

LOG NO:	OCT 06 1993	RD.
ACTION:		
FILE NO:		

**PRELIMINARY EVALUATION**

**OF THE**

**DEL VMS PROSPECT**

Deep Creek Area  
Omineca Mining Division  
British Columbia

Lat. 54°39' N.-Long. 126°42'W.  
NTS 93 L/10

Willard D. Tompson, P.Geo

September, 16, 1993

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**23,023**

FILMED

## CONTENTS

<u>Subject</u>	<u>Page</u>
Summary of conclusions and recommendations	
Property and location	1
Claims	5
History	5
General geology	7
Exploration record	8
Results of geochemical survey	8
Results of geophysical surveys	11
Diamond drilling program	12
Geochemical silt survey of the claims	16
Geology of the prospects	16
Massive sulfide mineralization	22
Conclusions	26
Recommendations	28
References cited	29
Certificate	30
Appendix I. Exploration costs /	
Appendix II. Petrographic report /	

## ILLUSTRATIONS

<u>Figure No.</u>	<u>Subject</u>	<u>Page</u>
1.	Map of British Columbia showing location of the Del group.	2
2.	Map of Smithers-Telkwa area showing the Del group and important cultural and geographic features. Scale, 1:2,000,000.	3
3.	Topographic map showing the Del group and access. Scale, 1:250,000.	4
4.	Claim map of Deep, Del and Santo claims, Deep Creek area, Omineca mining division, British Columbia. Scale, 1:50,000.	6
5.	Compilation of geochemical and geophysical data. Original maps were produced by Falconbridge Nickel Mines Ltd. in 1970.	10
6.	Map showing sites of geochemical samples and sample numbers.	18
7.	Geological map of old trenches on Del Santo VMS prospect.	20
8.	Geological map of stripped area east of trenches, Del Santo VMS prospect.	21
9.	Assay map of old trenches on Del Santo VMS prospect.	24

## SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Massive sulfide mineralization occurs in submarine volcanic rocks and in marine shale and greywacke of the Lower Jurassic (Pliensbachian) Nilkitkwa Formation east of Telkwa, British Columbia.

Prospectors found occurrences of massive sulfides prior to 1915 and dug some trenches; additional occurrences were discovered in bulldozer trenching in the 1960's and 1970's.

Mineralization is exposed only in the trenches and is seen to occur over a length of 100 meters and a width of 15 meters.

Induced polarization surveys and magnetometer surveys are recommended in the area of known mineralization. A limited amount of grid preparation will be required. Cost of the program as proposed is \$17,000.00.

British Columbia Forest Service plans to construct a good logging road from Kerr Road to Deception Lake during the summer of 1994, traversing the southeast part of the Del claim group. New road cuts should be examined as the work progresses in the event that fresh rock exposures make available new geological information, or perhaps expose previously unknown mineralization.

Exploration Proposal  
for the  
Del VMS Prospect  
Omineca Mining Division  
British Columbia

PROPERTY AND LOCATION

The Del group of mineral claims lies 23 kilometers easterly from Telkwa, British Columbia (Figure 1) and covers a volcanogenic massive sulfide prospect, which in the 1960's and 1970's was known as the Del Santo property.

Access to the claim area is from Highway 16 (Figure 2) near the settlement of Quick, British Columbia. From Highway 16, Kerr Road, an improved gravel road traverses easterly to an unimproved 4WD dirt road known locally as, the Deception Lake road. The 4WD road exits Kerr Road about 5 kilometers east of the highway and traverses northeasterly to the Del group, a distance of about 8 kilometers (Figure 3).

The claim area lies in the Babine Range and is characterized by low to moderate relief with elevations of 1060 to 1450 meters. Three small tributaries of Deep Creek occur on the claim group as well as four small lakes, which are from 1 to 7 hectares in area. Mature stands of spruce, balsam and lodgepole pine cover the area and according to British Columbia Forest Service maps, are from 100 to 140 years old and from 10 to 28 meters tall.

Glacial drift is widespread and most rock outcrops are glacially polished. Overburden depths vary from a thin edge on higher hill slopes to unknown depths in areas of lower relief. Outcrops are rare below an elevation of 1380 meters (4500 feet).

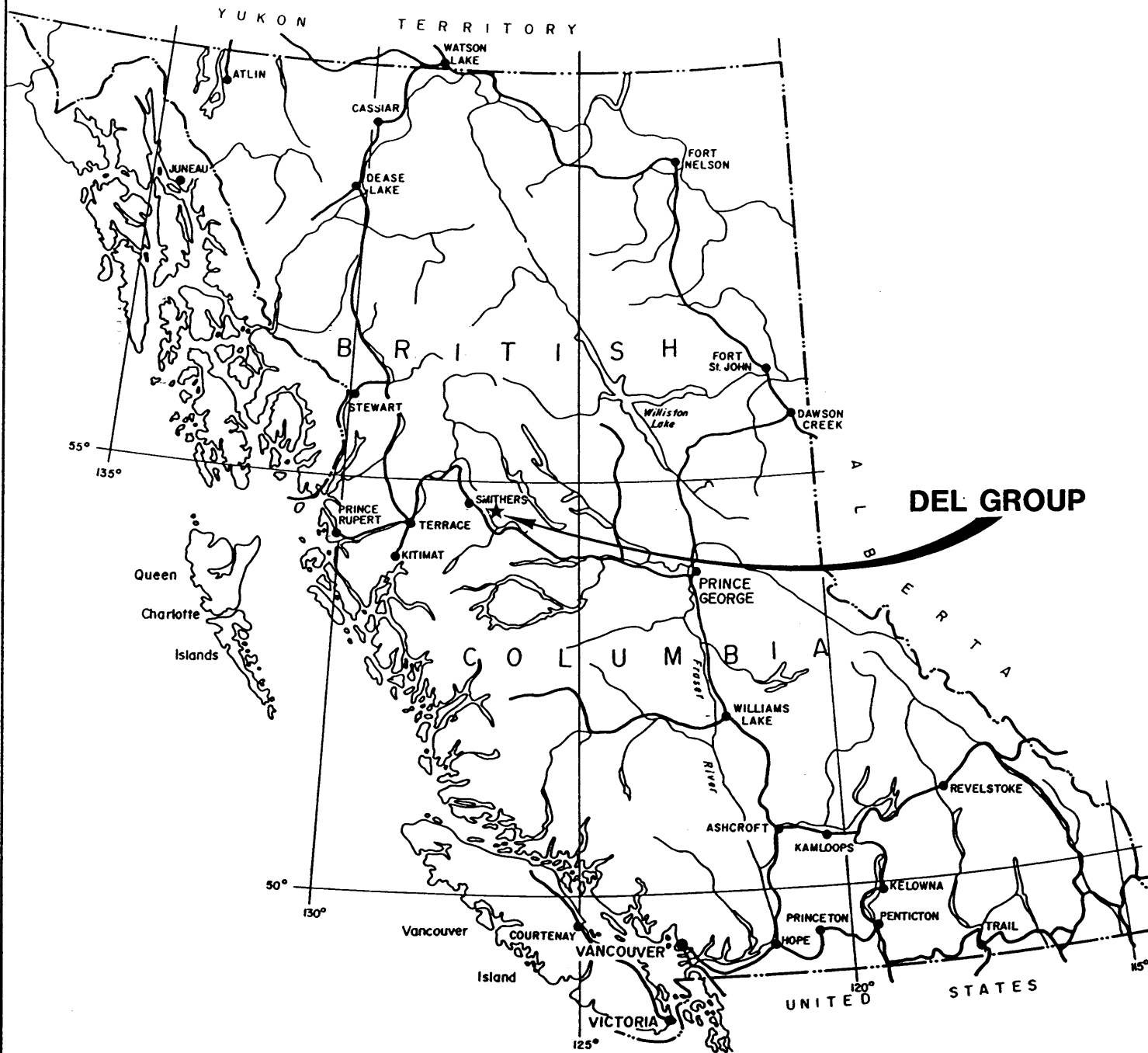
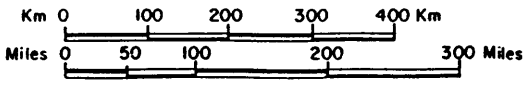


FIGURE 1

<b>DEEP CREEK VMS PROSPECT AREA</b>	
MAP OF BRITISH COLUMBIA SHOWING LOCATION OF THE DEL GROUP Omineca Mining Division, British Columbia	
Willard D. Tompson	January 4, 1993





SCALE - 1 : 2 000 000

Kilometres 20 0 20 40 60 80 100 120 140 160 180 200 Kilometres

Figure 2.- Map of Smithers-Telkwa area showing location of the Del group and important cultural and geographical features.

