82-#803 - #10803

GEOLOGICAL REPORT ON THE COBALT, DEASE & JAY CLAIMS,

ALICE ARM AREA

SKEENA MINING DIVISION, B. C.

NTS: 103P/11,12

FOR

TOURNIGAN MINING EXPLORATIONS LTD.

704 - 535 Thurlow Street,

Vancouver, B. C.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

by

10,803

P. B. READ

GEOTEX CONSULTANTS LIMITED
Consulting Geologists

November 8, 1982

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GEOLOGICAL REPORT ON THE COBALT, DEASE AND JAY CLAIMS, ALICE ARM AREA, SKEENA MINING DIVISION, B. C.

INTRODUCTION

Location and Access

The claims are located largely on the west side of the Kitsault River between 2 km and 17 km north of Alice Arm. The legal corner post of Cobalt #1 in UTM co-ordinates occurs at 616535N and 47183E.

Alice Arm is serviced by air and water from Prince Rupert, a distance of 145 km to the southwest. A highway from Terrace to nearby Kitsault was under construction during the time of the current surveys.

Property

The property reported hereon consists of the following claims:

Claim Name	Tag Number	Record Number	Number of Units
Cobalt 1	65673	3308	20
Cobalt 2	65674	3309	20
Cobalt 3	65675	3310	20
Dease 1	64693	3518	20
Dease 2	64695	3519	20
Dease 3	64696	3520	20
Dease 4	64697	3521	20
Jay 1	24916	3339	20
Jay 2	24917	3340	20
Claim Name			
Cape Nome	939	3303	1
New World No. 3	5515	3304	1
B.J. No. 2	5516	3305	1
B.J. No. 3	5517	3306	1
B.J. No. 4	5518	3307	1

Description of Work

Geological mapping of bedrock outcrops at 1:10,000-scale was carried out by our four-man crew during the period July 8 to July 20, 1982, and a three-man crew from Tournigan Explorations Ltd. The crew was based in Alice Arm in accommodations provided by Tournigan Mining Explorations Ltd. Local transportation was supplied by Tournigan Mining Explorations Ltd.

GEOLOGY OF COBALT, DEASE, AND JAY CLAIM BLOCKS

1. Introduction:

Prospecting in Alice Arm began about 1900 and the claims forming the nucleus of the copper mine at Anyox were staked in 1901. After completion of a smelter at Anyox in 1914, the Dolly Varden mine lying seventeen miles north of Alice Arm was actively developed and shipped 35,000 tons of high grade silver ore between 1919 and 1921 when it closed. In 1911 molybdenum mineralization was found and staked in Lime Creek. The property was put into production from 1967 to 1972. In 1980 Amax of Canada Ltd. resumed production.

The earliest geological investigations in the area are those of McEvoy (1895) and McConnell (1913). Systematic studies by Hanson (1922, 1923, 1924 and 1929) culminated in his publication on the Portland Canal area (1935). Hanson (1922) divided the stratified rocks of the Kitsault valley into the volcanic-rich Dolly Varden Formation, and the overlying sedimentary-rich Kitzault River Formation. Because the formations did not extend beyond the upper Kitsault valley, Hanson (1923) abandoned them and correlated the rocks with the Lower and Middle Jurassic Hazelton Group. This geological investigation of the Cobalt, Dease, and Jay claim blocks does not substantiate the earlier geological studies. Within the map area, volcanic rocks overlie sedimentary rocks of Permo-Triassic age and neither is correlative with the Hazelton Group.

2. Stratified Rocks of the Cobalt, Dease, and Jay Claim Blocks:

A northeasterly dipping and facing sequence of sedimentary and overlying volcanic rocks outcrops on Cobalt, Dease, and Jay claim blocks, and adjacent country west of the Kitsault River valley. The sedimentary rocks span map units **Pss** to **PTp**,

and have an increased volcanogenic component upsection. The overlying volcanic units, **PTv1** to **PTv2**, flank sediments of unit **PTp2**. Briefly the rock units are:

(a) Unit **Pss:**

The stratigraphically lowest sedimentary unit in the Cobalt, Dease, and Jay claim blocks consists primarily of a coarse clastic sequence typified by grey arkosic sandstone with polymictic conglomerate lenses. Pebbles are rounded and consist of chert, argillite, siltstone, volcanic and locally diorite in a greywacke matrix. The base of the unit lies beyond the map area. The upper contact of the clastic sequence is placed at the first appearance of grey to black calcareous argillite and siltstone.

(b) Unit **Pp:**

The base of unit **Pp** is marked by a sharp transition from a coarse to a fine clastic sequence. From its most northerly limit near Klayduc Creek southward to Gwunya Creek, the unit is characterized by thinly bedded, dark grey calcareous argillite and siltstone. South of Gwunya Creek the argillite is accompanied by minor black limestone, plagioclase porphyry volcanic breccia and rare siltstone pebble conglomerate.

