

## ARIS SUMMARY SHEET

District Geologist, Smithers

Off Confidential: 89.03.07

ASSESSMENT REPORT 17383

MINING DIVISION: Skeena

PROPERTY: Brucejack  
LOCATION: LAT 56 28 47 LONG 129 58 55  
UTM 09 6259692 439517  
NTS 104A05W 104B08E

CLAIM(S): Brucejack 4-5

OPERATOR(S): Catear Res.

AUTHOR(S): Kruchkowski, E.R.; Sinden, G.

REPORT YEAR: 1988, 25 Pages

## COMMODITIES

SEARCHED FOR: Gold, Silver

## GEOLOGICAL

SUMMARY: The showings are in altered andesites and sericite schists of the Middle Jurassic Betty Creek and Salmon River Formations. Pyrite is the only mineral known to be present.

## WORK

DONE: Geological, Geochemical  
GEOL 56.3 ha  
Map(s) - 1; Scale(s) - 1:5000  
ROCK 5 sample(s) ;AU,AG  
SILT 5 sample(s) ;AU,AG

LOG NO: 0509	RD.
ACTION:	
FILE NO:	

REPORT ON THE BRUCEJACK 4 AND 5 CLAIMS  
 STEWART, BRITISH COLUMBIA  
 SKEENA MINING DIVISION  
 NTS 104A/5W AND NTS 104B/8E  
 LATITUDE 56° 29'  
 LONGITUDE 129° 59'

FILMED

BY

E.R. KRUCHKOWSKI, B.Sc., P.Geol.  
 CONSULTING GEOLOGIST

G. SINDEN, R.E.T.

PREPARED FOR: CATEAR RESOURCES LTD.  
 #400, 255 - 17 Avenue S.W.  
 Calgary, Alberta  
 T2S 2T8

PREPARED BY: E.R. KRUCHKOWSKI CONSULTING LTD.  
 23 Templeside Bay N.E.  
 Calgary, Alberta  
 T1Y 3L6

GEOLOGICAL BRANCH  
 ASSESSMENT REPORT

17,383

CALGARY, ALBERTA  
 APRIL, 1988

RECEIVED

MAY - 3 1988

GOLD COMMISSIONER  
 PRINCE RUPERT

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## SUMMARY

The 24 unit Brucejack 4 and Brucejack 5 claims are located within the Stewart complex, some 68 kilometers north-northwest of Stewart, British Columbia. The area is underlain by volcanic and sedimentary rocks of the Middle Jurassic Betty Creek and Salmon River Formations.

Chip sampling and silt sampling indicated slightly anomalous gold values in areas of sericite alteration.

Follow-up work on the Brucejack claims is essential in order to adequately evaluate the properties. A program of detailed geological mapping, rock geochemical sampling, silt geochemical sampling, trenching and prospecting is recommended.

Significant mineralization is encountered in quartz-sulphide veins and pyritic sericitic gossan zones in the Betty Creek host rock.

The area of the Brucejack Claims is east of the bonanza gold-silver discoveries at Brucejack Lake by both the Newcana Joint Venture and Catear Resources Ltd.

The Newcana Joint Venture has announced the following results:

<u>ZONE</u>	<u>CATEGORY</u>			
West	Drill	535,765	0.332	21.06
	Indicated			
West	Inferred	480,965	0.332	21.06
Total		<u>1,016,730</u>	<u>0.332</u>	<u>21.06</u>
West				
Zone				
Short	Inferred	539,776	0.263	27.23
Gossan	Inferred	27,639	1.940	3.51
Hill				
Total	Indicated	<u>1,584,145</u>	<u>0.336</u>	<u>22.86</u>
Brucejack &				
area	Inferred			

Catear conducted diamond drilling on its Goldwedge property within the Newcana block and has reported the following results:

<u>Zone</u>	<u>Category</u>	<u>Tons</u>	<u>Au oz/T</u>	<u>Ag oz/T</u>
Golden Rocket	Drill Indicated	146,437	0.837	2.56
Golden Rocket	Drill Inferred	145,479	0.837	2.56

The above gold-silver discoveries are structurally controlled, epithermal-mesothermal veins occurring in areas of syenodiorite intrusions and associated with areas of intense sericite (quartz-pyrite) alteration.

