825177

REPORT ON

J. G.; J. GUS AND AT LAST MINERAL CLAIMS

OWNED BY:

DUSTY MAC MINES LTD.

OSOYOOS M. D.

BRITISH COLUMBIA

by

D. M. CANNON, P. ENG.

AUGUST 13, 1968

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PART A

SUMMARY AND RECOMMENDATIONS

On the claim group owned by Dusty Mac Mines Ltd., there is an area of highly silicified volcanic breccia, the limits of which have not yet been determined. Associated with the silicification there is sparse sulphide mineralization in the form of tetrahedrite as well as identifiable native gold and silver.

It is recommended that a programme of detailed mapping and sampling be instituted immediately and that plans be made for follow-up subsurface investigation.

Cost Estimate

It is presumed that a minimum of three months time will be required and that it will be geologically mapped, geochemically sampled, test pitted and have, at least, preliminary percussion drilling.

SUMMARY AND RECOMMENDATIONS CONT'D

Estimated Costs Cont'd

Supervision:		
1 - Senior Geologist	4,500.00	
1 - Senior Geochemist	4,500.00	
Labor:		
4 - Line Cutters & Samples	10,000.00	
2 - General Laborers	3,600.00	
1 - Cobra Drillers	2,500.00	
	$ 25,100.00	$ 25,100.00
Living Expenses - ($6.50/man day)	5,500.00	5,500.00
Supplies and Expendibles	2,000.00	2,000.00
Assaying (Geochemical and Ore)	1,000.00	1,000.00
Drilling (Contract @ $5.00/ft)	60,000.00	60,000.00
TOTAL:		93,600.00
PLUS:		
Engineering, Administration and Contingencies @ 20%	18,720.00	18,720.00
		$112,320.00
SAY :		$115,000.00

PART B

INTRODUCTION

The metallic mineral showings on the Dusty Mac Property were examined on August 6, 1968 by Mr. M. Guiguet at the request of Mr. I. Shulman. On August 13, 1968 an additional examination was made by the writer.

On both occasions Messrs. J. and L. A. McDonald acted as guides to the property and the various exposures on it.

Title

No effort was made to check the title to the claims as this had reportedly already been done to the satisfaction of Mr. Shulman.

Location and Access

The property is located approximately one mile East of the South end of Skaha Lake in the Okanagan District of British Columbia. The claim group encompasses part of the village of Okanagan Falls.

A paved highway passes through Okanagan Falls and good dirt roads or passable trails extend to the showings.

INTRODUCTION CONT'D

History

The early history of the property is not known. Old claim posts with claim tags numbered 17885 Initial Post and 17832 Final Post were seen to be rotted almost completely away.

More recently the At Last claim was staked by Mr. Ewars of Okanagan Falls to cover some old adits, and still more recently the J. G. and J. Gus claims were staked.

During the past few weeks a very small amount of surface blasting has been done; most of it on Zone A on the At Last M. C.

WORK PERFORMED

Geological Mapping

The area has been mapped by H. W. Little, of the Geological Survey of Canada. (See map 15-1961 - Kettle River West Half). There has been no detailed geological mapping done on the property.

Geochemical, Geophysical Surveys

There has been no geochemical or geophysical work completed.

Drilling

The property has not been drilled.

Surface Trenching

Four small surface trenches have been blasted into Zone A, and two blasted on Zone B. (See attached Map). A total of about 25 cubic yards of rock have been extracted.

Underground Development

Three short adits were driven by early prospectors near Zone A but did not intersect it. No underground work has been done in recorded time.

WORK PERFORMED CONT'D

Sampling

Recorded sampling has all been done from surface or near surface exposures. Mr. M. Guiguet collected conventional chip-channel samples across the A Zone and from the two pits on the B Zone. In addition muck samples were collected from the material thrown out of the two pits on the B Zone.

The writer collected no samples from the A Zone. One check sample was channel across the bottom of the South pit on the B Zone. In addition a 60-pound sample of the muck from the two pits was taken, chips from all brecciated outcrops were collected, and two grab samples chipped from outcrop to the South of Pit S.

GEOLOGY

Regional Setting

The regional geology is recorded on Map 15-1961 published by the Geological Survey of Canada.