(c) Unit **PTs:**

Dark grey, vaguely bedded siltstone and argillite dominate over interbedded light green tuffaceous wacke. The boundaries to the unit are set at the base of the lowest thick (greater than 10 m) grey siltstone or argillite and at the top of the highest one. This unit separates two sequences of tuffaceous wacke (**PTw**). The unit is well exposed south of Lyall Creek and within an inaccessible canyon section in the lower part of Lyall Creek.

(d) Unit **Ptw:**

A vaguely bedded to nonbedded light green through grey-green to grey tuffaceous wacke with rare thin volcanic breccia layers compose this unit. The wacke consists mainly of feldspar, some plagioclase porphyry lithic fragments, and minor

augite crystals. Northeast of Klayduc Creek the lower part of the unit contains interbedded grey siltstone-argillite and tuffaceous wacke. The base of the unit is set at the lowest, thick tuffaceous wacke.

(e) Unit **PTp1:**

The well bedded nature of the grey siltstone and argillite characterize this unit. Rare tuffaceous wacke forms thin lenses. The lower boundary of the unit is set at the lowest grey argillite-siltstone of a thick sequence and the upper boundary at the top of the highest one. The unit is well exposed in a logged area south of Lyall Creek.

(f) Unit **PTv1:**

This is the lowest, exclusively volcanic rock unit, and contains only volcaniclastic rocks. Augite and/or plagioclase porphyry volcanic breccia is characteristic, and with minor medium to dark grey-green tuffaceous wacke, constitute the unit. Along Kitsault River road north of Lyall Creek, a grey breccia composed of volcanic, siltstone and wacke clasts, and minor chert-argillite-limestone pebble conglomerate locally lie near the top of **PTv1.** The unit is well exposed in a logged area north of Lyall Creek.

(g) Unit **PTp2:**

Along the lower part of Miner Creek and for a kilometre downstream on the west bank of Kitsault River, grey argillite and siltstone outcrop. The presence of interbedded tuffaceous wacke characterizes unit **PTp2** in contrast to the unit **PTp1.** Because unit **PTv1** apparently lenses out northerly, unit **PTp1** and **PTp2** may become indistinguishable north of the map area.

(h) Unit **PTv2:**

The stratigraphically highest volcanic unit of the map area outcrops between Miner Creek and Kitsault River. Near the base is a thin grey-green tuff and plagioclase porphyry volcanic breccia, but higher it is a massive greenstone of uncertain origin.

3. Intrusions of the Cobalt, Dease, and Jay Claim Blocks:

The map area lies east of the major intrusions of the Coast Plutonic Complex. Only small, irregularly shaped, basic intrusions, and sills and dikes locally invade the stratified rocks.

(a) **PTgns:**

A small lens of sparsely porphyritic (plagioclase) meta-andesite outcrops just south of the lower part of Lyall Creek.

(b) Unit **Mdi:**

From Klayduc Creek to the southern limit of mapping is an irregular shaped intrusion of massive fine to medium grained metadiorite and metagabbro. The mineralogy consists of plagioclase and hornblende or pyroxene that averages 1 - 2 mm, but locally reaches 5 mm. Between La Rose Creek and the southern boundary of map sheet 2 are numerous dikes and sills related to the intrusion. In the same area the intrusion contains large sediment screens of units **Pss** and **Pp**. The screens, sills and dikes are locally mineralized (p. 5). The marginal phase of the intrusion is composed of a green, fine grained massive greenstone.

4. Age of Stratified Rocks:

Of seven limestone samples from units **Pp** and unit **Pss**, F2 from a 1 m thick limestone within grey argillite of unit **Pp** yielded a conodont fauna of Permian and possibly Early Permian age (Appendix A). F1 contained only one conodont of Permo-Triassic age and its presence could be due to laboratory or other contamination. A macrofossil collection (F8) from unit Pss, consisting of pelecypods, gastropods and plant stems, presently awaits identification. In view of the paleontologic data, rocks within the map area should not be correlated with the Hazelton Group. The nearest other stratified rocks of Late Paleozoic or Triassic age are 140 km distant on Dunira Island off the entrance of Portland Canal (Hutchison 1982, p. 39). A fossil collection

from east of the head of Kitsault River, gives a Jurassic or Cretaceous age (Hanson, 1922) and supports the correlation of rocks north of the map area to those of the Hazelton Group, but the preliminary paleontologic data from rocks within the map area indicate that they should not be correlated with the Hazelton Group.

5. Structure:

Within the map area, the stratified rocks form a 30 to 60° east-northeasterly dipping and facing panel. A few north-northwesterly trending folds deform the panel north of Klayduc Creek and mesoscopic folds locally deform argillite and siltstone. Faults are rare, and strike west-northwest with apparent horizontal displacements of less than a few hundred metres.

6. Mineralization:

Because the primary objective of our investigation was the geologic framework of the claim blocks, the following are occurrences of mineralizations noted during geological investigations:

(a) Jay 2 Claim Block:

Location: South bank of Gwunya Creek, 700 m SW of the Kitsault River road and on the SW flank of a prominent asymmetric ridge.

