

3814

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3814 MAP

GEOLOGICAL REPORT
ON THE 93A/7E
EUREKA COPPER PROSPECT
BY
ERIC R. SMITH, B.SC., P. ENG.
FOR
RIO TINTO CANADIAN EXPLORATION LIMITED

CLAIMS:

EN 1-6 (incl.)
EN 11-15 (incl.)
EN 28-29 (incl.)
EN 104-107 (incl.)
EN 109
EN 126-127 (incl.)
EN 129
CS 55-56

OWNER:

E. Scholtes,
P.O. Box 1731,
Williams Lake, B.C.

LOCATION:

Seventy miles east of Williams Lake, B.C.
Cariboo Mining Division
52°18'N, 120°38'W N.T.S. 93A/7

DATES:

12 July to 26 July, 1972.

TABLE OF CONTENTS

	<u>Page No.</u>
INTRODUCTION.....	1
SUMMARY.....	1
CONCLUSIONS.....	2
LOCATION AND ACCESS.....	2
TOPOGRAPHY.....	2
PREVIOUS WORK.....	2-3
PROPERTY.....	3-4
GEOLOGICAL DESCRIPTION.....	4-7 incl.
SAMPLING PROCEDURE.....	7
REFERENCES.....	7-8
ASSESSMENT DATA.....	9

LIST OF MAPS

<u>Map No.</u>	<u>Subject</u>	<u>Scale</u>
#1 L-6066	Location Map and Claim Map	1" = 1 mile
#2 G-6065	Geological Cross Section	1" = 500'
#3 G-7125	Geological Map	1" = 500'

GEOLOGICAL REPORT
ON THE
EUREKA COPPER PROSPECT

N.T.S. 93A/7

INTRODUCTION:

The Eureka property was visited for a two-week period in July 1972 by a four-man crew under the supervision of Eric R. Smith, P. Eng. The purpose of this visit was to examine and evaluate the mineralized zones as identified by the previous property owners. During this program, a total of 22 rock chip, and 50 hand specimen samples were collected for geochemical and petrographic analysis. Geological mapping on a scale of one inch equals five hundred feet was completed over about two square miles. A geological map and cross section illustrate the interpretation obtained by this program.

SUMMARY:

Copper mineralization in the Cirque #2 area of Eureka Peak was identified in previous years by the original property owners and by exploration companies holding options on the claims. Several drill holes and surface trenches were completed at various locations and in 1970 a general outline of the geology was mapped by Amax crews. The work program outlined in this current report was focussed on the mineralized intrusive indicated by the Amax program (see Assessment Report No. 2662.)

This mineralization was found to consist of finely disseminated pyrite, chalcopyrite, pyrrhotite, with traces of bornite and possibly chalcocite in a leucocratic syenodiorite host rock. Outcrop sampling reveals an inner "core" of about 4,000 ft. by 800 ft. running from 0.13% Cu to 0.44% Cu, and an outer "envelope" in the surrounding diorite and augite porphyry of about 0.10% Cu. Much of the mineralized outcrop contains secondary copper minerals near the surface, but sulphides are present to within 2 or 3 feet of surface. The highest values are obtained where fresh rock has been exposed by recent trenching or rock slides.

CONCLUSIONS:

The Eureka copper prospect has characteristics similar to those of a typical Northern Cordillera porphyry copper deposit. As outcrop sampling has indicated a large area (4,000' x 800') to contain from 0.13% Cu to 0.44% Cu, and alteration studies indicate that this zone could be as much as 6,000 feet long, the potential for finding in excess of 150,000,000 tons of porphyry copper ore is excellent.

LOCATION AND ACCESS:

The center of the main area of interest is at 52°18'N latitude and 120°38'W longitude. This point is located between Crooked Lake and the Mackay River, approximately 70 miles east of Williams Lake, B.C.

Access to the property is by gravel road from either 150 Mile House or 100 Mile House to the junction of the Mackay and Horsefly Rivers, and from there to the property by a dirt road requiring 4-wheel drive vehicles.

The camp on the property consists of two plywood cabins near the main area of interest. Access to various points on the property is by helicopter, as much of the area is inaccessible by foot due to the rugged topography.

TOPOGRAPHY:

Alpine glaciation has shaped the Cirque #2 area to a U-shaped valley and razor-backed ridge situation. Access to various points in the area of interest is hampered by this extreme topography, and areas inaccessible to other than experienced climbers are shown on the accompanying Geological map. Roads and trails across the mineralized area involve tight switchbacks as the average slope would be in excess of 35 degrees.

