ANNUAL REPORT

1980 - 81

EL 2041 BEACON HILL.

G. Hassall.

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ABSTRACT

EL 2041, Beacon Hill, was granted to AAR Limited on the 15th August, 1979 for a period of twelve months. A twelve month renewal was granted on the 15th August, 1980. A 50% relinquishment was made on the 15th August, 1981.

No field work was carried out during the period August 1980 to August 1981. Work completed on the area during the year included planning for a limited exploration programme in late August - early September, 1981.

1. INTRODUCTION

This report describes the results of work carried out on Exploration Licence 2041, Beacon Hill, during 1980/81.

The Exploration Licence was granted for all minerals on the 15th August 1979.

1 Location and Access

Exploration Licence 2041, Beacon Hill, is located approximately 140 kilometres south-east of Darwin (Fig. 1). The area is contained within the 1:250,000 Pine Creek Sheet area. The northern-most section of the EL occurs in the Batchelor 1:100,000 sheet area while the southern portion of the area lies within the Tipperary one inch to one mile map. A detailed description of EL 2041 is as follows:-

All that piece or parcel of land in the Northern Territory of Australia containing an area of 2.07 square miles (6.65 sq.km.) more or less, the boundary of which is described as follows:-

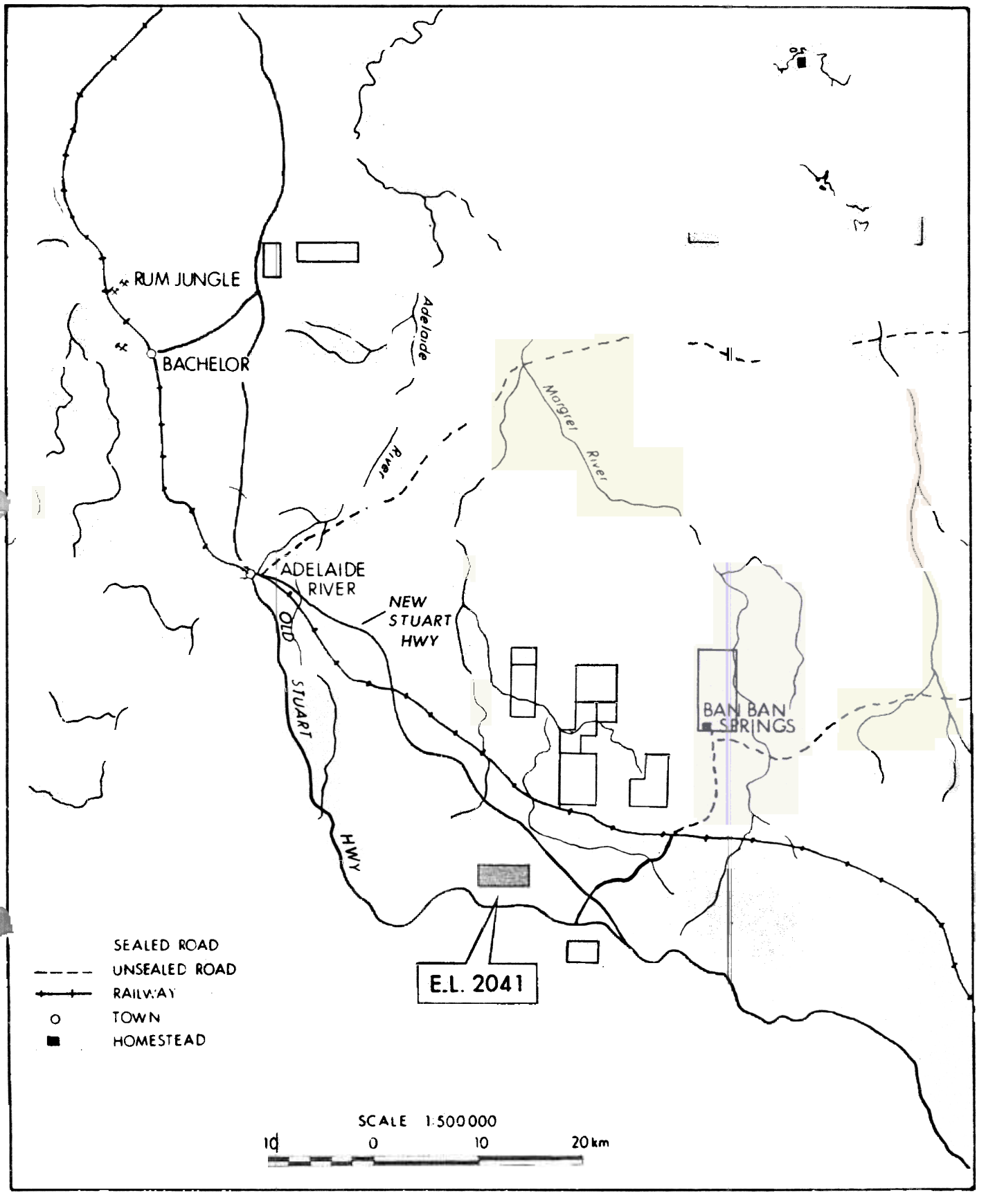
Commencing at the intersection of latitude 13 degrees 30 minutes with longitude 131 degrees 18 minutes thence proceeding to the intersection of latitude 13 degrees 30 minutes with longitude 131 degrees 20 minutes thence proceeding to the intersection of latitude 13 degrees 31 minutes with longitude 131 degrees 20 minutes thence proceeding to the intersection of latitude $13^{o}31'$ with longitude $131^{o}18'$ thence proceeding to commencement point.