Host Rock: Interlayered dark grey siltstone and grey-green tuff of unit **Pss** cut by closely spaced feldspar and quartz-feldspar veins.

Observed mineralization: Disseminated sulfides, dominantly pyrite and arsenopyrite, appear to be associated with feldspar and quartz-feldspar veins. Gossan zones were observed on ridge NE of prominent NW-trending gully.

(b) Dease 4 Claim Block:

Location: South bank of LaRose Creek, 1 km WSW of the Kitsault River road.

Host Rock: Massive, fine grained green to dark green diorite of unit Mdi contains screens of dark grey and black, thinly bedded argillite and siliceous siltstone of unit Pp. Diorite and sedimentary screens are both cut by coarse and very fine grained, NE-trending diorite dikes.

Observed mineralization: Sedimentary screens contain disseminated pyrite. Very fine grained diorite dikes contain ubiquitous disseminated pyrite and arsenopyrite. Bornite-arsenopyrite(?) were also observed within hairline fractures cutting very fine grained diorite dykes.

(c) Dease Claim 1 and 4 Blocks:

Location: (467800mE ; 6158320mN) on east bank of first major drainage north of Klayduc Creek, approximately 1100 m upstream from its intersection with the Kitsault River road. 20 - 25 m cliff exposure below logging cuts are visible from the south. There are several helicopter pads nearby.

Host Rock: Interlayered massive grey calcareous siltstone and limestone structurally overlain by thinly laminated siltstone, tuffaceous wacke and breccia all of unit Pp. All units are cut by massive WNW-trending quartz veins believed to be associated with massive fine to medium grained plagioclase porphyry diorite exposed to the south and east of the cliff-section. Sediments are tightly folded on a mesoscopic scale.

Observed mineralization: Several gossan horizons were observed within siltstones along the top of cliff-section proximal to crosscutting quartz veins. Minor disseminated pyrite and arsenopyrite occur in low percentage within the main body of diorite.

(d) Dease 3 Claim Block:

Location: (466180mE ; 6157530mN) in a clearing at the base of a steep slope, 2180 m on a bearing of 273° from junction of Klayduc Creek and Kitsault River road.

Host Rock: Along contact between massive fine-grained diorite of unit **Mdi** to the SW and chert-limestone breccia of unit **Pp** to the NE.

Observed mineralization: Gossan zones were observed along sediment-intrusive contact at an elevation of 790 m. Previous trenching along fractures and narrow veins were noted. Disseminated sulfides occur in low percentages in host rock.

(e) Cobalt 1 Claim Block:

Location: (250 m) north of Zorka Copper Adit on Kitsault River Road.

Host Rock: Polymict pebble conglomerate of unit **PTv1** crosscut by SW-trending (242/52 NW) mineralized carbonate veins.

Observed mineralization: Abundant pyrite and chalcopyrite in calcite veins containing trace amounts of bornite. Sulfide-bearing veins are subparallel to trend of Zorka Adit.

REFERENCES

Hanson, G.

1922: Upper Kitzault Valley, British Columbia; Geological Survey of Canada, Summary Report 1921, part A, p. 7A-21A.

1923: Reconnaissance between Kitsault River and Skeena River, British Columbia; Geological Survey of Canada, Summary Report 1922, part A, p. 35A-50A.

1924: Reconnaissance between Skeena River and Stewart, British Columbia; Geological Survey of Canada, Summary Report 1923, part A, p. 29A-45A.

1929: Mineral Deposits of Alice Arm District, British Columbia; Geological Survey of Canada, Summary Report 1928, part A, p. 27A-49A.

1935: Portland Canal Area, British Columbia; Geological Survey of Canada, Memoir 175.

Hutchison, W.W.

1982: Geology of the Prince Rupert - Skeena Map Area, British Columbia; Geological Survey of Canada, Memoir 394.

McConnell, R.G.

1913: Portions of Portland Canal and Skeena Mining Divisions, Skeena District, British Clumbia; Geological Survey of Canada, Memoir 32.

McEvoy, J.

1895: Report A (1893): Summary Report on the Operations of the Geological Survey for the Year 1893, by the Director; Geological Survey of Canada, Annual Report 1892-93, p. 13A-16A.

APPENDIX A: PALEONTOLOGIC DATA

TOURNIGAN MINING EXPLORATIONS LIMITED

Project:	KITSAULT RIVER	**NTS Sheet:**	103P/11
Field No.:	H82-4F **Map No.:** F1	**GSC Loc. No.:**	
UTM Coordinates:	VQ0468320mE	**Latitude:**	55°38'31"
	VQ6166180mN	**Longitude:**	129°29'12"
Station:	R1h	**Notebook:**	#18, p.22
Collector:	P.B. Read	**Identified By:**	

Location: On the west side of Kitsault River, 1.8 km north of its junction with Lyall Creek on the Dolly Varden Mine road.

Rock Unit: **PTv1**, near the top of an unnamed unit of presumed Permo-Triassic age

Lithology: Medium grey limestone.

