AUSTRALIAN DEVELOPMENT NO LIABILITY

(EXPLORATION MANAGERS FOR NOBELEX NO LIABILITY)

ANNUAL REPORT

ON

AUTHORITY TO PROSPECT

NO. 2386

ELECN

FOR THE

DIRECTOR OF MINES & WATER RESOURCES

DARWIN.
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1) Locality Sketch
2) General Information Plans

Distribution:

N.T. Administration (2)
General Manager, Noble's Nob
Nobelex File, Noble's Nob
Geology File, Noble's Nob
INTRODUCTION:

The Elbon Authority to Prospect No. 2386 covers an area of approximately 35 square miles centered on the Noble's Nob Mine, ten miles south-east of Tennant Creek (see locality sketch). Originally granted as A. to P. No. 1253 to Australian Development N.L. on 8th December 1964, and regranted as A. to P. No. 1947 on 1st May 1968, a slightly smaller area was conditionally surrendered and assigned to Nobelex N.L. as A. to P. No. 2386 on 4th September, 1969. This report summarizes expenditure and exploration activities in the area from 14th May 1969, the date the last annual report was submitted on the area, to the present, and estimates expenditure for the remainder of the period of tenure.

This report attaches to a separate application for renewal of prospecting rights in the area.

EXPENDITURE:

In the period under review, actual expenditure was $122,023, chiefly on diamond drilling of promising anomalies. Estimated expenditure for the period ended 3rd September 1970, is $140,000, which will be split between additional low level aeromagnetic and ground coverage, and drilling of one diamond drill hole to further test a small copper intersection east of Noble's Nob.

EXPLORATION ACTIVITY:

a) Surveying:

Both Company and contract surveyors were employed in gridding of magnetic anomalies and in the construction of baselines for systematic coverage of the western half of the Authority to Prospect. Approximately one million line feet of grid was laid out on 100 x 100 foot spacing by A.D.N.L. personnel and 50,000 feet of baseline accurate to 1 in 10,000 was laid out by contract survey crews.

b) Geophysics:

Contract crews provided by Austral Exploration Services Pty. Ltd., Geophysical Consultants to Nobelex N.L. worked part time in the area. Ground magnetic coverage totalled 1,500,000 line feet on current and old grid systems.

In the area west of Noble's Nob, low level aeromagnetic coverage was provided over approximately 14 square miles in conjunction with the neighbouring Ridge I A. to P. No. 2389 programme. Several interesting anomalies were covered by close gridding (100 x 50 foot spacing) and prepared for diamond drilling.

An experimental Induced Polarization survey was completed over the Red Terror magnetic anomaly to obtain a comparison between the magnetic and I.P. methods.

c) Geological Mapping:

Several areas underlain by interesting magnetic anomalies were mapped at 1" = 40', while a start was made the complete coverage at 1" = 1000' of the whole Authority to Prospect.
d) Road Construction:

Four miles of gravelled road (all weather) was constructed to give access to the eastern half of the Authority to Prospect. Several miles of track were cleared to drill sites and in the more inaccessible areas to facilitate mapping and gridding.

e) Drilling:

Ten diamond drill holes totalling 8,812'10", including one major hole of 2,000' feet, were drilled on various prospects throughout the area. One percussion hole to 700 feet was drilled on an anomaly two miles west of Noble's Nob.

A programme of shallow auger drilling in areas of poor outcrop was completed. Total footage was 10,028 feet in 644 holes.

Two water bores (dry) were drilled four miles west of Noble's Nob. Total footage was 470 feet.

CONCLUSIONS & SUMMARY:

Work on the Authority to Prospect progressed to an advanced stage, with the bulk of ground and aerial magnetometry being completed. Four anomalies were drilled, one of which gave an encouraging copper intersection warranting follow-up drilling.

Geological mapping of individual prospects of immediate interest is largely completed while a start has been made on mapping at 1" = 1000', portion of a programme to cover all of Nobelex N.L.'s areas in Tennant Creek with accurate maps on this scale.