It shows the section to the SouthEast of Skaha Lake to be underlain by Precambrian schist and gneiss of the Monashee Group. To the immediate SouthEast, South and SouthWest of the Lake the Monashee Group is overlain by a rectangular-shaped segment of fragmental rock that has been classified as being Eocene or Oligocene in age. Similar Oligocene rocks are to the West and SouthWest.

To the North the schists and gneisses are intruded by the Cretaceous Nelson plutonic rocks and immediately to the SouthEast of the Oligocene segment there are two small plugs of Cretaceous granodiorite (Valhalla Formation).

Rock Types

On the claim group only two rock types were encountered:

Breccia

This Member consists of coarse to fine, mostly angular fragments of slightly porphyritic andesite in which the fragments have been recemented by hard, vitreous, slightly crystalline, glassy quartz. Many of the fragments are bleached and are extensively silicified.

GEOLOGY CONT'D

Rock Types Cont'd

Andesite Porphyry

This rock adjoins the breccia on the West. It is fairly massive, structureless and hard. It is comprised of a very fine grained matrix containing small distinct mafic crystalls, probably hornblende.

Structure

The most prominent structure is the Zone B breccia, which trends North - NorthWest and can be traced by surface outcrop for several hundred feet in both directions from the two surface pits. (See sketch). The breccia may be associated with a strong fault that was mapped by the G. S. C as striking S 35° E. The fault forms the contact of the Oligocene rocks and Precambrian rocks.

At Zone A a group of four N 20° W trending trenches expose a zone, the strike and dip of which cannot be determined. Although more heavily mineralized with sulphides than Zone B, the A Zone closely resembles it and there may be a structural relationship between the two.

GEOLOGY CONT'D

Rock Alteration

Rock alteration is confined to the breccia zone and is comprised of:

1. Surface oxidation, which extends to a usual depth of 6 inches to 14 inches. It is essentially a breakdown of iron sulphides with the resultant formation of limonite which is deposited as a thin film on the myriad of fracture faces.

2. Silicification, resulting in the formation of reticulated quartz stringers filling the interstitial spaces between the breccia fragments and the partial replacement of the fragments by quartz.

MINERALIZATION

Zone A

In Zone A metallic mineralization is comprised of pyrite, chalcopyrite and tetrahedrite together with a thin film of limonite and malachite. All are associated with quartz veins and stringers in a brecciated shear zone.

Zone B

Metallic mineralization in Zone B is exceptionally scarce. Minute specks of tetrahedrite are scattered throughout most of the rock and in some places there is a bluish-grey tinge to the rock that may be caused by fine grained tetrahedrite.

Visible native gold and silver have been identified from two different locations.

There is very scant malachite stain in much of the near surface material.

ASSAYS

Sample No.	Location	Width	Au. oz/ton	Ag. oz/ton	% Cu.	% MoS_2
123	Zone A - Tr. #2	10'	0.05	5.9	0.31	0.015
124	Zone A - Tr. #2	10'	0.08	10.6	0.34	0.020
125	Zone A - Tr. #3	10'	0.09	2.0	0.12	0.010
126	Zone A - Tr. #4	5'	0.36	6.3	0.15	0.015
127	Zone A - Tunnel	Muck	0.02	3.2	0.56	-
128	Zone A	Muck	0.01	0.8	0.17	-
129	Zone A - Tunnel	Muck	0.07	0.10	0.34	-
130	Zone A -	Surface Vein Muck	0.01	0.80	0.19	-
131	Bet. A & B	Tunnel Muck	0.01	Tr.	0.02	-
132	Zone B - Pit S	Chip Channel	0.23	3.1	0.02	-
133	Zone B - Pit S	Muck	0.20	0.8	0.03	-
134	Zone B - Pit N	Chip Channel	0.51	4.1	0.03	-
135	Zone B - Pit N	Muck	0.21	2.8	0.02	-

ASSAYS CONT'D

Sample No.	Location	Width	Au. oz/ton	Ag. oz/ton	% Zinc
333	Zone B - Pit S	Channel Bottom of Pit 4.1',	.81	1.57	0.22
334	Zone B - 228' S of Pit S	Grab of Surface Outcrop - Grey Cu.	2.58	30.47	-
335	Zone B - 400' S of Pit S	Crystal fragments Dissem. Sulphide.	.20	1.42	-
336	Zone B	Chips from out-crops S of Pit S.	.06	.44	-
337	Zone B	Chips from Outcrops N of Pit S.	.02	.43	

METALLURGY

No metallurgical investigations have yet been made.

