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REPORT OF GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL SURVEYS

FOX AND OX GROUPS

SKEENA MINING DIVISION

By: G. W. H. Norman, P. Eng.

For: Granduc Mines Limited (N.P.L.)

June - September, 1960

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Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. 347 MAP.....

REPORT OF GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL SURVEY

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INTRODUCTION

This report presents exploration data collected on the Fox and Ox groups of claims in the Unuk River district of the Skeena Mining Division.

The claims were staked in May 1960 and work started in June and was continued to September. Work was carried out partly from a base camp near the junction of the South Unuk and main Unuk rivers and partly from fly camps on the claims.

The claims extend eastward from the mouth of Sulphurets Creek and lie partly north and partly south of the creek. During low water Sulphurets Creek can be forded, but with swelling by melted snow and rain during summer the creek cannot be crossed with safety. Cable crossings were constructed across the Unuk River on both sides of the mouth of Sulphurets Creek many years ago, but require considerable repairs for safe operation at the present time. Due to the high stage of water in the creek the helicopter was required to ferry personnel for work on the northern half of the claims.

In order to keep map preparation, and the processing of results of work on the claims, under control and supervision, the personnel returned to base camp  $1\frac{1}{2}$  days each week.

#### LOCATION

The Fox and Ox groups of claims lie at the junction of Sulphurets Creek and Unuk River. The junction is 44 miles north-north-west of the town of Stewart at the head of Portland Canal. The accompanying plan, Figure 1, shows the distribution of the claims in relation to the mouth of Sulphurets Creek and the relative position of the two claim groups.

#### WORK PERFORMED

General Statement: The personnel employed on the work on the Fox and Ox groups were as follows:

D. R. S. Doal,	Graduate, Haileybury School of Mines, Geophysicist (Several years field experience Magnetic and E.M. surveys)
R. Hrkac,	4th year Student, U. B. C. Geologist
A. Stanley,	M. Sc., U. B. C. Geologist
G. C. Gutrath,	B. Sc., U. B. C. Geologist
R. W. Hunt,	Surveyor
A. Skiber,	Three years field experience, Geochemical Technician
T. Wilkinson,	Assistant
J. Brache,	Assistant
W. Gauthier,	Assistant
R. B. Ward,	Assistant
V. Preto,	Assistant

under the supervision of G. W. H. Norman, P. Eng., Chief Geologist and K. G. Sanders, Assistant Chief Geologist.

The work consisted of line cutting; geological mapping along surveyed marked lines on 200-foot to the inch, and on photos and enlarged photos with scales of 600 to 2,800 feet to the inch; magnetic surveys (geophysical) of the lines on 200-scale; and soil sampling (geochemical) along the lines. The results of the geological, geophysical and geochemical work are shown on Figures 1, 2 and 3 in the folder at the end of this report.

Fox Group: Work in the field on this group started on June 15th and ended September 13th. During this period fifteen man-days of line cutting for detail surveys were completed by the surveyor and the assistants, with two days of work by geologists. Eight man-days were spent on magnetic surveys (seven by the geophysicist and one by an assistant). Five days were spent on collecting and testing soil samples. Fourteen man-days were spent on geological surveys (seven by geologists, seven by assistants). Three days of supervision by the Chief Geologist and two days of supervision by the Assistant Chief Geologist were taken up on this work.

Ox Group: Work in the field on the Ox Group commenced June 27th and ended August 27th. During this period seventeen man-days of line were completed by the surveyor (3) and assistants (12), with a little help from geologists (2). Seven days were spent on the magnetic survey (six by the geophysicist, one by assistant), five days were taken by

geochemical work of collecting and testing soil samples. Thirteen days were taken by geological surveys (seven by geologists and six by assistants). Three days of supervision by the Assistant Chief Geologist and three days of supervision by the Chief Geologist were required for the work.

#### GEOLOGICAL SURVEY

General Statement: The outcrop geology of the Fox and Ox groups is shown on Figure 1. The outcrops were located partly by traversing with the aid of standard or enlarged aerial photographs and partly by mapping the lines laid out for geophysical surveys. The claim groups have a very hummocky broken surface, which is heavily forested where trees have been able to get a foothold. In places where cliffs occur along the sides of Sulphurets canyon and along other scarps large rocky areas are exposed. The elevation of the claims ranges from 750 to 3,500 feet above sea level.

Rock Units: The surficial rocks of the area consist of alternating belts of volcanic and sedimentary rocks. A few sheets of diabase are apparently intruded as sheets into the surficial rocks. The greater part of the rocks on the claims are massive and only a few attitudes that would be helpful for structural interpretation were noted.

The andesites are considered to be the oldest surficial rocks and were divided into two main types. One type is characterized by well formed pillow structures and

lies on the east side of the claims. The more westerly belts of andesite are more altered. The alteration may have masked primary volcanic structures to some extent but the structures that are apparent in these rocks are fragments, amygdaloidal structures. Porphyritic phases with amphibole or pyroxene phenocrysts are more common in the western belts.