The camp on the property is at 5,050 feet in elevation, with all of the ridges in the Cirque #2 area running up to 7,000 feet. Eureka Peak itself is at 7,959 feet. The mineralization is confined to the areas between 5,300 feet and 6,300 feet.

PREVIOUS WORK:

According to the B.C. Minister of Mines reports, earlier work consisted of road construction, geochemical and geophysical surveys,

PREVIOUS WORK:- cont'd.

and diamond drilling by Helicon Explorations Ltd. in 1965 and 1966, including one drill hole from a short adit. In 1968, a small geophysical program was conducted by Howard Travis, and in 1969 and 1970, Amax completed geological and geochemical surveys. Cerro Corp. did a small amount of sampling in 1971.

PROPERTY:

The Eureka copper prospect consists of two separate claim groups, approximately two miles apart. The main area of interest is covered by the Group I claim block, and the second area is covered by Group II.

GROUP I CLAIMS

<u>Claim Name</u>	<u>Record No.</u>	<u>Expiry Date</u>
EN 1	30398	Aug. 5, 1976
EN 2	30399	Aug. 5, 1976
EN 3	30400	Aug. 5, 1976
EN 4	30401	Aug. 5, 1976
EN 5	30402	Aug. 5, 1974
EN 6	30403	Aug. 5, 1976
EN 11	30408	Aug. 5, 1973
EN 12	30409	Aug. 5, 1973
EN 13	30476	Aug. 17, 1973
EN 14	30477	Aug. 17, 1973
EN 15	30478	Aug. 17, 1973
EN 28	30646	Sept. 28, 1972
EN 29	30647	Sept. 28, 1974
EN 104	30618	Aug. 30, 1972
EN 105	30619	Aug. 30, 1974
EN 106	30620	Aug. 30, 1974
EN 107	30621	Aug. 30, 1974
EN 109	30623	Aug. 30, 1972
EN 126	30608	Aug. 30, 1972
EN 127	30609	Aug. 30, 1972
EN 129	30611	Aug. 30, 1972
CS 55	48017	Oct. 24, 1972
CS 56	48018	Oct. 24, 1972

Total number of claims in Group I - 23.

PROPERTY:- cont'd.GROUP II

<u>Claim Name</u>	<u>Record No.</u>	<u>Expiry Date</u>
CS 15	47983	Oct. 24, 1972
CS 17	47985	Oct. 24, 1972
CS 20	47988	Oct. 24, 1972
CS 37	48005	Oct. 24, 1972
CS 39	48007	Oct. 24, 1972
CS 43	48011	Oct. 24, 1972
CS 45	48013	Oct. 24, 1972
CS 46	48014	Oct. 24, 1972
SEB 3 to SEB 16	64992 to 65005	Oct. 29, 1972

Total number of claims in Group II - 22.

The work described in this report refers only to those claims in Group I.

GEOLOGICAL DESCRIPTION:1. General Geology.

The Eureka copper prospect lies on the eastern edge of the Quesnel Trough, near its contact with the deformed strata of the Snowshoe Formation, a part of the Late Paleozoic Cariboo Group. Near Eureka Peak, the Quesnel Trough consists of Mesozoic andesitic volcanics and argillaceous sediments. These layered rocks have been cut by an intrusive complex of intermediate to basic composition. The youngest phase of intrusion, a syenodiorite, appears to have been accompanied by sulphide mineralization consisting of pyrite, chalcopyrite and pyrrhotite which exists in the form of a Northern Cordilleran "Porphyry Copper" deposit.

GEOLOGICAL DESCRIPTION:- cont'd.2. Lithology.

The bedrock underlying the Cirque #2 area is comprised of basic rocks such as amphibolite and greenstones in the north and east sections, an augite porphyry to the west and south, and intermediate intrusive rock in the center and northwest (see Geological Map of Cirque #2 Zone). One outcrop of siltstone was found along the ridge running north from Eureka Peak, and is considered a remnant of the original Mesozoic sediments.

A regional foliation consisting of the sedimentary strata alignment, a well developed schistosity in the augite porphyry, and a shear trend in the intermediate intrusive, is observed to occupy a west-northwest zone across much of Eureka Mountain. This was probably the result of the deformation accompanying the Pinchi Fault system.

The basic rocks are thought to be intrusive in origin, but they have not been examined in detail. The amphibolite is strongly magnetic in hand specimens, which probably accounts for the high aerial magnetic anomaly lying southwest of Cirque #2.