Fauna: Barren

Remarks:

C.A.I.:

Age:

TOURNIGAN MINING EXPLORATIONS LTD.

Project:	KITSAULT RIVER	**NTS Sheet:**	103P/12
Field No.:	P82-6F **Map No.:** F2	**GSC Loc. No.:**	
UTM Coordinates:	VM0467240mE	**Latitude:**	55°31'21"
	VM6156465mN	**Longitude:**	129°32'30"
Station:	P135m	**Notebook:**	Ntbk #2, p. 81
Collector:	J.F. Psutka	**Identified By:**	

Location: 340 m elevation, 0.5 km due north of La Rose Creek.

Rock Unit: **Pp**, in the middle of an unnamed Permian unit

Lithology: 1 m thick grey massive limestone in grey argillite.

Fauna:

Remarks:

C.A.I.:

Age:

TOURNIGAN MINING EXPLORATIONS LTD.

Project:	KITSAULT RIVER	**NTS Sheet:**	103P/12
Field No.:	P82-3F **Map No.:** F3	**GSC Loc. No.:**	
UTM Coordinates:	VM0468280mE	**Latitude:**	55°32'16"
	VM6155390mN	**Longitude:**	129°30'39"
Station:	P129f	**Notebook:**	#2, p. 69
Collector:	J.F. Psutka	**Identified By:**	

Location: 1 km south of the mouth of La Rose Creek, on the Dolly Varden Road.

Rock Unit: **Pp**, in an unnamed unit of Permian age

Lithology: Dark grey to black limestone layer in black massive siltstone.

Fauna: Barren

Remarks:

C.A.I.:

Age:

TOURNIGAN MINING EXPLORATIONS LTD.

Project:	KITSAULT RIVER	**NTS Sheet:**	103P/12
Field No.:	P82-5F **Map No.:** F4	**GSC Loc. No.:**	
UTM Coordinates:	VM0466620mE	**Latitude:**	55°31'33"
	VM6155310mN	**Longitude:**	129°31'46"
Station:	P132e	**Notebook:**	#2, p. 74
Collector:	J.F. Psutka	**Identified By:**	

Location: 415 m elevation, 0.5 km due south of La Rose Creek.

Rock Unit: **Pp**, within 150 m of the base of an unnamed Permian unit

Lithology: Dark grey limestone layer with thin black calcareous siltstone beds.

Fauna: Barren

Remarks:

C.A.I.:

Age:

TOURNIGAN MINING EXPLORATIONS LTD.

Project:	KITSAULT RIVER	**NTS Sheet:**	103P/11, 12
Field No.:	P82-4F **Map No.:** F5	**GSC Loc. No.:**	
UTM Coordinates:	VM0468330mE	**Latitude:**	55°31'43"
	VM6154295mN	**Longitude:**	129°30'00"
Station:	P129i	**Notebook:**	#2, p. 70
Collector:	J.F. Psutka	**Identified By:**	

Location: On the Dolly Varden Road, 2 km south of the mouth of La Rose Creek.

Rock Unit: **Pp**, in an unnamed Permian unit

Lithology: Black massive limestone layer in black massive silstone.

Fauna: Barren

Remarks:

C.A.I.:

Age:

TOURNIGAN MINING EXPLORATION LTD.

Project:	KITSAULT RIVER	**NTS Sheet:**	103P/12
Field No.:	P82-9F **Map No.:** F6	**GSC Loc. No.:**	
UTM Coordinates:	VM0468500mE	**Latitude:**	55°30'31"
	VM6151920mN	**Longitude:**	129°30'18"
Station:	P138h	**Notebook:**	#2, p. 84
Collector:	J.F. Psutka	**Identified By:**	

Location: 285 m elevation, 0.5 km due south of Gwunya Creek.

Rock Unit: **Pss**, of an unnamed Permian unit

Lithology: Greenish, nonbedded limestone

Fauna: Barren

Remarks:

C.A.I.:

Age:

TOURNIGAN MINING EXPLORATIONS LTD.

Project:	KITSAULT RIVER	**NTS Sheet:**	103P/11
Field No.:	P82-7F **Map No.:** F7	**GSC Loc. No.:**	
UTM Coordinates:	VM0469540mE	**Latitude:**	55°30'16"
	VM6151250mN	**Longitude:**	129°29'24"
Station:	P137e	**Notebook:**	Ntbk #2, p. 82
Collector:	J.F. Psutka	**Identified By:**	

Location: On Dolly Varden Road, 1.5 km south of mouth of Gwunya Creek.

Rock Unit: **Pp**, within 100 m of the top of an unnamed Permian unit

Lithology: Black, pyritic massive limestone more than 12 m thick.

Fauna: Barren

Remarks:

C.A.I.:

Age:

TOURNIGAN MINING EXPLORATIONS LTD.

