PRELIMINARY REPORT
ON
MINERAL PROSPECTS
of portion of the
SCHWERIN - MURAL CRESCENT AREA
WESTERN AUSTRALIA
for
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NORTHERN TERRITORY GEOLOGICAL SURVEY CRG6/046
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In view of the need for haste in connection with obtaining title to land in Western Australia which adjoins P.A's 1435 and 1546 in the Petermann Ranges area of Northern Territory, I have selected several preliminary exploration targets. These are based on premises and arguments set out in detail in my report entitled "A geological report on the mineral prospects in the vicinity of the Petermann Ranges, Northern Territory", as prepared on August 12, 1966 for Planet Mining Co. Pty. Ltd.

EXPLORATION TARGETS

I. MT. HARRIS BASALT.

No simple anticlinal sites are present. However, the terrain has been so severely deformed that other structural factors should be considered.

Zones of amygdaloidal basalt should be sought. Mineralization should then be looked for where these are cut by major faults which penetrate deep into rock formations of contrasting porosity and chemical composition. Some of the major faults will be silicified and may carry sulphides. On the other hand, the faults which occur in zones of negative relief must not be overlooked for such relief may be due to hydrothermal "softening" of the rocks. These could show up as zones of negative magnetic anomaly due to the magnetic minerals becoming altered to non-magnetic hydrous minerals.

Three sites are selected. A and B are more obvious topographic features than C. If possible, however, the rest of the Mt. Harris Basalt should be prospected with aeromagnetic magnetometer and possibly one of the electromagnetic methods.

There are no obviously favourable sites on Sheet II.
II. THE PINYINNA BEDS

Sheet I.

Sheet I has a strong development of Pinyinna Beds. Four sites have been selected for initial study.

H: - Faulted and contorted synclinorium.
J: - A strongly faulted zone which runs into P.A. 1435.
K: - Representative outcrops of strongly developed Pinyinna Beds on the northern extremity of the project area. The NE-trending faults may connect with deeper parts of the Amadeus Basin.
L: - Probable good thickness of Pinyinna Beds in two synclines. Geochemical sampling of fresh Pinyinna Beds from these four widely separated outcrops may reveal regional chemical trends or give evidence of the nearness of the Pinyinna shore line.

Sheet II.

Outcrops of Pinyinna Beds are uncommon. However, they are of considerable interest.

D: - A narrow strip of Pinyinna Beds is dark in outcrop (unusually heavily vegetated) and could be gossanous as near Butler Dome.
E and F: - These sites are small outcrops flanking a buried basin which should contain a large thickness of Pinyinna Beds. The margin of the basin may be studied by the magnetometer. Of special interest should be the margin of the basin where it is cut by WNW. faults and a continuation of the trend of site D.

III. BLOODS RANGE BEDS.

A detailed search for exploration sites in the formation has not been done. However, in the Deen Range (Sheet I, site G) there are three anomalously jet black outcrops on the crest of an overturned anticline in the Bloods Range Beds. These may be manganiferous gossans. On the other hand, they strongly resemble tar seepages. As oil seepages are known in the White Pine Copper Mine in Michigan (of similar Precambrian age) these outcrops could be of great significance as metal indicators.

Cursory examination of the air - photographs of the adjoining area in Northern Territory shows that the black patches persist for three or four miles eastward from the W.A. - N.T. border.
These black outcrops are the most intriguing sites so far noticed in Sheets I and II, and they should be investigated forthwith.

RECOMMENDATIONS

A rapid helicopter survey of sites A - L should be made to enable a wise choice of sites to be legally negotiated with the Western Australian Government.

Meanwhile a P.A. should be taken up over the Northern Territory extension of the "black outcrops" of the Dean Range (see Fig. 1).

Fig. 1. The area to be taken up by P.A. in Northern Territory.

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Probable large thickness of Pinjin Beds. Outcrop and (G and F) but magnetic. More survey may reveal mineralized zones in the basin.