

6284

GEOCHEMICAL REPORT

FED CLAIM

OMINECA MINING DIVISION

93L/10E

ASARCO INCORPORATED

(Vancouver)

by

D.G. MacIntyre

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

NO. _____

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GEOCHEMICAL REPORT

FED CLAIM

Omineca Mining Division

SUMMARY

The FED Claim was staked on July 17th and 18th, 1976, and a soil sampling grid was completed in late August. Results of the work were negative although several occurrences of pyritized float were found over an area approximately 800m x 200m.

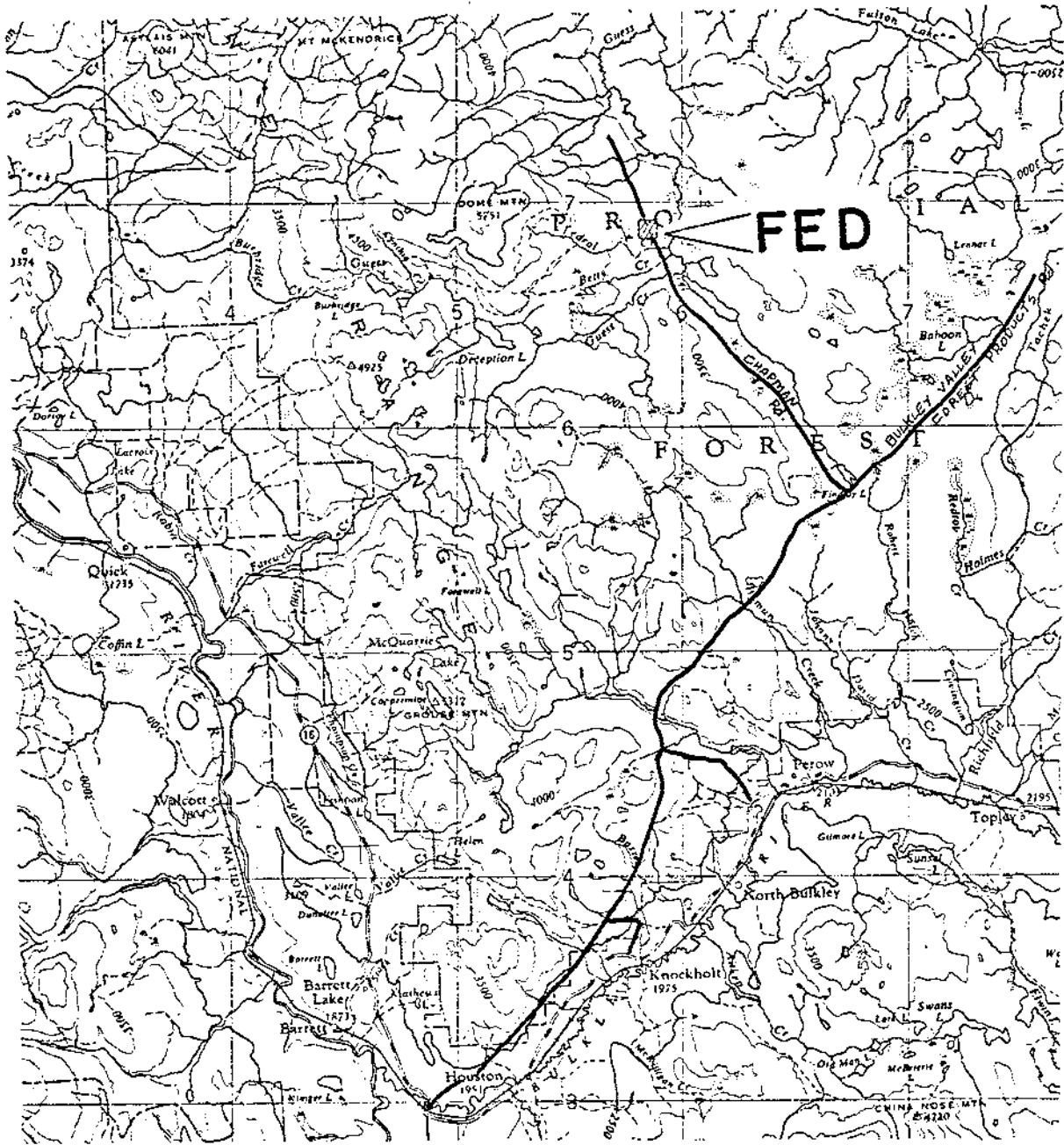
LOCATION AND ACCESS

The FED Claim is located in West Central British Columbia at Longitude 54°44', Latitude 126°32' (NTS 93L/10E, Omineca Mining Division), approximately 41 Km (25.4 miles) NNE of the town of Houston and 8 Km (5 miles) east of Dome Mountain (Figure 1). The FED Claim (Tag No. 10117) contains 4 units, and covers a relatively flat, drift-covered area just north of Federal Creek. Average elevation of the claim is 3350 feet above sea level.

