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ERL 145

2000 FINAL REPORT

01/10/96 to 27/10/00

Batchelor (14/2-IV) 1:50,000 Scale Map Sheet

Title Holder:- Northern Gold N.L. and Camelot Northern Territory Limited

Managed by:- Northern Gold N.L.

December 2000

Distribution

NTDME

Northern Gold N.L., Adelaide River

Northern Gold N.L., Perth Office

Compiled by:-

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Essential Data Services, W.A.

SUMMARY

ERL 145 is located approximately 10 kilometres northwest of Adelaide River, within the Rum Jungle Mineral Field, on the Batchelor (14/2-IV) 1:50,000 scale map sheet.

East and southeast dipping siltstones, believed to belong the Mount Bonnie Formation, are conformably overlain by poorly sorted micaceous feldspathic wackes of the Burrell Creek Formation within ERL 145.

Several hundred tons of hand picked gold ore grading 1.5-2 ounces/ton were mined from a narrow shear zone at the Virginia Gold Mine, located to the east of ERL 145, before the turn of the century. No further work was carried out in the area until after the discovery of uranium at Rum Jungle in 1949.

ERL 145 was granted to Northern Gold N.L. (50%) and Camelot Northern Territory Limited (50%) on the 1st of October 1996 for a period of five years. The licence was managed by Northern Gold N.L. ERL 145 was surrendered on the 27th of October, 2000.

Exploration over ERL 145 was conducted by Northern Gold N.L. between 1996 and 2000. Digital data studies, literature reviews, landholder negotiations and regional soil sampling were completed during this period.

During the 1996/97 field season Northern Gold N.L.. completed a work program based on digital data acquisition and manipulation. Landsat Imagery, SPOT Imagery and AGSO mapping were obtained and used in conjunction with aerial mapping to determine the best method of exploration to be used on the licence.

Northern Gold N.L. completed a comprehensive literature review at the Northern Territory Department of Mines and Energy and negotiations with traditional landholders regarding access to the area, during the 1997/98 year of tenure.

A comprehensive literature review, aimed at evaluating the uranium mineralisation potential within project areas held and managed by Northern Gold N.L., was completed at the Northern Territory Department of Mines and Energy, in April 1998. The review covered the known uranium deposits, depositional models within the Pine Creek Geosyncline, and previous exploration within the project areas, with the aim of farming out the ground to potential explorers. The uranium exploration within and around ERL 145 was completed by CRA Exploration Pty. Ltd., over EL 610, and International Mining Corporation N.L., over EL 1219.

During the 1998/99 field season, Northern Gold N.L. conducted regional soil sampling over ERL 145. Samples were collected at 100 metre intervals, along four, 400 metre spaced lines. A total of 58, B-horizon, -5 millimetre size fraction, samples, including duplicates, were submitted to Assaycorp, in Pine Creek, for

analysis of Au, Ag, As, Cu, Pb and Zn. Results from the soil sampling defined a north trending, low-tenor, soil gold anomaly in the south eastern area sampled. The peak results returned were 7.9 ppb Au, 80.6 ppm As, 103 ppm Cu, 98.5 ppm Pb, 21.7 ppm Zn and 91.7 ppb Ag.

No physical exploration was completed by Northern Gold N.L., over ERL 145, during the 1999/2000 year of tenure. Work was restricted to further reviews of existing geological, geochemical and geophysical data as part of a target generation and ranking exercise.

The expenditure, from the grant date to the surrender date, totalled $18,365.

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1.0 INTRODUCTION

ERL 145 is located approximately 10 kilometres northwest of Adelaide River, within the Rum Jungle Mineral Field, on the Batchelor (14/2-IV) 1:50,000 scale map sheet. The licence, covering an area of 317 hectares, lies between latitudes 13°09' south and 13°10' south and longitudes 131°02' east and 131°03' east (Figure 1).

Vehicle access to the area is gained via the Camp Creek or Batchelor - Stapleton roads. Access within the tenement is restricted to four wheel drive vehicles, due to the rugged nature of the terrain.

