827980

Metall Mining Corporation

Summary Report on the

SENECA PROPERTY

New Westminster Mining Division

NTS 92H/5 February 25, 1994

Owner: International Curator Resources

Operator: Metall Mining Corporation

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Vancouver, B.C.

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Introduction

The Seneca property was optioned by **Metall Mining Corporation (MMC)** (formerly Minnova Inc.) from International Curator Ltd. under an agreement dated April 25th, 1990. This report summarizes the exploration that has been carried out since that time and discusses future options.

The agreement allows for **MMC** to earn a 51% interest in the property by expending $1.3m by December 31st, 1995 and making payments totaling $300,000. An additional 9% may be earned by funding a further $800,000 in exploration by December 31st, 1998. As of December 31st, 1993 expenditures totaled $1,380,543.41 and option payments totaled $190,000. In order to vest at the 51% interest level **MMC** would be required to pay the remaining $110,000 of option payments ahead of schedule. No decision to do so has been made, therefore we continue to fund all exploration expenditures.

Exploration History

The Seneca property has a long history of exploration dating back to the original discovery of sulphides during logging operations in 1950. This history is summarized in Appendix 1 along with a bibliography of available information prior to **MMC**'s involvement.

At the time of optioning in 1990, it was evident that Seneca required an integrated, systematic exploration program to tie together and expand upon the work of the past. More specifically it required the following:-

- relogging and interpretation of all available drilling
- a comprehensive lithogeochemical evaluation of alteration trends
- compilation of all available surveys at 1:5000
- 1:5000 regional mapping
- additional drilling of the Seneca horizon, especially to the north

Work Done By MMC (Minnova)

The following table compiles the work carried out since the 1990 option:-

Table 1. MMC(Minnova) Work History

	1990	*1991*	*1992*	*1993*	*Total*
Linecutting	60.4	23.9		54.8	139.1
Soils	1,641	796			2,437
Rock lithos	249	74			323
Core lithos	484	180	269		933
Assays	71	134	44		249
Relogging	136 holes				136 holes
Geophysics		13.2km+3 holes DEEPEM	9km+6 holes MELIS	45.2km DEEPEM	67kms 9 holes
Drilling (m)	387.7 1 hole	5,359.3 20 holes	6,361.5 20 holes		12,108.5 41 holes

In addition, new claims have been staked northwest along the Chehalis River valley to cover possible extensions to the mineralized stratigraphy. The current property status is listed in Appendix II.

Geology and Mineralization

The property covers the southwest portion of the Harrison Lake formation. The Harrison Lake formation consists mainly of intermediate to felsic pyroclastics, flows and related epiclastic rocks of Middle Jurassic age. The Seneca deposit, shown in Figure 1, is associated with a felsic flow/dome complex in the lower part of the Harrison Lake. In 1983 Wright Engineers of Vancouver calculated a possible reserve of 533,000 tons of .91% Cu, 7.1% Zn, 69 g/t Ag, and 1.44 g/t Au but cautioned the zone had been segmented. Subsequent drilling demonstrated that the deposit does not form a continuously