## INTRODUCTION

This report is based on data obtained from field observations and samples collected from the Brucejack 4 and Brucejack 5 claims. These claims are situated 3 kilometers northeast of Mt. Knipple and/or 10 kilometers north of Knipple Lake.

The claims are located approximately 68 kilometers by air north-northeast of Stewart, B.C.

E.R. Kruchkowski consulting personnel carried out a program of stream sediment sampling, prospecting and rock geochemical sampling during July of 1987. The results of this work are presented within this report.

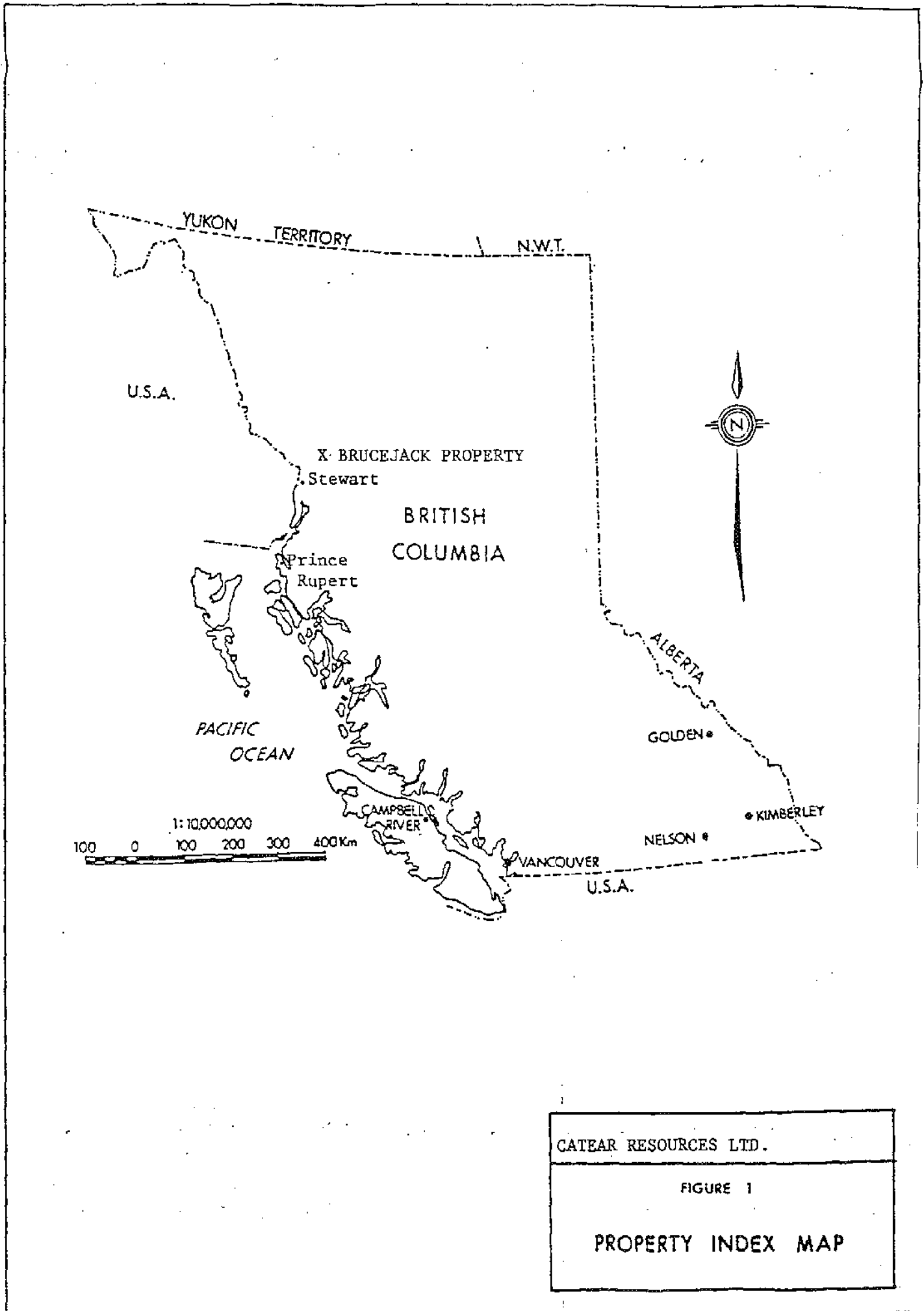
Geochemical analysis were performed by Loring Laboratories Ltd. of Calgary, Alberta.