The FED Claim is readily accessible via well maintained logging roads (Figure 1). However, these roads are presently in use 5 days a week and are restricted to radio-controlled traffic. Therefore, access to the property and surrounding area, is limited to weekends only.

WORK DONE

Two men spent a total of 10 man-days on the FED Claim. The work was done on July 23rd, August 2, 15, 22 and



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Fig. 1



FED CLAIM
Location

SCALE	DRAWN D. G. M.	DATE JAN. 1977	FILE NO. 93L/10E
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28. The following has now been completed.

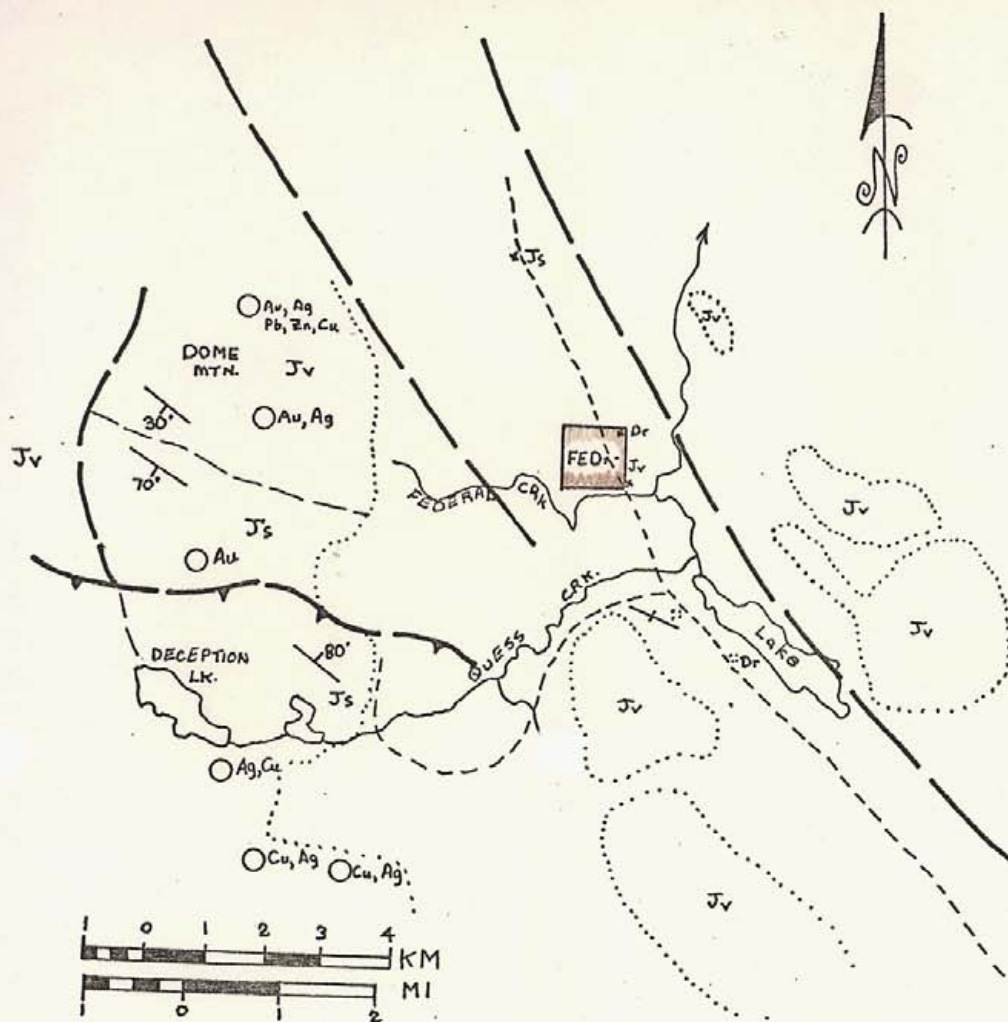
- (1) Location of 10 Km (6.2 miles) of ribbon line forming a 100 x 100m grid covering the claim.
- (2) Determination of Cu, Zn and Ag concentrations for 96 soil, one silt and ~~1~~⁴ rock chip samples. The total cost of this work, including wages, drafting and report preparation, was \$ 1,034.35. Expenditures are itemized in Appendix A.