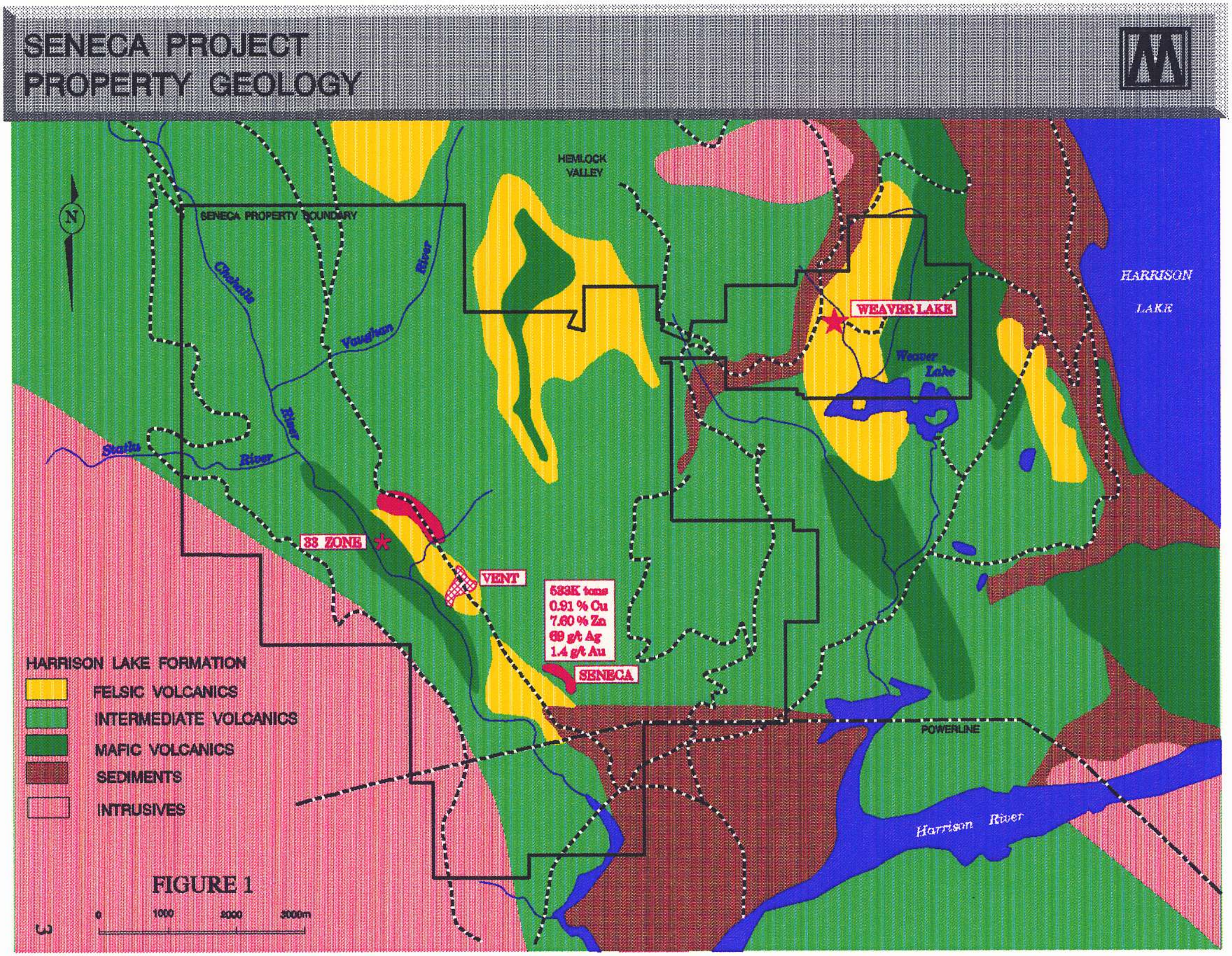

SENECA PROJECT
PROPERTY GEOLOGY
HEMLOCK VALLEY
SENECA PROPERTY BOUNDARY
Chehalis
River
Vaughan
River
Statlu
River
HARRISON
LAKE
WEAVER LAKE
Weaver
Lake
33 ZONE
VENT
533K tons
0.91 % Cu
7.60 % Zn
69 g/t Ag
1.4 g/t Au
SENECA
POWERLINE
Harrison River
HARRISON LAKE FORMATION
FELSIC VOLCANICS
INTERMEDIATE VOLCANICS
MAFIC VOLCANICS
SEDIMENTS
INTRUSIVES
0
1000
2000
3000m

FIGURE 1

mineable body. Several publications listed in Appendix I adequately describe the regional setting.

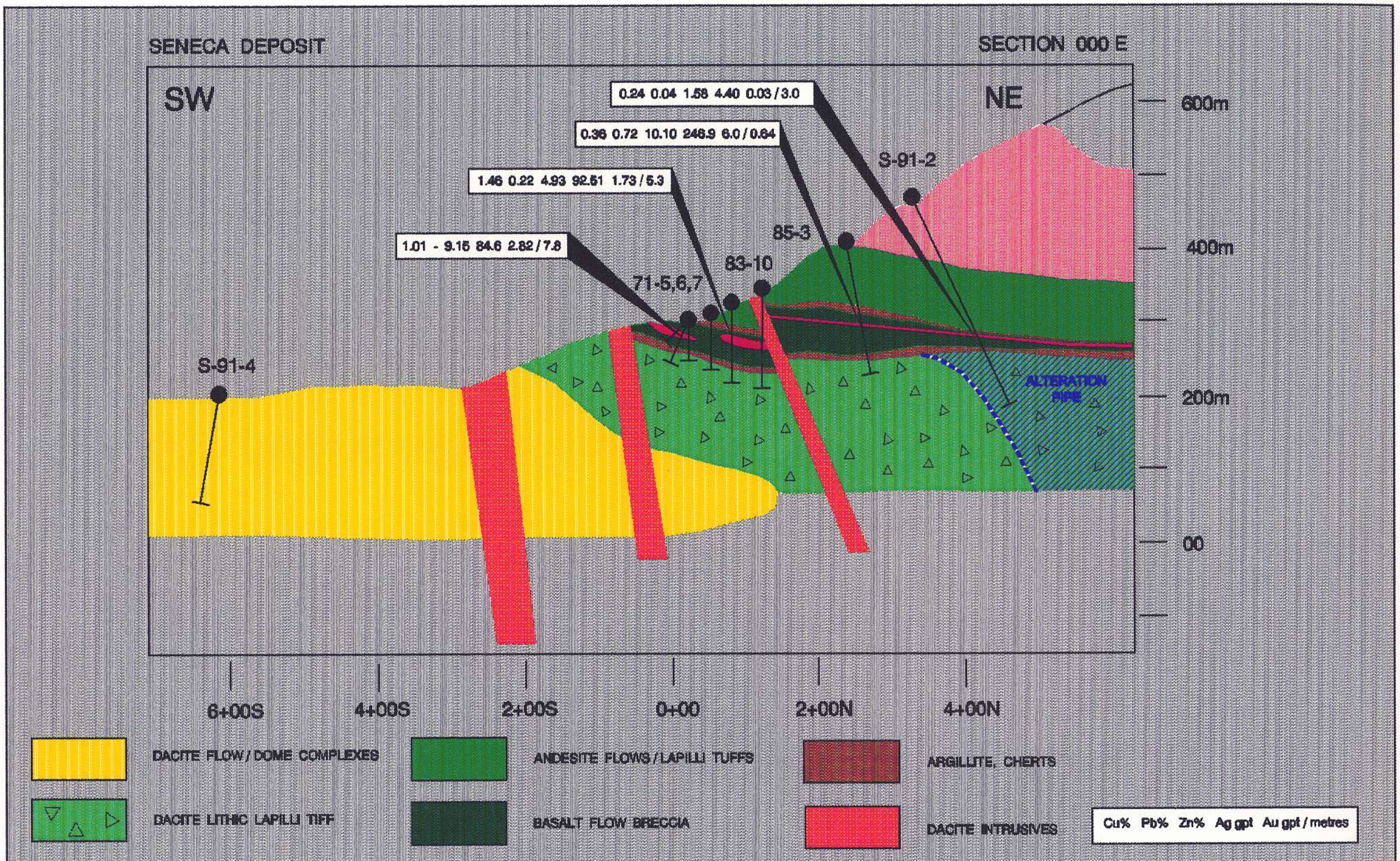
In 1990 relogging of Seneca deposit (Pit) area drill holes was undertaken in conjunction with surface mapping at a 1:2500 scale. The purpose was to produce a set of 1:1000 scale drill sections that could be integrated with a surface map and come up with a workable model to explore the property with. The density of drilling in the Seneca deposit area provided an excellent opportunity get a handle on stratigraphy before exploring the rest of the property.

Seneca Deposit Area

Figure 2 shows a typical section through the gently northeast dipping Seneca stratigraphy. The deposit consists of solid polymetallic massive sulphides lying within a 10 to 35 meter thick package called the Seneca sequence. The Seneca sequence consists of an unusual mud matrix mafic flow breccia and a baritic, sulphide rich epiclastic unit known as the ore zone conglomerate. The thickness and order of these units varies from hole to hole. Massive sulphides reach widths of up to 8 meters. The host package is overlain by a fine grain intemediate ash tuff and overlies a pyritic argillite which correlate throughout the Seneca deposit area. The Seneca sequence appears to have been deposited on a talus breccia derived from a felsic dome southwest of the Pit. Most of this dome has been eroded away and stringer mineralization and alteration in the remainder is weak. The hanging wall package consists of mafic to intermediate flows and pyroclastics interbedded with argillaceous units.