Access to EL 2041 is gained via the Stuart Highway which passes through the north-eastern corner of the EL. The Old Stuart Highway passes to the south of the EL. There are no other tracks within the project area.

1.2 Topography and Climate

Within the EL the topography consists of low hills, with rocky outcrops having a relief of up to 30 metres. The creek valleys consist of "black soil" plains and occasionally swamps.

Climate is sub-tropical. The monsoonal season occurs from November to April, during which most of the annual rain falls in torrential storms. Rainfall averages more than 1 200 mm annually. Humidity is constantly high and temperatures range from 30-40^{o}C. During the remainder of the year the



LOCATION MAP

E.L. 2041 BEACON HILL

Figure 1

humidity is lower with daily changes in temperature ranging from 30°C during the day to 10°C or less at night.

1.3 Tenement Situation

Exploration Licence 2041 was granted to AAR Limited on the 15th day of August, 1979 for a period of 12 months with a minimum expenditure of $1,250. A twelve month renewal was granted on the 15th August, 1980. A 50% relinquishment was made on the 15th August, 1981.

Implementation of exploration programmes in the Licence area is being undertaken by Mines Administration Pty. Limited, a wholly owned subsidiary of AAR Limited.

1.4 Previous Work

The earliest geological investigations of the Pine Creek region resulted from the discovery of gold in 1872. A number of the mining fields and mines were mapped with aerial photographs by the Aerial, Geological and Geophysical survey of Northern Australia between 1935 and 1939.

The BMR has carried out a number of regional mapping programmes which have included the EL. The area was studied at 1:63,360 scale (1959) and 1:250,000 scale. (Malone, 1962).

Walpole et. al., (1968) compiled all the previous literature and mapping pertaining to the Katherine - Darwin Region. More recently mapping of the entire Pine Creek Geosyncline was completed at 1:500,000 scale (Needham et. al. 1980).

During 1964/65 United Uranium N.L. and United Exploration Pty. Ltd. conducted an exploration programme for base metals on a number of ELs to the south of the present project area. Most of the work was centred over old mine workings. However, some exploration examining 'gossanous' outcrops was carried out.

CRA carried out a regional mapping and soil and rock chip sampling programme on an area to the south of EL 2041 during 1978. Their work was oriented toward base metal exploration with major emphasis on the investigation of ironstones within the project area.

Several pits, one with minor malachite showing, and a trench have been dug within EL 2041. No literature pertaining to this exploration was found.

2 REGIONAL GEOLOGY

Exploration Licence 2041 is located near the centre of the Pine Creek Geosyncline. The regional geology of the Pine Creek Geosyncline has been described in detail by Needham et.al. (1980) and will be discussed only briefly in this report.

By correlating a Tuffaceous sequence Needham et. al., (op cit) have now defined the Pine Creek Geosyncline as a single intracratonic basin containing a thick sequence of mainly pelitic and psammitic Lower Proterozoic sedimentary rocks with interlayered tuff units resting on an Archean granitic basement. Cover rocks, of Carpentarian and younger age, unconformably overly all of these rocks and conceal the basin margins (Table 1).

2.1 Archean Basement

The Archean Basement is represented by the three domes of the Rum Jungle/Waterhouse and Nanambu Complexes. Possible Archean rocks outcrop in the Woolner area. All three complexes consist mainly of gneisses, migmatites and leucocratic granites with minor schists, metasediments and banded iron formations. All of the Archean basement rocks have anomalous uranium concentrations and are possible source rocks for the deposits in the Pine Creek Geosyncline.