Inclusions of these basic rocks are found in the augite porphyry, which indicates an intrusive relationship between the two. The bulk of this porphyry consists of phenocrysts of augite pyroxene in a fine to medium-grained dioritic matrix. Much of the rock has been chloritized and epidotized, especially the phenocrysts.

The intermediate intrusive has been found to consist of at least two phases. An outer diorite phase is probably a hybrid-contact feature between an inner syenodiorite and the surrounding augite porphyry. In the vicinity of the adit, the diorite phase and the augite porphyry are almost indistinguishable, which makes one believe that the augite porphyry could be an outer phase of the whole intrusive complex. The inner phase is called a leucocratic syenodiorite because of its light grey colour and because it is composed mainly of plagioclase, K-feldspar and alteration products - predominantly sericite-saussurite types.

3. Structure.

The intrusive complex appears to have a general north-northwest strike, as seen on the Geological Map. The inner leucocratic syenodiorite extends for 6,000 feet in this direction, and appears

GEOLOGICAL DESCRIPTION:- cont'd.3. Structure:- cont'd.

to be gradually plunging to the west, forming a sill-like intrusive. The thickness of the "core" zone is probably variable, but should average in excess of 1,000 feet. The Geological Cross-Section portrays the pertinent features of the intrusive as found in the central portion of the area of interest.

A diamond drill hole completed in 1966 by Helicon Explorations is shown on the section, and it appears that the hole was drilled only in augite porphyry-diorite phase of the intrusive.

4. Alteration and Mineralization.

An alteration sequence is apparent from the inner leucocratic syenodiorite to the outer limits of the augite porphyry and into the amphibolites, with various sulphide assemblages accompanying each phase of alteration. The center or "core" area of this metamorphism would focus on the syenodiorite, and is featured by replacement of plagioclase and mafics by sericite and clay minerals, and flooding around plagioclase by K-feldspar. Accompanying this zone of alteration is a finely disseminated assemblage of chalcopyrite, pyrite and minor pyrrhotite with traces of bornite and possible chalcocite. Rock chip samples taken from outcrops returned values in the range of 0.13% Cu to 0.44% Cu. The size of this "core" zone is approximately 4,000 feet by 800 feet, but is still open to the east where it disappears beneath the talus piles, and could extend another 2,000 feet to the north.

Outside the "core" zone of alteration, a suite of saussurite and argillic minerals is characteristic of the metamorphic assemblage. This would roughly coincide with the diorite phase and the augite porphyry phase of the intrusive. Pyrite and minor chalcopyrite and pyrrhotite are present as disseminated grains and fracture filling in this "envelope" which extends up to 2,500 feet away from the "core" zone. Rock chip samples from this zone run up to 0.17% Cu, but are mainly less than 0.1%.

The outermost zone of alteration involves chloritization and epidotization in the augite porphyry and in the basic rocks. Some pyrite is found in this area, and traces of chalcopyrite have been observed. The copper content of this fringe area is

GEOLOGICAL DESCRIPTION:- cont'd.4. Alteration and Mineralization:- cont'd.

estimated at less than 0.05%. Some of the chloritic alteration could be due to the regional metamorphism of the Quesnel Trough, and is traceable for many thousands of feet away from Cirque #2.

Barren quartz veins and veinlets are present in much of the area of interest, as well as calcite veining. The relationship between copper mineralization and these intrusive features is not yet understood.

SAMPLING PROCEDURE:

The Geological Map accompanying this report shows the location of outcrops examined and sampled in the vicinity of Cirque #2. There are many more outcrops present in the area, but they were not examined and are consequently not shown on this map.

A hand specimen was taken from each outcrop for later analysis, and rock chip samples were taken from outcrops showing mineralization. Approximately 5 pounds of chips were taken for every 10 feet of exposure. The resulting copper assays are plotted on the Geological Map with the width sampled indicated nearby. No widths are shown where sample length is less than 2 feet.

Copper assays were obtained from the Rio Tinto laboratory in North Vancouver.

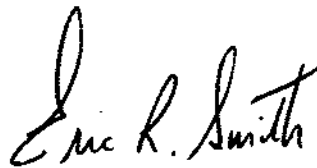
REFERENCES:

Background and detailed information about this prospect was obtained from the following documents:

- 1) Geological Survey of Canada, Map 1-1963: Quesnel Lake, East Half.
- 2) Campbell, R.B. and Tipper, H.W.: Geology and Mineral Exploration Potential of the Quesnel Trough, British Columbia, C.I.M. Bulletin, July 1970, p. 785.
- 3) G.S.C. - B.C. Dept. of Mines Aeromagnetic Map 5238G (93A/7): Mackay River, British Columbia.