A northeast trending fault cuts the Seneca package west of the pit. The resulting displacement has moved the Seneca horizon some 80 meters up on the northwest block. The horizon can then be traced northwest into steep terrain and in the hanging wall several 1979 drill holes.

The entire Seneca package is cut by a series of felsic dikes and sills. Some of these intrusives, previously interpreted as flows, are steep dipping dikes which in some cases "dike out" crucial stratigraphy. This hampers proper evaluation and can frustrate efforts to correlate stratigraphy .



SENECA DEPOSIT
SECTION 000 E
SW
NE
0.24 0.04 1.58 4.40 0.03 / 3.0
0.36 0.72 10.10 246.9 6.0 / 0.64
1.46 0.22 4.93 92.51 1.73 / 5.3
1.01 - 9.15 84.6 2.82 / 7.8
S-91-2
85-3
83-10
71-5,6,7
S-91-4
ALTERATION PIPE
600m
400m
200m
00
6+00S
4+00S
2+00S
0+00
2+00N
4+00N
DACITE FLOW / DOME COMPLEXES
ANDESITE FLOWS / LAPILLI TUFFS
ARGILLITE, CHERTS
DACITE LITHIC LAPILLI TIFF
BASALT FLOW BRECCIA
DACITE INTRUSIVES
Cu% Pb% Zn% Ag gpt Au gpt / metres

FIGURE 2

Trough Area

The Trough area is one kilometer south of Seneca and was explored in 1979 with a number short drill holes. A thick sequence of base metal enriched siltstones was intersected in hole 79-21 (0.5% Zn/11 meters) and subsequent drilling discovered a felsic dome with weak zinc stinger mineralization but no massive sulphides. At first we interpreted the Trough sediments to underlie the Seneca but recent section work suggests they are a distal expression of the Seneca sequence.

Vent Zone

The Vent prospect outcrops 2 kilometers northwest and stratigraphically below the Seneca package. The mineralization consists of a spectacular sphalerite-pyrite stockwork stringer system developed in a hydrothermally altered felsic dome. The zone measures about 200 meters by 50 meters and extends to a depth of 100 meters. No massive sulphide horizon was recognized in the several drill holes testing the zone in 1985-6. Geologic mapping and core logging in 1990 revealed that the mineralization is cut-off to the northwest by a large sill/dike and that potential remained northwest of the intrusive.

Fleetwood Area

The Fleetwood Zone was discovered by **MMC** in 1991 one kilometer northwest of the Vent occurrence. Figure 3 shows a cross-section through the Fleetwood and 33 Zones. The mineralization consists of narrow massive sulphide intercepts underlain by sphalerite-pyrite stockworks up to 35 meters thick.. The massive sulphides occur at the base of a sequence of felsic ash which can be correlated throughout the Fleetwood area. The stockworks are hosted by the underlying Fleetwood felsic dome. The ashes were also intersected north and stratigraphically above the Vent Zone suggesting the Fleetwood and Vent domes are correlative. The host stratigraphy is overlain by a distinctive block and lapilli tuff which contains mineralized felsic clasts set in a mafic to intermediate matrix. This unit commonly displays epidote and carbonate alteration. The entire felsic package overlies a wide spread mafic