ORE RESERVES

No ore reserves can be calculated at this time.

SERVICES

The geographical location of this property is ideal. If there is an orebody on it, only a minimum of expense would be required to install power, transportation, mining and milling facilities. Personnel could be housed at nearby Okanagan Falls, BC.

ECONOMIC ASSESSMENT

Capital Cost

No estimate of preproduction costs can be made until more is known of the mineralization.

Operating Costs

Operating costs for either an underground or open pit mine would be favorable.

CONCLUSIONS AND GENERAL COMMENT

The host rock and mineralization in the B Zone is unprepossessing and would normally be discarded without an assay. The identification of free gold and silver explains in part the assays received but the very sparse grey copper must also have an inordinately high precious metal content.

This zone cannot be adequately tested without a good programme of work.

Zone A is more spectacular in appearance than Zone B. It has not had sufficient investigation, but it has the general appearance of a smaller deposit. If Zone B is tested, some additional work should be programmed for Zone A.

Respectfully Submitted,

D. M. Cannon, P. Eng.

16 August 1968

PART C

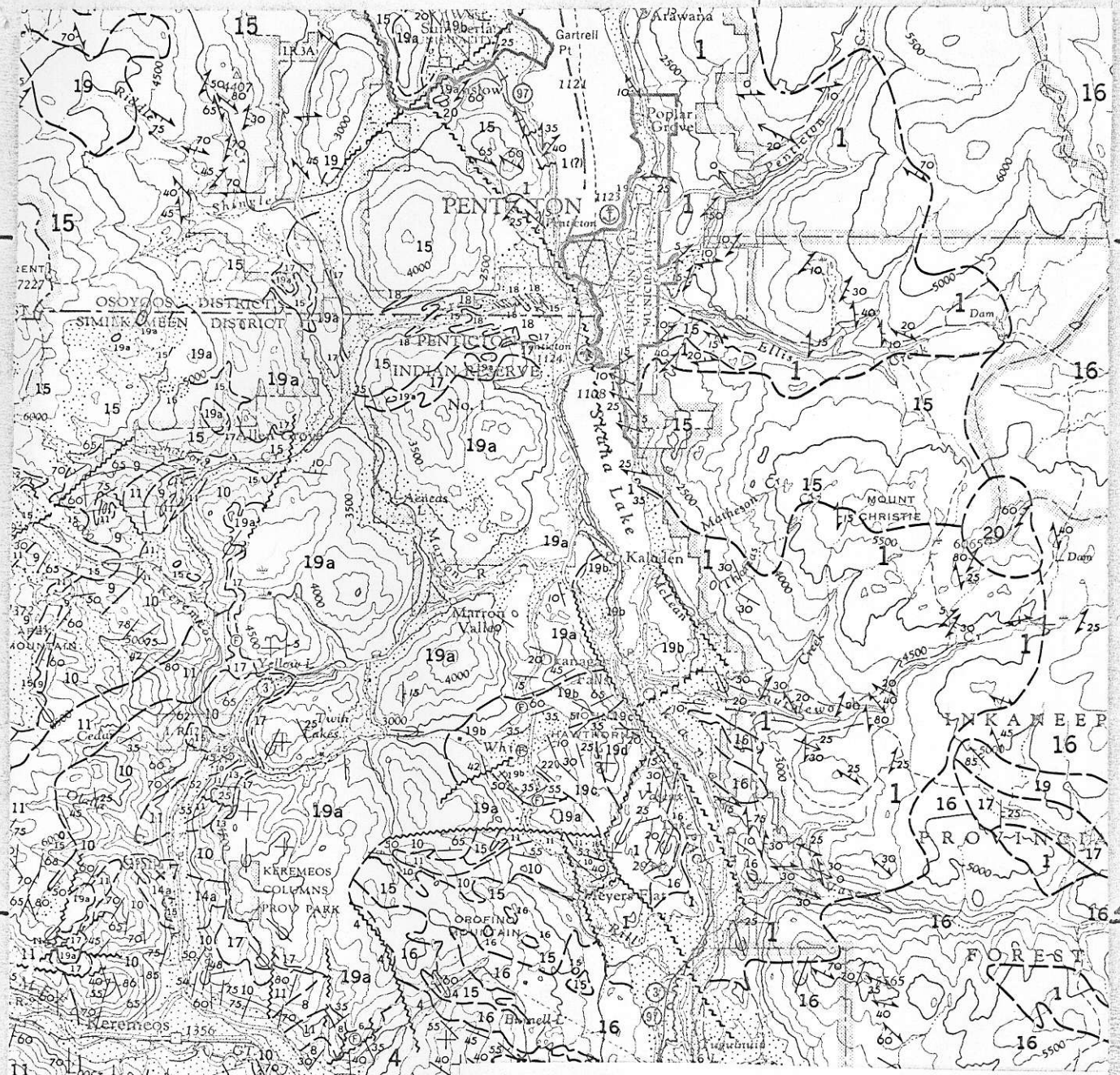
REFERENCES AND DEFINITIONS

References:

Report of Sampling	M. Guiguet 1968
G. S. C. Map 15-1961	H. W. Little 1961

Definitions:

Volcanic Breccia:	Fragments of slightly porphyritic andesite, mostly sharply angular but some are rounded; all silicified and recemented together with quartz. Some of the quartz is slightly crystalline.
Tetrahedrite :	This mineral is likely one of the Tetrahedrite family but could probably be more accurately identified as Freibergite.