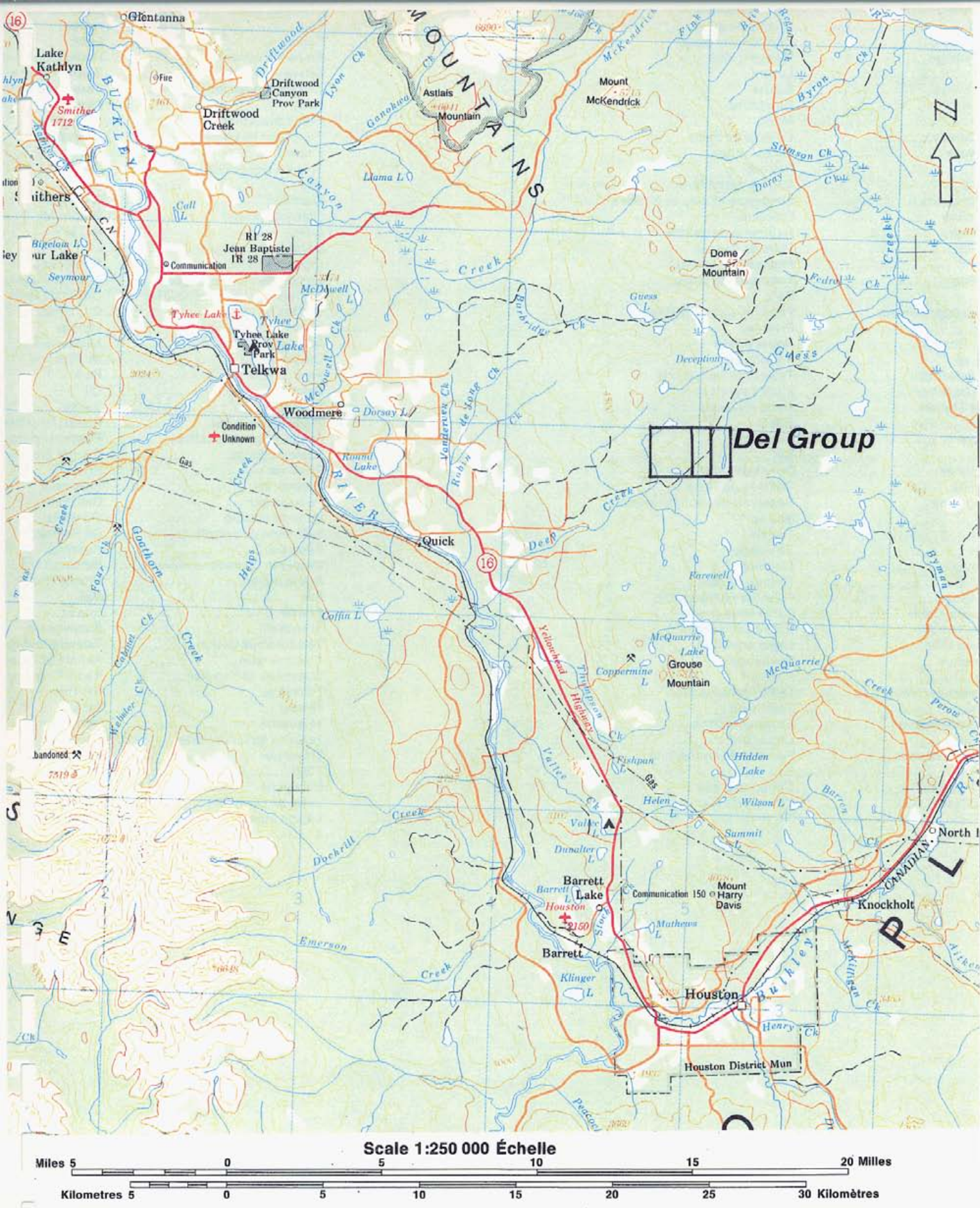


Figure 3.- Topographic map showing the Del group and access.



### CLAIMS

The Del group is comprised of three claims (Figure 4):

Claim Name	Tenure No.	Units	Date of Record
Deep	314107	20	October 23, 1992
Del	314603	10	November 10, 1992
Santo	318125	10	June 14, 1993

The claims are owned by, W.D. Tompson, signator of this report and by Al Burrows, Telkwa, B.C.

### HISTORY

The earliest record of work on the mineral occurrences at Deep Creek is in 1915. In that year the B.C. Minister of Mines noted that claims were staked in the Deep Creek area. The next mention in the literature is 13 years later (B.C. Min. of Mines, 1928) when it was reported that open cuts and pits were made on pyrite-chalcopyrite-sphalerite occurrences by claim owners, Tom Brewer and Tom Brandon.

Thirty-nine years passed before the next work was recorded, when in 1967, claim owner Mel Chapman cut several bulldozer trenches. Texas Gulf Sulfur Co. (L'Orsa, 1968) optioned the claims from Chapman in 1968 and conducted a ground magnetometer survey and a limited geochemical soil survey.

In 1969 Falconbridge Nickel Mines Ltd. optioned the claims from owners, Mel Chapman and Francis Madigan (Brown, 1970; Helgesen, 1970 and Harper, 1970) and in 1969 and 1970 conducted geochemical soil surveys, geological mapping, magnetometer surveys and electromagnetic surveys using Ronka E.M.-16 and Ronka Mark IV equipment and drilled three diamond drill holes for a total of