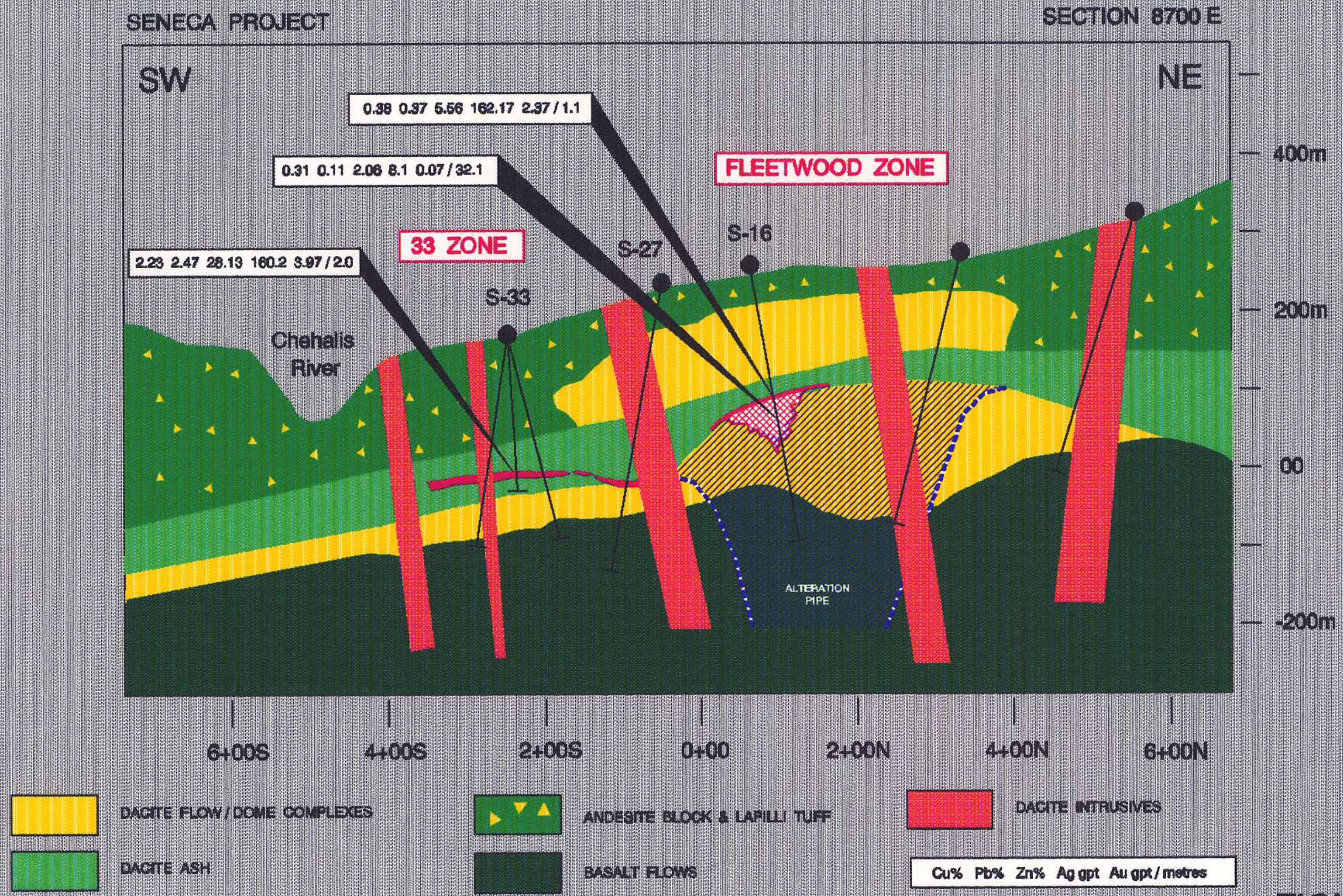

SENECA PROJECT
SECTION 8700 E
SW
NE
0.38 0.37 5.56 162.17 2.37 / 1.1
0.31 0.11 2.06 8.1 0.07 / 32.1
2.23 2.47 28.13 160.2 3.97 / 2.0
FLEETWOOD ZONE
33 ZONE
S-33
S-27
S-16
Chehalis River
ALTERATION PIPE
400m
200m
00
-200m
6+00S
4+00S
2+00S
0+00
2+00N
4+00N
6+00N
DACITE FLOW / DOME COMPLEXES
DACITE ASH
ANDESITE BLOCK & LAPILLI TUFF
BASALT FLOWS
DACITE INTRUSIVES
Cu% Pb% Zn% Ag gpt Au gpt / metres

FIGURE 3

lapilli tuff which displays strong chlorite alteration where observed. Anhydrite veins are very common in the Fleetwood zone and are found predominately in the felsic units.

An abundance of felsic dikes and sills were intersected in the Fleetwood area. Some of these dikes such as the S-31 intercept are mineralized. The shape and size of these intrusives is not well known since drill testing has been widely spaced. A late stage dolomite veining event has affected all units in the Fleetwood area.

Lithogeochemistry

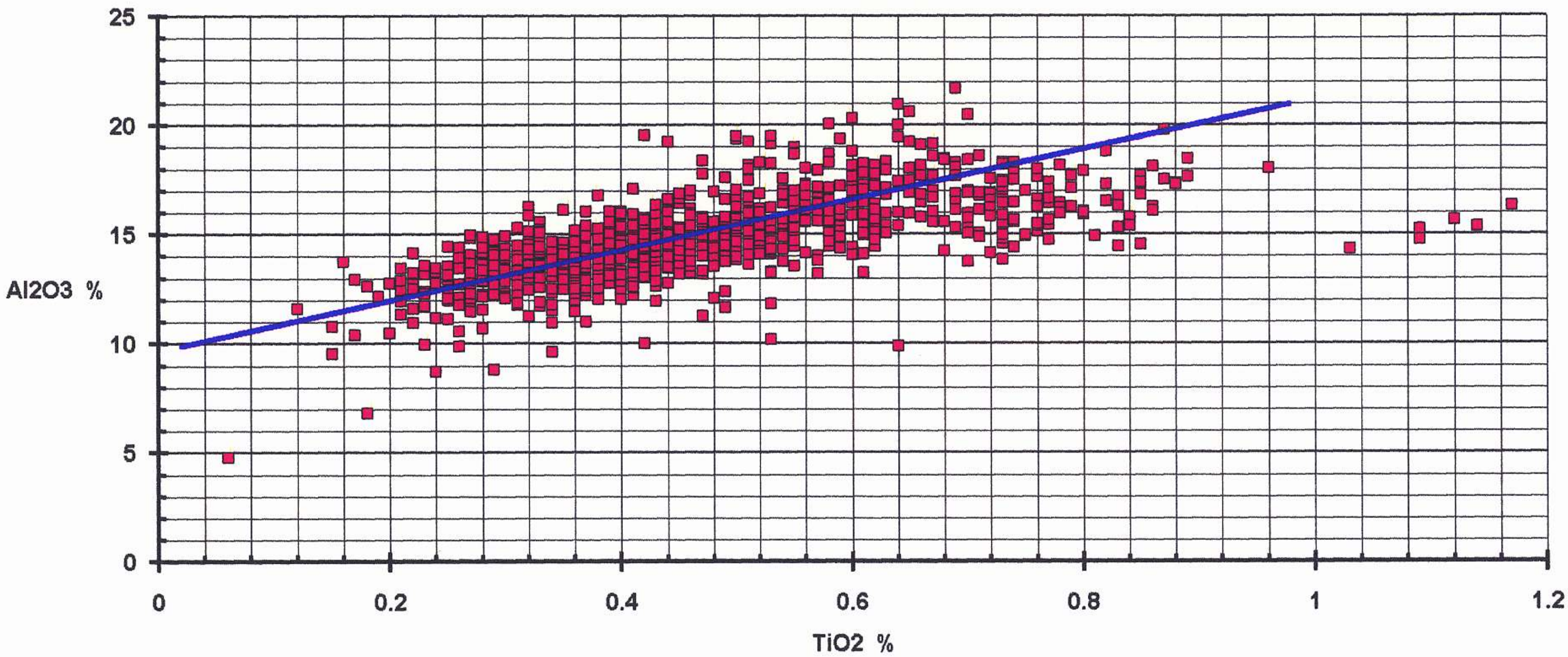
More than a 1100 samples have been collected on the property for whole rock analysis. Samples of all core relogged and drilled by MMC were taken at 30 meter intervals avoiding true sediments and late dikes. Surface mapping samples were collected on roughly 50 meter intervals. The samples were sent to Min-En Labs in North Vancouver where they are crushed to 120 mesh. A 0.2 gram sample is then fused with lithium metaborate and dissolved and diluted to a standard volume. The samples were then analyzed by standard ICP techniques.