### Location, Access and Physiography

The Brucejack 4 and Brucejack 5 claims are located in Northwestern British Columbia, 68 kilometers north-northeast of Stewart, British Columbia in the Skeena Mining Division, NTS 104A/5W and 104B/8E (Figure 1).

The property is situated 10 kilometers north of Knipple Lake and/or 3 kilometers northeast of Mt. Knipple at latitude  $129^{\circ}59'$ , longitude  $56^{\circ}29'$ .

At present access is by helicopter based in Stewart, British Columbia. A 38 kilometer summer road extending from Stewart, British Columbia to the Tide Lake Airstrip can be used to reduce mobilization/demobilization expenses (approximately 25 kilometers south-southwest of the Brucejack 4 and 5 claims).



CATEAR RESOURCES LTD.

FIGURE 1

PROPERTY INDEX MAP



The terrain is extremely rugged and steep with elevations ranging from 4100 feet to 6800 feet. Vegetation is limited to thin brush and minor hemlock.

Water supply is plentiful as several glacial run-off streams cross the property.

#### Property Ownership

The property consists of two 12-unit staked claims (Figure 2).

<u>Name</u>	<u>Record No.</u>	<u>Units</u>	<u>Record Date</u>
Brucejack 4	5853	12	Feb. 11, 1987
Brucejack 5	5854	12	Feb. 11, 1987

Catear Resources holds a 50% working interest in the property.

#### Previous Work

The work history of the property is short and recent. Glacial and snow cover made the property unexplorable until recently.

#### Personnel and Operations

E.R. Kruckowski Consulting Ltd. conducted the 1987 surface exploration program. Work was executed from the Catear Brucejack Lake Camp, June 30 to July 30, 1987, utilizing a Bell 206 Helicopter.

##### Personnel:

E.R. Kruckowski, Geologist  
G. Pauls, Geological Assistant

Work consisted of rock geochemical sampling, stream sediment sampling and prospecting. During the work program, 5 rock samples and 5 silt samples were collected. Geochemical analysis were performed by Loring Laboratories Ltd. of Calgary, Alberta.

M 104 A 15 W

BRUCEJACK  
(5854)

BRUCEJACK-5  
(5854)

WH 6  
5243(4)  
10250  
10250

WH I  
4895(B)  
10250

WH II  
4896(B)  
10250

WH 5  
5242(4)  
10250

WH II  
4893(B)  
10250

WH III  
4897(B)  
10250

8051

4837

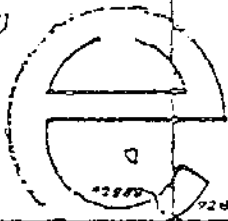
7422

KNIP  
2559(9)

Knipple

Lake

TOE 2  
4835(3)



Box 39

Box 38

BOWSER

CLAIM MAP  
FIGURE 2

SCALE:  
1:50,000

488-E

BC 55

BC 5504

BC 5504

110

146

75

75

## GEOLOGY

### Regional Geology

Rocks that underlie the claim area belong to the mesozoic Hazelton Group. These low-middle Jurassic extrusive volcanics and sediments are intruded by Cenozoic and Mesozoic phases.

The Lower Jurassic volcanoclastic Unuk River Formation are the oldest rocks in the area. These rocks form a distinct north-northwesterly trending belt extending from Alice Arm to the Iskut River. The Unuk River Formation consists of: green, red, and purple volcanic breccia, pillow lavas, volcanic flows, volcanic conglomerate, sandstone, siltstone, with minor crystal lithic tuff, limestone, chert, and coal.

The Unuk River Formation is unconformably overlain by Lower Middle and Middle Jurassic rocks from the Betty Creek and Salmon River Formations, respectively. The next series of rocks encountered in order of decreasing age is the Lower Middle Jurassic Betty Creek Formation. Similar to the Unuk River Formation the Betty Creek Formation is a continued sequence of trough-filling submarine pillow lavas, pillow breccias, andesite and basalt flows, red, green, purple and black volcanic breccia, volcanic conglomerate, sandstone, siltstone with minor crystal and lithic tuffs, chert and limestone.