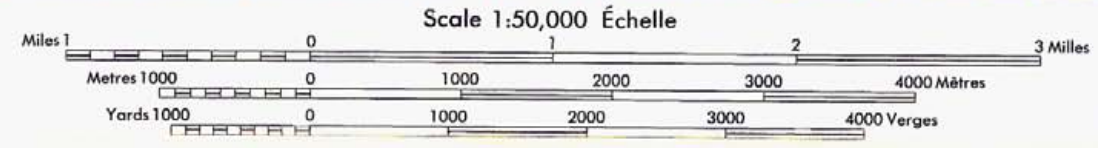
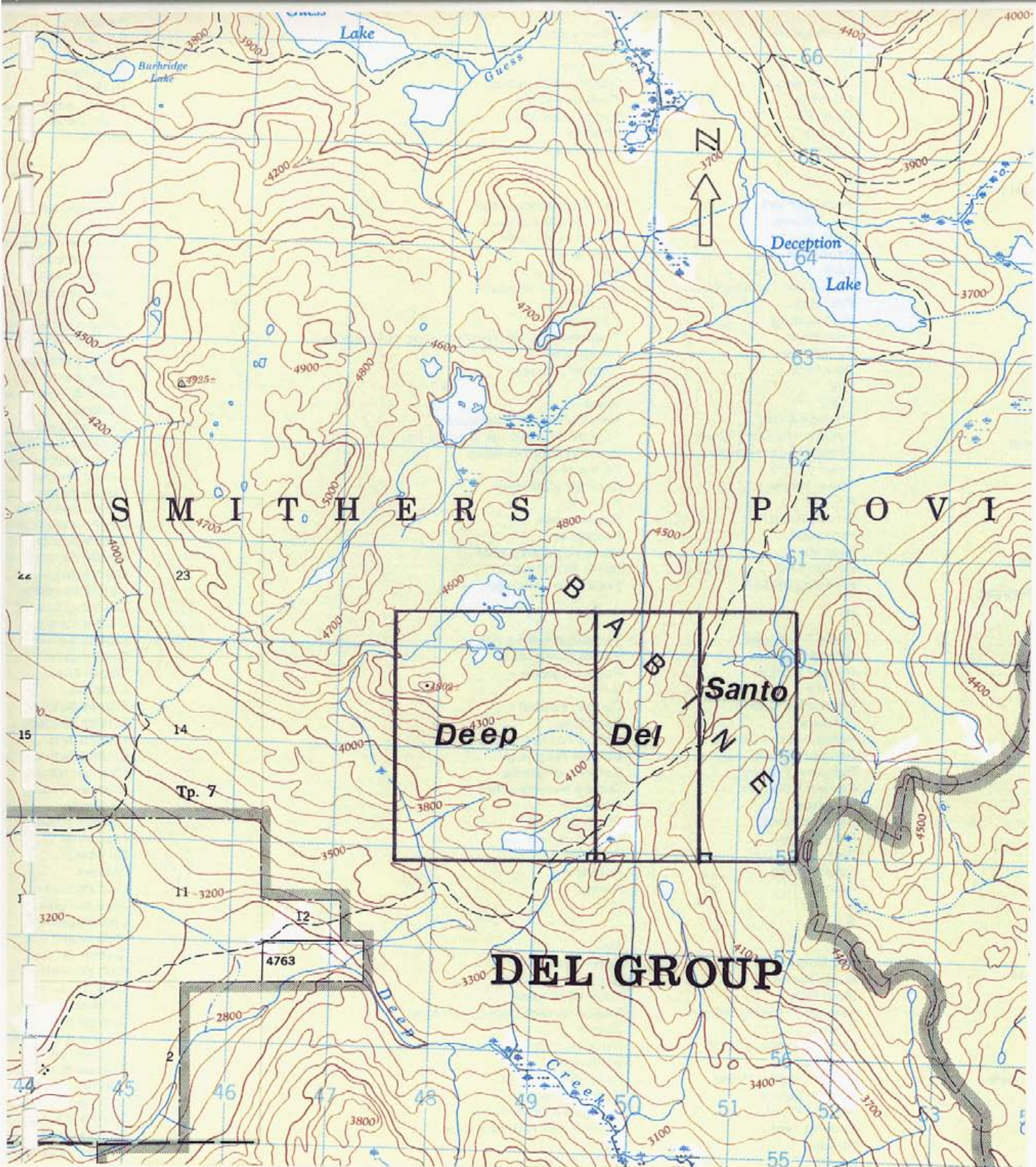


Figure 4.- Claim map of the Del group, Omineca mining division.

129.5 feet (B.C. Dept. Mines G.E.M., 1969 and B.C. Min. Energy Mines and Petrol. Res. G.E.M., 1970).

In 1970(?) Bovan Mines Ltd. drilled one BX diamond drill hole from a drill site near the trenched area (D.C. Plecash, personal communication). The hole was drilled to a depth of about 140 feet (43 meters) but no records exist from that drill hole.

Union Minere Explorations and Mining Corporation under an agreement with Mel Chapman, cut four bulldozer trenches in 1976 (B.C. Min. Energy, Mines and Petrol. Res., 1976, p. E150) each about 3 by 20 meters and 0.3 meters deep.

Petra Gem Exploration of Canada, Ltd. acquired an option to purchase the Del Santo claims from Mel Chapman and Francis Madigan and staked an additional block of claims contiguous with Del Santo. They conducted geological work (Price, 1979) over the previously cut grid lines and surveyed the trench area with a McPhar M-700 fluxgate magnetometer and conducted a pulse E.M. survey over a small (120 by 180 meters) area near the trenches (White, 1978).

In 1979 four diamond drill holes were drilled by D. Groot Logging Ltd. in the area of the previous work. About 1000 feet (328 meters) were drilled. Groot also cut some bulldozer trenches in January or February of 1983 or 1984, but no maps or assays exist for that work (D.C. Plecash, personal communication).

#### GENERAL GEOLOGY

The Babine Range of west-central British Columbia lies within the Stikine terrane. The prospect area at Deep Creek is underlain by the Nilkitkwa Formation of the Early to Middle Jurassic Hazelton Group. Tipper and Richards (1976, p. 9-27) show that the Hazelton

Group is an island-arc volcanic and sedimentary assemblage which was deposited in the Hazelton Trough during Early to Middle Jurassic time.

The Nilkitkwa Formation is comprised of shale, greywacke, amygdaloidal andesite or basalt (MacIntyre, 1986) rhyolite, volcanic breccias, tuff and minor limestone. Rocks of the Nilkitkwa Formation exposed in the prospect area are: chlorite-epidote altered amygdaloidal andesite, chloritized andesitic flows and dikes, argillite, siltstone, phyllitic shale, tuff and lapilli tuff, chert and limestone.

#### EXPLORATION RECORD

The Falconbridge grid (Harper, 1970) was 4400 by 5800 feet (1341 by 1768 meters) and all of their work was conducted on that grid. Outcrop in the grid area is about one percent. Overburden is from one meter to several meters deep.

#### Results of the Geochemical Survey

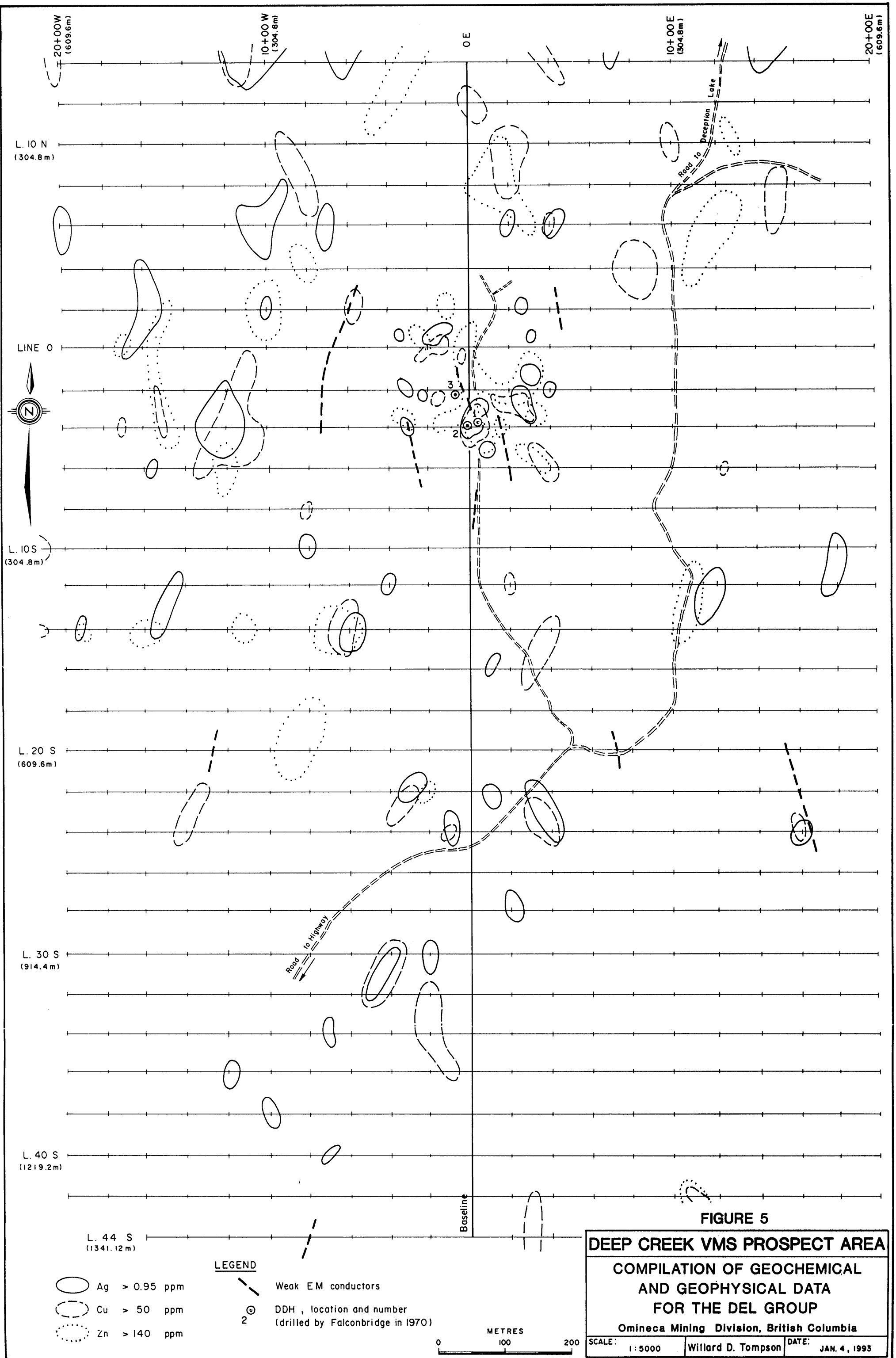
Figure 5 of this report is a compilation of the geochemical and geophysical data which were produced by Falconbridge Nickel Mines, Ltd. (Harper, 1970). The compilation map (Figure 5) is at a reduced scale (1:5,000) for ease of presentation and some details from the original surveys are omitted.