MAP 15-1961
(REVISION OF MAP 538A)

GEOLOGY

KETTLE RIVER
(WEST HALF)

BRITISH COLUMBIA

Scale: One Inch to Four Miles = $\frac{1}{253,440}$

Miles

4 2 0 4 8 12

Approximate magnetic declination, 23° 00' East

DRILLING COST: (Table I Cont'd)

Drill & Compressor Rental: $3,000 mo/9,333	- $0.32		
Fuel Oil, 8 g.p.h. @ $0.20/gal.	- 0.04		
Lubricants	- 0.01		
Repairs & Maintenance	- 0.14		
Bits and Rods	- 0.11		
	$0.62		
Whence, drilling cost/ton before labour charges - $0.62 / 2.25		- $0.28	
Explosives		- 0.15	
Labour:			
Driller/Shift inc. fringes	$38.00		
Helper / " " "	36.80		
Mechanic/ " " "	40.00		
	114.80		
@ 500 tons/shift, cost/ton		- 0.23	
		$0.66	
COST/TON ORE BROKEN - $0.66 x 1.84			- $ 1.21

OVERHEAD CHARGES:

Supervision:

Project Manager, 2 months @ $2,000	- $4,000	
Junior Engineer, 2 " @ $1,000	- 2,000	
Helper-Sampler, 2 " @ 600	- 1,200	
	$7,200	
Per Ton - $7,200 / 18,000	-	$0.40
Assaying: 1,000 samples @ $5.00 per sample	-	0.28
Engineering & Administration:	-	0.17 — 0.85

LOADING, HAULING & STOCKPILING

Rental of 4 yd. loader & 25 ton truck @ $2,500/mo. per ton	- $0.28	
Load and Haul Ore, 1,000 ft.	- 0.20	
Load and Haul Waste, 1,000 ft.	- 0.17	0.65
		$2.71
Contingencies, 10%		0.27
GRAND TOTAL COST/TON ORE DELIVERED TO STOCKPILE		$2.98
	say,	$3.00

TABLE II

SILICA, ALUMINA AND IRON GRADES

Section	Tons Assigned	SiO_2	Al_2O_3	Fe
10,000	6,666	81.3	5.86	1.7
9,975	-	83.8	5.60	1.0
10,025	5,500	80.8	5.50	1.8
10,050	3,200	78.0	4.14	1.7
10,100	6,500	72.3	10.60	2.2
10,150	10,500	85.5	3.90	1.5
10,200	-	82.1	5.10	1.7
	32,366	80.4	5.9	1.8

Subsequent to the selection of the above samples, a new ore reserve was calculated, based on a three-pit mining sequence and no reserves are now assigned to sections 9,975 and 10,200.