Extensive follow-up work is warranted on the results of the past year's programme, and several interesting anomalies are yet to be tested. Authority to Prospect No. 2386 remains a prime exploration area for Nobelex N.L. and its renewal is recommended for a further twelve months.

G.C. Wolff,
Geologist.

A.J. Weil,
Chief Geologist.

GCW:JAS:
24th June, 1970.
REPORT

ON

AUTHORITY TO PROSPECT

NO. 2387

RED BLUFF

FOR THE

DIRECTOR OF MINES & WATER RESOURCES

DARWIN
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INTRODUCTION:

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EXPLORATION PROGRAMME:

a) Geology
b) Surveying
c) Geophysics
d) Geochemistry
e) Drilling
f) Plan Preparation

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CONCLUSIONS:

PLATE 1 Locality Plan
PLATE 2 Survey and Auger Drill Hole Plan

Distribution:

N.T. Administration (2)
General Manager, Noble's Nob.
Mobelex File, Noble's Nob.
Geology File, Noble's Nob.
INTRODUCTION:

The Authority to Prospect No. 2387, located 15 miles west-north-west of Tennant Creek (see Plate 1) covers an area of three square miles. The area was granted on the 4th September 1969, for a period of twelve months.

This report summarizes work done in the area from the 4th September 1969, to 3rd June 1970, and estimates exploration and expenditure for the remainder of the period of tenure to the 3rd September, 1970.

This report attaches to an application for renewal of the Authority to Prospect.

EXPLORATION AIMS:

The exploration programme was planned in such a way as to gain as much geological, geophysical and geochemical information as possible, to interpret the data so gained, and to test these interpretations by a programme of diamond drilling.

EXPLORATION PROGRAMME:

a) Geology:

Aerial photography of the area was carried out by contractors, Aerial Photos & Surveys. Outcrop of the area has been mapped at 1" = 1000' using this aerial photography. However, the information gained was limited due to scarcity of outcrop.

Useful information of the subsurface geology was gained from the auger drilling programme (explained in more detail later in this report).

b) Surveying:

A short 9,600 E-W baseline was surveyed by contract surveyors. 109,000 line feet of traverse lines were surveyed, with stations being spaced at 100' intervals. The line spacing varied from 400 feet to 200 feet (see Plate 2).

c) Geophysics:

A low level aeromagnetic survey was flown over the area. This was followed up by ground magnetometry, carried out over the abovementioned grid system. The results are presently with our Consulting Geophysicist and his interpretation of sources is expected to be available to the Company by the end of July.

In addition to this, samples were taken from each of the auger holes in order to gauge a coefficient of magnetic susceptibility for the rocks of the area.
d) **Geochemistry:**

The Lines Branch of the N.T. Administration undertook a contract for a programme of auger drilling on the Authority to Prospect. This programme of 123 holes (plus four locations which were redrilled) has been completed. The plan showing the location is given on Plate 2. Bedrock samples were taken from each hole for assay.

e) **Drilling:**

One diamond drill hole is planned to test our interpretation of the combined geology, geophysics and geochemistry during the present period of tenure. Estimated depth is 1,000 feet.

f) **Plan Preparation:**

Controlled base plans (1" = 1000') are being drawn up by contractors using the aerial photography.

**EXPENDITURE:**

Expenditure to date for the period under review is $3,215. The auger drilling programme now complete will add to this figure by an estimated $1,400. Estimated expenditure for the remaining three months of the present period of tenure is approximately $5,000. The greater proportion of this amount will be due to diamond drilling, which is expected to commence before the expiry date.

**CONCLUSION:**

The ground work necessary for the full examination of the Authority to Prospect has been completed, viz. Geological, geophysical and geochemical field work has been carried out. Interpretation of this work is at present underway and diamond drilling is expected to follow before expiration of present period of tenure.

Further exploratory drilling is planned to follow and recommendation is made for the renewal of the Authority to Prospect for a further twelve months.

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\begin{align*}
\text{D.J. CONDON,} \\
\text{Geologist.} \\
\text{A.J. "EIL,} \\
\text{Chief Geologist.}
\end{align*}
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DJC: JAS:
26th June, 1970.
AUSTRALIAN DEVELOPMENT NO LIABILITY

(EXPLORATION MANAGERS FOR NOBELEX N.L.)