Project:	KITSAULT RIVER	**NTS Sheet:**	103P/11
Field No.:	P82-8F **Map No.:** F8	**GSC Loc. No.:**	
UTM Coordinates:	VM0469580mE	**Latitude:**	55°30'15"
	VM6151120mN	**Longitude:**	129°29'24"
Station:	P137g	**Notebook:**	Ntbk #2, p. 32
Collector:	J.F. Psutka	**Identified By:**	

Location: On Dolly Varden Road, 1.6 km south of mouth of Gwunya Creek.

Rock Unit: **Pss**, within 200 m of the top of an unnamed Permian unit

Lithology: Fine to medium grained grey sandstone. Bedded on scale of 10 to 20 cm. Collection contains macrofossils of gastropods, pelecypods, and plant stems.

Fauna:

Remarks:

C.A.I.:

Age:

STATEMENT OF QUALIFICATIONS

I, Peter B. Read, do hereby certify that:

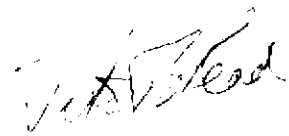
1. I am a practicing professional geologist, a fellow in good standing in the Geological Association of Canada, and resident at 4490 Angus Drive, Vancouver, B.C.

2. I am a graduate of the University of British Columbia with degrees in Geological Engineering (B.A.Sc., 1957 and M.A.Sc., 1960), and the University of California, Berkeley with the degree of Doctor of Philosophy in Geology (Ph.D., 1966).

3. I have practiced my profession continuously for eighteen years as a Lecturer or Senior Lecturer at the Department of Geology, University of Otago, Dunedin, New Zealand and Assistant Professor at the Department of Geology, Carleton University, Ottawa, Canada and at the Department of Geological Sciences, University of British Columbia, Vancouver, B.C., and since 1974 as a consulting geologist.

4. Most of the work undertaken by myself or Geotex Consultants Ltd. consists of structural geology for the Geological Survey of Canada and geology as applied to engineering projects for British Columbia Hydro and Power Authority.

5. I have no interest in Tournigan Mining Explorations Ltd. nor do I expect to acquire any interest.



Peter B. Read

Suite 1200, 100 West Pender Street,
Vancouver, B.C. V6B 1R8
November 8, 1982

GEOLOGICAL WORK

ON THE COBALT, DEASE & JAY CLAIMS

STATEMENT OF EXPENDITURES

July 8 - July 20, 1982

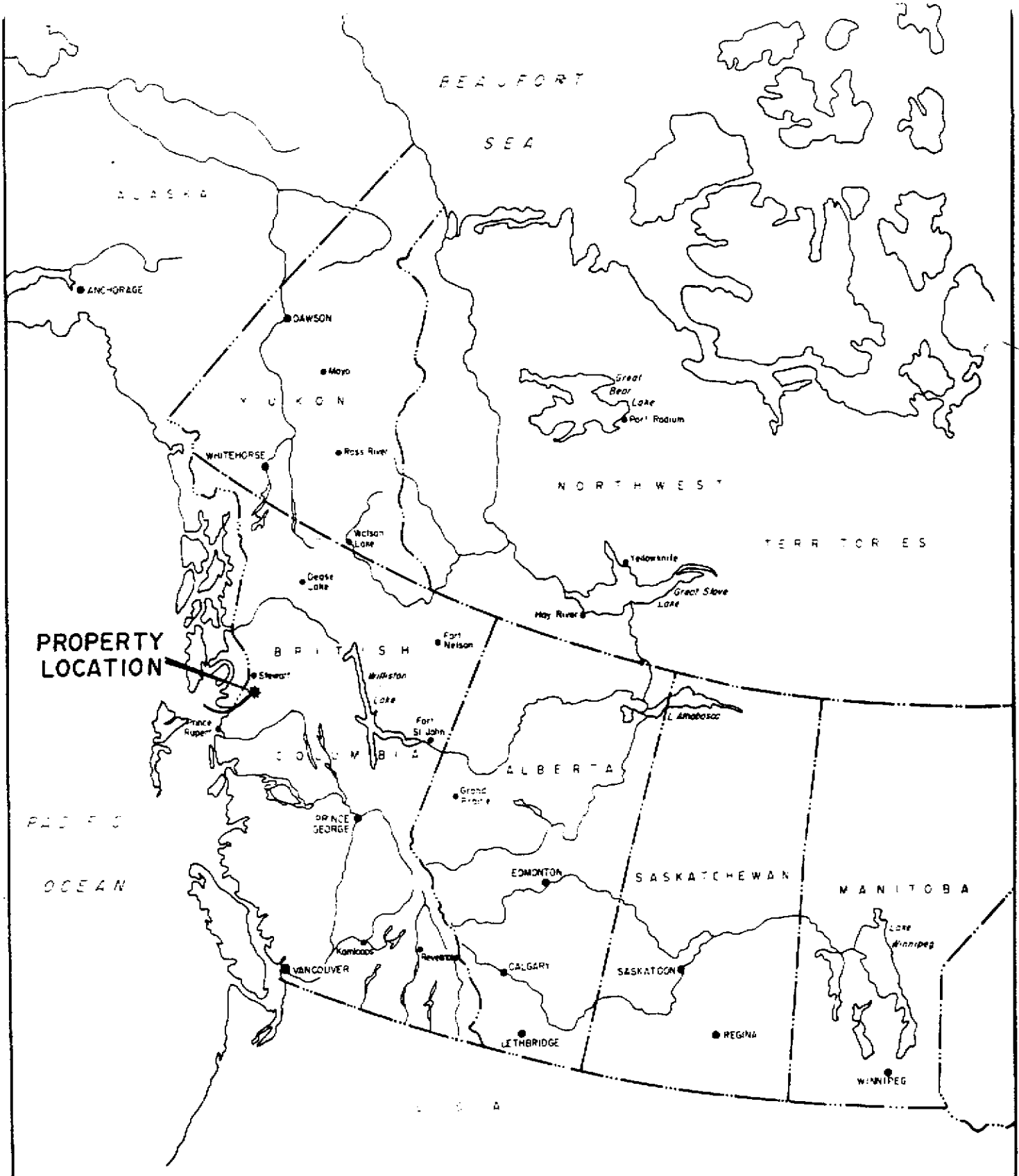
1.	Consulting - July 8 - July 20, 1982	
	Dr. P. B. Read, Geologist 5 days @ 375.00/day	$1,875.00
	John F. Psutka 12 days @ 185.00/day	2,220.00
	Murray Jouneay 12 days @ 185.00/day	2,220.00
	2 assistants - 12 days @ 57.50/day	1,380.00
	Lodging in Prince Rupert - 4 men	231.21
	Truck Rental - Terrace to Prince Rupert	122.97
	Excess baggage	133.20
	Airfare - 5 men - return - 1,537.50 X 50% allowable	768.75
	Preparing reports and drafting	500.00
2.	Wages -	
	D. Duncan 12 days @ 86.42/day	1,037.04
	K. Foellmer 12 days @ 76.56/day	918.72
	G. Christison 12 days @ 68.75/day	825.00
3.	Camp Rental	375.00
4.	Food - 7 men, 12 days @ 21.65/day	1,818.60
	1 man, 5 days @ 21.65/day	108.25
5.	Truck, gas and rental equipment	2,500.00
6.	Explosives	539.76