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Figure 1 Tenement Location Diagram

2.0 GEOLOGY

2.1 Regional Geology

ERL 145 is situated within the Pine Creek Geosyncline, a tightly to isoclinally folded sequence of mainly pelitic and psammitic Lower Proterozoic sediments with interlayered tuff units. All the lithologies in the area have been metamorphosed to low and in places medium grade metamorphic assemblages. For the purposes of this report the prefix meta is implied, but omitted from rock names and descriptions. The sequence has been intruded by pre-orogenic dolerite sills and a number of late syn-orogenic to post-orogenic Proterozoic granitoids. Largely undeformed Middle and Late Proterozoic, Palaeozoic and Mesozoic strata as well as Cainozoic sediments and laterite overlie the Pine Creek Geosyncline lithologies (Socic, 1997).

2.2 Local Geology

East and southeast dipping siltstones, believed to belong the Mount Bonnie Formation, which crop out directly east of the Northern Australia Railway Line, are conformably overlain by poorly sorted micaceous feldspathic wackes of the Burrell Creek Formation within ERL 145 (Figure 2). Sparse graded conglomeratic beds, with rip-up clasts, are traceable for up to 1 kilometre, and are suggestive of a turbiditic origin (Cooper, 1992).

The Virginia Gold Mine, to the east of the licence, is located within a shear zone in the core of the most westerly, continuously traceable, syncline (Cooper, 1992).

Figure 2 Local Geology

3.0 PREVIOUS EXPLORATION

Several hundred tons of hand picked gold ore grading 1.5-2 ounces/ton were mined from a narrow shear zone at the Virginia Gold Mine before the turn of the century (Parkes, 1891). The mine is located to the east of ERL 145.

No further work was carried out in the area until after the discovery of uranium at Rum Jungle in 1949. Subsequent geophysical work by the B.M.R., in 1953, located several uranium prospects (Waterhouse 1-4) north of ERL 145 (Wyatt, 1953). The largest of these, Waterhouse 2, located 2 kilometres north of the tenement, was drilled by the B.M.R. (Ruxton, 1961) and C.R.A. Exploration (French, 1974a), and tested with one shaft and several costeans, by United Uranium.

Northern Gold N.L. conducted mapping, stream sediment sampling, two soil sampling, and two rock chip sampling programs over EL 5870, which covered the area now held as ERL 145, in 1990, 1991 & 1992 (Socic, 1996).

Northern Gold N.L.'s rock chip sampling program over EL 5870, during the 1989/90 field season, consisted of the collection of forty seven samples. The samples were submitted to Australian Assay Labs in Pine Creek for analysis of Au by fire assay, and As, Cu, Pb, Zn and Ag by ICP1. One sample from a gossanous bedding - parallel vein, possibly related to the bedding parallel vein set in the core of the Virginia Syncline, contained 0.98 g/t Au. Other rock chip samples from the same vein set returned values close to or below detection limits (Rhys *et al*., 1990).

A total of fifty four stream sediment samples were also collected from trap-sites in small creeks draining directly from areas of outcrop. The samples were submitted to Australian Assay Labs in Pine Creek for a bulk cyanide leach for Au. The stream sediment sampling program identified an anomalous zone within the area. Values up to 74.7 ppb Au were obtained (Rhys *et al*., 1990).

During the 1990/91 exploration season, Northern Gold N.L. completed a reconnaissance rock chip sampling program and a soil sampling program over the area of EL 5780 now held as ERL 145.

A soil sampling program was conducted over the anomalous areas defined by stream sediment sampling in 1990. A total of 235 soil samples, including duplicates, were collected every 25 metres and composited to 50 metres, on a 100 metre by 50 metre grid. The samples were sent to Analabs in Darwin for low level Fire Assay Au analysis. The results from the soil sampling identified a highly anomalous area with values ranging up to 418 ppb Au. This anomalous zone is thought to represent the northwestern extension of the Virginia gold mineralisation (Cooper *et al*., 1991).

A total of 24 rock chip samples were collected over the anomalous area. Three samples returned Au values greater than 2 ppm Au, with a high of 4.28 ppm Au from a quartz vein with sulphidic box works along strike from old workings. The samples confirmed the presence of hard rock Au mineralisation in the area defined by the soil sampling program (Cooper *et al*., 1991).