ANNUAL REPORT

ON

AUTHORITY TO PROSPECT

NO. 2388

FLAG

FOR THE

DIRECTOR OF MINES AND WATER RESOURCES

DARWIN.
CONTENTS

INTRODUCTION:

EXPENDITURE:

EXPLORATION PROGRAMME:

FIGURES:
1) Locality Sketch.

Distribution:

N.T. Administration (2)
General Manager, Noble's Nob.
Nobelex File, Noble's Nob.
Geology File, Noble's Nob.
INTRODUCTION:

The Flag Authority to Prospect No. 2388, covering six square miles, lies approximately 18 miles south-east of Tennant Creek. The area has been held for several years by Australian Development N.L. and was regranted in favour of Nobelex N.L., for whom Australian Development N.L. are exploration managers, for a period of twelve months, expiring on 22nd September, 1970. This report summarizes exploration on the Authority to Prospect for the nine months to 27th May 1970, and estimates expenditure for the remainder of the period of tenure.

This report attaches to an application for renewal of the Authority to Prospect.

EXPENDITURE:

Total expenditure for Nobelex N.L. was $554. Additional expenditure was incurred by the N.T. Administration's Mines Branch, in diamond drilling on the Authority to Prospect, and is not included in the above figure.

Projected expenditure to 22nd September is $3,500, largely on low level aeromagnetic coverage of the south-eastern portion not covered by the Bureau of Mineral Resources survey. (See B.M.R. Record No. 1967/35, Finney, W.A., Tennant Creek Detailed Aeromagnetic Survey). This work will be carried out in conjunction with the programme of low level aeromagnetics on the neighbouring Gosse River A. to P. No. 2390.

EXPLORATION PROGRAMME:

In the past nine months, exploration by Nobelex N.L. has been restricted to limited photo-mapping on a scale of 1" = 1000', and to construction of access tracks in the south-western part of the Authority to Prospect. The bulk of exploration activity has centered on subsidized diamond drilling by the N.T. Administration's Mines Branch, who have drilled two deep holes in the past 2½ years. A full magnetic coverage has not been obtained to date, and the Authority to Prospect must be regarded as basically untested.

The whole of the Authority to Prospect was covered by aerial photography and a full coverage at 1" = 1000' in both colour and black and white is available to assist in geological mapping.

With the completion of the magnetic coverage systematic exploration of the whole area will proceed. The Flag A. to P. No. 2388, while not regarded as having high potential, is nevertheless a geologically interesting area worthy of more detailed attention and its renewal for a further twelve months is recommended.

GUSTAV C. WOLFF,
Geologist.

A.J. HEIL,
Chief Geologist.
AUSTRALIAN DEVELOPMENT NO LIABILITY
(EXPLORATION MANAGERS FOR NOBELEX N.L.)

REPORT

ON

AUTHORITY TO PROSPECT

NO. 2391

NAIL EXTENDED

FOR THE

DIRECTOR OF MINES AND WATER RESOURCES

DARWIN
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INTRODUCTION:

EXPLORATION AIMS:

a) Geophysics
b) Geochemistry
c) Surveying
d) Geology
e) Plan Preparation
f) Drilling
g) Expenditure
h) Conclusions

PLATES:

1) Locality Map
2) General Information Plan

Distribution:

N.T. Administration (2).
General Manager, Noble's Nob.
Nobelex File, Noble's Nob.
Geology File, Noble's Nob.
INTRODUCTION:

The Authority to Prospect No. 2 391, located six miles south west of Tennant Creek (see plate 1), covers an area of 55 square miles. The area was granted on the 23rd September 1969, for a twelve month period, and a subsequent renewal of twelve months is sought.

This report attaches to an application for renewal of the Authority to Prospect, and summarizes the past nine month's work completed, and estimates exploration and expenditure for the remainder of the period of tenure to the 22nd September, 1970.