.....2

7. Analytical -		
	337 samples assayed, Au, Ag, Cu @ 3.80	1,280.60
8. Other;	Radio telephone, maintenance field and geological supplies	1,500.00
	TOTAL:	$ 20,354.10

Provided by:

TOURNIGAN MINING EXPLORATIONS LTD.



PROPERTY LOCATION MAP

COBALT, DEASE & JAY CLAIMS

LEGEND

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT

Qs (Pp) — Alluvium, colluvium and glacial deposits; few if any outcrops. Probable subcrop unit within parentheses

MESOZOIC

TRIASSIC TO CRETACEOUS

Mdi — Fine grained metadiorite and metagabbro grading to marginal greenstone

PALEOZOIC AND/OR MESOZOIC

PERMIAN AND/OR TRIASSIC

PTrgns — Green, porphyritic (plagioclase) meta-andesite sills and dikes

uTrv2 — Green, porphyritic (plagioclase) meta-andesite breccia and flows

PTrp2 — Dark grey argillite and siltstone; minor interbedded tuffaceous wacke

PTrv1 — Tuffaceous wacke, augite porphyry breccia, grey feldspathic tuff and breccia; rare chert-argillite-limestone pebble conglomerate

PTrp1 — Thin bedded, dark grey argillite and siltstone

PTrw — Nonbedded tuffaceous wacke

PTrs — Interbedded tuffaceous wacke, and nonbedded grey siltstone

PALEOZOIC

PERMIAN
EARLY PERMIAN?

Pp — Dark grey and black bedded argillite and siltstone; minor green massive tuff and black limestone

Pss — Grey sandstone, chert, argillite, and siltstone; minor conglomerate

Geological boundary — defined / approximate / assumed

Fault — defined (with slickensides) / approximate / assumed

Bedding, facing determined — inclined / vertical / overturned

Bedding, facing undetermined — inclined / vertical

Foliation (inclined, vertical)

Lineation, fold axis — undetermined vergence / northerly vergence*

Fold (undetermined vergence, northerly vergence*)

Trace of axial plane — antiform, dipping to N / synform, dipping to N / antiform, upright

Fossil locality — FB

Limit of mapping

Stations — Journeay / Psutka / Read

*Vergence is the direction of the upper member of the rotational couple implied by the asymmetry of the fold.

Geology by J.F. Psutka, M. Journeay and P.B. Read, 1982

1000 0 1000
metres

Miner Creek
Lyall Creek
KITSAULT RIVER
COBALT 1
COBALT 2
COBALT 3
ZORKA COPPER? (5m at 242')
Match line
ADJOINS SHEET 2

GEOLOGICAL BRANCH
ASSESSMENT REPORT

10,803

GEOTEX CONSULTANTS limited	
GEOLOGY	
COBALT, DEASE & JAY CLAIM BLOCKS	
NOV. 1982	1:10,000
A.Z.	MAP 1

Scale and elevation datum based on limited ground control resulting in good relative, but uncertain absolute map accuracy.
Compiled from aerial photography at an approximate scale of 1:75000 & 1:20000 flown in 1974 & 80

TOURNIGAN MINING EXPLORATIONS LTD.