REFERENCES:- cont'd.

- 4) B.C. Dept. of Mines and Petroleum Resources Annual Reports 1965 - 1970.
- 5) Baldwin, A.B.: Geologist's Report on the Eureka Peak Copper Property; unpublished manuscript, Feb. 1, 1972.



August 14, 1972.

Eric R. Smith, P. Eng.

ASSESSMENT DATACLAIM BLOCK I:

Work done on EN 1 - 6, EN 29 Fraction, EN 104 - 107, EN 109, 127, 129 and CS 55 and 56.

DURATION OF WORK:

July 12 to July 26: 14 days.

WORK COMPLETED:

Geological mapping at 1" = 500' - 2 square miles.

Rock chip samples collected and assayed - 22.

Hand specimens collected - 50.

PERSONNEL EMPLOYED:

	<u>Dates</u>			<u>Wage</u>
Eric R. Smith, P. Eng.	12 July-26	July	14 days	\$ 561.09
Hugh Fortier	12 July-26	July	14 days	397.03
David Van Blarcom	12 July-26	July	14 days	211.72
Robert Albino	12 July-26	July	14 days	198.51
A.G. Troup	19 July-21	July	3 days	113.44
L. Haynes	19 July-21	July	3 days	<u>78.25</u>
				\$ 1,560.04

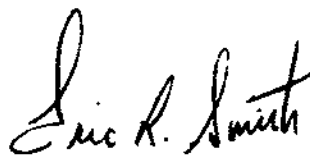
EQUIPMENT RENTALS:

4-wheel drive 3/4 ton Truck,	14 days @ \$7.50/day	\$ 105.00
Helicopter (see copies of Invoice)	6 hrs. 40 min. @ \$135/hr.	900.00

CAMP COST:

62 man days @ \$8.00/m.day	\$ 496.00
Helicopter Fuel - 3 barrels 100/130 @ \$45/barrel	<u>135.00</u>

TOTAL:

\$ 3,196.04


Eric R. Smith, P. Eng.

Declared before me at the

City

of

Vancouver

, in the

Sublot

Province of British Columbia, this

21

day of

August 1972

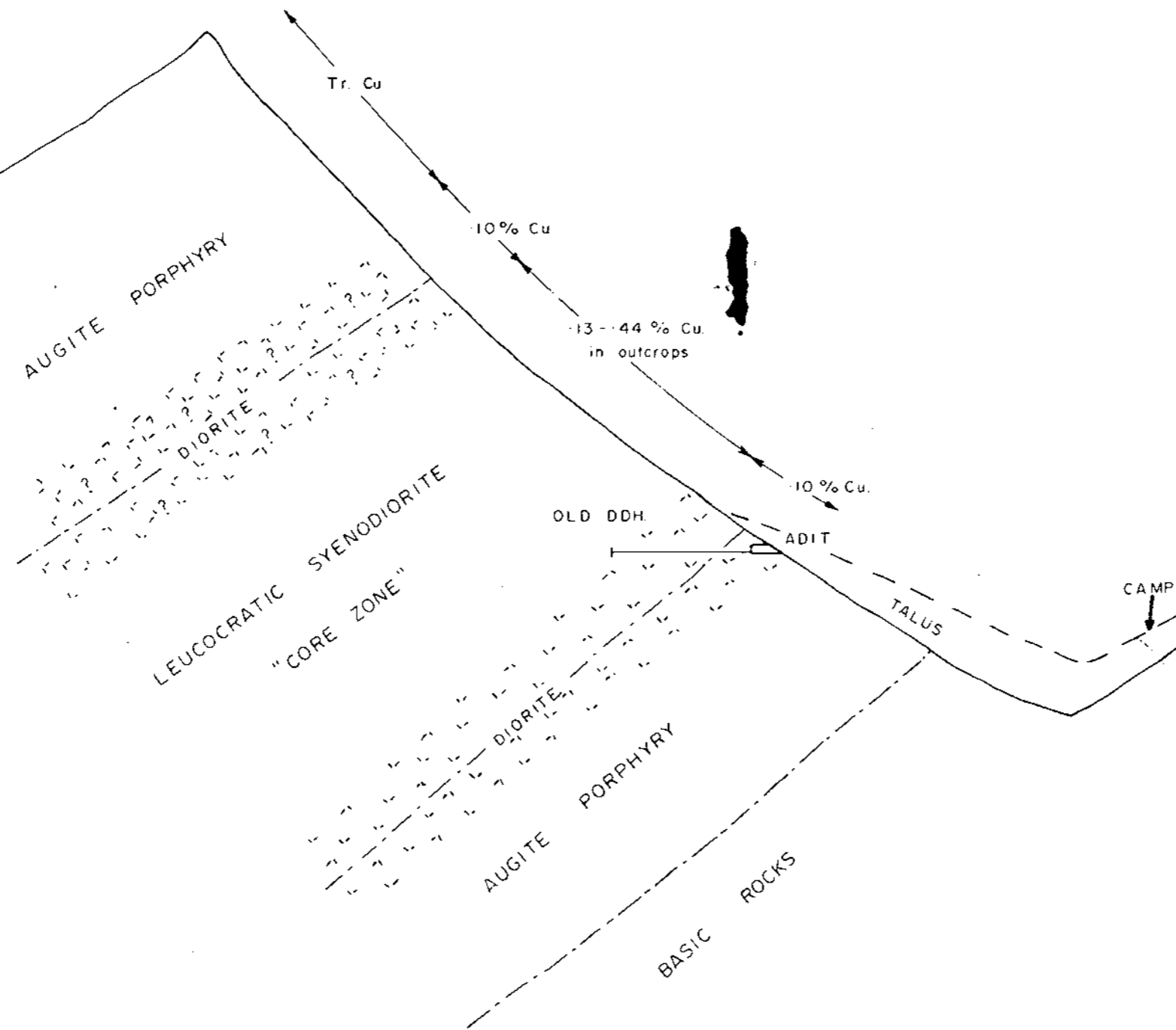
, A.D.