TABLE III

MILLING COST

(Flotation @ 100 tons per day)

		Per Ton
Overall Supervision	-	$ 0.67
Labour, 5 men @ $35/shift	-	1.75
Sampling & Assaying	-	0.15
Reagents and steel	-	0.25
Operating & Maintenance Supplies	-	0.75
Power	-	0.30
Heat, Water, Tailings Disposal	-	0.10
		$3.97
	say,	$4.00

TABLE IV

CAPITAL COST FLOTATION MILL

(100 tons per day)

Purchase, second hand equipment	-	$100,000
Delivery	-	2,500
Housing	-	25,000
Installation	-	60,000
Design	-	10,000
Electrics	-	25,000
Water Supply	-	20,000
		$242,500
	say,	$250,000

APPENDIX "A"

SAMPLE SELECTION FOR METALLURGICAL TESTING AND DETERMINATION OF SiO_2 AND AL_2O_3

Ore reserves are based on the results of both diamond drill and percussion holes. Because there is a remote possibility of salting in the latter, only the diamond drill cores were used in compiling samples. Where assay office rejects were available these were taken; otherwise the remaining half cores were used.

Significant results are available on holes from sections 9,975, 10,000, 10,025, 10,050, 10,100, 10,150 and 10,200. Some additional samples were taken of ore-grade material from holes outside the ore-reserve boundaries to provide additional test material if required.

Table A-1 shows a list of sections with samples selected.

Samples for each of the seven significant sections were made up by combining the core from the various holes, weighted by length of ore intersection in each hole. Table A-2 gives details.

The seven section samples were each assayed for silica and alumina. For purposes of metallurgical testing, however, all except the sample from section 9,975, which was too small, were combined into a single sample by weighting on the basis of ore-reserve tonnage calculated for each section. The weights assigned are shown in Table A-3.

Table A-4 sets out the calculations leading to an estimate of the average grade of each section and of the final metallurgical sample. This was expected to assay 0.32 oz/ton gold and 6.1 oz/ton silver. The actual values obtained were 0.30 oz/ton gold and 5.9 oz/ton silver. This is above the ore reserve grade due to the omission of the percussion hole samples but, is considered sufficiently close to be satisfactory for metallurgical investigations.

"CONFIDENTIAL" November 26th, 1971.

Memo. To: G. H. Laycraft

From: James R. Glass

Subject: DUSTY MAC

I have gone over all the information on the Dusty Mac deposit.

Cannon-Hicks figures on tonnage and grade of 67,790 tons of 0.2304 Au/ton and 4.9656 Ag/ton work out although I disagree on the distribution of this ore.

The Noranda figure of 76,400 tons of .20 Au/ton and 4.2 Ag/ton takes in some waste material and would be easier to mine because of this but would not be as attractive on a dollar return basis.

The ore zone is open to the north and the last three northern sections are open to the east. Noranda has drilled 100' north of the ore zone and have low grade mineralization in three holes.

These holes are 50' apart and return the following:

		Au.	Ag.	Gross
Hole #35	25' - 50'	.10	2.90	$ 8.82
Hole #36	10' - 20'	.18	3.25	12.43
Hole #37	5' - 15'	.16	0.25	6.43

One hole another 100' north of these three holes collared in the breccia and returned the following:

		Au.	Ag.	Gross
Hole #40	4' - 20'	.07	1.14	$ 5.07

Hole #48 collared in the andesite, another 100' north of Hole #40 along strike from the breccia, returned from 110' - 130' 0.04 Au. and 0.4 Ag. for a gross of $2.20.

Since the Cannon "drill indicated" ore zone is only 200' long this additional Noranda information is extremely important. The values are low but I expect some sections to run to ore grade in this 200' so feel that we have a chance of increasing tonnage by a factor of from 20% to 50%.

Noranda's soil sampling has outlined the zone very well, but their pattern of sampling probably reflects the overburden thickness so they did not extend their grid too far. There is one Noranda anomaly which should be checked by further soil sampling. If results are positive, trenching should be done.