KITSAULT RIVER B.C.

PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd.
1166 Alberni Street, Vancouver B.C., Canada

Scale	1:10000
Contour Interval	50 Metres, (100M East of River)
Date	Mar. 1982
Job No.	06941-0
Sheet No.	1 of 3

ADJOINS SHEET 1

Match line

DEASE 2

DEASE 1

DEASE 3

DEASE 4

JAY 1

Klaydu Creek

KITSAULT RIVER

La Rose Creek

LEGEND

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT

Qs (Pp) — Alluvium, colluvium and glacial deposits; few if any outcrops. Probable subcrop unit within parentheses

MESOZOIC

TRIASSIC TO CRETACEOUS

Mdi — Fine grained metadiorite and metagabbro grading to marginal greenstone

PALEOZOIC AND/OR MESOZOIC

PERMIAN AND/OR TRIASSIC

PTrgns — Green, porphyritic (plagioclase) meta-andesite sills and dikes

uTrv2 — Green, porphyritic (plagioclase) meta-andesite breccia and flows

PTrp2 — Dark grey argillite and siltstone; minor interbedded tuffaceous wacke

PTrv1 — Tuffaceous wacke, augite porphyry breccia, grey feldspathic tuff and breccia; rare chert-argillite-limestone pebble conglomerate

PTrp1 — Thin bedded, dark grey argillite and siltstone

PTrw — Nonbedded tuffaceous wacke

PTrs — Interbedded tuffaceous wacke, and nonbedded grey siltstone

PALEOZOIC

PERMIAN
EARLY PERMIAN?

Pp — Dark grey and black bedded argillite and siltstone; minor green massive tuff and black limestone

Pss — Grey sandstone, chert, argillite, and siltstone; minor conglomerate

Geological boundary — defined / approximate / assumed

Fault — defined (with slickensides) / approximate / assumed

Bedding, facing determined — inclined / vertical / overturned

Bedding, facing undetermined — inclined / vertical

Foliation (inclined, vertical)

Lineation, fold axis — undetermined vergence / northerly vergence*

Fold (undetermined vergence, northerly vergence*)

Trace of axial plane — antiform, dipping to N / synform, dipping to N / antiform, upright

Fossil locality

Limit of mapping

Stations — Journeay / Psutka / Read

*Vergence is the direction of the upper member of the rotational couple implied by the asymmetry of the fold.

Geology by J.F. Psutka, M. Journeay and P.B. Read, 1982

1000 0 1000
metres

ADJOINS SHEET 3

Match line

GEOLOGICAL BRANCH ASSESSMENT REPORT

10,803

Geotex Consultants Limited

GEOLOGY
COBALT, DEASE & JAY CLAIM BLOCKS

NOV. 1982 | 1:10,000
A.Z. | MAP 2

Scale and elevation datum based on limited ground control resulting in good relative, but uncertain absolute map accuracy
Compiled from aerial photography at an approximate scale of 1:50000 & 1:20000

TOURNIGAN MINING EXPLORATIONS LTD.

KITSAULT RIVER B.C.

PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd.

Scale: 1:10000
Contour Interval: 50 Metres (100M, East of River)
Date: Mar. 1982
Job No.: 06941-0
Sheet No.: 2 of 3

ADJOINS SHEET 2

Match line

LEGEND

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT

Qs (Pp) — Alluvium, colluvium and glacial deposits; few if any outcrops. Probable subcrop unit within parentheses

MESOZOIC

TRIASSIC TO CRETACEOUS

Mdi — Fine grained metadiorite and metagabbro grading to marginal greenstone

PALEOZOIC AND/OR MESOZOIC

PERMIAN AND/OR TRIASSIC

PTrgns — Green, porphyritic (plagioclase) meta-andesite sills and dikes

uTrv2 — Green, porphyritic (plagioclase) meta-andesite breccia and flows

PTrp2 — Dark grey argillite and siltstone; minor interbedded tuffaceous wacke

PTrv1 — Tuffaceous wacke, augite porphyry breccia, grey feldspathic tuff and breccia; rare chert-argillite-limestone pebble conglomerate

PTrp1 — Thin bedded, dark grey argillite and siltstone

PTrw — Nonbedded tuffaceous wacke

PTrs — Interbedded tuffaceous wacke, and nonbedded grey siltstone

PALEOZOIC

PERMIAN
EARLY PERMIAN?