REGIONAL GEOLOGIC SETTING

The regional geologic setting of the FED Claim is shown in Figure 2. The areas peripheral to the claim are underlain by calc-alkaline volcanic rocks of Jurassic age. These rocks are correlated with the Hazelton Group and have been uplifted and folded by late Jurassic and late Cretaceous orogenies. Bedding attitudes trend NW with steep dips to both the NE and SW. Major northwest-trending normal faults are inferred along the NE slope of Dome Mountain and in the valley to the east. (Figure 2)

PROPERTY GEOLOGY

A small outcrop of greenish-grey, chlorite-epidote-altered diorite was discovered in the extreme NE corner of the claim, suggesting this area is underlain by intrusive rocks. In the SE corner of the claim, road construction has exposed purplish-grey andesite and andesitic lapillituff. Approximately 500 meters N along the road, large angular blocks of dacitic crystal-lithic tuff have been



LEGEND

Js - Hazelton Group: argillite, greywacke, conglomerate, limestone
 Jv - Hazelton Group: andesitic to rhyolitic flows, pyroclastic rocks
 Dr - Topley Intrusions: diorite, quartz diorite

○ mineral occurrence ○ outcrop area 30° bedding attitude
 - - - geologic contact - - - normal fault - - - thrust fault

N.B. Geologic data from G.S.C.
 Map O.F. 351

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Fig. 2



**FED CLAIM
 Regional Geology**

SCALE	DRAWN	DATE	FILE NO.
	D.G.M.	Jan. 1977	93L/110E

overtumed. Similar rocks occur as angular float in isolated locations to the southwest. All of these rocks are considered to be part of lower volcanic division of the Hazelton Group. Hand samples are described in more detail in Appendix B.