Figure 4 shows a plot of Al_2O_3 versus TiO_2. The data set includes all samples collected from all rock units in all areas of the property. The plot clearly demonstrates that all rocks are on one fractionation trend. This indicates that the felsic dikes are comagmatic with all other volcanics and are most likely feeders to overlying flows. The scatter along the trend is probably due to the heterolithic and fragmental nature of many of the units.

Further manipulations of the data suggest that there is virtually no evidence for appreciable alteration in the Seneca deposit area stratigraphy. In fact there is no change in chemistry between the hanging wall and footwall units suggesting that there is no chemically discrete break at the massive sulphide horizon as is often the case in VMS bearing volcanic piles.

A comparison of whole rock data between the Fleetwood/Vent area and the Seneca/Pit revealed that there is no significant difference in major element geochemistry with the exception of soda (Na_2O). Soda values at the Fleetwood have a lower average of 3.9% compared to 5.3% in the Pit. The Fleetwood stratigraphy showed enrichment with respect to trace metals in comparison to the Seneca deposit area.

SENECA LITHOS (N=1125)



Discussion of Results - 1990 to 1992

Relogging of existing drillholes produced immediate results when it was recognized that hole 87-12, one of the most westerly holes on the property at that time, had intersected a zone of exhalitive sulphides assaying 6.5% Zn and 326 g/t Ag over 0.46m. This intersection was open in all directions. The interpretation was that the 87-12 mineralization was the northwestern fringe of a potential massive sulphide deposit associated with the Vent stockwork 800 meters away. The Vent area stratigraphy had provided the only suite of chemically altered rock on the property. In the Pit area, a possible synvolcanic fault was recognized immediately west of Seneca which may play a critical role in massive sulphide deposition.

These discoveries heavily influenced future work. During 1990 and 1991, **mapping, rock and soil sampling** were all directed at finding additional mineralization to the west and northwest of the main Seneca area. However, while the **mapping** was successful in following the Seneca horizon a short way to the northwest, the paucity of outcrop (and what there was mainly intrusive) precluded more extensive delineation. In addition, the relatively flat lying stratigraphy did not lend itself to tracing by **mapping**, nor did it favour **soil sampling.** Indeed the Fleetwood horizon discovered in 87-12 is usually at depths of 150 m to 300 m and is nowhere exposed on the property.

Initial **geophysical testing** carried out in 1991 was disappointing. Noise from a major transmission line passing just to the east of Seneca made much of the data uninterpretable. So exploration continued with **drilling** on a wide spaced grid pattern in order to get a better handle on stratigraphy and, hopefully, to pick up telltale alteration or even mineralization.

To start with, this approach was pretty successful. The 1991 program intersected the mineralization shown in Table 2 and provided the outlines of a weak, but distinctive hydrothermal alteration pattern in the Fleetwood area.

Table 2. Fleetwood Zone intersections in 1991.

Hole	Int. (m)	Cu (%)	Pb (%)	Zn (%)	Ag g/t	Au g/t	Type
S-10	1.35	.48	.42	13.8	29	.65	MS
S-16	1.10	.38	.37	5.6	162	2.37	MS
S-18	2.24	.79	.10	9.7	15	.1	Stockwrk.

The zone trends northwest of the 87-12 and is unrelated to the Vent prospect despite similarities in appearance. Intersections were at depths of around 150 metres. Drilling in the Vent area confirmed that it was a classic VMS stockwork zone, but did not find anything to indicate that a related zone of stratiform, massive sulphides might be preserved. Drilling in the Seneca pit area failed to find any encouragement for mineralization on a lower horizon, but did intersect mineralized ore zone conglomerate and clay alteration along the main horizon. S-2, a 400 meter stepout north on the Seneca horizon, hit 1.6% Zn, 5.6% Ba over 3.0 meters at the top of an 8 meter intercept of mineralized ore zone conglomerate.

The 1992 program focused on the Fleetwood area intersections of the previous year. Drilling to the north, west and east on the trends suggested by alteration and mineralization outlined a system measuring 750 meters by 350 meters. Drilling to the south produced an intersection of 4.3m of massive pyrite and anhydrite in S-27. A further stepout to the south produced the best intercept to date in the zone with S-33 returning 28.1% Zn, 2.2% Cu, 2.5% Pb, 160 g/t Ag and 3.97 g/t Au over 1.95m. Unfortunately, six holes drilled around S-33 failed to extend the mineralization or to indicate the presence of a significant alteration zone.

Several drill holes intersected felsic dikes at the position of the Fleetwood horizon. This makes evaluation of stratigraphy and correlation of mineralized zones from hole to hole next to impossible. With current drilling being on 200 meter centers we can only speculate that these felsic bodies are large, sill-like and very common in this part of the property.

1993 Results

At the beginning of 1993 a re-evaluation of the strategy was undertaken. There was obviously an important NW - SE paleostructure traversing the property and controlling mineralization at Seneca, Vent and Fleetwood and this trend was open to the northwest. However, pattern drilling, while regularly hitting local areas of mineralization, was not a viable, cost effective method of testing the remainder of this trend. Some way of targeting drillholes more effectively was essential. A test Melis geophysical survey carried out in 1992 had proven that EM methods could be successful on the property, but a lack of confidence in interpretation of the results of this type of EM persuaded us to give DEEPEM another try.

A total of 10 loops, approximately 1km X 1km, were laid out to cover the area from the Fleetwood zone to the western claim boundary, the Seneca pit area and the south side of the Chehalis River and lines run at 200 m intervals within them. The survey was performed by Jim Hawkins of Scott Geophysics utilizing a Crone 20 channel digital system and a 2000 watt transmitter. In general, the data is quite clean and interpretable (Appendix IV). Where noise is present it is attributable to coupling effects of the powerline with clay rich overburden in the lower parts of the Chehalis Valley. Figure 6 shows the position of the grids and presents stacking of the late time responses along their respective lines for the horizontal component.

Unfortunately there were no significant anomalies detected. With the relatively flat lying stratigraphy that is present, any substantive stratiform sulphide body occurring within 200m or so of the surface should have been picked up by the survey. While problems due to lack of conductivity of Cordilleran "massive" sulphides are recognized, it is considered very unlikely that any large deposit would not have at least one conductive zone within it. Thus it is concluded that no VMS deposit of significant size occurs within 200m of surface beneath the area tested.