EXPLORATION AIMS:

a) Geophysics:

A comprehensive geophysical programme was carried out by our Consultants in this area, and most of the more interesting anomalies indicated by low level aeromagnetometry were delineated in the field. Total line footage of ground magnetometry 410,000 line feet. Interpretation of several of the more interesting anomalies by the geophysicists is in progress.

Measurement of magnetic susceptibility was made on all auger drill cuttings.

b) Geochemistry:

In conjunction with the above geophysical programme, several areas underwent geochemical investigation.

Drilling was carried out using a Mines Branch Gemco auger drill, and a total of 9,146 feet was drilled.

On the whole, results were poor due to a hard calcareous layer which hindered penetration to bedrock, but in the M6-N7 Anomaly area, several bismuth and copper anomalies were delineated.

Drilling pattern used was 400 feet east-west with 200' intervals north-south.

c) Surveying:

Due to the large area of the Authority to Prospect, and also the widespread nature of the anomalies, it was decided to grid all the anomalies to accurately locate them in the field. In the northern section of the Authority to Prospect, a ten mile east-west baseline was constructed. A total of 33,000 line feet of reconnaissance gridding at 800' spacing was carried out over the Mount Samuel/Skipper line of outcrop. This defined the N6 and N7 Anomalies. However, this programme accounted for a mere seven square miles of the Authority to Prospect and to adequately grid the remaining interesting areas, contractors were engaged. The work completed by them consisted of a 65,200' baseline which was 2 1/2 miles south of the first baseline, and a total of 774,600 line feet of fill-in gridding over anomalous areas was completed.

..2..
Further surveying consisted of gridding the N6-N7 area using a smaller interval. Total line footage involved here was 114,400. A diagram of the surveying carried out is attached (see plate 2).

In conjunction with this large volume of surveying, new access tracks into and within the area were constructed.

d) Geology:

In conjunction with the geophysical programme, the entire Authority to Prospect was mapped on a scale of 1" = 1000' using aerial photographs. The map is still awaiting draughting. Basically, this mapping agreed with that of the B.M.R. as shown on the 1 mile Geological Series Sheet 238 Zone 5.

As the anomalies were located in the field, a more comprehensive mapping programme was carried out at a scale of 1" = 200' using enlargements of the 1" = 1000 scale photos. If necessary, over some areas where structure is difficult, plane table mapping on a scale of 1" = 40' will eventuate.

To clarify details of the N7 area's structure, a 1,000 foot costean was cut. Mapping at a scale of 1" = 200' is continuing.

The auger drilling yielded useful bedrock information in some areas.

e) Plan Preparation:

Contractors are compiling control plans of the Authority to Prospect using aerial photos taken during a recent colour aerial photography programme carried out over the Tennant Creek area. These plans are at a scale of 1" = 1000'.

f) Drilling:

Two anomalies which have been interpreted by the consultant geophysicists and also have been mapped geologically are ready for drilling.

To date, a total of six targets has been realized and drilling is expected to commence early next financial year.

g) Expenditure:

Total expenditure to date is $30,863. Total estimated expenditure for the twelve months is $47,500.

h) Conclusions:

During the past year, emphasis has been placed on magnetometry and geological mapping which are necessary for a thorough examination of the area.

As a result, seven major anomalies have been verified and, of these, two are approaching drilling stage.

Geological mapping is current over all of the interesting areas and, in conjunction with magnetics, further drill targets will most certainly be defined.
Authority to Prospect No. 2391 is an extremely promising exploration area for this Company and a recommendation is made for its renewal for a further twelve months.

J.W. MORROW,
Geologist.

A.J. WARD,
Chief Geologist.

JWM: JAS:
23rd June, 1970
A-PUNDER APPLICATION FOR RENEWAL

AUSTRALIAN DEVELOPMENT N.L.

LOCALITY MAP OF NAIL EXTENDED A-P 2391

SCALE DATE DRAWN MAP REF
1" = AMLE 14-2-69 MVAP TN 2335A
LOCALITY PLAN OF
A-P 2387 RED BLUFF.

PLATE 1

OVERLAY FOR 1" = 2 miles AEROMAGNETIC S.W. SHEET OF THE
TENNANT CREEK 4 mile MAP AREA

AUSTRALIA 1:126720