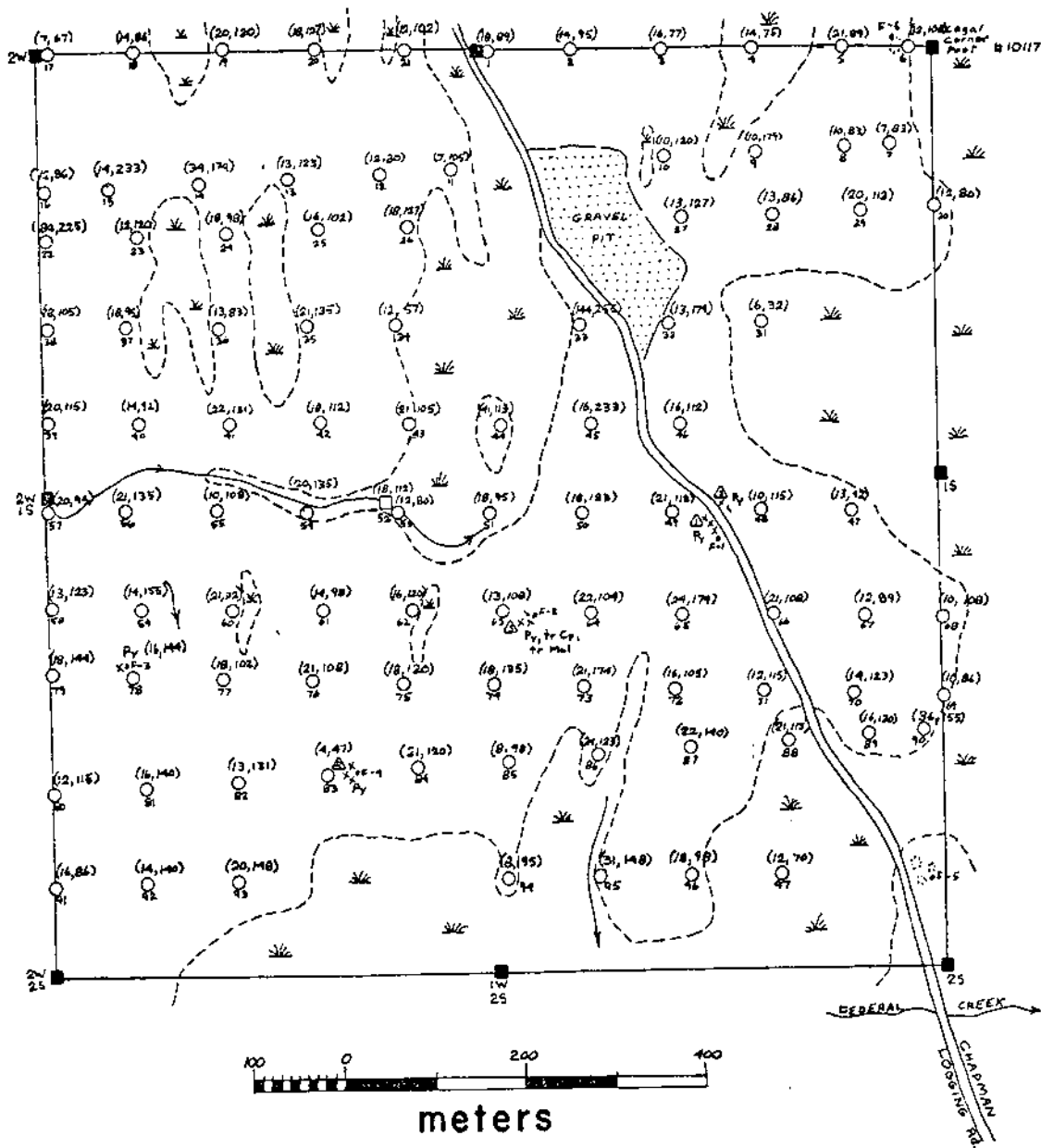
ALTERATION AND MINERALIZATION

Angular blocks of silicified crystal-lithic tuff, containing very finely disseminated pyrite and irregular quartz and quartz-carbonate stringers, were found along the road cut (F-1) and near soil sample sites 63(F-2) and 83(F-4). In addition, several pieces of subangular, badly weathered float containing up to 5% disseminated pyrite were found near soil sample site 78(F-3).

Sample F-2 also contained trace amounts of chalcocopyrite and malachite, mainly in quartz-carbonate veinlets. This sample was assayed (#16432) and contained 562 ppm Cu and 500 ppm Zn. However, other samples that were assayed did not contain significant concentration of base or precious metals.

GEOCHEMISTRY

In late August, a soil sampling grid was completed covering the entire FED Claim. A total of 97 soil samples, one silt sample and ~~3~~⁴ rock chip samples were collected and analyzed. Analytical results and laboratory procedures are given in Appendices C and D, respectively. Sample locations are shown on Figure 3.



LEGEND

- Outcrop
- ⊗ Swampy Area
- Soil Sample
- △ Rock Chip Sample
- ⊗ Angular Float
- Claim Post
- Silt Sample
- ⊗ Hand Specimen

(ppm Cu, ppm Zn)
(Sample No.)

ASSAY RESULTS

Sample No.	% Cu	% Zn	OZ/Ton	
			Ag	Au
△	<.01	.01	<.01	<.003
△	<.01	.01	.02	<.003
△	.05	.05	<.01	<.003
△	<.01	.02	<.01	<.003

SAMPLE DESCRIPTIONS

- F-1 Dacitic tuff. 1% pyrite in quartz stringers and as disseminations.
- F-2 Dacitic crystal-lithic tuff. Trace chalcopryite in quartz-carbonate stringers. .5-1% pyrite and chalcopryite in groundmass.
- F-3 Clay-altered tuff with 1% finely disseminated pyrite. Quartz-carbonate stringers common.
- F-4 Crystal lithic tuff with trace disseminated pyrite. Quartz-carbonate stringers common.
- F-5 Fine-grained andesite and lapilli-tuff cut by barren quartz veinlets.
- F-6 Medium-grained diorite.