Conclusions

Work done by **MMC** (Minnova) since 1990 has outlined a four kilometer, NW - SE trending mineralized belt incorporating the Seneca, Vent, Fleetwood and 33 Zones. However, potential for a large VMS deposit along this trend is now considered limited. Remaining drill targets are to the north of the trend in the Seneca Pit area.

Recommendations

No further drilling is recommended for the area covered by the 1993 DEEPEM survey. A target remains to the north of the Seneca pit area where the Seneca horizon is still open in an area likely beyond the range of the PEM survey. The nearest hole to this target, S-2, is also the hole that hit the most potentially significant footwall alteration seen to date in the area of the Seneca deposit. The possibility that a productive horizon exists stratigraphically below the Seneca deposit (Fleetwood time?) remains to be addressed.

A full review of all available data is also in order to see if any other targets warrant further work on the rest of the property or if any new ideas can be generated.

Acknowledgments

This report is a synthesis of work done by a number of **MMC/Minnova** geologists assigned to the property over the last four years. Paul Baxter relogged most of the existing holes and John Bradford mapped and litho sampled the Seneca deposit and Vent areas. Dave Thomas did the number crunching and interpretation of the lithogeochemical data. All company drilling was logged by Paul Baxter and Colin Burge.

Appendix I

Property History and Bibliography

Seneca Property History

Date	*Company*	*Activity*	*Total Drilling (m)*	
1951	Loggers	discover Lucky Jim prospect (Seneca)		
	Noranda	drilling	14 holes	135
1961	MM&H	130 meter adit 287 tons shipped to Britannia from Pit		
1962	Cont. Cons.		9 holes	
1964-65	Noland Mines	drilling		280
1971-76	**Cominco Ltd.**	recognized stratabound potential of **Seneca**.	43 holes	7360
1977-81	**Chevron Res.**	drilled west of Seneca	25 holes	2816
1983	Int. Curator Res.	drill Seneca deposit	18 holes	2558
1985	Loggers	found **Vent** Prospect		
1985	Int. Curator Res.	evaluate Vent Zone	12 holes	1375
1986	**B.P. Canada**	continue at Vent	28 holes	2672
1987	Int. Curator Res.	test stratigraphy	12 holes	3042
1990-92	**MMC**/Minnova	discover **Fleetwood**	41 holes	12109
		Total	**182 holes**	**32,000**

* compiled from reports by G. Garrett and I. Watson

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Appendix II

Property Status

Seneca Property Claims

NUMBER	NAME	UNITS	SIZE (Ha)	DATE	EXPIRY
255	DOROTHY 1	16	400.00	12/1/77	12/1/98
256	DOROTHY 2	6	150.00	12/1/77	12/1/98
257	DOROTHY 3	12	300.00	12/1/77	12/1/98
235379	DOROTHY 4	20	500.00	12/1/77	12/1/98
259	DOROTHY 5	18	450.00	12/1/77	12/1/98
260	DOROTHY 6	12	300.00	12/1/77	12/1/98
261	DOROTHY 7	12	300.00	12/1/77	12/1/98
235383	DOROTHY 8	15	375.00	12/1/77	12/1/98
235384	DOROTHY 9	20	500.00	12/1/77	12/1/98
264	DOROTHY 10	9	225.00	12/1/77	12/1/98
288	I AM 50	20	500.00	3/28/78	3/28/98
478	I AM 51	1	25.00	6/13/79	6/13/95
479	I AM 52	1	25.00	6/13/79	6/13/95
480	I AM 53	1	25.00	6/13/79	6/13/95
481	I AM 54	1	25.00	6/13/79	6/13/95
482	I AM 55	1	25.00	6/13/79	6/13/95
483	I AM 56	1	25.00	6/13/79	6/13/95
1292	DOROTHY 14	8	200.00	9/28/81	9/28/98
1356	DOROTHY 11	4	100.00	11/30/81	11/30/98
1357	DOROTHY 12	2	50.00	11/20/81	11/20/95
1358	DOROTHY 13	9	225.00	11/20/81	11/20/95
235940	EARL	12	300.00	6/23/89	6/23/95
310169	TAKI	9	225.00	6/5/92	6/5/95
310680	CAROL 2	20	500.00	6/16/92	6/16/95
310681	CAROL 3	20	500.00	6/16/92	6/16/95
310778	CAROL 1	20	500.00	6/30/92	6/30/95