Contoured values which are shown on the map are as follows:

Ag > 0.95ppm  
Cu > 50ppm  
Zn > 140ppm

The contours show that anomalous values in silver, copper and zinc are widespread and appear to be scattered throughout most of

the grid area in a nearly random orientation. The greatest concentration of anomalous values lies northwest of the road (Figure 5) where topographic relief is moderate and where overburden is relatively thin.



### Results of the Geophysical Surveys

The geophysical report and maps which were produced by Harper (1970) were submitted to Frontier Geosciences Inc. for re-evaluation. J. Graham Parkinson, P. Geoph. examined the data and made some general observations and recommendations (Parkinson, 1992, personal communication):

"Geophysical coverage includes VLF-(Hawaii and Maine stations) over an area of about one thirtieth of the claim group. Horizontal loop (HLEM survey) coverage with a short cable (optimized for shallower details) covers the same larger area as the geological mapping. At the 200-foot cable length the HLEM shows less detail, corresponding to the interpretation of shallow conductors. Coverage at the 200-foot cable length is limited to the same small area as covered by the VLF."

"In general, the geophysical work done appears to be properly controlled and to consist of low noise data. The surveys are of appropriate types for this geological environment."

"Line 4S, an area of anomalous copper and silver geochemistry, has three showings (of which the two easternmost were drill tested) and is cut by several conductors (which are parallel to the strikes of the trenched showings). Considering the nearby mineralization, the western half of the line is of particular interest for further work."

A weak, linear magnetic anomaly is centered approximately at the baseline and line zero and extends for about 300 meters north-northwesterly and 600 meters south-southeasterly through the center of the Falconbridge grid area.

Several weak conductors were disclosed by the HLEM and VLF surveys, mostly occurring in a broad zone extending north-northwesterly from L.22S. to L.2N., a distance of about 750 meters (Figure 5).

Diamond Drilling Program

Although three different owners have drilled the occurrences at Deep Creek (see Page 5, this report) the most complete records exist for only the work done by Falconbridge Nickel Mines, Ltd. (Harper, 1970). The holes were drilled in an area near the trenches and were drilled to depths of 11, 12 and 15 meters respectively. Summary logs of those holes are pages 13 to 15 of this report.

Rocks encountered in the drilling were andesitic tuff, tuffaceous shale, chert, cherty greywacke, andesite and andesite breccia. Chlorite-epidote alteration and quartz-calcite veining are common throughout the core.

Massive sulfides and patchy bunches of sulfides were encountered in drill holes 2 and 3. Drill hole number one terminated in mineralization at 38.5 feet (11.7m) after a 5.7 foot (1.7m) intersection of sulfides.

Assay data from the drill core are summarized as follows;

DDH No.	Depth (feet)		Interval (feet)	Assays			
	From	To		Au (opt)	Ag (opt)	Cu (%)	Zn (%)
1	29.7	31.2	1.5			0.01	0.10
1	32.8	38.5	5.7			0.08	0.19
2	0	2.0	2.0			2.32	0.18
2	2.0	10.0	8.0			0.43	0.04
2	10.0	20.0	10.0			0.16	0.12
3	0	5.0	5.0	Tr	0.4	0.24	0.66
3	5.0	10.0	5.0	Tr	0.1	0.09	1.24
3	10.0	15.0	5.0	Tr	0.3	0.18	0.63
3	15.0	18.2	3.2	NA	NA	1.08	0.99
3	19.7	25.0	5.3	NA	NA	0.02	0.04



Summary Log  
 DDH Del Santo No. 1  
 Falconbridge Nickel Mines Ltd.

Latitude L.3+94S.  
 Departure 0+32E.  
 Elevation  
 Bearing 278°  
 Angle -45°  
 Date started Sept. 22, 1970  
 Date completed Sept. 24, 1970  
 Depth 38.5ft. (11.7m)  
 Core size  
 Avg. core recovery 60%

From	To	Description of Rocks	Assays			
			Au (opt)	Ag (opt)	Cu (%)	Zn (%)
0	6.2	Dark grey to purplish-brown tuffaceous shale.				
6.2	16.8	Purplish tuffaceous shale and greenish andesitic tuff.				
16.8	23.1	Fine grained, purplish andesite with quartz-chlorite bands.				
23.1	28.3	Chloritized fragmental andesite.				
28.3	29.7	Bands of purplish fine grained andesitic tuff with f. g. greenish tuffaceous shale.				
29.7	31.2	Purplish andesite				
30.0	32.8		NA	NA	0.01	0.10
31.2	32.7	Banded shale. White cherty bands, whitish-greenish bands and purplish andesitic tuff bands.				
32.7	38.5	Purplish andesite. Abundant pyrite, minor chalcopyrite, sphalerite.				
32.8	38.5		NA	NA	0.08	0.19
End hole at 38.5 ft. (11.7m)						

Summary Log  
 DDH Del Santo No. 2  
 Falconbridge Nickel Mines Ltd.

Latitude L.3+81S.  
 Departure 0+14W.  
 Elevation  
 Bearing 0  
 Angle Vertical  
 Date started Sept. 25, 1970  
 Date completed Sept. 25, 1970  
 Depth 40.0 ft. (12.2m)  
 Core size  
 Avg. core recovery 61.2%

From	To	Description of Rocks	Assays			
			Au (opt)	Ag (opt)	Cu (%)	Zn (%)
0	2.0	30 percent massive sulfides, pyrite, chalcopryrite, sphalerite in brown-purplish biotite-andesitic tuff; with quartz veins.	NA	NA	2.32	0.18
2.0	3.0	Brecciated, quartz veined, purplish-brown andesite with 5 percent massive sulfides.				
3.0	8.0	2 percent massive sulfides in brecciated quartz-veined, purplish-brown andesite.				
8.0	16.9	Fine grained, green-brown-grey shale with minor chalcopryrite.				
2.0	10.0		NA	NA	0.43	0.04
10.0	20.0		NA	NA	0.16	0.12
16.9	17.1	Fault gouge.				
17.1	27.2	Banded, purplish and pinkish tuffaceous shale. Beds contorted.				
27.2	27.5	Fault gouge.				
27.5	40.0	Fine grained, dark green, sheared andesite, locally purplish in color.				

End hole at 40.0 feet (12.2m) due to sticking rods and low water pressure.

Summary Log  
DDH Del Santo No. 3  
Falconbridge Nickel Mines Ltd.

Latitude L.2+50S.  
Departure 0+70W.  
Elevation  
Bearing 238°  
Angle -70°  
Date started Sept. 26, 1970  
Date completed Sept. 27, 1970  
Depth 51.0 ft.(15.5m)  
Core size  
Avg. core recovery 67%

From	To	Description of Rocks	Assays			
			Au (opt)	Ag (opt)	Cu (%)	Zn (%)
0	13.3	Very fine grained grey-brown greywacke. Some pyrite, chalcopryrite, sphalerite; each less than 1%. Limonite at contact, 50° with CA.				
0	5.0		Tr	0.4	0.24	0.66
5.0	10.0		Tr	0.1	0.09	1.24
10.0	15.0		Tr	0.3	.018	0.63
13.3	14.1	Dark reddish, fine grained andesite.				
14.1	16.0	Grey and white cherty greywacke. Occasional blebs sphalerite.				
15.0	18.2		NA	NA	1.08	0.99
16.0	17.8	Grey and white cherty greywacke becoming brown to greenish-brown with chloritic bands. Has bands of massive sulfides.				
17.8	19.7	Epidote-rich and rusty. Poor recovery.				
19.7	25.7	Dark green-brown, fragmental greywacke. Andesitic composition. Some patches of py-cp-sl and quartz.				
19.7	25.0		NA	NA	0.02	0.04
25.7	32.9	Dark green andesitic tuff.				
32.9	51.0	Fine grained, purplish to greenish andesite. Chloritic alteration prominent on fractures. Many calcite and quartz veinlets.				