Cannon lost sight of the "target" at an early date. Twenty diamond drill holes and one hundred and one percussion holes drilled on 25 foot centres is extremely excessive when the target zone was demonstrated to be about 20' thick at an early date. The second row of diamond drill holes on section 10,125 N should not have been done. On the other hand, holes in a N-S line should have been done.

I cannot argue with Cannon's costs on mining and milling. They are well done. It should be noted that silver has dropped in price since the calculations.

TABLE A - 1

METALLURGICAL SAMPLE LIST

Line	D.D.H. Nos.	Footage	Tons Assigned
9,800	Nil		170
9,825	Nil		3,170
9,850	Nil		1,570
9,875	Nil		2,470
9,900	Nil		2,790
9,925	Nil		2,170
9,950	61	5'	2,000
9,975	20	10'	5,180
10,000	1	35'	
	2	30'	
	3	30'	
	4	10'	8,600
	5	10'	
	6	30'	
	7	20'	
	45	5'	
10,025	9	20'	
	10	30'	6,900
	11	20'	
	12	35'	
	13	15'	
10,050	60	10'	8,300
	69	30'	
10,075	Nil		5,300
10,100	25	30'	
	26	15'	3,800
10,125	Nil		11,100
10,150	59	65'	14,100
10,175	Nil		12,200

METALLURGICAL SAMPLE LIST

Line	D.D.H. Nos.	Footage	Tons Assigned
10,200	30	5'	
	31	35'	6,100
	47	10'	
	58	10'	
10,300	35	10'	
	36	10'	Nil
	37	5'	
10,400	40	10'	Nil

TABLE A - 2

METALLURGICAL SAMPLE - Makeup of Section Samples

Section	Hole No.	Length Feet	Weight %
9,975	20	10	100
10,000	1	5	4
	2	10	7
	3	35	26
	4	30	22
	5	10	7
	6	10	7
	7	30	22
	45	5	5
10,025	9	20	17
	10	30	25
	11	20	17
	12	35	29
	13	15	12
10,050	60	10	20
	69	40	80
10,100	25	30	67
	26	15	33
10,150	59	65	100
10,200	30	5	8
	31	35	58
	47	10	17
	58	10	17

TABLE A - 3

METALLURGICAL SAMPLE - Section Weighting

Section	Assigned Tons	Weight %
10,000	8,600	18
10,025	6,900	14
10,050	8,300	17
10,100	3,800	8
10,150	14,100	30
10,200	6,100	13
	47,800	100

TABLE A - 4

METALLURGICAL SAMPLE - Grade Estimate

Section	Hole No.	Grade Au oz/ton	Grade Ag oz/ton	Weight %	Weighted Grade Au oz/ton	Weighted Grade Ag oz/ton
10,000	1	0.59	13.1	4		
	2	0.04	2.0	7		
	3	0.02	1.4	26		
	4	1.25	14.1	22	0.37	6.8
	5	0.50	11.9	7		
	6	0.24	15.7	7		
	7	0.08	2.7	22		
	45	0.12	3.1	5		
10,025	9	0.29	5.8	17		
	10	0.52	12.6	25		
	11	0.38	9.1	17	0.26	7.0
	12	0.02	3.0	29		
	13	0.09	3.2	12		
10,050	60	0.46	9.0	20	0.36	5.2
	69	0.34	4.3	80		
10,100	25	0.12	2.8	67	0.11	2.6
	26	0.08	2.1	33		
10,150	59	0.27	6.0	100	0.27	6.0
10,200	30	0.10	0.8	8		
	31	0.99	14.4	58	0.59	10.3
	47	0.02	8.7	17		
	58	0.08	2.1	17		

SUMMARY

METALLURGICAL SAMPLE

Section	Grade		Weight	Weighted Grade	
	Au oz/ton	Ag oz/ton	%	Au oz/ton	Ag oz/ton
10,000	0.37	6.8	18		
10,025	0.26	7.0	14		
10,050	0.36	5.2	17	0.33	6.4
10,100	0.11	2.6	8		
10,150	0.27	6.0	30		
10,200	0.59	10.3	13		

APPENDIX B

TENTATIVE COMINCO TERMS FOR PURCHASE OF SILICEOUS ORE

NOTE:

Cominco will purchase siliceous material either as flux or as siliceous ore. Terms are identical except that flux is not sampled and there is no payment for metallic content. Hence, for Dusty Mac, the material would have to be handled as siliceous ore.