The youngest stratified units are of the Middle Jurassic Salmon River Formation. Overlying the Betty Creek Formation, the Salmon River Formation consists of primarily sedimentary, late to post volcanic, deposition of siltstone, greywacke, sandstone, intercolated calcarenite, minor limestone, argillite, conglomerate, littoral deposits, volcanic sediments and minor volcanic flows.

Many of the rocks from the Hazelton Group are erosionally derived from andesitic rocks deposited in lenticular beds varying from breccias to sandstone. The

Betty Creek and Unuk River Formations are separated by violent cauldric collapse and erosion of their active volcanic phases. The vulcanism was accompanied by volcanosenic massive sulphide deposits originated from the submarine spreading ridge. The intense volcanic activity subsided into an erosional, tuff-distal sedex precipitate episode with back-arc and continental sedimentation (Salmon River Formation). Minor hot spring-fumarolic activity followed.

Various intrusives are encountered ranging from the Coast Plutonic complex to smaller post Coast Plutonic Stocks and plugs (thought to be late offshoots of the Coast plutonism). The rocks include: granodiorite, granite, quartz monzonite and feldspar porphyry. These stocks are often accompanied by significant sulphide mineralization featuring argentiferous veins developed in post-crystallization fractures and breccia zones.

Structurally, the region is characterized by a double plunging, northwesterly trending synclinal folds of the Salmon River and underlying Betty Creek Formations. The folds are locally disrupted by small overthrusts. Major northwest trending faults offset beds.

#### Local Geology

According to E.W. Grove on maps titled Geology of the Unuk River - Salmon River - Anyox map area - two separate rock units are encountered on the property both of Middle Jurassic age. The oldest rocks are from the Betty Creek Formation which are composed of green, red, purple and black volcanic breccia, conglomerate, sandstone and siltstone. The younger rocks of the Salmon River Formation unconformably overlies the Betty Creek Formation. The Salmon River Formation includes siltstone, greywacke, sandstone, some calcarenite, minor limestone, argillite, conglomerate and littoral deposits.

The limited reconnaissance program indicates that the area within the claims are underlain by green clastic volcanics variably altered to sericite and chlorite schists in several locations. The schists are pale grey to green with locally abundant pyrite. These zones appear as bright yellow to dull orange gossan zones.

The area of the Brucejack claims is east of the bonanza gold-silver discoveries at Brucejack Lake by both the Newcana Joint Venture and Catear Resources Ltd.

The Newcana Joint Venture has announced the following results:

<u>ZONE</u>	<u>CATEGORY</u>	<u>TONS</u>	<u>AU OZ/T</u>	<u>AG OZ/T</u>
West	Drill Indicated	535,765	0.332	21.06
West	Inferred	<u>480,965</u>	<u>0.332</u>	<u>21.06</u>
Total		<u>1,016,730</u>	<u>0.332</u>	<u>21.06</u>
West Zone				
Shore	Inferred	539,776	0.263	27.23
Gossan	Inferred	27,639	1.940	3.51
Hill				
Total	Indicated	<u>1,584,145</u>	<u>0.336</u>	<u>22.86</u>
Brucejack & area	Inferred			

Catear conducted diamond drilling on its Goldwedge property within the Newcana block and has reported the following results:

<u>ZONE</u>	<u>CATEGORY</u>	<u>TONS</u>	<u>AU OZ/T</u>	<u>AG OZ/T</u>
Golden Rocket	Drill Indicated	146,437	0.837	2.56
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The above gold-silver discoveries are structurally controlled, epithermal-mesothermal veins occurring in areas of syenodiorite intrusions and associated with areas of intense sericite (quartz-pyrite) alteration.

The presence of sericite schists with weak quartz veining and locally intense pyrite mineralization make the Brucejack 4 and 5 claims excellent exploration targets for gold-silver mineralization.

## GEOCHEMICAL SURVEYS

### Rock Geochemistry

Five (5) rock geochemical samples were collected from the Brucejack 4 and 5 claims during July of 1987. A 3-4 pound sample of unweathered material was selected on the basis of mineralization or alteration.