Appendix III

Drill Hole Summary

SENECA DRILL HOLE SUMMARY

HOLE	DEPTH*	GRID*	AZIM.*	DIP	EAST	NORTH	RESULTS
S-90-01	387.7	Vent	230	-65	9834	562	NSV
S-91-02	300.2	Pit	53	-65	242	225	.24%Cu,1.58%Zn,5.6%Ba/3.0 Seneca horizon
85-7 EXT.	170.1	Pit	230	-80	150	-310	NSV
S-91-03	159.7	Pit	50	-80	1070	-305	NSV
S-91-04	149.7	Pit	230	-80	-460	-455	NSV
S-91-05	275.8	Vent	230	-80	9595	565	NSV
S-91-06	226.8	Vent	50	-80	9695	197	NSV
S-91-07	211.8	Vent	50	-75	9418	219	NSV
S-91-08	221.9	Vent	230	-80	8139	129	NSV
S-91-09	206.7	Vent	0	-90	9150	413	NSV
S-91-10	246.3	Vent	230	-75	8940	322	.84%Cu,.42%Pb,13.8%Zn,29gptAg,.65gptAu/1.35
S-91-11	395.6	Vent	230	-80	8882	0	NSV
S-91-12	316.3	Vent	233	-75	8713	357	.30%Cu,3.1%Zn,4gptAg,.001gptAu/0.30
S-91-13	92	Vent	230	-80	8944	121	Abandon
S-91-14	263.7	Vent	50	-75	8950	434	NSV
S-91-15	377	Vent	230	-70	8953	151	NSV
S-91-16	347.5	Vent	50	-80	8747	93	.38%Cu,.37%Pb,5.6%Zn,162gptAg,2.37gptAu/1.1
S-91-17	340.5	Vent	50	-75	8544	21	NSV
S-91-18	349.2	Vent	230	-85	8514	285	.79%Cu,.1%Pb,9.67%Zn,15gptAg,.1gptAu/2.24
S-91-19	383.5	Vent	236	-74	8731	574	NSV
S-91-20	355.3	Vent	50	-75	8473	388	Strong alteration and weak stringers/82 meters
S-92-21	276.5	Vent	50	-83	9365	78	NSV
S-92-22	389.8	Vent	50	-77	8308	198	NSV
S-92-23	381.8	Vent	50	-75	8222	392	.61%Cu,2.97%Zn/0.5 Vein
S-92-24	331.3	Vent	55	-65	8296	547	NSV
S-92-25	367.6	Vent	230	-80	7866	194	NSV
S-92-26	423.4	Vent	230	-68	8407	237	NSV
S-92-27	357.8	Vent	230	-75	8722	14	NSV
S-92-28	379.8	Vent	230	-68	8834	300	1.49%Cu/0.5m
S-92-29	280.7	Vent	219	-66	8821	278	NSV
S-92-30	393.2	Vent	233	-70	8964	23	NSV
S-92-31	313	Vent	45	-73	9046	116	.24%Cu,2.7%Zn,27gptAg,.19gptAu/3.0
S-92-32	221	Vent	230	-90	9800	191	NSV
S-92-33	188.7	Vent	50	-87	8659	-247	2.2%Cu,2.5%Pb,28.1%Zn,160gptAg,4.0gptAu/2.0
S-92-34	271.9	Vent	50	-85	9235	-54	NSV
S-92-35	319.1	Vent	47	-67	8511	-258	NSV
S-92-36	317.8	Vent	44	-70	8823	-256	3.6%Cu/0.6 Vein
S-92-37	392.3	Vent	230	-77	8554	-262	NSV
S-92-38	271.6	Vent	232	-72	8761	-261	NSV
S-92-39	273.4	Vent	230	-82	8658	-247	.12%Cu,1.1%Pb,3.1%Zn,4.0gptAg,.27gptAu/0.10
S-92-40	261.2	Vent	44	-77	8660	-245	.07%Cu,.21%Pb,1.44%Zn,21gptAg,.88gptAu/1.5
Total	**12108.8**						

*DEPTH in meters

*GRID - Pit grid : grid north=true north, Pit showing is 0 on L0+00

Vent grid: grid north=050, Vent showing is 0 on L10000E

*AZIM is an astronomic bearing

Appendix IV

1993 DEEPEM Survey Report

LOGISTICAL REPORT

CRONE SURFACE
INLOOP PEM SURVEY

SENECA PROJECT
AGASSIZ AREA, BRITISH COLUMBIA

on behalf of

METALL MINING CORP.
3rd Floor, 311 Water St.
Vancouver, B.C. V6B 1B8

Field work completed
August 24 to November 9, 1993

by

Jim Hawkins, Geophysicist
SCOTT GEOPHYSICS LTD.
4013 West 14th Avenue
Vancouver, B.C. V6R 2X3

November 24, 1993

TABLE OF CONTENTS

1. INTRODUCTION

A surface Inloop Pulse EM survey was performed on several grids of the Seneca Project, near Agassiz, B.C., by Scott Geophysics Ltd. on behalf of Metall Mining Corp. The field work was done at various times over the period of August 24 to November 9, 1993.

The surface Inloop surveys consisted of ten double turn loops approximately 1 km x 1 km in size on six grids of the Seneca Project, namely the Vent (two loops), West Vent, Vaughan (two loops), Seneca, Statlu West (two loops), and Statlu East (two loops). The dBz/dt and dBx/dt components of the secondary magnetic field were measured at all stations.

This report presents the results of the survey, describes the instrumentation and procedures, and gives the approximate location of selected conductors detected on the survey.

2. PERSONNEL

Jim Hawkins, Geophysicist, was the party chief on the survey and acted as primary operator of the PEM receiver. Steve McMenemy of Crone Geophysics replaced him from September 30th to November 9th. The two or three Scott Geophysics assistants were made up from the following personnel; Scott Benson, Pat Mullan, Gord Stewart, John Reaume, Jim Laird, Trevor Shephard, Eric Hards, and Mitch Davies. Colin Burge, Geologist, was the Metall representative for the survey.

3. INSTRUMENTATION AND PROCEDURES

A Crone 20 channel digital PEM receiver and a Crone 2000 watt PEM transmitter were used on the surface Inloop PEM surveys.

A double turn of 10 or 12 gauge wire approximately 1 km x 1 km was laid around the areas of interest and lines surveyed within the transmitter loop, to get the optimum coupling with flat lying conducters. The dBz/dt and dBx/dt components were recorded every 50 metres, with closer readings taken to detail any anomalies.

Time reference between the receiver and transmitter was maintained by radio link for the first five loops (Vent, West Vent, and Vaughan grids), but the rough terrain and poor access resulted in some gaps in the radio sync. The last five loops (Seneca, Statlu West, and Statlu East grids) were surveyed using crystal clocks as the time reference.

The receiver/transmitter settings were constant for the entire survey, namely; Ramp - 1.5 ms, Time Base - 16.6 ms, Current - either 11 or 12 amps (peak to peak), and Stacking - 512.

The survey data was archived, processed, and plotted using a Texas Instrument TI3000 microcomputer running Crone PEM and proprietary software.

4. SURFACE INLOOP PEM SUMMARY

Vent Grid - Loop #1

Surveyed August 25th to 27th.
Loop corners - 9000E 450N, 9000E 350S, 8000E 300S, 8000E 450N.
Survey lines - L8100E,250S-600N; L8300E,250S-600N; L8500E,300S-550N;
L8700E,325S-700N; L8900E,300S-700N.
Loop current - 11 amps.

Vent Grid - Loop #2

Surveyed August 30th to 31st.
Loop corners - 8100E 800N, 8100E 125S, 7150E 125S, 7150E 800N.
Survey lines - L7200E,250S-750N; L7400E,300S-750N; L7600E,0-750N;
L7800E,150S-750N; L8000E,200S-750N.
Loop current - 11 amps (6.5 amps for L8000E AND L7800E).

West Vent Grid - Loop #3

Surveyed September 12th to 14th.
Loop corners - 7100E 800N, 7100E 300S, 6350E 300S, 6350E 800N.
Survey lines - L6400E,275S-775N; L6600E,275S-775N; L6800E,275S-750N;
L7000E,275S-775N.
Loop current - 11 amps.