Northern Gold N.L. completed a follow-up exploration program over the area now held as ERL 145, in the 1991/92 exploration season. The program included detailed mapping and rock chip sampling.

Detailed mapping of the anomalous zone defined by soil sampling conducted in 1990/91, identified Au mineralised quartz veins. The mineralised veins have a strong spatial association with the Virginia synclinal closure. Host rocks for the mineralised veins are quartz wackes and conglomerates. The quartz veins occur as bedding sub-parallel veins, bedding cross-cutting veins sub-parallel to the dominant foliation and as shear hosted veins. The old working on the area consists of small pits and trenches that have been dug in the shear hosted veins (Cooper, 1992).

The rock chip sampling program consisted of the collection of 7 rock chips over the anomalous area defined by previous work. The results ranged from below detection limits to 0.30 ppm Au (Cooper, 1992).

4.0 EXPLORATION COMPLETED

Exploration over ERL 145 was conducted by Northern Gold N.L. between 1996 and 2000. Digital data studies, literature reviews, landholder negotiations and regional soil sampling were completed during this period.

4.1 1996/97 Exploration

During the 1996/97 field season Northern Gold N.L.. completed a work program based on digital data acquisition and manipulation. Landsat Imagery, SPOT Imagery and AGSO mapping were obtained and used in conjunction with aerial mapping to determine the best method of exploration to be used on the licence (Socic, 1997).

GIS and satellite imagery were used to log soil types, indicating that the region comprises mainly lateritised lower saprolite (Socic, 1997).

Satellite imagery was also used to interpret the structural geology of the region (Figure 3).

4.2 1997/98 Exploration

Northern Gold N.L. completed a comprehensive literature review at the Northern Territory Department of Mines and Energy and negotiations with traditional landholders regarding access to the area, during the 1997/98 year of tenure.

4.2.1 Access Negotiations

No field work was completed due to continued negotiations with the traditional landholders in regard to obtaining access to ERL 145 and the applications of ELA 9138 and ELA 8888. To undertake field work on ERL 145 without the consent of the traditional landowners, would have undoubtably jeopardised the chances of reaching an agreement on ELA 8888, which contains a large part of the mineralised zone (Mottram, 1998).

On the 17th of September, 1998, however, the Northern Land Council, on behalf of the traditional owners, refused consent to the grant of ELA 8888 and ELA 9138 (Mottram, 1998).

4.2.2 Uranium Review

A comprehensive literature review, aimed at evaluating the uranium mineralisation potential within project areas held and managed by Northern Gold N.L., was completed at the Northern Territory Department of Mines and Energy, in April 1998.

Figure 3 Satellite Image Map

The review covered the known uranium deposits, depositional models within the Pine Creek Geosyncline, and previous exploration within the project areas, with the aim of farming out the ground to potential explorers (Mottram, 1998).

Exploration within the Virginia area was mainly focused on uranium mineralisation associated with the Coomalie Dolomite/Masson Formation contact, the Archaean Waterhouse Complex, and the haematite-quartz-breccia of the Tolmer Group Depot Creek Sandstone (Mottram, 1998).

ERL 145 is contained within the Virginia Area.

The uranium exploration within and around ERL 145 was completed by CRA Exploration Pty. Ltd., over EL 610, and International Mining Corporation N.L., over EL 1219.

CRA Exploration Pty. Ltd. completed airborne and ground radiometric surveys, geological mapping, auger drilling, rotary drilling and diamond drilling over EL 610 (Marmont and Doe, 1973, Marmont, 1973, French, 1974b, 1974c). The Waterhouse No. 2 Uranium Prospect lies approximately 800 metres outside the northwest corner of ERL 145 (Mottram, 1998).

International Mining Corporation N.L. completed comprehensive exploration programs over EL 1219. This work included airborne and ground magnetic and radiometric surveys, photogeological interpretations, radon gas surveys, rock chip sampling, soil sampling, track-etch surveys, resistivity/E.M. surveys, geological mapping, rotary/percussion drilling, petrographic studies, diamond drilling, geophysical downhole logging and auto-radiograph studies (Mottram, 1998).