End of hole at 50 feet (15.5m)

### GEOCHEMICAL SILT SURVEY OF CLAIMS

Several small creeks occur on the claims of the Del group and silt samples were collected from the creeks for geochemical evaluation. Samples were collected with a shovel and were sieved through a 10 mesh sieve and into a catch pan. The minus 10 fraction of the samples were placed into Kraft soil sample bags.

Acme Analytical Laboratories Ltd. conducted ICP analyses on the samples. For analysis, the sample is sieved to minus 80 and the 0.500 gram aliquot digested with 3ml 3-1-2 HCl-HNO<sub>3</sub>-H<sub>2</sub>O at 95 degrees C for one hour and is diluted to 10 ml with water. Gold analysis is by acid leach/AA from 10 gram sample.

The map showing sample locations (Figure 6) and the geochemical analysis certificate are pages 18 and 19 of this report.

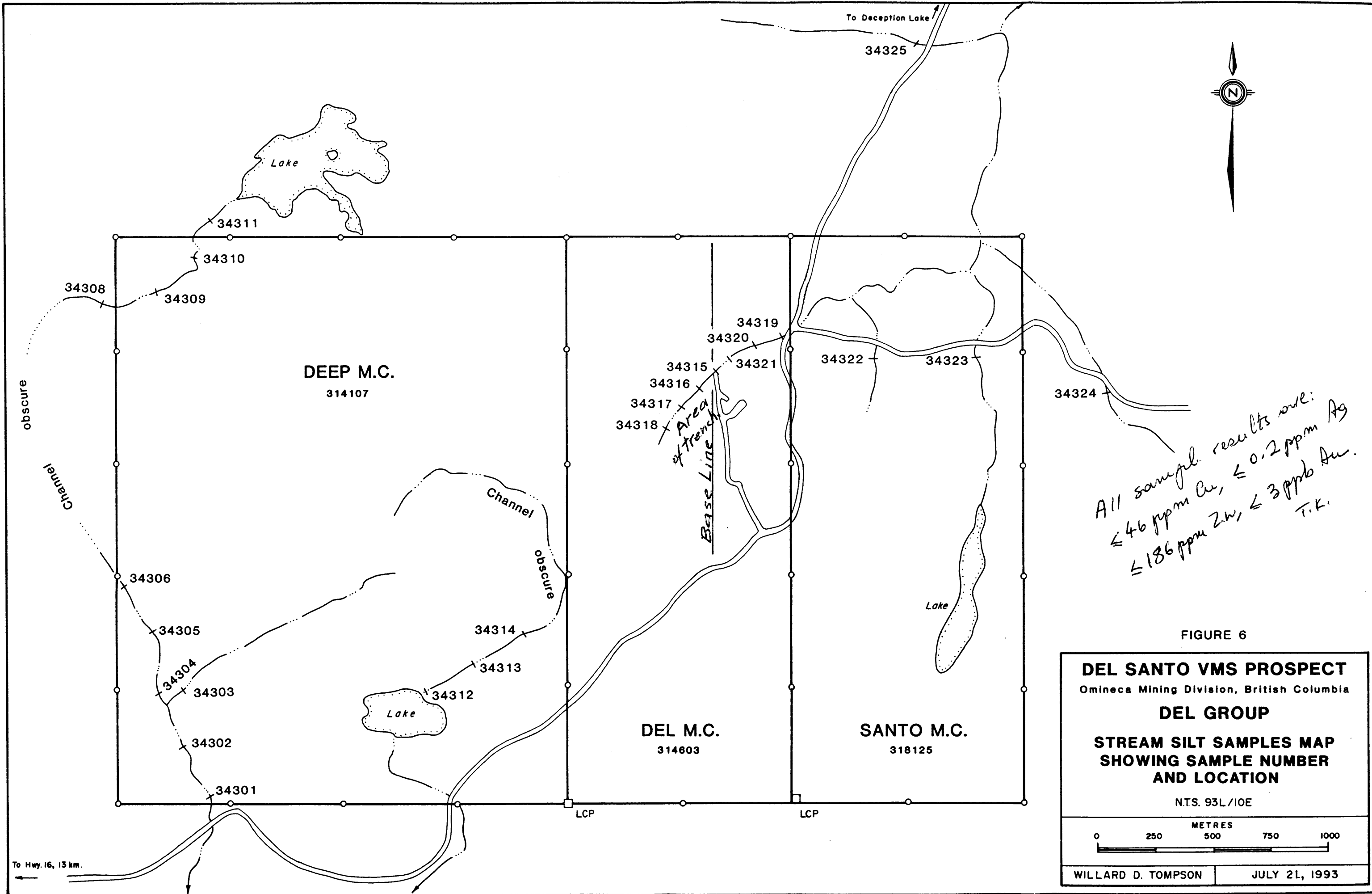
### GEOLOGY OF THE PROSPECTS

Massive sulfide mineralization is exposed in several trenches (Figure 7) which were cut by earlier workers (see pages 5-7 of this report) in the area. There were probably very few exposures of bedrock prior to trenching.

The massive sulfides occur in an assemblage of black argillic tuff, lapilli tuff, siltstone and thin bedded grey limestone with thin beds of brown sandstone (Figures 7 and 8). The sedimentary rocks and bedded massive sulfides apparently overlie chlorite-epidote altered amygdaloidal andesite or basalt (MacIntyre, et.

al., 1986) which is exposed along the road about 400 meters south of the trenches.

Bedding in the sedimentary rock strikes mostly about N.10°W. to N.20°W. and dips from vertical to 80°E. (Figures 7 and 8).



*All sample results are:  
 ≤ 46 ppm Cu, ≤ 0.2 ppm Ag  
 ≤ 186 ppm Zn, ≤ 3 ppm Au.  
 T.K.*

FIGURE 6

**DEL SANTO VMS PROSPECT**  
 Omineca Mining Division, British Columbia

**DEL GROUP**

**STREAM SILT SAMPLES MAP  
 SHOWING SAMPLE NUMBER  
 AND LOCATION**

N.T.S. 93L/10E

0 250 500 750 1000  
 METRES

WILLARD D. TOMPSON | JULY 21, 1993

To Hwy. 16, 13 km.