Vaughan Grid - Loop #4

Surveyed September 18th to 19th.
Loop corners - 5950E 600N, 5950E 325S, 5000E 325S, 5000E 600N.
Survey lines - L5100E,350S-575N; L5300E,400S-575N; L5500E,500S-575N;
L5700E,300S-525N; L5900E,500S-500N.
Loop current - 11 amps.

Vaughan Grid - Loop #5

Surveyed September 22nd to 24th.
Loop corners - 5000E 650N, 5000E 375S, 4000E 375S, 4000E 650N.
Survey lines - L4100E,150S-800N; L4300E,300S-850N; L4500E,450S-850N; L4700E,450S-750N; L4900E,325S-700N.
Loop current - 11 amps.

Seneca Grid - Seneca Loop

Surveyed October 2nd to 5th (25 m station interval).
Loop corners - 400W 450S, 400W 600N, 600E 600N, 600E 450S.
Survey lines - L500E,375S-150N; L300E,375S-575N; L100E,375S-575N; L0, 100S-125N; L100W,375S-575N; L300W,375S-575N.
Loop current - 10 amps.

Statlu West Grid - Loop #6

Surveyed October 9th to 10th.
Loop corners - 6200E 1800S, 6200E 800S, 5200E 800S, 5200E 1800S.
Survey lines - L5500E,1750S-850S; L5700E,1750S-850S; L5900E,1750S-850S; L6100E,1775S-850S.
Loop current - 12 amps.

Statlu West Grid - Loop #7

Surveyed October 11th to 13th.
Loop corners - 7200E 1800S, 7200E 800S, 6200E 800S, 6200E 1800S.
Survey lines - L6300E,1750S-850S; L6500E,1750S-850S; L6700E,1750S-850S; L6900E,1750S-850S; L7100E,1750S-850S.
Loop current - 11 amps.

Statlu East Grid - Loop #8

Surveyed October 24th to 25th.
Loop corners - 7000E 1500S, 7000E 500S, 8000E 500S, 8000E 1500S.
Survey lines - L7100E,1450S-550S; L7300E,1450S-550S; L7500E,1450S-550S; L7700E,1450S-550S; L7900E,1450S-550S.
Loop current - 12 amps.

Statlu East Grid - Loop #9

Surveyed November 2nd, 3rd and 8th.
Loop corners - 8000E 1500S, 8000E 500S, 9000E 500S, 9000E 1500S.
Survey lines - L8100E,1450S-550S; L8300E,1450S-550S; L8500E,1450S-550S; L8700E,1450S-550S; L8900E,1450S-550S.
Loop current - 12 amps.

5. RECOMMENDATIONS

A preliminary examination of the results of the Inloop PEM survey on the various grids of the Seneca Project show numerous high-frequency, single station anomalies that would appear to be shallow cultural responses. This would most likely be caused by buried logging cables, which are quite numerous in the survey area.

The very high background response found on the Statlu East grid data is probably due to the thick olays found in the area. Some sharp cultural responses are also evident.

The X component data from the Seneca grid indicates a deep conductor on the northern part of the lines. There is little corresponding Z component response, but this anomaly should be checked further.

A detailed interpretation of these results, and correlation to geological and geochemical data, is required before any specific recommendations could be made.

Respectfully submitted,

James P Hawkins

James P. Hawkins, P. Geoph.

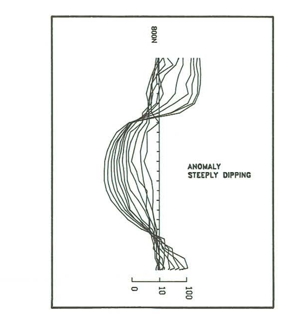

Hemlock Valley
Mount Klaudt
Mount Keenan
Vaughan
Creek
Statlu
Creek
CHEHALIS
RIVER
FLEETWOOD ZONE
33 ZONE
VENT ZONE
SENECA DEPOSIT
WEAVER LAKE SHOWING
Weaver Lake
Sakwi
Creek
WEAVER CREEK PROVINCIAL PARK
Grace Lake
Wolf Lake
Weaver
Morris Lake
MORRIS CREEK
CHEHALIS INDIAN RESERVE 5
LEGEND
INDEX CONTOUR
LAKE
RIVER
CREEK
SWAMP
PAVED ROAD
GRAVEL ROAD 2L
GRAVEL ROAD 1L
ROUGH ROAD
POWER LINE
CLAIM BOUNDARY
PARK / IR. BDY
BRIDGE
SPOT HEIGHT
127.3
DRILL HOLE (1972–1992)
DDH-4
ADIT
HARRISON LAKE FORMATION
INTRUSIVES
MINERALIZED ZONES
PROSPECT
1972 MERCURY ANOMALY
CONTOUR INTERVAL 200 m
SCALE 1:10,000
0 200 400 600 800 1000
METALL MINING CORPORATION
MAP No. 1
SENECA PROPERTY
COMPILATION MAP
DATE : FEBRUARY 1994
FILE : SENCOMP
DRAWN BY : CMB/sg
REVISED :

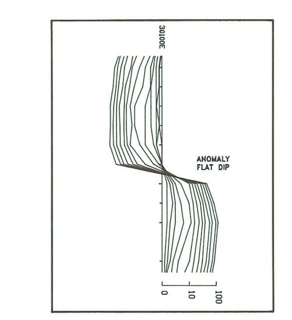
LEGEND

SURVEY SPECIFICATIONS

1993 Survey

Crone Pulse Electromagnetic System
20 Channel Digital Receiver
2000 watt Transmitter
Ramp Time: 1.5 ms
Time Base: 16.66 ms
Posted Value: dBx/dt
Units: nanoTelsa/sec (nt/s)
Channels Plotted: 8 to 16 and 8 to 20
Vertical Scale: 10 nt/s/cm
Tx Loop (Double Turn)





LEGEND

CONTOUR INTERVAL 10 m
SCALE 1:10,000

0 200 400 600 800 1000

METALL MINING CORPORATION

MAP No. 2

SENECA PROPERTY

1993 DEEPEM SURVEY

DATE : FEBRUARY 1994 | FILE: SENDEEP
DRAWN BY : CMB/sg | REVISED :