CENTRAL PACIFIC MINERALS N.L.

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(Expired 10th June 1972)

PINE CREEK - NORTHERN TERRITORY

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F. Baarda

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NORTHERN TERRITORY
GEological SURVEY

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   Sampling Data and Ground magnetic survey.

3. Ronans Prospect and Auger drill holes and cross section.

4. Heatleys Prospect – Geology

5. Heatleys Prospect – Ground magnetic survey

6. The Jar Prospect – Geology, Auger drilling and Geochemical Sampling Data.

7. Hayes Creek Fault – Geology
INTRODUCTION

P.A. 1959 was renewed for a period of 12 months expiring 10th June, 1972 (Map 1).

This report summarises the exploration programme and results for the 12 month period. Central Pacific Minerals N.L. carried out the programme on behalf of a joint venture between Central Pacific Minerals N.L. and A.O.G. Minerals Pty Ltd. (a wholly owned subsidiary of Australian Oil and Gas).

Total expenditure on P.A. 1959 during the period May 1971 - May 1972 was $58,141.97 shared equally between the joint venture partners.

For details of previous work by C.P.M., situation and access topography, history and previous investigations etc., (See 1971 Progress Report for P.A. 1959 Pietsch and Shields, 1971).

In this report results up to June 1971 are only briefly summarised and only results for June 1971 - June 1972 are discussed fully.

Only those prospects on which follow up work was carried out are discussed. The prospects dealt with are:-

1. Ronan's Prospect (including George Creek Uranium Prospect ML 360B and ML 227B)
2. Heatley's Prospect
3. The Jar Copper Prospect
4. The Burrundie Project Area
5. Hayes Creek Fault
6. McKinley River Area
RONANS PROSPECT (NT-11.1) INCLUDING GEORGE CREEK
URANIUM PROSPECT (M.L.360B & M.L. 227B)

Summary of Previous Work

An area of approximately 3 square miles in the George Creek Uranium Mine Area was gridded, geologically mapped, and covered by radiometric and soil geochemical surveys.

Results of geological mapping and radiometric surveying suggest that uranium mineralization is associated with a folded banded siltstone. Some copper, lead and radiometric anomalies were delineated in alluviated areas.

1971/1972 Programme and Results

a. Ground Magnetic Survey

Four ground magnetic traverses totalling three miles in length were run to check the usefulness of magnetometry in the area. Results varied a maximum of 40 gammas. (Map 2)

b. Hand Auger Sampling

Two lines of hand auger holes (30 holes totalling over 130 feet) were sampled. (Map 3)

Results showed that radiometric anomalies are caused by minor uranium trapped in an approximately one foot thick surface layer of black humic clay (3 to 5 ppm U). Likewise the copper and lead anomalies did not increase in value with depth, and appear to be related to the surface clays.

The surface clay is underlain by unconsolidated, remarkably clean sand, which is an excellent aquifer, as testified by the disappearance underground of George Creek water derived from Robyn Falls.
Conclusions and Recommendations

1. The banded siltstone is no longer regarded as significant. Hydrothermal uraninite (as derived from the George Creek Mine), would tend to weather and fix on ferruginous outcrops or in joints and partings of the banded siltstone, which would tend to give anomalies out of proportion to their source.

2. The radiometric geochemical anomalies on the alluvial plain, are no longer considered significant.

3. The economic potential of the sand deposit was given consideration. It was concluded that distance from market, anticipated mining difficulties (such as contamination, removal of vegetation etc.), preclude commercial extraction.

4. It is recommended that no further work be carried out on this prospect.
HEATLEY'S PROSPECT (N.T. 11.2)

Summary of Previous Work

Reconnaissance and detailed geochemical surveys were carried out over portions of P.A 1959 containing exposures of Golden Dyke Formation.

Anomalous surface lead values of greater than 1,000 p.p.m. over a strike length of 2,500 feet were detected and the anomalous area named "Heatley's Prospect" (Map 1).

1971/72 Programme and Results

A detailed programme was carried out to more clearly outline and evaluate the lead anomaly prior to drilling.

a. Gridding

The area was covered by an accurate grid, and approximately 12 line miles of abney level traversing completed to prepare topographic contours.

b. Geological Mapping

An area 7,200 by 2,400 feet was remapped at a scale of 1 inch equals 100 feet (the region had been previously mapped at photo scale, 1 inch equals 1,350 feet). The outcrops consist of shale, siltstone and diabase sills, and the mapping outlined lithologic trends that tie in accurately with the geochemical and geophysical results (Map 4).

c. E.M. & S.P. Surveys

Reconnaissance electromagnetic (Slingram and Turam), and self potential surveys were carried out by the Bureau of Mineral Resources.
Three S.P. traverses over the lead anomaly gave good agreement with black shale distribution.