LCP

LCP



**GEOCHEMICAL ANALYSIS CERTIFICATE**



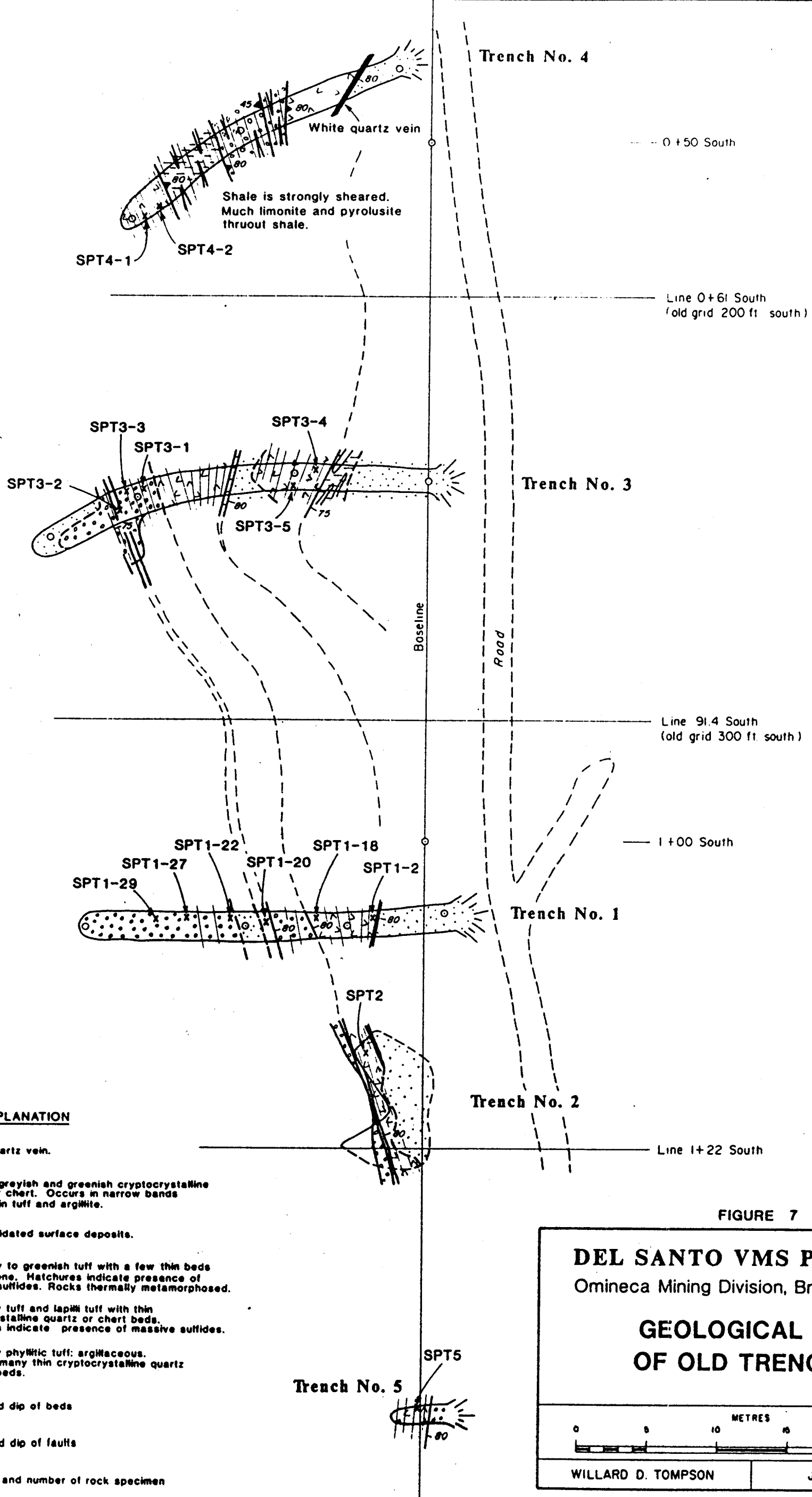
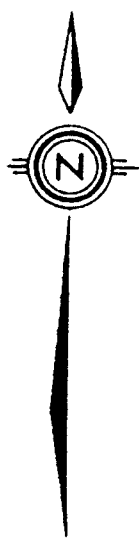
**Orvana Minerals Corp. File # 93-1673**

710 - 1177 W. Hastings St, Vancouver BC V6E 2K3 Submitted by: Willard D. Tompson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb
34301	<1	19	7	117	.1	22	13	1272	5.26	9	<5	<2	<2	33	.2	<2	2	61	.48	.035	7	32	.97	176	.06	<2	1.80	.05	.09	1	3
34302	<1	18	6	126	<.1	21	14	1356	5.57	16	<5	<2	<2	32	.2	<2	3	67	.48	.037	7	33	1.05	171	.08	2	1.82	.04	.08	<1	2
34303	<1	20	7	119	<.1	22	14	1494	5.30	11	<5	<2	<2	33	.6	<2	3	58	.48	.039	7	31	1.02	190	.06	4	1.82	.04	.07	<1	2
34304	<1	17	7	131	.1	17	12	1275	4.92	10	<5	<2	<2	27	.7	<2	3	54	.44	.031	6	26	.87	175	.05	2	1.62	.03	.07	<1	1
34305	<1	23	10	151	.1	18	10	1147	4.60	10	<5	<2	<2	34	<.2	<2	<2	49	.66	.039	6	26	.78	195	.04	3	1.59	.02	.06	<1	1
34306	<1	17	7	173	<.1	18	13	2005	5.24	13	<5	<2	<2	27	.9	<2	<2	54	.43	.033	6	27	.87	235	.05	3	1.63	.02	.07	<1	2
34307	1	8	<2	121	<.1	11	10	3211	9.47	14	<5	<2	<2	42	<.2	<2	<2	35	.56	.041	5	16	.47	882	.03	<2	1.04	.02	.04	<1	1
34308	5	12	2	186	.1	14	11	4444	5.89	58	<5	<2	<2	27	.7	<2	2	70	.52	.053	5	26	.92	284	.07	<2	1.64	.02	.05	<1	1
RE 34308	5	12	6	184	<.1	13	12	4396	5.87	59	<5	<2	<2	27	.9	<2	<2	70	.52	.052	5	26	.91	281	.07	<2	1.66	.02	.05	<1	<1
34309	9	12	2	173	.1	19	14	2736	5.32	37	<5	<2	<2	22	.3	<2	<2	79	.55	.051	4	39	1.26	184	.08	2	1.81	.02	.05	<1	2
34310	1	12	3	102	.1	17	9	522	3.32	11	<5	<2	<2	28	<.2	<2	<2	64	.59	.050	5	29	1.10	98	.10	<2	1.61	.03	.05	<1	1
34311	<1	13	2	94	.1	18	11	442	2.60	7	<5	<2	<2	26	<.2	<2	<2	44	.46	.049	5	26	.88	111	.07	3	1.45	.02	.04	<1	1
34312	<1	10	7	98	<.1	16	9	2050	4.51	7	<5	<2	<2	33	<.2	<2	<2	51	.46	.042	6	24	.75	165	.06	4	1.51	.03	.06	<1	1
34313	<1	9	3	95	<.1	19	9	528	3.82	4	<5	<2	<2	26	.3	<2	<2	48	.40	.043	6	27	.76	113	.06	<2	1.47	.02	.05	<1	<1
34314	<1	12	5	116	.1	16	10	6117	5.24	11	<5	<2	<2	43	.4	<2	<2	45	.56	.045	6	20	.61	464	.04	4	1.40	.02	.05	<1	1
34315	1	38	9	176	.2	26	13	1836	4.88	11	<5	<2	<2	42	.8	<2	2	70	.82	.056	9	39	.92	342	.03	2	2.06	.02	.08	<1	<1
34316	<1	34	6	167	.2	28	13	818	4.47	8	<5	<2	<2	40	.5	<2	4	71	.71	.062	8	39	1.02	261	.04	<2	2.22	.02	.09	<1	1
34317	1	42	9	159	.2	35	18	2440	5.59	7	<5	<2	<2	36	.8	<2	<2	86	.69	.061	8	47	1.36	330	.04	2	2.24	.02	.08	<1	2
34318	1	46	4	145	.2	25	15	2397	4.87	12	<5	<2	<2	36	.5	<2	<2	72	.69	.056	9	35	.87	280	.04	<2	2.02	.02	.08	<1	2
34319	<1	21	5	162	.2	21	10	1155	4.31	8	<5	<2	<2	30	.4	<2	<2	62	.53	.043	7	29	.85	213	.04	3	1.67	.02	.07	<1	1
34320	1	27	7	167	.1	22	11	1196	4.50	14	<5	<2	<2	32	<.2	<2	<2	67	.57	.044	8	30	.81	231	.04	<2	1.74	.03	.08	<1	1
34321	1	28	9	145	.1	20	13	1237	4.91	16	<5	<2	<2	26	<.2	2	<2	67	.44	.038	6	26	.77	183	.05	3	1.55	.02	.07	<1	2
34322	<1	14	6	124	.1	18	9	459	3.58	4	<5	<2	<2	25	<.2	<2	<2	55	.40	.040	7	27	.91	112	.05	<2	1.67	.03	.07	<1	1
34323	1	16	6	125	.1	15	12	2548	5.10	7	<5	<2	<2	40	.7	<2	<2	48	.44	.050	8	20	.66	313	.04	2	1.63	.02	.08	<1	1
34324	<1	12	11	121	.1	19	8	741	3.57	4	<5	<2	<2	34	.2	<2	<2	45	.43	.052	8	24	.82	171	.06	4	1.67	.03	.09	<1	1
34325	<1	21	4	115	<.1	24	13	1230	4.99	9	<5	<2	<2	27	.2	<2	<2	71	.52	.035	5	34	1.21	148	.08	<2	1.91	.02	.06	<1	1
STANDARD C/AU-S	16	59	36	122	6.8	67	28	981	3.96	42	19	6	34	54	17.0	14	19	51	.51	.086	37	54	.90	191	.09	33	1.88	.06	.14	11	50