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Fig. 3



**FED CLAIM
Geochemistry**

SCALE	DRAWN D.G.M.	DATE JAN. 1977	FILE NO. 93L/10E
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*R. MacIntyre
Jan 20, 1977*

The FED Claim is covered by sands and gravels of a fluvioglacial origin. Drainage is generally poor with wet swampy areas separated by elongate gravel mounds. Soil samples were taken from the B horizon at depths ranging from 15 to 40 cm.

Soils collected from the FED Claim generally contained low concentrations of Cu (mean 18.2 ppm), Zn (mean 116.7 ppm), and Ag (all < 0.5 ppm). Only samples 22 and 33 contain anomalous Cu and Zn concentrations, while samples 15 and 45 are anomalous in Zn only. These anomalies are probably due to organic or drainage accumulations of metal.

CONCLUSIONS

Soil sampling on the FED Claim has failed to define any significant geochemical anomalies. However, most of the claim is covered by transported fluvioglacial debris which could be masking any geochemical expression due to subsurface mineralization. Thus, the significance of sulfide mineralization which occurs in angular volcanic float over an area approximately 800 x 200m (2600' x 650') is uncertain.


D.G. MacIntyre.

DGMacI:sm

APPENDIX A

FED CLAIM

1976 EXPLORATION EXPENDITURES

2 men for 5 days, July 23, Aug 2, 15,
22, 28/76

Transportation, 740 miles - 62 gal @ \$0.97/gal	\$ 60.00
Meals @ \$8.16/man-day	81.60
Accommodation @ \$171.20/Mo	28.55
Analytical -- 97 @ \$2.85	276.45
5 @ \$19.25	96.25
Wages - D.G. MacIntyre	250.00
J. Sheen	141.50
Drafting, 2 days @ \$50/day & report preparation	100.00
Total Expenditures:	<u>\$ 1,034.35</u>

- of which \$ 800 is to be applied as assessment work on
the FED Claim.

APPENDIX B

FED CLAIM - SAMPLE DESCRIPTIONS

- F-1 Light greenish-grey fine-grained dacite, or dacitic tuff. Cut by widely spaced quartz stringers containing pyrite. Pyrite also occurs as very fine-grained disseminations in the groundmass of the dacite.
- F-2 Dark, pinkish to reddish-grey crystal-lithic tuff. Dacitic in composition. Cut by numerous quartz-carbonate stringers containing minor amounts of chalcopyrite and trace amounts of sphalerite and malachite. Groundmass contains 0.5-1% very finely disseminated pyrite and chalcopyrite. K-feldspar appears to be replacing plagioclase.
- F-3 Light pinkish-grey altered tuff? Contains approximately 1% finely disseminated pyrite. Cut by quartz-carbonate stringers and veinlets.
- F-4 Light grey crystal lithic tuff. Trace disseminated pyrite in groundmass. Cut by discontinuous quartz-carbonate stringers. Plagioclase crystal fragments slightly altered to clay.
- F-5 Dark reddish-grey fine-grained andesite. Cut by barren quartz veinlets. No sulfides present.
- F-6 Dark greenish-grey medium-grained diorite. Chlorite-epidote alteration present.

APPENDIX C

ANALYTICAL RESULTS

FED CLAIM



CHEMEX LABS LTD.

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NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 985-0648
AREA CODE: 604
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ASSAY

TO: American Smelting & Refining Co.
504 - 535 Thurlow Street
Vancouver, B.C.

CERTIFICATE NO. 31442
INVOICE NO. 17308
RECEIVED July 13/76
ANALYSED July 16/76

ATTN: **SKEENA ARCH PROJECT**
cc: D. MacIntyre

SAMPLE NO. :	% Copper	% Molybdenum	% Zinc	Oz/Ton Silver	Oz/Ton (F.A.) Gold
1 16403	< 0.01	0.001	0.01	<0.01	< 0.003
2 16404	< 0.01	< 0.001	0.01	0.02	< 0.003



MEMBER
CANADIAN TESTING
ASSOCIATION

R. Stewart
REGISTERED ASSAYER, PROVINCE OF BRITISH COLUMBIA



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CERTIFICATE OF ANALYSIS

TO: American Smelting & Refining Co.
504 - 535 Hurlow Street
Vancouver, B.C.