The samples were shipped to Loring Laboratories Ltd. of Calgary, Alberta where they were crushed, split and ground to a -80 mesh. The samples were then analyzed using standard geochemical methods for Au and Ag.

Results of the survey indicated weakly anomalous gold and silver values. (See Figure 3)

### Silt Geochemistry

A total of 5 silt samples were collected, placed in Kraft Sample Bags and shipped to Loring Laboratories Ltd. of Calgary, Alberta where they were dried, crushed, split and ground to a -80 mesh. The samples were analyzed for Au and Ag using standard geochemical methods.

Results of the survey indicate weakly anomalous gold values and low silver values. The sample sites are shown on Figure 3.

CONCLUSIONS

1. The Brucejack Claims are underlain by volcanic and sedimentary rocks of the Betty Creek and Salmon River Formations.
2. A rock geochemical and silt geochemical program has indicated weakly anomalous gold and silver values.
3. The area of the Brucejack claims is east of the bonanza gold-silver discoveries at Brucejack Lake by both the Newcana Joint Venture and Catear Resources Ltd.

The Newcana Joint Venture has announced the following results:

<u>ZONE</u>	<u>CATEGORY</u>	<u>TONS</u>	<u>AU OZ/T</u>	<u>AG OZ/T</u>
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Brucejack area	& Inferred			

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Golden Rocket	Drill Indicated	146,437	0.837	2.56
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The above gold-silver discoveries are structurally controlled, epithermal-mesothermal veins occurring in areas of syenodiorite intrusions and associated with areas of intense sericite (quartz-pyrite) alteration.

The presence of quartz stockworks in association with intense pyrite mineralization in areas of sericite alteration make the area an excellent exploration target.

4. An exploration program consisting of prospecting, silt geochemistry and geological mapping is recommended for the property.



## RECOMMENDATIONS

### Prospecting

All structural features on the property should be carefully prospected in order to evaluate the mineral potential. As well, all gossaned zones should be checked for all minerals associated with the gold, particularly arsenopyrite and tetrahedrite.

### Detailed Silt Geochemistry

Sampling should be conducted every 50 meters along stream beds on the property.

### Geological Mapping

The property should be mapped in conjunction with the silt sampling and prospecting programs. Detailed mapping would be concentrated over areas of newly discovered mineralization.

STATEMENT OF EXPENDITURES

Personnel

E.R. Kruchkowski, Geologist	2 days @ \$300/day	600.00
G. Pauls, Geological Assistant	2 days @ \$100/day	200.00

Food

\$20 per day x 4 mandays	80.00
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Camp Rental

\$25 per day x 4 mandays	100.00
--------------------------	--------

Geochemical Analysis

5 rock samples @ \$15 per sample	75.00
5 silt samples @ \$12 per sample	60.00

Helicopter

2½ hours x \$588.75 per hour	1,471.88
------------------------------	----------

Freight

50.00

Communications/Expediting Costs

100.00

Equipment Rental

50.00

Report

500.00

TOTAL	<u><u>\$3,286.00</u></u>
-------	--------------------------

REFERENCES

GROVE, E.W., 1986

Geology and Mineral Deposits of the Unuk River-Salmon River-Anyoz Area,  
British Columbia Ministry of Energy, Mines and Petroleum Resources,  
Bulletin No. 63.

CERTIFICATE

I, EDWARD R. KRUCHKOWSKI, Geologist, residing at 23 Templeside Bay, N.E., in the City of Calgary, in the Province of Alberta, hereby certify that:

1. I received a Bachelor of Science degree in Geology from the University of Alberta in 1972.
2. I have been practising my profession continuously since graduation.
3. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
4. I am a consulting geologist on behalf of Catear Resources Ltd.
5. This report is based on a review of reports, documents, maps and other technical data on the property area and on my experience and knowledge of the area obtained during programs in 1974 - 1987.

Date

April 27/88

E.R. Kruchkowski, B.Sc.