Pp — Dark grey and black bedded argillite and siltstone; minor green massive tuff and black limestone

Pss — Grey sandstone, chert, argillite, and siltstone; minor conglomerate

Geological boundary — defined / approximate / assumed

Fault — defined (with slickensides) / approximate / assumed

Bedding, facing determined — inclined / vertical / overturned

Bedding, facing undetermined — inclined / vertical

Foliation (inclined, vertical)

Lineation, fold axis — undetermined vergence / northerly vergence*

Fold (undetermined vergence, northerly vergence*)

Trace of axial plane — antiform, dipping to N / synform, dipping to N / antiform, upright

Fossil locality — F8

Limit of mapping

Stations — Journeay / Psutka / Read

*Vergence is the direction of the upper member of the rotational couple implied by the asymmetry of the fold.

Geology by J.F. Psutka, M. Journeay and P.B. Read, 1982

500 0 1000
metres

Gwunya Creek

JAY 1

JAY 2

KITSAULT RIVER

OAK RIVER

Falls Creek

ALICE ARM

GEOLOGICAL BRANCH ASSESSMENT REPORT

10,803

GEOTEX CONSULTANTS limited

GEOLOGY
COBALT, DEASE & JAY CLAIM BLOCKS

NOV. 1982 | 1:10,000
A.Z. | MAP 3

Scale and elevation datum based on limited ground control resulting in good relative but uncertain absolute map accuracy
Compiled from aerial photography at an approximate scale of 1:5000 & 1:20000 Flown in 1968

TOURNIGAN MINING EXPLORATIONS LTD.

KITSAULT RIVER B.C.

PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd
1166 Alberni Street, Vancouver B.C., Canada

Scale: 1:10000
Contour Interval: 50 Metres (100M, East of River)
Date: Mar. 1982
Job No.: 06941-0
Sheet No.: 3 of 3

ENFIELD RESOURCES INC.

THE MOLY MAY STOCK

MOLY MAY CLAIM GROUP
55°21' N., 129° 48' W.
SKEENA MINING DIVISION BRITISH COLUMBIA

JOHN AFFLECK, B.Sc. AUGUST, 1982

BEATRICE
2937 (4)

SYLVESTER BAY

MOLY FR. 1
2935 (4)

GRANBY BAY

MOLY MAY (2S. X 5E.)
2936 (4)

MOLY MAY 3
(5S. X 4W.)
3136 (7)

MOLY MAY 2 (2S.X4E)
3135 (7)

WEST ZONE

EAST ZONE

SOUTH ZONE

WEST ZONE WORKINGS

MOLY MACK SHOWING

DDH 82-1-3

S1 S2 S3 S4

OBSERVATORY INLET

5+00 N.
0+00
5+00 S.
10+00 S.
15+00 S.
20+00 W
15+00 W
10+00 W
5+00 W
0+00 W

N

LOCATION

MOLY MAY

BRITISH COLUMBIA

TABLE OF UNITS

MOLY MAY STOCK

- Dykes: diabase / quartzofeldspathic pegmatite
- Fresh Quartz Monzonite
- Moderately Altered Quartz Monzonite: bleached, minor stockwork development, sparse Fe·Mo stain
- Coarse Biotite, abundant throughout units 2-3
- Intensive Vein Stockwork Development in highly altered Quartz Monzonite
- Highly Altered Quartz Monzonite; abundant Fe·Mo stain, highly fractured

HAZELTON GROUP

- Greywacke, Argillite, Andesite

LEGEND

- Geological contact or igneous phase boundary — Defined / Approximate / Assumed
- Limit of outcrop
- Major molybdenite showing
- Major fault
- Sedimentary bedding, upright
- Limit of tidal flat
- Surveyed grid
- Diamond drill hole

SCALE

0 500

FIGURE 3

CASSIAR EAST YUKON EXP. LTD.

ENFIELD RESOURCES INC.

FRACTURES IN THE MOLY MAY STOCK

MOLY MAY CLAIM GROUP

55° 21' N., 129° 48' W.

SKEENA MINING DIVISION BRITISH COLUMBIA

JOHN AFFLECK, B.Sc. AUGUST, 1982

BEATRICE
2937 (4)

SYLVESTER BAY

MOLY FR. 1
2935 (4)

GRANBY BAY

MOLY MAY (2S. X 5E.)
2936 (4)

EAST ZONE

WEST ZONE

MOLY MAY 3
(5S. X 4W.)
3136 (7)

MOLY MAY 2 (2S. X 4E.)
3135 (7)

SOUTH ZONE

OBSERVATORY INLET

5+00 N
0+00
5+00 S
10+00 S
15+00 S
20+00 W
15+00 W
10+00 W
5+00 W

N

LOCATION

MOLY MAY

BRITISH COLUMBIA

LEGEND

Stereonets of fracture data (poles of fracture planes) — 50% of data; 95% of data

Contact of the Moly May Stock and Hazelton Group rocks — Defined; Approximate; Assumed

Limit of outcrop

Major molybdenite showing

Major fault

Sedimentary bedding, upright

Limit of tidal flat

Surveyed grid

Diamond drill hole

SCALE

0 500

Metres

CASSIAR EAST YUKON EXP. LTD.

FIGURE 4