John Turner

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

SUB-MINING RECORDER

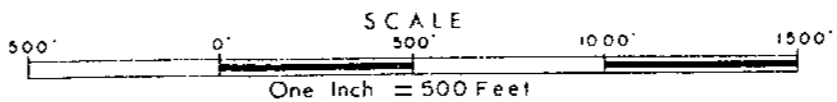
ELEVATION IN FEET
 7500'
 7000'
 6500'
 6000'
 5500'
 5000'
 4500'
 4000'



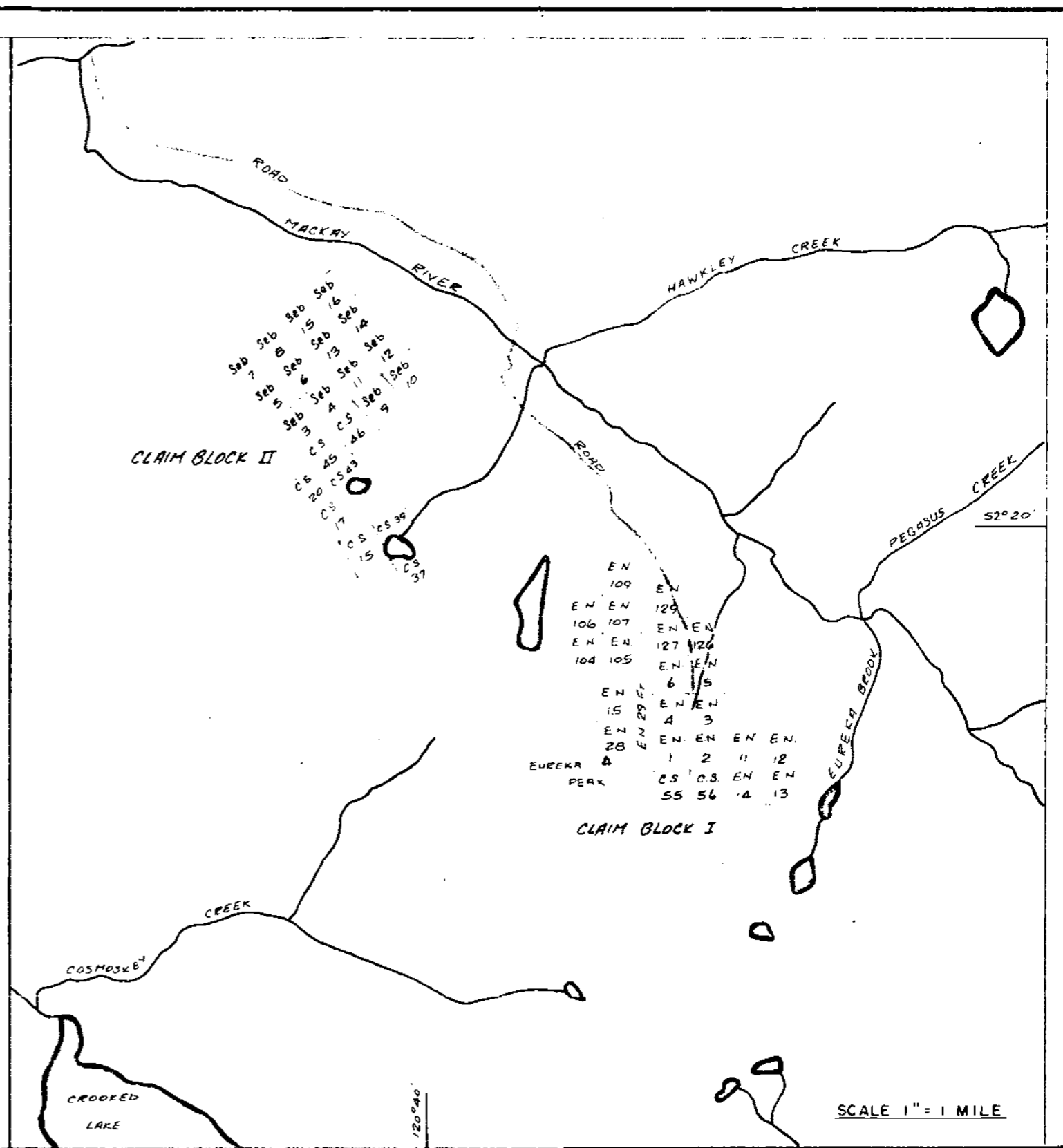
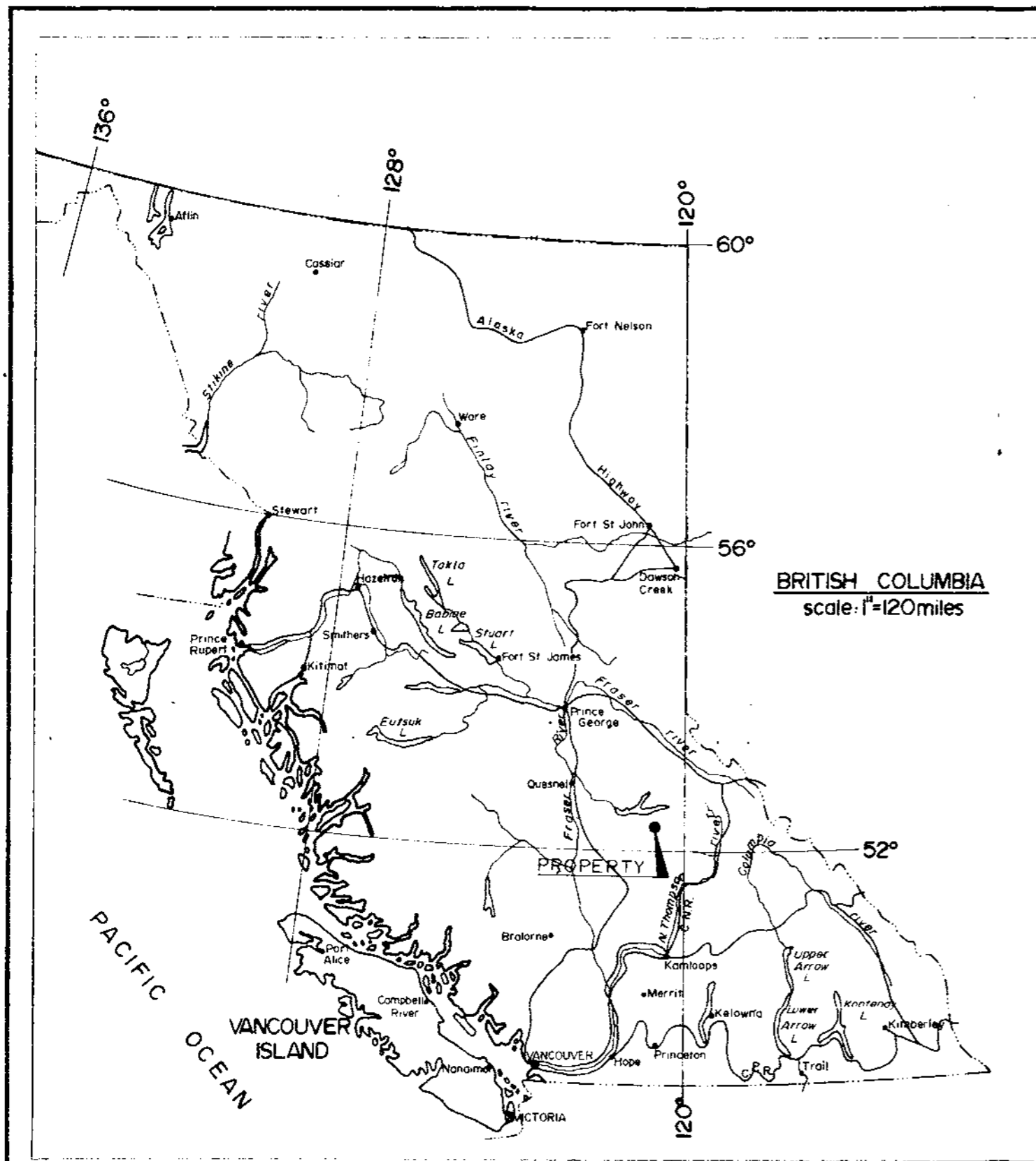
Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 3814 MAP #2