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.  
 THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL.  
 - SAMPLE TYPE: SILT AU\* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE. Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: JUL 26 1993 DATE REPORT MAILED: *July 29/93* SIGNED BY: *C. Leong* D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS



**EXPLANATION**










-  White quartz vein.
-  Whitish, greyish and greenish cryptocrystalline quartz or chert. Occurs in narrow bands or beds in tuff and argillite.
-  Unconsolidated surface deposits.
-  Dark grey to greenish tuff with a few thin beds of limestone. Hatchures indicate presence of massive sulfides. Rocks thermally metamorphosed.
-  Dark grey tuff and lapilli tuff with thin cryptocrystalline quartz or chert beds. Hatchures indicate presence of massive sulfides.
-  Dark grey phyllic tuff; argillaceous. Contains many thin cryptocrystalline quartz or chert beds.
-  60°  
Strike and dip of beds
-  80°  
Strike and dip of faults
-  x-SPT2 Location and number of rock specimen

FIGURE 7

**DEL SANTO VMS PROSPECT**  
 Omineca Mining Division, British Columbia








**GEOLOGICAL MAP  
 OF OLD TRENCHES**

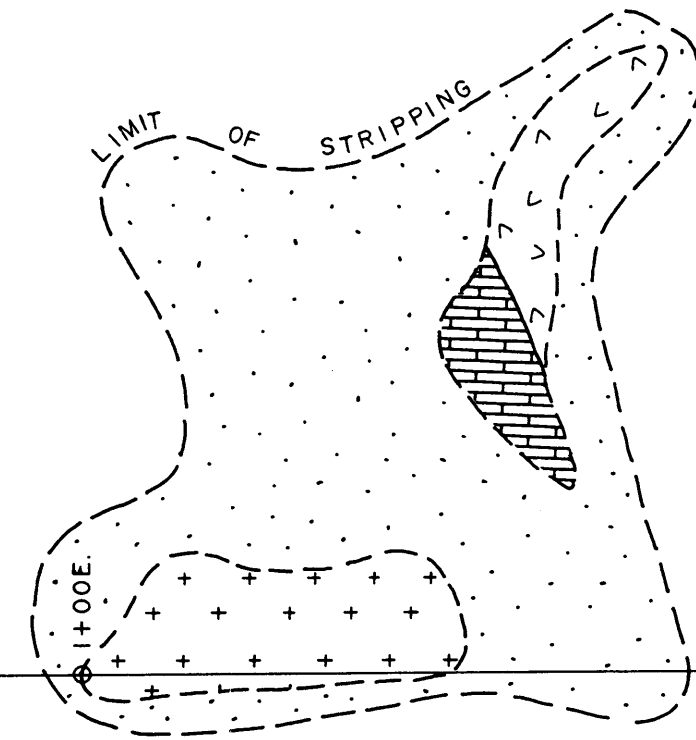


WILLARD D. TOMPSON      JULY 29, 1993



**EXPLANATION**

-  Unconsolidated surface deposits.
-  Greenish tuff with v.f.g. pyrite and pyrrhotite. Rocks are brown on weathered surface.
-  Thin bedded grey limestone with thin beds of grey shale and brown sandstone.
-  Dark grey to greenish calcareous, phyllitic shale with minor pyrite. Brown on weathered surface.
-  Coarse grained biotite granodiorite. Some chloritic alteration.
-   $80^\circ$  Strike and dip of beds
-  Strike of vertical beds
- X SP103 Location and number of rock specimen



Line 91.4 South  
(Old grid line 300 ft. south)

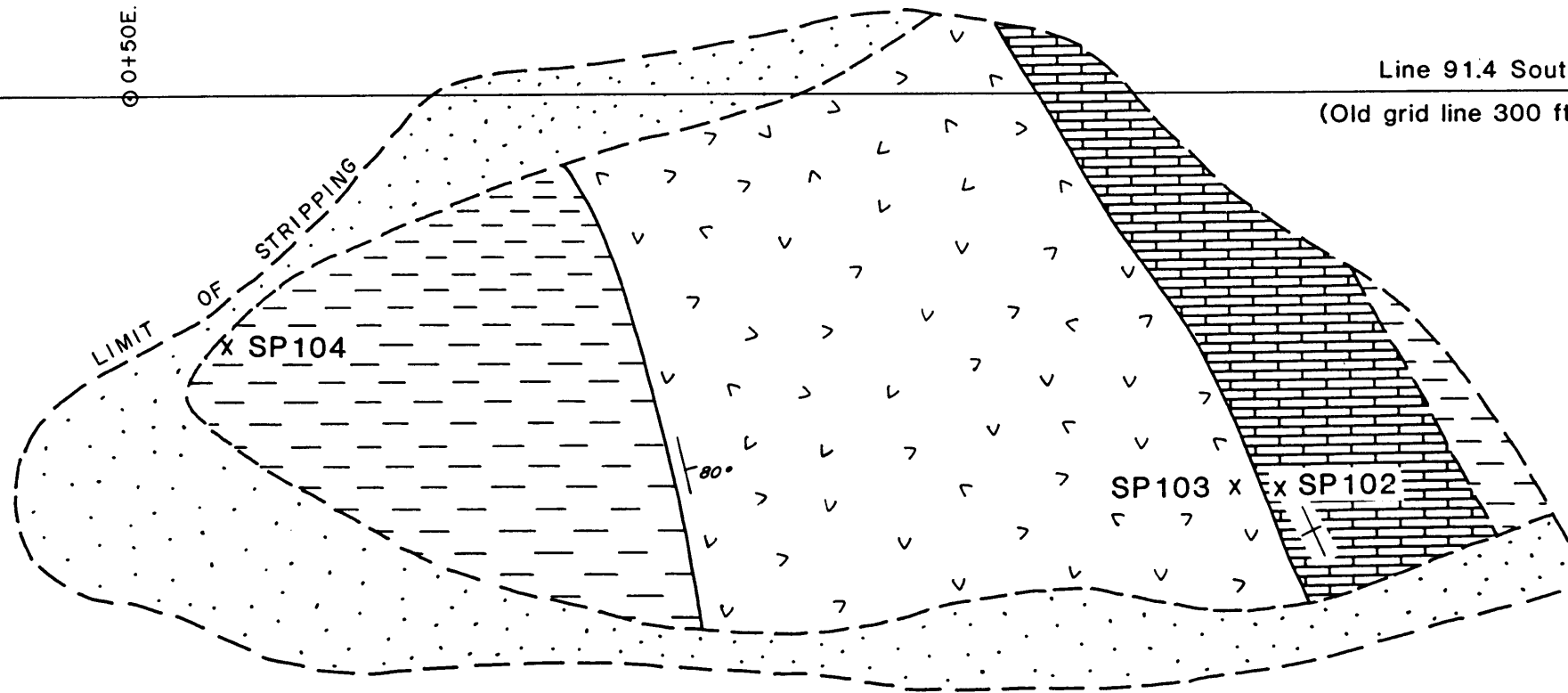


FIGURE 8

**DEL SANTO VMS PROSPECT**  
Omineca Mining Division, British Columbia

**GEOLOGICAL MAP  
OF STRIPPED AREA  
EAST OF TRENCHES**

METRES  
0                      5                      10

---

WILLARD D. TOMPSON                      JULY 23, 1993

Grey to greenish banded cryptocrystalline quartz occurs in beds(?) from about one millimeter to 20 centimeters thick and is mostly parallel with bedding, but some cuts across bedding. Narrow quartz veins are clear and glassy and cut across bedding.