CERTIFICATE

I, GORDON W. SINDEN, currently residing at #2607, 123 - 10 Avenue S.W., Calgary, Alberta T2R 1K8, hereby certify that:

1. I am a geological technologist and have practised my profession since 1977.
2. I am a graduate of the Northern Alberta Institute of Technology (1977) in Mineral Resources Technology.
3. I am a Registered Engineering Technologist with the Alberta Society of Engineering Technologists.
4. This report is based on a review of reports, documents, maps and other technical data on the property area and on my own experience and knowledge of the area obtained during programs in 1982 - 1987.

april 27/88  
Date

Gordon Sinden  
Gordon W. Sinden, R.E.T.

APPENDIX I  
ANALYTICAL INFORMATION

LABORATORY: Loring Laboratories  
Calgary, Alberta

MESH SIZE: -80/stream sediments  
-80/rocks

EXTRACTION: For Au/Ag: Fire assay fusion,  
cupellation and acid  
dissolution of precious  
metal beads.

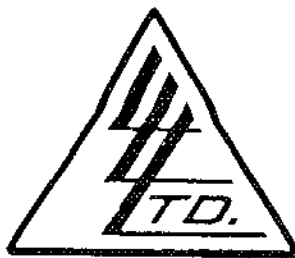
ANALYSIS: Atomic absorption

APPENDIX II  
ROCK GEOCHEMICAL ANALYSIS



To: BIG HORN DEVELOPMENT CORP.,  
400, 255 - 17th Avenue S.W.,  
Calgary, Alberta T2S 2T8  
 ATTN: Jack Wyder  
 cc: E. Kruckowski

File No. 30274  
 Date September 16, 1987  
 Samples Rock



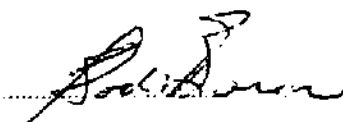
Certificate of  
 ASSAY of  
**LORING LABORATORIES LTD.**

Page # 4

SAMPLE No.	PPB Au	PPM Ag
KK-177	35	1.4
178	175	0.9
179	10	0.6
180	55	0.4
181	270	4.1
18506	+1000	30.0+
18507	+1000	9.5
18508	390	2.4
18509	+1000	12.8
18510	+1000	8.5
19455	+1000	16.8
19456	50	0.9
19457	105	1.1
19458	615	13.0
19459	25	1.1
19460	35	1.0
19461	+1000	3.8
19462	175	3.6
19463	310	1.2
19464	+1000	30.0+
19465	210	3.6
BJR-1	55	0.4
2	10	0.3
3	15	0.2
4	10	1.9
5	20	6.1

**I Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE  
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
 Pulps Retained one month  
 unless specific arrangements  
 made in advance.

  
 Assayer

APPENDIX III  
SILT GEOCHEMICAL ANALYSIS

BRUCEJACK 4 (5853)

BRUCEJACK 5 (5854)



ICEFIELD

ICEFIELD

ICEFIELD

ICEFIELD

WEAKLY PYRITIC,  
GOSSANED  
ROCKS

Helicopter  
Drop-off  
Point

July 24/88

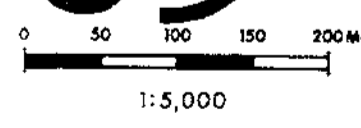
OCCASIONAL WEAKLY PYRITIC ROCKS  
July 17/88

SERICITIC  
SCHISTS  
HIGHLY  
PYRITIC

BJR-2 10,0.3  
 BJR-3 15,0.2  
 BJR-4 10,1.9  
 BJR-5 20,6.1  
 BJS-1 X 5,0.1  
 BJS-2 X 5,0.1  
 BJS-3 X 15,0.1  
 BJS-4 X 35,0.1  
 BJS-5 X 10,0.1  
 BJS-1 X NIL,0.2  
 BJR-1 55,0.4

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

ICEFIELD, 17,383



LEGEND

- Traverse
- LCP (Legal Corner Post)
- x Silt Sample Site
- Rock Geochemical Site
- GEOCHEMICAL ASSAY RESULTS  
10,0.1 Au-ppb, Ag-ppm
- Creek & Direction of Drainage

Helicopter  
Drop-off  
Point

CATEAR RESOURCES LTD.

BRUCEJACK 4 & 5  
SAMPLE LOCATION MAP

Scale: 1:5000	By:
Date: Apr. 1988	Revised: Figure: 3