

FINAL REPORT  
ON  
AUTHORITY TO PROSPECT NO. 1991  
MT POWELL, HARTS RANGE, N.T.

D. S. FLACK (1970)

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PLAN NO. 1858

LOCATION AND GEOLOGICAL MAP

FINAL REPORT ON  
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SUMMARY

Authority to Prospect No. 1991 was taken up to evaluate occurrences of rare earth minerals in calc-silicate rocks, and of tantalite associated with pegmatite. Radiometric survey, geochemical sampling, and field traversing indicated that all mineralization discovered was too small or too discontinuous to be of interest. The area was relinquished.

INTRODUCTION

Authority to Prospect No. 1991 was granted on 19 June 1968 for a period of twelve months. It was 525 square miles in area, centred roughly on Atnarta Dam, which is located at the intersection of S.Lat. 23°15' with E.Long. 135°15'. It was acquired, together with P.A's. 1992, 1993, and 2277, because of Company interest in tantalite and rare earth minerals. The northern boundary of the P.A. is approximately 35 miles from the Harts Range Police Station, which is situated on the Plenty River beef road about 90 miles from the Stuart Highway. A well developed system of station roads crosses the P.A.

OWNERSHIP AND HISTORY

Numerous small prospects and workings lie within the area, but although gold was mined at about the turn of the century, there has been little profitable mining to date. Uranium was discovered in 1935 by Owen in the Mt Palmer region, but little interest was shown until 1948-49, when B.M.R. geophysicists Daly and Dyson visited almost every mine in the Harts Range district, and reported the presence of radio-activity and uranium minerals at half of them. High grade patches of radio-activity were all found associated with pegmatites, and most were subsequently identified as samarskite and betafite. This information was withheld from publication for security reasons until 1956. Hence the Harts Range district was largely neglected as a prospecting area for uranium during the uranium "boom".

## LOCATION AND ACCESS

The Harts Range lies approximately 130 miles east-north-east of Alice Springs, and trends from west to east. The area of interest is in the eastern portion of the range, roughly south-east of the Harts Range Police Station. Access is obtained by the Stuart Highway. Eighteen miles east of the Police Station, almost immediately after crossing Entire Creek, a track is taken to the south through a gap in the range to Mt Eaglebeak, and followed to Mt Mary Bore and Mt Powell.

The P.A. covered an area described as follows:

"Commencing at the intersection of S.Lat.  $23^{\circ}02'$  with E.Long.  $135^{\circ}18'$ , thence proceeding to the intersection of Lat.  $23^{\circ}02'$  with Long.  $135^{\circ}30'$ , thence proceeding to the intersection of Lat.  $23^{\circ}22'$  with Long.  $135^{\circ}30'$ , thence proceeding to the intersection of Lat.  $23^{\circ}22'$  with Long.  $135^{\circ}00'$ , thence proceeding to the intersection of Lat.  $23^{\circ}10'$  with Long.  $135^{\circ}00'$ , thence proceeding to the intersection of Lat.  $23^{\circ}10'$  with Long.  $135^{\circ}18'$ , thence to the point of commencement, excluding therefrom all reserves, all mining tenements held or applied for, and all rail and road reserves."

## GEOLOGY

The country rocks consist of Archaean granulites and amphibolites, cut by swarms of quartz-feldspar-pegmatite dykes. Metamorphism of sediments rich in aluminium has led to the formation of large corundum phenocrysts. Gneiss is common within the P.A., and crops out prominently in the Harts Range Anticline. Basic rocks (mainly gabbro) intrude the metamorphics at several localities.

A photogeological study of the area was carried out by Geophoto Resources who produced a photointerpretation map.

## GEOPHYSICS

A Geiger counter and scintillometer were used to locate most of the reported radio-active rare earth minerals. Radiometric surveys were also carried out at the old mines in the area, and during lengthy vehicle and foot traverses. No significant anomalies were found.

### GEOCHEMISTRY

Stream sediment from the entire drainage system of the P.A. was sampled and analyzed for base metals, each sample representing a drainage area of approximately five square miles. No anomalous zones were revealed.

An iron-rich outcrop near Mt Mary Bore was chip-sampled, and soil samples were taken at 100 ft intervals along a line at right angles to the trend of the outcrop. Analysis did not show any anomalous values for base metals.

All pegmatites outlined by the photogeological study were chip-sampled and tested for radio-activity. No anomalies were indicated.

### MINERALIZATION

All the old mines of the area were investigated for radio-active minerals and beryl mineralization. At the Lone Pine Mine, samarskite was noted in small concentrations in an area of a few hundred square feet. Betafite reported at the Last Hope Mine was not found. Atrich's Mine and the Mt Ruby Mine contained occurrences of large beryl crystals in zoned pegmatites, but the zones were too small to be of interest.

Near Atnarta Dam an occurrence of large phenocrysts of indeterminate mineral species was sampled for petrographic examination. This mineral had the optical properties of chrysoberyl, but X-ray powder photography showed that it was, in fact, corundum.

Blades of kyanite up to three inches long were found extensively scattered over ridges west of Huckitta Well, shed from two discontinuous seams approximately ten feet thick within a coarse biotite-schist. The deposit was of no economic interest.

Other small outcrops of kyanite and scheelite were noted at several places within the P.A., but thick overburden and erratic occurrence preclude economic development.

High copper values were obtained from a pegmatite zone near Mt Mary, but it proved to be too small to be of interest.