NTS
 93-A-7

Eric R. Smith



RIO TINTO CANADIAN EXPLORATION LTD.
 EUREKA PROJECT B.C.
 GEOLOGICAL CROSS SECTION
 A — B
 AUG. 72 | ES / rwr | DWG. G-6065



NTS
93-A-7

RIO TINTO CANADIAN EXPLORATION LTD

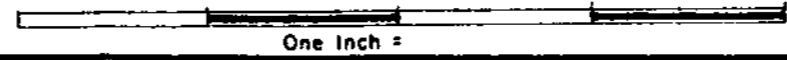
EUREKA PROJECT B.C.

LOCATION MAP

AUG. ES / rwr DWG. L-6066

Eric R Smith

SCALE



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3814 MAP #1

CONTINENTAL AIRLINES LTD. CHARTER AND CONTRACT TICKET

Date *July 1/67*

<i>Riviera Canadian Express LTD</i>					
<i>615 555 BARRARD ST</i>					
<i>Vancouver B.C.</i>					P.O.
Pilot	<i>To Kienert</i>	Base		Cash	Charge
A/C Type	<i>B-1</i>	CF	<i>UVF</i>	Area	<i>BARBARA PA</i>

From _____ To (1) *LEWISBURG MT*

To (2) _____ To (3) _____

To (4) _____ To (5) _____

FARE	Miles At \$		\$
	<i>1-25</i> Hours At \$ <i>135.00</i>		<i>214.00</i>
Contract Rate	At		
Waiting Time	At \$		
Extra Landings	At \$		
Pilot Expenses			
Other (Including Gas Surcharges Etc.)			
Authorized By <i>A. R. Smith 18605</i>		TOTAL CHARGE	<i>214.00</i>

This ticket is expressly subject to the conditions printed on the reverse side of ticket and which are hereby accepted: (Passengers' Signature)

- | | |
|----------|-----------|
| 1. _____ | 7. _____ |
| 2. _____ | 8. _____ |
| 3. _____ | 9. _____ |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. _____ | 12. _____ |

No. 3317

Main Base P.O. Box 363 Prince George, B.C. Phone 963-3511 Telex 047-8280
2 Base P.O. Box 280 Fort St. James, B.C. Phone 936-8224



UNITED AIRLINES LTD. CHARTER AND CONTRACT TICKET

Date Jan 20/68

UNITED AIRLINES LTD
615-555 BURNARD ST.
VANCOUVER BURNARD ST. P.O.

Pilot <u>K. KRAIGT</u>	Base <u>01</u>	Cash	Cheque	Charge
A/C Type <u>K. KRAIGT</u>	CF <u>LVF</u>	Area <u>EUREKA PR.</u>		

From B-1 To (1) EUREKA MT
 To (2) To (3)
 To (4) To (5)

FARE	Miles At \$		\$
	<u>2.05</u> Hours At \$ <u>135.00</u>		<u>281 00</u>
Contract Rate	<u>3.00</u> At		
Waiting Time	At \$		
Extra Landings	At \$		
Pilot Expenses			
Other			
(Including Gas Surcharges Etc.)		TOTAL CHARGE	<u>281 00</u>

Authorized By [Signature] 196057

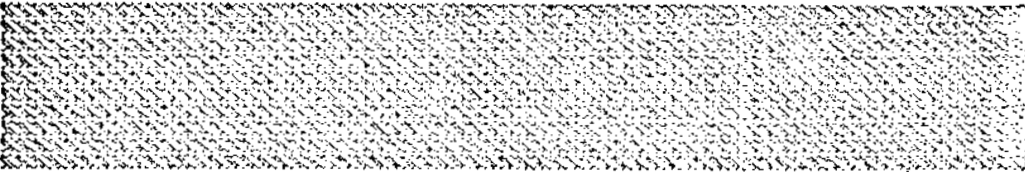
This ticket is expressly subject to the conditions printed on the reverse side of ticket and which are hereby accepted: (Passengers' Signature)