PAYMENTS:

Gold - Pay for 95% of contained gold with a minimum deduction of 0.03 oz/ton at London price less $1.25/oz.

Silver - Pay for 94% of contained silver with a minimum deduction of one oz/ton at Handy and Harmon unrefined quote less one cent/oz.

Silica - Pay for 100% of contained silica at $0.075/unit.

DEDUCTIONS:

Silica: (100% - actual content %) x $0.08

Al_2O_3 : $0.15/unit.

Fe : $0.50/unit.

Handling: $1.00 - $2.50 (see below)

Over 6% Al_2O_3 is not desired. Individual lots carrying more than this would not be rejected, but this should be the cumulative target. The smelter has an overall limited

APPENDIX B (Cont'd)

capacity to absorb alumina.

QUANTITIES:

Would probably require 1,000 tons per month up to, depending on other deliveries of siliceous materials, a maximum of 1,500 tons per month.

LOTS:

For a continuous operation, 500-ton lots are optimum. This is the daily capacity of the larger crusher - sampling unit. Handling charges through this unit are $1.00 per ton. Smaller lots are handled through a smaller unit with handling charges running up to $2.50 per ton.

DELIVERY:

May be by truck or gondola rail car.

With trucks, loads are dumped in the yard until a lot (500 tons) has accumulated.

With cars, these are switched to a yard siding (with consequent demurrage) until a lot has accumulated.

LUMP SIZE:

The crushing and sampling plants are integral so all material must go through the crusher. There is no reduction in handling charges for pre-crushed material.

Maximum lump size is 12". Larger lumps are hand-broken at day-labour rates.

APPENDIX B(2)

NET SMELTER RETURN PER TON, RAW ORE

Using the January 1971 ore reserve calculation, the overall grade may be cited as:

Gold	-	0.23 oz/ton
Silver	-	4.9 oz/ton
Silica	-	80.4%
Alumina	-	5.9%
Iron	-	1.8%

Payments:

Gold:	(0.23 x 95%) x $37.50 - $1.25	-	$7.92
Silver:	(4.9 x 94%) x $ 1.75 - $0.01	-	8.01
Silica:	80.4 x $0.075	-	6.03
			$21.96

Less:

Silica:	(100.0 - 80.4) x $0.08 -	$1.57	
Alumina:	5.9 x $0.15 -	.87	
Iron:	1.8 x $0.50 -	.90	
Handling:	-	1.00	4.34
Net Before Mining & Freight	-		$17.62

APPENDIX C

TENTATIVE COMINCO TERMS FOR PURCHASE OF HIGH GRADE CONCENTRATES

Gold - Pay for 95% of contained gold with a minimum deduction of 0.03 oz/ton at London price less $1.25 oz.

Silver - Pay for 94% of contained silver with a minimum deduction of one oz/ton at Handy and Harman unrefined quote less one cent per ounce.

DEDUCTIONS:

Treatment Charge	-	$9.00 per dry ton.
Container Handling	-	$4.00 per dry ton.
Sampling and Assaying	-	$250.00/lot, maximum 15 tons (or $16.67 per dry ton).
Iron penalty	-	$0.50/unit over 0.1%.
Arsenic penalty	-	$2.50/unit over 0.1%.

APPENDIX C(2)

NET SMELTER RETURN, FLOTATION CONCENTRATE

CONCENTRATE GRADE:

Gold - 14.5 oz/ton.

Silver - 255.6 oz/ton.

Iron - 8.6%

Arsenic - 0.05% (below penalty limit)

PAYMENTS:

Gold	- (14.51 x 95%) x ($37.50 - $1.25)	- $499.34
Silver	- (255.6 x 94%) x ($1.75 x $0.01)	- $418.06
		$917.40

DEDUCTIONS:

Treatment	-	$9.00	
Handling	-	4.00	
Sampling, etc.	-	16.67	
Iron Penalty	-	4.25	
Freight	-	10.00	43.92

NET SMELTER RETURN/TON CONCENTRATE $873.48

NET SMELTER RETURN/TON ORE - $\frac{\$873.48}{52}$ - $16.80