SKEENA ARCH PROJECT

ATTN: cc: D. MacIntyre

CERTIFICATE NO. 3836

INVOICE NO. 17997

RECEIVED Aug. 26/76

ANALYSED Aug. 30/76

SAMPLE NO. :	PPM Copper	PPM zinc	Rocks
3 16432	562	500	Fed.



CERTIFIED BY: *Hart Biddle*



CHEMEX LABS LTD.

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NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 985-0648
AREA CODE: 604
TELEX: 043-52597

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CERTIFICATE OF ASSAY

TO: American Smelting & Refining Co.
504 - 535 Thurlow Street
Vancouver, B.C.

ATTN: cc: D. MacIntyre SKEENA ARCH PROJECT

CERTIFICATE NO. 31699
INVOICE NO. 18054
RECEIVED Aug. 26/76
ANALYSED Sept. 1/76

SAMPLE NO. :	Oz/Ton	Oz/Ton
	Silver	Gold
34 16432	<0.01	<0.003



B. Swaiter
REGISTERED ASSAYER. PROVINCE OF BRITISH COLUMBIA



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 NORTH VANCOUVER, B.C.
 CANADA V7J 2C1
 TELEPHONE: 985-0648
 AREA CODE: 604
 TELEX: 043-52597

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- GEOCHEMISTS
- REGISTERED ASSAYERS

CERTIFICATE OF ASSAY

TO: American Smelting & Refining Co.
 504 - 535 Thurlow St.,
 Vancouver, B.C.
 V6E 3L2

ATTN:

Skeena Arch.

~~from Smithers~~

CERTIFICATE NO. 31727
 INVOICE NO. 18180
 RECEIVED Aug. 31/76
 ANALYSED Sept. 9/76

SAMPLE NO. :	Oz/Ton Silver	Oz/Ton Gold
4 16436 17	< 0.01	< 0.003



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R. L. Swaiter

REGISTERED ASSAYER, PROVINCE OF BRITISH COLUMBIA



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NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 985-0648
AREA CODE: 604
TELEX: 043-52597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 38422

TO: American Smelting & Refining Co.,
4504 - 535 Thurlow Street,
Vancouver, B.C.
V6E 3L2

INVOICE NO. 18137

RECEIVED Aug. 31/76

ANALYSED Sept. 7/76

ATTN: Skeena Arclay cci: Smithers

SAMPLE NO. :	PPM Copper	PPM Zinc	Rock Geochem
4 164 36	64	290	
STD.	104	200	



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ASSOCIATION

CERTIFIED BY:

B. Swaites



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 NORTH VANCOUVER, B.C.
 CANADA V7J 2C1
 TELEPHONE: 985-0648
 AREA CODE: 604

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CERTIFICATE OF ANALYSIS

TO: Asarco,
 #504 - 535 Thurlow St.,
 Vancouver, B.C.

Skeena Arch Project

ATTN: cc: MacIntyre, Smithers.

CERTIFICATE NO. 37877

INVOICE NO. 17537

RECEIVED July 28/76

ANALYSED Aug. 2/76

SAMPLE NO. :	PPM Copper	PPM Lead	PPM Zinc	PPM Silver
76FMS 1	18		89	< 0.5
2	14		95	< 0.5
3	16		77	< 0.5
4	14		75	< 0.5
5	21		89	< 0.5
6	12		108	< 0.5
7	7		83	< 0.5
8	10		83	< 0.5
9	10		179	< 0.5
10	10		120	< 0.5
11	7		105	< 0.5
12	12		80	< 0.5
13	13		123	< 0.5
14	34		174	< 0.5
15	14		233	< 0.5
16	12		86	< 0.5
17	7		67	< 0.5
18	14		86	< 0.5
19	20		120	< 0.5
20	18		127	< 0.5
76FMS21	12		102	< 0.5



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 ASSOCIATION

CERTIFIED BY:

Don MacIntyre



CHEMEX LABS LTD.

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CANADA V7J 2C1
TELEPHONE: 985-0648
AREA CODE: 604
TELEX: 043-52597

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CERTIFICATE OF ANALYSIS

TO: American Smelting & Refining Co.
504 - 535 Thurlow St.,
Vancouver, B. C.

CERTIFICATE NO. 38178
INVOICE NO. 17885
RECEIVED Aug. 19/76
ANALYSED Aug. 23/76

ATTN: cc: Smithers "Skeana Arch Proj."