CONCLUSION

Geological, geochemical, and geophysical investigation indicated that all mineralization known or discovered was too small and too discontinuous to be economic. The P.A. was therefore relinquished.

DSF:AS:793  
October 9, 1970

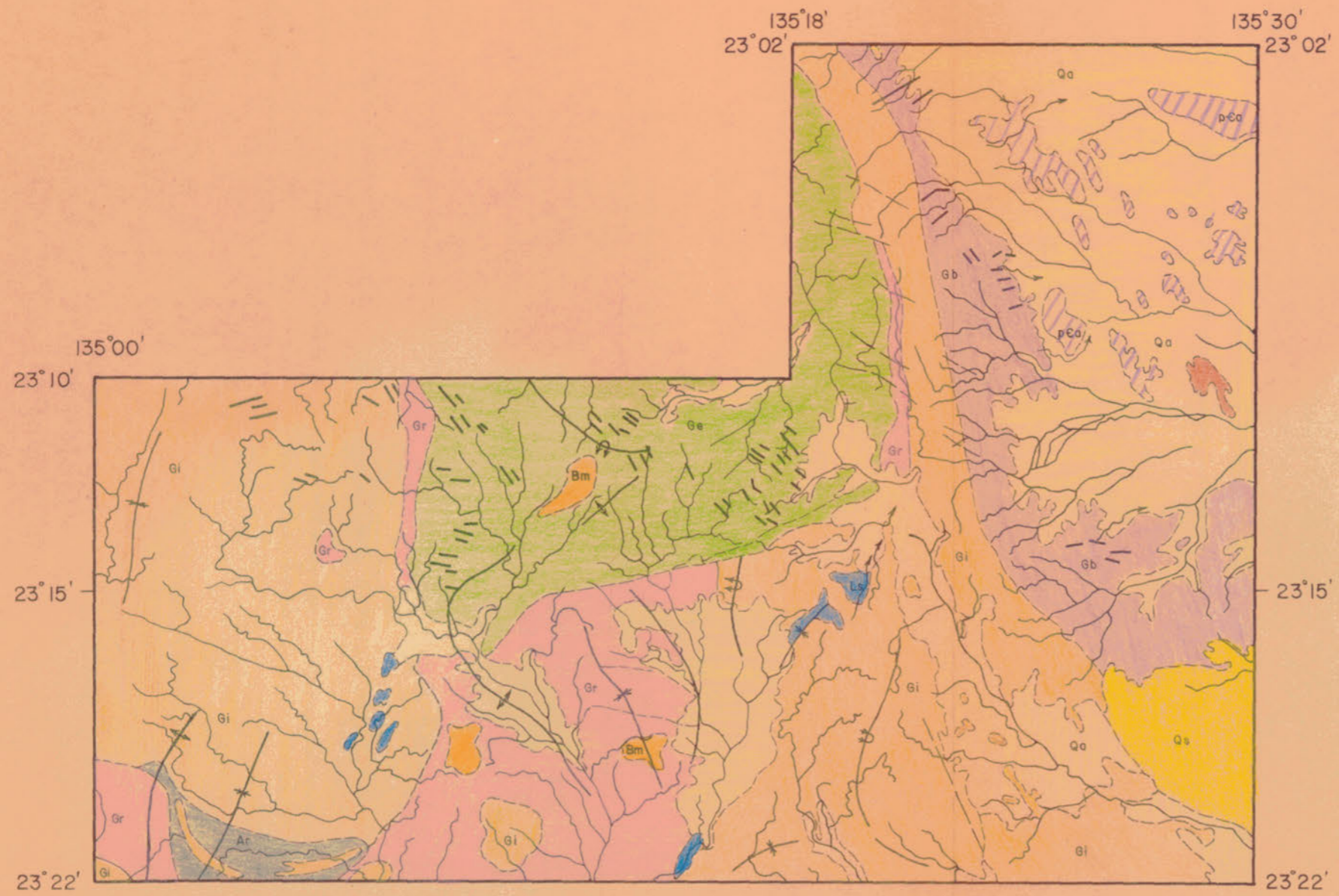
PROSPECTING AUTHORITY NO. 1991  
ANALYSIS OF EXPENDITURE

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	\$
Surface prospecting	3200
Geology	4528
Geophysics	1473
Geochemistry	289
Drilling	91
Property expenses	-
Sampling, assaying	240
Road building	-
Transportation	1823
Legal costs	-
Consulting fees	494
Evaluation	40
	<hr/>
TOTAL	\$12,178
	<hr/>

LEGEND

- QUATERNARY
  - Qa Alluvium
  - Qs Aeolian Sand
- TERTIARY
  - T Sediments Undifferentiated
- ARCHAEAN
  - Bm Basalt Metamorphozed
  - Gb Brady Gneiss
  - Ar Riddock Amphibolite
  - Ls Metamorphozed Limestone, Calcareous Sandstone
  - Gi Irindina Gneiss
  - Gr Bruna Gneiss
  - Ge Entia Gneiss
  - pCa Arunta Complex Undifferentiated
- /// Pegmatites
  - ↑ Anticline
  - ↯ Overturned Anticline
  - ∩ Syncline
  - Fault



PLACER PROSPECTING (AUSTRALIA) PTY. LTD.	
Geological, Structural & Location Map	
P.A. 1991- NORTHERN TERRITORY	
DATE: JUNE, 1970	GEOLOGIST: D.S. FLACK
SCALE: 1:250,000	DRAUGHTSMAN: R.J. VOSS
REVISIONS:	FILE No: 1858- N.T.