EL 2103 MT ELLISON
ANNUAL REPORT
1981
OPEN FILE

Neil Fraser
December, 1981
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ABSTRACT

EL 2103 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 1981, with a 50% relinquishment also being made on the same date.

Work for the year ended 15th August 1981, consisted of planning and preparing for the 1981 field season, letting of contract gridding over 31.7 line km. on prospective horizons, and compilation of the 50% relinquishment report.
1. **INTRODUCTION**

EL 2103 was granted to AAR Limited on the 15th August 1979 for a period of twelve months. The area was granted for all minerals. A twelve month renewal was granted on 15th August 1981.

During the twelve months ended 15th August 1981, work on EL 2103 consisted of planning for the 1981 field season. Work was due to commence on EL 2103 in late August - early September, 1981.

1.1 **Location and Access**

EL 2103 is located approximately 125 kilometres south east of Darwin and 63 kilometres north west of Pine Creek in the Northern Territory (Fig. 1). It is located on the Pine Creek 1:250,000 sheet the Ban Ban 1:63,360 sheet and the McKinlay River 1:100,000 sheet. A detailed description of EL 2103 is given below:-

All that piece or parcel of land in the Northern Territory of Australia containing an area of 12.86 square miles (33.29 sq.km.) more or less, the boundary of which is described as follows:-

Commencing at the intersection of latitude 13 degrees 18 minutes with longitude 131 degrees 30 minutes thence proceeding to the intersection of latitude 13 degrees 18 minutes with longitude 131 degrees 32 minutes thence proceeding to the intersection of latitude 13 degrees 23 minutes with longitude 131 degrees 32 minutes thence proceeding to the intersection of latitude 13 degrees 23 minutes with longitude 131 degrees 30 minutes thence proceeding to the intersection of latitude 13 degrees 18 minutes with longitude 131 degrees 30 minutes.

Access to EL 2103 is obtained via the sealed Stuart Highway from Darwin and thence by a combination of sealed and formed gravel roads to Ban Ban Station.

From Ban Ban Station a combination of farm tracks and fence lines provides access to most of the area. The north east corner of the Exploration Licence is accessible only on foot.

1.2 **Topography and Climate**

The granite areas of EL 2103 consist of low rounded hills merging into broad alluvial flats. The south east quarter is a broad alluvial flood plain with patches of black soil and
LOCATION MAP.

E.L. 2103 - MT. ELLISON

Figure 1
laterite. The laterites are distinguished by low gravel covered rises. The remainder of the Exploration Licence consists of steep sided hills and ridges rising up to sixty metres above broad valleys filled with black soil. The south west corner is especially rugged as it contains Mt. Ellison which rises to a height of 100 metres above the surrounding countryside.

The climate of EL 2103 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°C. During the remainder of the year the 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 2103 was granted to AAR Limited on the 15th August 1979 for a period of twelve months.

A 12 month renewal was granted on the 15th August 1981, with a 50% relinquishment being made on 15th August 1981.

A detailed expenditure statement is presented in Appendix II.

Implementation of the exploration programme is being undertaken by Mines Administration Pty Limited a wholly owned subsidiary of AAR Limited.

1.4 Previous Work

The Mt. Ellison area has been covered by a number of regional mapping programmes by Government Departments. In 1935, 1936 and 1939 the Aerial Geological and Geophysical Survey of Northern Australia mapped a number of mines and mining fields in the district. EL 2103 was mapped as part of the Ban Ban 1:63,360 map (1962) and the Pine Creek 1:250,000 geological map (Malone 1962). The area was also mapped by Walpole (1968) in his regional survey of the Pine Creek Geosyncline. More recently the Mt. Ellison area was covered by the 1:500,000 scale mapping of the Pine Creek Geosyncline.

The uranium potential of the Burnside area was investigated in the 1950's and 1960's by Australian Mining and Smelting and United Uranium. More recently Nord Resources (1978) tested an area to the south for uranium and tin. CRAE (1959, 1977-79) and Comalco (1975) also tested the carbonaceous shales for gold
2. REGIONAL GEOLOGY

Exploration Licence 2103 is located near the centre of the Pine Creek Geosyncline between two intrusive early Carpentarian Granites.

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 overlie all of these rocks and conceal the basin margins (Table 1).

2.1 Archean Basement

The Archean Basement is represented by the domes of the Rum Jungle/Waterhouse and Nanambu Complexes. Possible Archean rocks outcrop in the Woolner area. All the 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 1800 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 lopoliths known as the Oenpelli Dolerites.

2.3 Cover Rocks

The Lower Proterozoic rocks of the Pine Creek Geosynclines 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
3. **EXPLORATION PROGRAME**

Work on EL 2103 for the year ended 15th August consisted of contract gridding and compilation of the 50% relinquishment report for August 15th, 1981 and planning for the 1981 Field Programme.

A contract was let to Geoex Nominees, Duncraig, W.A., for gridding of 31.7 line km. over prospective horizons, as determined from the 1980 field programme. A location map is provided in Appendix I.

Further field work was due to be carried out after the 15th August, and will be comprised of detailed geological mapping, further gridding, detailed ground radiometrics and geochemical sampling.

4. **SUMMARY**

Work for the year ended 15th August consisted of contract gridding and compilation of the 50% relinquishment report.

The bulk of the field work is due to be carried out after 15th August 1981.
5. **BIBLIOGRAPHY.**


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N.T. Open File CR 78/167 unpbl.

Willis, K.J., 1979: Final Reports Burnside East, EL 1137, and
Burnside West EL 1149, Pine Creek Basin N.T.
N.T. open File CR 79/56 unpbl.
APPENDIX I.

Grid Plan.
APPENDIX II.

EXPENDITURE STATEMENT
BRISBANE.
24th August, 1981.

MINES ADMINISTRATION PTY LIMITED

STATEMENT OF EXPENDITURE

MT. ELLISON EL 2103

YEAR ENDED 15.8.81.

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G.T. Hall,
Accountant.