The E.M. surveys were not very useful, probably because of the steep topographic slope over the anomaly (however, the slope should not have affected the Turam results).

d. Ground Magnetic Survey

Approximately 15 line miles of ground magnetic traverse was completed over the area. Readings were taken at 100 feet intervals, and where magnetic intensity variations warranted it, the spacing was reduced to 50 feet. Readings varied from -200 gammas to -1400 gammas, and a 4,600 feet long anomaly was outlined along strike (Map 5).

e. Ground Scintillometer Survey

Approximately 15 line miles of ground scintillometer survey was completed over the area. Readings were recorded at 100 feet intervals and no anomalies were detected.

Over black shales readings of 80 to 110 cps were obtained, whereas over diabase sills readings were only 35 cps.

f. Trenching

The previously opened costean was re-sampled (58 samples at five feet intervals), with the following results:

\[
\begin{align*}
\text{Pb:} & \quad 100 \text{ to } 5000 \text{ ppm} \\
\text{Zn:} & \quad 300 \text{ to } 1500 \text{ ppm over a 30 feet wide zone, otherwise less than } 100 \text{ ppm} \\
\text{Ag:} & \quad \text{mostly less than } 1.0 \text{ ppm maximum } 2.6 \text{ ppm.}
\end{align*}
\]

A sixty feet long trench was dug to bedrock and sampled. No sign of massive mineralization was observed.
g. Geochemical Soil Sampling

A total of 872 samples were taken at 12-18 inches depth (below the A-horizon) at 100 feet intervals, reduced to 50 feet where high values had been previously obtained. Line spacing was 200 feet. The samples were analysed for copper and lead by A.A.S.

The lead anomaly was better outlined and found to consist of an area 400 feet long by 300 feet wide with a peak of 1,500 p.p.m., and an area 900 feet long and 150 feet wide with a peak of 1000 p.p.m.

Subsequent to the drilling programmes soil sampling coverage was extended southwards, but only minor anomalies of no commercial significance were detected.

h. Bulldozing

A few hours of bulldozing were carried out to improve access for the drilling programme.

i. Percussion Drilling

From 22nd September to 12th October, 1971 a percussion drilling programme was carried out using a Longyear air track rig.

Twenty-seven holes totalling 3,550 feet were drilled to provide four cross sections down to the water table across the lead anomalies. (Map 4)

The holes were sampled at 5 feet intervals and analysed by A.A.S. for copper and lead. When lead content was greater than 2,000 p.p.m. silver was also determined.
A 15 to 25 feet wide zone containing 2,000 to 8,800 p.p.m. lead was confirmed. Copper values did not exceed 50 p.p.m. and a maximum of 8.5 p.p.m. silver was obtained.

j. Diamond Drilling

The percussion drilling results showed that lead values persisted and generally increased with depth. A diamond drilling programme aimed at testing the possibility that the lead values represented the geochemical aureole of an ore body was carried out. (Map 4)

Two holes totalling 1,137 feet were drilled by the Mines Branch of the Northern Territory Administration. Minor lead and zinc mineralization was intersected. The results are fully discussed in Report No. NT. 58:

Baarda, F., Sept 1972 Prospecting Authority 1959, Diamond Drilling at Heatley's Prospect 1971-72, Golden Dyke Dome, Northern Territory".

a copy of which has been submitted to the Mines Branch.

Conclusions and Recommendations

An old pyromorphite bearing prospector's pit located during the soil sampling carried out subsequent to the drilling programmes should be evaluated.

On the basis of the diamond drilling results no further work is recommended on Heatley's Prospect.
THE JAR COPPER PROSPECT

Summary of Previous Work

A series of unrecorded copper-bearing pits were located during regional prospecting in 1970.

The mineralized zone is up to five feet wide and is discontinuously exposed over 2,000 feet and consists of quartz limonite and minor box works containing malachite and azurite, and host rock being silicified and ironstained siltstone of the Burrell Creek Formation (Map 6).

Geological mapping was followed by geochemical soil and weathered bedrock sampling which delineated several anomalous zones requiring evaluation.

Two bulldozer costeans 200 feet apart were opened up across the vein and sampled. Copper values greater than 1% over 8 feet and 4 feet widths respectively, were obtained.

1971/72 Programme & Results

a. Ground Magnetic Survey

Two ground magnetic traverses totalling 3,000 feet were run across the mineralized zone with fairly constant results, showing that magnetic intensities are not a useful exploration parameter in the area.

b. E.M. & S.P. Surveys

The B.M.R. carried out two S.P. traverses and three E.M. (Slingram) traverses over the mineralized zone. No anomalies were detected.
c. Percussion Drilling

Seven inclined holes were drilled for a total of 460 feet using a Longyear Airtrack Rig from 13 to 16th October, 1971.