2.2 Lower Proterozoic Sedimentary Rocks

The oldest known Lower Proterozoic rocks are those of the Batchelor and Kakadu Groups which rest unconformably on Archean basement. The Batchelor Group, which surrounds the Rum Jungle/Waterhouse complex contains Arkosic rudites, psammites, conglomerates, and minor shales of the Beestons and Crater Formations interbedded with massive crystalline carbonates of the Celia and Coomalie Dolomites. The Kakadu Group is best developed adjacent to the Nanambu Complex and is comprised mainly of meta-arkose and paragneiss.

These two basal groups are overlain by the pelites and psammites of the Namoona Group. The dominant unit in this group is the Masson Formation which extends from west of the Rum Jungle/Waterhouse Complex almost to the South Alligator River. Further east it is thought to be equivalent to the lower member of the Cahill Formation, a partly calcareous and carbonaceous sequence of micaceous quartz- feldspathic schist, with lenses of massive carbonate. These two units are the hosts to the major uranium deposits in the Rum Jungle and Alligator Rivers areas. In the centre of the geosyncline the

Masson Formation is unconformably overlain by the Stag Creek Volcanics. Elsewhere the Masson Formation is overlain by the sandstone-siltstone assemblage of the Mount Partridge Group which contains the Mundogie Sandstone, Mount Hooper Sandstone and Wildman Siltstone and correlates with the Acacia Gap Sandstone in the Rum Jungle Area. East of the South Alligator River the Mundogie Sandstone correlates with feldspathic quartz schist of the upper Cahill Formation and the overlying Wildman Siltstone correlates with the Nourlangie Schist.

Overlying the older rocks is the South Alligator Group which comprises the Koolpin Formation, Gerowie Tuff and Kapalga Formation. Together with the Koolpin Formation, the overlying Gerowie Tuff provides the main evidence for correlating the strata of the western and central parts of the geosyncline. The Kapalga Formation is the youngest unit in the South Alligator Group and represents a transitional sequence between the South Alligator Group and the overlying Finniss River Group.

The Finniss River Group is the youngest Lower Proterozoic Group and consists of a monotonous sequence of siltstone, slate, shale and greywacke. The Finniss River Group is made up of the Burrell Creek Formation, the Fisher Creek Siltstone and the Chilling Sandstone. The Burrell Creek Formation grades laterally and upwards into the Chilling Sandstone. The Fisher Creek Siltstone is present in the South Alligator Valley area and is a correlative of the Burrell Creek Formation.

At or near the end of sedimentation in the Lower Proterozoic the rocks were intruded by a suite of dolerites, mainly sills, known as the Zamu Dolerites. At approximately 1 800 m.y. the sills and sedimentary rocks were deformed and regionally metamorphosed. Both the grade of metamorphism and degree of deformation increases towards the north east of the geosyncline. The metamorphics were then intruded and in places domed by early Carpentarian granite plutons. This was followed by the intrusion of a series of tholeitic known as the Oenpelli Dolerites.

2.3 Cover Rocks

The Lower Proterozoic rocks of the Pine Creek Geosyncline are unconformably overlain by the sandstone and minor volcanics of the Tolmer and Katherine River Groups. The northern and southern margins of the geosyncline are concealed by Palaeozoic rocks of the Daly River Group and Mesozoic strata of the Bathurst Island and Petrell Formations.

3. EXPLORATION PROGRAMME, 1981

As of 15th August, 1981 no field work had been carried out on EL 2041, Beacon Hill. A limited field programme which would include some geological mapping and rock-chip sampling and radiometric surveys is planned for late August - September, 1981.

4. REFERENCES

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APPENDIX I.

Expenditure EL 2041 year ended 14.8.81.

BRISBANE.

3RD NOVEMBER, 1981

MINES ADMINISTRATION PTY LIMITED

STATEMENT OF EXPENDITURE

EL 2041 BEACON HILL

YEAR ENDED 14.8.81

REF: AC/MDE

	$
Salaries and Wages	2,237
Travel & Accommodation	624
Vehicle Hire	194
Communications	6
Freight	15
Drafting, Air Photography, Printing, etc.	107
Geophysics Contractor - Logging	2,558
Surveying Consumables	2,217
	7,958

G.T. Hall,
Accountant.