The sedimentary rocks range from dark dense argillite to greywacke, with intermediate phases consisting of gritty dark argillaceous rocks. Some phases of the bedded rocks are light colored and silicified. Tuffaceous rocks with numerous feldspar granules may be present and occur locally interstratified in the volcanic rocks.

Conglomerates are of local occurrence. Some have well polished quartz pebbles of coarse gravel size, and others have the appearance of breccias with angular fragments.

The diabase sheets are relatively small. Some shearing and alteration may be present, but these rocks are generally medium grained and distinct from the other rocks.

Structure: The volcanic and sedimentary rocks are arranged in a series of alternating belts trending generally a little east of north. The belts probably represent a series of folds, but it is not clear to what extent the repetitions can be attributed to folding or to faulting.

Mineralization: Magnetite has been introduced into the andesite on the Fox No. 14 and No. 16 claims. The rock,

when crushed and tested with a magnet, can be seen to have plenty of visible magnetite present. The only sulphide mineral noted with the magnetite is a little pyrite. A little silicification and carbonatization is present and may be associated with the introduction of magnetite.

#### MAGNETIC SURVEY

Statement: The geophysical work on the Fox and Ox groups consisted of a magnetic survey of parts of claims Fox Nos. 12, 14, 16, 18, 24, 26, 28, 30, and is shown on Figure 2.

The rugged, hummocky character of the ground, particularly near the canyon of Sulphurets Creek, slowed up the work on the lines. The lines were marked at intervals of 100 feet along the base line and at intervals of 50 feet along cross lines. For readings required at closer intervals than 50 feet distances were estimated.

The readings were taken with a Torsion type Askania Magnetometer, with a rated sensitivity of 266 gammas per degree. The degrees are divided into ten divisions for speedy reading and the instrument is light and can be operated by one man.

The readings given on Figure 2 are in gammas and have been derived by multiplying the instrument readings in degrees by 266 (sensitivity of the instrument) and subtracting 2,123, which is assumed datum level and value assigned



to a base station at camp. The figures give relative values only, as the average earth field is more than 50,000 gammas.

Interpretation: The anomaly across the Fox-Ox group of claims is due to an introduction of magnetite into andesitic rocks. The trend of the anomaly is north-west across the general trend of the belts of rock and may be due to a weak zone of fracturing in this direction. There is no indication of a shear zone or vein structure coincident with the anomaly.

#### GEOCHEMICAL SURVEY

Geochemical tests were made of soil samples collected at certain stations along the lines cut out for magnetic surveys. The results of the tests are shown on Figure 3.

The Rubenic Acid Method (copper) and Dithizone cold field Method (heavy metals) were tried out. The method chiefly employed was the Rubenic Method, which has been developed by H. V. Warren and R. E. Delavault of the University of B. C. and described by them in Mining Engineering, November 1958.

The purpose of trying geochemical work on the claims was to find out whether this method would prove of distinct value. No attempt was made to assign quantitative values to the results, which would have been possible if

tests had first been made on a set of prepared solutions with known concentrations of copper. The results given are qualitative, and quantitatively represent very low values in parts per million.

The two drawbacks to carrying out extensive geochemical work in the Unuk River region are the soil and weather conditions.

Rock is either close to the surface or deeply buried by glacial deposits. Where rock is close to the surface the only covering may be a peat-like mat of roots, with very little true soil. These conditions favor a complete absence of regularity and consequently variabilities in metal content that are not a true reflection of the variations in metal content of the rock.

The prevalence of rain makes it difficult to plan kits for testing soil samples during the field traverse. The samples had to be labelled in the field and carried back to camp for testing. This slows up the speed of the work.

The Rubenic method used is a very rapid method and is applicable chiefly for oxidized copper. To do justice to geochemical work in the Unuk Area other methods should be checked and better methods for extracting the less soluble forms of sulphide metal adopted. Our results are considered inconclusive.

March 7, 1961

  
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G. W. H. Norman, P. Eng.





- LEGEND**
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Department of  
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**347**

**OUTCROP GEOLOGY OF THE OX GROUP**  
 GUELPH, ONTARIO



FOX GROUP



Statement of  
Work and Technical Services  
DATE: 1977 - 8

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MAGNETICS - OX AND FOX GROUP

FOX GROUP



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OX GROUP

FOX GROUP

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OX & FOX GROUPS

GREENE, W.D. JAN - OCTOBER, 1967

*W.D. Greene*  
 GREENE, W.D.

*April 1*  
 1967

TABLE I

•	OX	•	FOX
•	OX	•	FOX
NORMANT MINING CORPORATION OF CANADA			
NO. 347	DATE	NO. 347	DATE
NO. 347	DATE	NO. 347	DATE