Holes were sampled at 5 feet intervals. Two holes were drilled to intersect the mineralized zone below the coteans and values of 2,500 to 4,200 p.p.m. copper were obtained over 10 foot widths. One 5 feet sample assayed 5.2% copper. (Map 6)

Mineralization is confined to a zone less than 10 feet wide containing haematite and quartz veinlets in a chloritic shale matrix.

The other holes intersected 10 feet zones assaying from several hundred p.p.m. to a maximum of 3,000 p.p.m. copper.

Conclusions & Recommendations

The percussion drilling programme showed that although the mineralized zone persists along strike high copper values are sporadic.

Indicated potential copper ore reserves are insufficient to warrant further work on the prospect.
BURRUNDIE PROJECT AREA (NT 11.14)

Nomenclature

The Burrundie Project Area is defined as the whole area of Golden Dyke Formation (with associated basic intrusions) in the western half of the Burrundie 1 mile sheet.

It includes the Golden Dyke Mine Dome, however exploration of the Golden Dyke Mine Dome is discussed under "Heatley's Prospect - NT.11.2" which the dome encompasses.

Summary of Previous Work

That portion of the Burrundie Project Area which falls within P.A. 1959 was explored by the 1969 regional chip-sampling programme.

On the basis of the chip-sampling results, the domal structure between Mt. Bonnie and the Margaret Diggings was covered by a broadly spaced soil sampling programme ("1/4 mile line spacing, 200 feet sample spacing"). A ground-scintillometer survey was also completed over the structure.

Some high lead soil values were detected in a black shale environment. No anomalous radioactivity was recorded.

1971/1972 Programme and Results

The base metal potential of the Burrundie Project Area was reappraised in April 1972. A literature search coupled with a review of results obtained to date was carried out, and conclusion and recommendations are presented and discussed in Report No. NT-64.

F. Baarda, 1972  "Burrundie Area - NT., a discussion on its base metal potential"
The proposed programme is discussed in the above report.

Mt. Bonnie-Iron Blow Area

a. Ground Magnetic Survey

An approximately one square mile area between the Mt. Bonnie and Iron Blow mines was gridded and a ground magnetic survey completed over the area.

An approximately 400 gamma anomaly was detected over the Iron Blow Mine. Over the remainder of the grid readings varied a maximum of 300 gammas but no anomalous areas were outlined.

The ground magnetic survey aimed at detecting possible mineralized trends linking the Mt. Bonnie and Iron Blow mines. No such trends were established.

b. Auger Drilling

Forty-eight auger holes were drilled by the Northern Territory Administration Mines Branch in the alluvial flats between the two mines. All holes finished in a quartz gravel horizon which the drilling rig could not penetrate. The programme was aimed at obtaining geochemical data from the alluvium covered bedrock and failed to reach its objective.

Mt. Bonnie-Margaret Area

Only minor grid preparation for a sampling programme over the domal structure between Mt. Bonnie Mine and the Margaret Diggings had been carried out when P.A. 1959 expired.

It is proposed to sample the area more thoroughly than has been done in the broadly spaced programme in 1970.
HAYES CREEK FAULT

Introduction

The Hayes Creek Fault has some analogies with the Giants Reef Fault (Rum Jungle District). The southern part of the Hayes Creek Fault was investigated.

Situation & Access

The Hayes Creek Fault is shown on the B.M.R. Tipperary 1:63,360 geological map. Access is from the Stuart Highway via the Douglass Station and Ooloo Station tracks.

1971/1972 Programme & Results

East-west traverses about 2 to 3 miles long and spaced ½ mile apart were walked across the fault zone south of Hayes Creek Inn. A geological map was prepared at air photo scale (about 1 inch equals 1350 feet) and radiometric readings taken. (Map 7) No radiometric anomalies were detected. Some reconnaissance ground magnetic traverses were completed.

Conclusions and Recommendations

The fault is expressed at the surface as a discontinuous quartz filled shear zone. The quartz appears to be barren of mineralization and no further work is recommended on the area.
MCKINLEY RIVER AREA

Introduction

The north eastern portion of P.A. 1959 was reconnoitered by C. Shipway late in 1971.

1971/1972 Programme and Results

More than 90% of the area is covered by alluvium. Isolated outcrops of Burrell Creek Formation and possibly some Golden Dyke Formation sediments were examined and sampled throughout the area.

Geochemical backgrounds for copper, lead and zinc were found to be low, and no anomalous values were obtained. Lithology was predominantly siltstone and chert.

Recommendation

Because of the high exploration costs in alluvium covered areas, and lack of any encouragement, no further work is recommended in the area.