SAMPLE NO. :	PPM	PPM	PPM	PPM
	Copper	Molybdenum	Zinc	Silver

76 FMS	22	84	225	< 0.5
	23	12	120	< 0.5
	24	18	98	< 0.5
	25	16	102	< 0.5
	26	18	127	< 0.5
	27	13	127	< 0.5
	28	13	86	< 0.5
	29	20	112	< 0.5
	30	12	80	< 0.5
	31	6	32	< 0.5
	32	13	179	< 0.5
	33	144	255	< 0.5
	34	12	57	< 0.5
	35	21	135	< 0.5
	36	13	83	< 0.5
	37	18	95	< 0.5
	38	18	105	< 0.5
76 FMS	39	20	115	< 0.5
Std.		104	200	



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CERTIFIED BY: *[Signature]*



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NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 985-0648
AREA CODE: 604
TELEX: 043-52597

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CERTIFICATE OF ANALYSIS

TO: American Smelting & Refining Co.
504 - 535 Thurlow St.,
Vancouver, B.C.

CERTIFICATE NO. 38179
INVOICE NO. 17885
RECEIVED Aug. 19/76
ANALYSED Aug. 23/76

ATTN: cc: Smithers
Skeena Arch Proj.

SAMPLE NO. :	PPM Copper	PPM Zinc	PPM Silver
76 FMS 40	14	92	< 0.5
41	22	131	< 0.5
42	18	112	< 0.5
43	21	105	< 0.5
44	41	115	< 0.5
45	16	233	< 0.5
46	16	112	< 0.5
47	13	92	< 0.5
76 FMS 48	10	115	< 0.5

filed



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AREA CODE: 604
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CERTIFICATE OF ANALYSIS

SEP 13 1976

CERTIFICATE NO.

38357

TO:

American Smelting & Refining Co.
504 - 535 Thurlow Street
Vancouver, B.C.

INVOICE NO.

18020

RECEIVED

Aug. 26/76

SKEENA ARCH PROJECT

CC: D. MacIntyre

ANALYSED

Aug. 31/76

ATTN:

SAMPLE NO. :	PPM Copper	PPM Zinc	PPM Silver
76FMS 49	21	112	<0.5
50	18	123	<0.5
FMS 51	18	95	<0.5
FML 52	18	112	<0.5
FMS 53	12	80	<0.5
54	20	135	<0.5
55	10	108	<0.5
56	21	135	<0.5
57	20	95	<0.5
58	13	123	<0.5
59	14	155	<0.5
60	21	112	<0.5
61	14	98	<0.5
62	16	120	<0.5
63	13	108	<0.5
64	22	144	<0.5
65	24	179	<0.5
66	21	108	<0.5
67	12	89	<0.5
68	10	108	<0.5
69	10	86	<0.5
FMS 70	14	123	<0.5

S/Keena

STD. 100 200



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Hout Biddle



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AREA CODE: 604
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TO: American Smelting & Refining Co.
504 - 535 Thurlow Street
Vancouver, B.C.

CERTIFICATE NO. 38420
INVOICE NO. 18062
RECEIVED Aug. 31/76
ANALYSED Sept. 2/76

ATTN: SKEENA ARCH PROJECT

SAMPLE NO. :	PPM	PPM	PPM
	Copper	Zinc	Silver

76 FMS	71	12	115	<0.5
	72	16	105	<0.5
	73	21	174	<0.5
	74	18	135	<0.5
	75	18	120	<0.5
	76	21	108	<0.5
	77	18	102	<0.5
	78	16	144	<0.5
	79	18	144	<0.5
	80	12	115	<0.5
	81	16	140	<0.5
	82	13	131	<0.5
76 FMS	83	4	47	<0.5
STD.		100	400	



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CERTIFIED BY:

[Handwritten Signature]



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TELEPHONE: 985-0648
AREA CODE: 604
TELEX: 043-52597

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CERTIFICATE OF ANALYSIS

TO: American Smelting & Refining Co.
504 - 535 Thurlow Street
Vancouver, B.C.