Although EL 1219 did not cover the ground now held as ERL 145, the current tenement area was covered by the airborne magnetic and radiometric survey. This outlined numerous anomalous uranium channel responses (Clavarino, 1979, Clavarino *et al*., 1979a and 1979b).

4.3 1998/99 Exploration

During the 1998/99 field season, Northern Gold N.L. contracted Arnhem Exploration Services to complete regional soil sampling over ERL 145, targeting previously identified low grade stream anomalies northwest along strike from the historic Stapleton gold workings (Mottram, 1999).

Samples were collected over the northern and western areas of the licence at 100 metre intervals, along four, 400 metre spaced lines. A total of 58, B-horizon, -5 millimetre size fraction, samples (Sample Nos. 191245 - 191302), including duplicates, were submitted to Assaycorp, in Pine Creek, for analysis of Au, Ag, As, Cu, Pb and Zn (Mottram, 1999). The analytical methods and detection limits

are listed in Table 1. Sample locations are presented on Figure 4 and listed in Appendix 1.

Table 1 **1998/99 Regional Soil Sampling Program Analytical Methods and Detection Limits**

Element	Analytical Method	Technique	Detection Limit	Units
Au	BLEG	2Kg	0.1	ppb
Ag	BLEG	2Kg	0.1	ppb
As	MA4/G400I	ICP-MS	0.5	ppm
Cu	MA4/G400I	ICP-MS	0.2	ppm
Zn	MA4/G400I	ICP-MS	0.5	ppm
Pb	MA4/G400I	ICP-MS	0.2	ppm

Results from the soil sampling defined a north trending, low-tenor, soil gold anomaly in the south eastern area sampled. The anomaly has a strike length of 400 metres, with a width of 200 metres. The peak results returned were 7.9 ppb Au (Sample No. 191270, 8545170N : 721730E), 80.6 ppm As (Sample No. 191271, 8545170N : 721830E), 103 ppm Cu (Sample No. 191259, 8545170N : 720730E), 98.5 ppm Pb (Sample No. 191288, 8544770N : 720730E), 21.7 ppm Zn (Sample No. 191275, 8544770N : 721930E) and 91.7 ppb Ag (Sample No. 191278, 8544770N : 721630E). This work is reported in Mottram, 1999.

The assay results from the regional soil sampling program are presented in Appendix 1.

4.4 1999/2000 Exploration

No physical exploration was completed by Northern Gold N.L., over ERL 145, during the 1999/2000 year of tenure.

Work was restricted to further reviews of existing geological, geochemical and geophysical data as part of a target generation and ranking exercise. This was followed up by field verification through a series of reconnaissance field visits across the licence (Mottram, 2000).

Figure 4 1998/99 Regional Soil Sampling Program Location Plan

5.0 EXPENDITURE

The expenditure over ERL 145, from the grant date to the surrender date, totalled $18,365. Details of this expenditure are listed in Table 2 and Table 3.

Table 2 ERL 145 1996/97 Expenditure

COSTS	AMOUNT
Report Compilation	370
Tenement Management	480
Data Review	295
Photocopying	165
Stationary and Office Expenses	60
Computing	75
AGSO Mapping	525
Satellite Imagery & Manipulation	1,580
GIS Manipulation	785
Salaries and Wages	695
Subtotal	**5,030**
Administration @ 15%	755
TOTAL	**$5,785**

Table 3 ERL 145 1997 to 2000 Expenditure

COSTS	AMOUNT
Report Compilation	810
Data Review	890
Tenement Management	1,185
Assays	1,325
Geological Contractors	895
Drafting and Computing	105
Stationary and Office Expenses	30
Photocopying	20
Motor Vehicle Expenses and Fuel	170
Casual Wages	3,475
Salaries	1,575
Subtotal	**10,480**
Administration @ 20% (Approx.)	2,100
TOTAL	**$12,580**

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APPENDIX 1

1998/99 Regional Soil Sampling Program
Locations and Assay Results

ERL 145
2000 Final Report

3.5” Disk

Files

145fr00.doc

145soil99.txt