- | | |
|---------------------|-----|
| 1. <u>E R Smith</u> | 7. |
| 2. | 8. |
| 3. | 9. |
| 4. | 10. |
| 5. | 11. |
| 6. | 12. |

No 3318

Main Base
 P.O. Box 368
 Prince George, B.C.
 Phone 963-9511
 Telex 047-8880

2 Base
 P.O. Box 280
 Fort St. James, B.C.
 Phone 996-8224



AIRLINES LTD. CHARTER AND CONTRACT TICKET

Charge _____ Date July 15/72

Port of Call: Vancouver Express Ltd.

615-555 BROAD ST, P.O. _____

Vancouver B.C.

Pilot <u>K. KNIGHT</u>	Base <u>01</u>	Cash	Cheque	<input checked="" type="checkbox"/> Charge
A/C Type <u>B-1</u>	CF <u>UVF</u>	Area <u>EUREKA MT.</u>		

From _____ To (1) _____

To (2) _____ To (3) _____

To (4) _____ To (5) _____

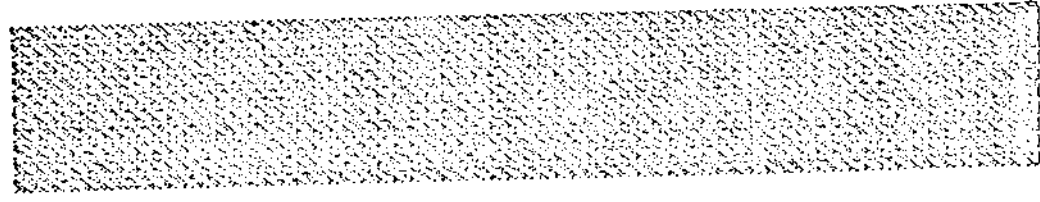
	Miles At \$	Hours At \$		\$
FARE				
	<u>3100</u>	<u>135⁰⁰</u>		<u>405 00</u>
Contract Rate	At			
Waiting Time	At \$			
Extra Landings	At \$			
Pilot Expenses				
Other (Including Gas Surcharges Etc.)				
Authorized BY <u>Eric R Smith (8605)</u>			TOTAL CHARGE	<u>405 00</u>

- This ticket is expressly subject to the conditions printed on the reverse side of ticket and which are hereby accepted: (Passengers' Signature)
1. ERIC R SMITH 7. _____
 2. _____ 8. _____
 3. _____ 9. _____
 4. _____ 10. _____
 5. _____ 11. _____
 6. _____ 12. _____

NO. 3314

Main Base
P.O. Box 388
Prince George, B.C.
Phone 963-9611
Telex 047-3390

2 Base
P.O. Box 269
Fort St. James, B.C.
Phone 966-8224



CIRQUE 4

CIRQUE 3

CIRQUE 2

CIRQUE 1

INACCESSIBLE AREA

183814 M-3

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 3814 MAP #3

Legend

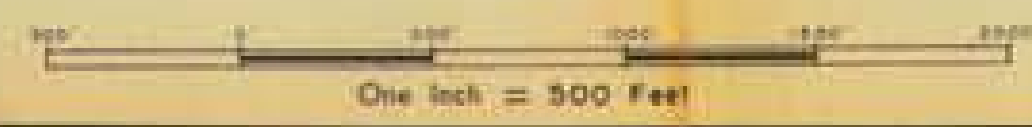
- | | | | | |
|---|------------------------------------|------------------------|---|--|
|  | Leucocratic Phase | GRANODIORITE INTRUSIVE |  | Circles examined |
|  | Hyaline mafic Phase | |  | Mass Chert Sample Site with % Cu value |
|  | Argill. gneiss | |  | Sleeping or faulting |
|  | Basic Rock (Amphibole, greenstone) | |  | Strong joint pattern |
|  | Mylonite - Siderite (Siderite) | |  | Geological contact (Agassiz-Point) |

See accompanying geological report by Eric Smith, B.Sc.,
 on the Eureka copper prospect, Cariboo Mining
 Division, dated 16 August, 1972.

Eric Smith

NTS
 8318-7

SCALE



RIO TINTO CANADIAN EXPLORATION LIMITED		
EUREKA PROJECT, B.C.		
GEOLOGICAL MAP		
AUG. 72	ES/rwr	DWG. G-7125