CERTIFICATE NO. 38421
INVOICE NO. 18062
RECEIVED Aug. 31/76
ANALYSED Sept. 2/76

ATTN: SKEENA ARCH PROJECT

SAMPLE NO. :	PPM Copper	PPM Zinc	PPM Silver
76 FMS 84	21	120	<0.5
85	8	98	<0.5
86	24	123	<0.5
87	22	140	<0.5
88	21	115	<0.5
89	16	120	<0.5
90	36	155	<0.5
91	16	86	<0.5
92	14	140	<0.5
93	20	148	<0.5
94	8	95	<0.5
95	31	148	<0.5
96	18	98	<0.5
76 FMS 97	12	70	<0.5



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APPENDIX D

ANALYTICAL PROCEDURES

LAB PROCEDURES FOR HANDLING, PREPARATION AND ANALYSES OF

GEOCHEMICAL MATERIALS.

Sample Preparation:

1. Samples are sorted numerically or in grid sequence and recorded on lab work sheets.
2. Soil and silt materials are air dried at 80°C. Drying time 12 - 16 hours.
3. Screen samples and retain all -80 mesh material. Other material of varying mesh size will be retained on request.
4. -80 mesh fraction is stored in powder seal coin envelopes for analyses and also for later dry storage. Geochem materials are retained for up to five years in Chemex storage facilities.

Sample Digestion, Chemical Preparation and Analyses.

1. For analyses of Cu, Mo, Pb, Zn, Co, Ni, Cd, Ag - a 0.5 gm sample of -80 mesh material is weighed into 22x175 mm test tubes. Detection limits 1 ppm or less.
2. Add 3 mls 70% HClO_4 and 2 mls conc. HNO_3 to sample. Slowly heat to 203°C. Digestion time 2-3 hours.
3. Add demineralized water to 25 ml volume, mix thoroughly, settle and analyse samples by standard atomic absorption procedures.
4. Gold (ppb) is analysed using a 5 gm sample of -80 mesh material. Sample is weighed into a crucible and ashed for 1 hour at 550°C. Residue is digested in aqua regia to dryness and dissolved in 25% HCl . Gold Bromide is extracted into MIBK and analysed by A.A. Procedures.
5. Uranium (ppm) is analysed fluorometrically. A 0.50 gm sample is digested in 4 M nitric to dryness. Digestion is repeated. A small portion of solution is transferred to a platinum dish and evaporated to dryness. Flux is added and sample is fused at 650°C. Fluorescence is determined using a Turner III Fluorometer.
6. Tungsten (ppm) is analysed colourimetrically using the dithol procedure. A 0.50 gm sample is mixed with pyrosulphate flux and fused in a closed furnace. Fused material is leached with HCl solution and a portion of sample is transferred to another test tube for complexation with zinc dithol reagent. Colour development is determined on a spectrophotometer.
7. Arsenic (ppm) is analysed colourimetrically by collecting arsine in pyridine and silver diethyldithiocarbamate reagent. Color intensity is determined using a flow through cell on a Spectronic 700 Spectrophotometer.

LAB PROCEDURES FOR HANDLING AND PREPARATION OF ROCK

GEOCHEMICAL MATERIAL.

1. Samples are sorted numerically and recorded on rock geochem lab sheets.
2. Samples are dried, then crushed through a jaw type crusher.
3. Secondary crushing to -1/8 inch is completed by passing sample through a gyro crusher.
4. Approximately 100 gms of crushed sample is split from reject for pulverizing and dried @ 80°C.
5. Sample is pulverized using a "Rocklabs" ring grinder.
6. Pulverized sample is retained in a suitably marked and numbered container.
7. Digestion and analytical technique for rock geochem materials is identical to that used for soils and silts.

STATEMENT OF QUALIFICATIONS

I, Donald G. MacIntyre, of 6020 Kalamalka Crescent,
Richmond, B.C., certify that:

- (1) I am a graduate of the University of British Columbia with a Bachelor of Science degree in Honors Geology, 1971.
- (2) I am a graduate of the University of Western Ontario with Master of Science (1974) and PhD (1977) degrees in Economic Geology.
- (3) I have ten years field experience in mineral exploration in British Columbia and the Yukon Territory.
- (4) The information contained in this report was compiled by myself and that the geochemical program described was under my direct supervision.

D MacIntyre

D.G. MacIntyre, PhD.,
Geologist,
Asarco Exploration Company
of Canada Limited.

13 May/77