A small stock of biotite-granodiorite intrudes the sedimentary-volcanic rock assemblage and is exposed near the road junction about 500 meters south of the trenches. Andesite near the margins of the intrusive is chloritized and epidotized.

The sedimentary rocks display evidence of thermal metamorphism; argillaceous tuff has a phyllitic fabric; limestone is altered to a crystalline marble and fine grained, massive garnet is developed in siliceous tuff(?) beds.

A small outcrop (?) of light buff colored quartz feldspar porphyry occurs near the baseline at coordinates; 5+75S.-0+05W. The rock is fine to medium grained, is silicified with quartz and cryptocrystalline quartz and is slightly sericitized. A few masses of boxworks of goethite and limonite remain where sulfide minerals were leached from the porphyry. Sulfide content was about 5 percent.

Rocks thruout the trenches were prominently stained with pyrolusite. Small patches of pyrophyllite were noted at several locations. Calcite and gypsum veins are mostly 2-3 millimeters wide and occur as cross cutting veins.

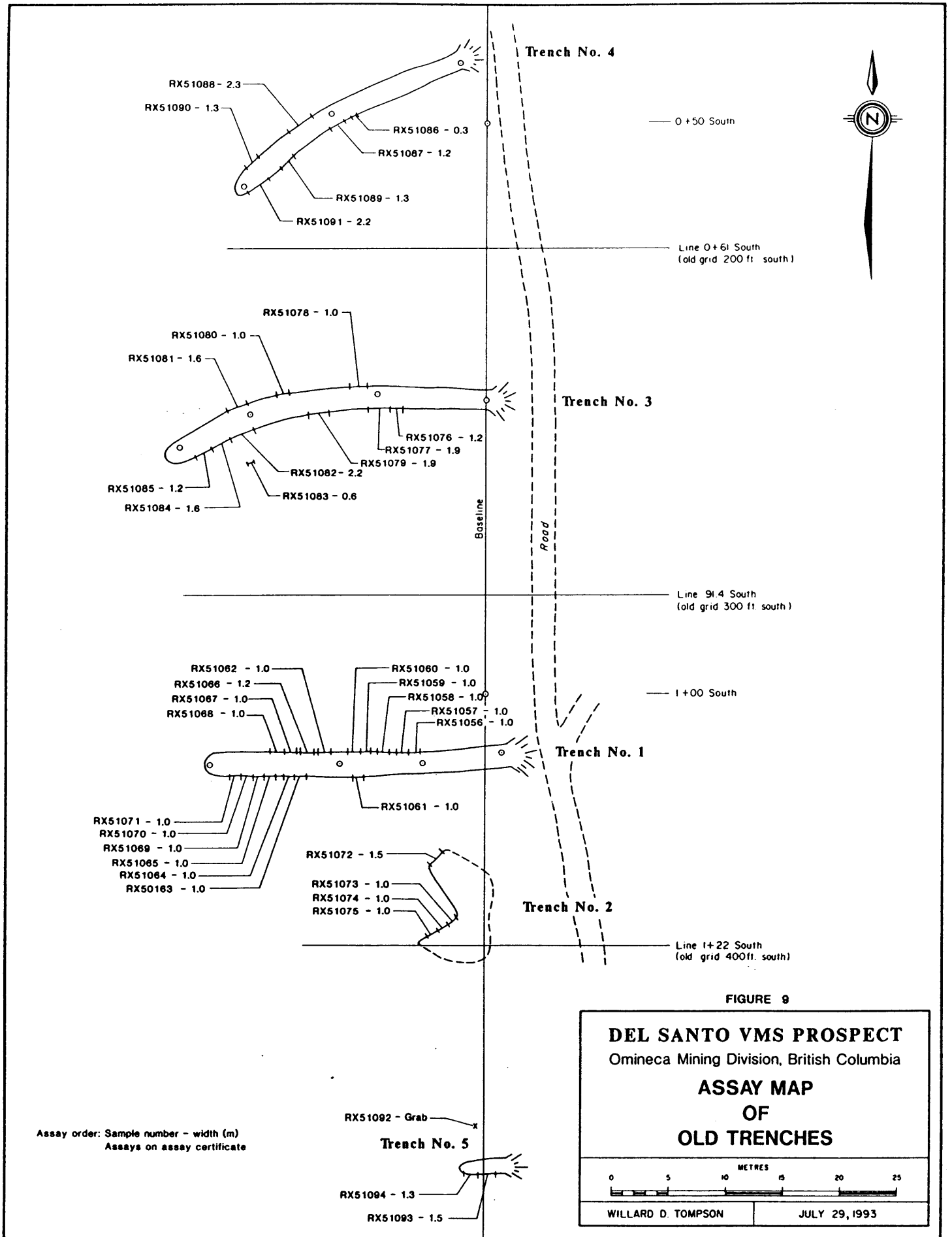
#### MASSIVE SULFIDE MINERALIZATION

Pyrite, pyrrhotite, chalcopyrite and sphalerite occur as blebs, partings, beds and in veins in the sedimentary rocks, commonly accompanied by cryptocrystalline quartz and by vein

quartz. Rare grains of bornite also occur.

Mineralization is exposed in the trenches over a strike length of 100 meters and a width of 15 meters (Figure 7). Overburden masks bedrock on strike to the north and south of the trenches.

Rock samples were cut from the trenches and their locations and sample widths are shown on Figure 9. Assays are shown in the assay certificate on page 15.





# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers

212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221

To: INCO EXPLORATION AND TECHNICAL SERVICES INC.  
ATTN: JIM MORIN  
2690 - 666 BURRARD ST.  
VANCOUVER, BC  
V6C 2X8

Page Number :1-A  
Total Pages :2  
Certificate Date: 14-SEP-93  
Invoice No. :19319963  
P.O. Number :  
Account :KPJ

Project : 60501-80001  
Comments: ATTN: JIM MORIN

## CERTIFICATE OF ANALYSIS A9319963

\*PLEASE NOTE

SAMPLE	PREP CODE		Au ppb	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
	FA+AA																				
RX 51056	205	274	25	21.6	1.04	2	40	< 0.5	< 2	0.48	14.5	19	43	2490	13.85	< 10	0.13	< 10	0.70	>10000	9
RX 51057	205	274	35	36.6	0.64	2	< 10	< 0.5	< 2	0.72	24.0	18	75	4460	13.05	< 10	0.06	< 10	0.73	>10000	6
RX 51058	205	274	30	6.6	3.06	4	50	< 0.5	< 2	6.28	8.0	19	84	431	5.50	< 10	0.64	< 10	2.28	>10000	10
RX 51059	205	274	5	0.8	3.91	20	90	< 0.5	< 2	2.82	1.0	31	126	99	5.58	10	0.66	< 10	3.51	2580	1
RX 51060	205	274	15	6.8	1.28	74	40	< 0.5	< 2	4.45	23.0	12	67	657	6.95	< 10	0.16	< 10	0.83	>10000	12
RX 51061	205	274	< 5	2.2	0.75	10	20	< 0.5	< 2	15.00	7.0	4	49	26	1.26	< 10	0.13	< 10	0.63	7740	10
RX 51062	205	274	15	15.2	1.96	26	20	< 0.5	< 2	3.87	33.5	18	62	1645	7.15	< 10	0.33	< 10	1.28	>10000	8
RX 51063	205	274	25	17.8	2.43	20	50	< 0.5	< 2	4.06	9.5	19	42	1395	8.06	10	0.24	< 10	1.48	>10000	15
RX 51064	205	274	< 5	1.0	2.93	10	30	< 0.5	< 2	3.97	1.5	21	27	44	6.78	10	0.26	< 10	1.84	>10000	1
RX 51065	205	274	< 5	0.8	3.37	22	100	< 0.5	< 2	2.05	0.5	26	37	42	6.80	10	0.71	< 10	2.09	9810	1
RX 51066	205	274	25	10.6	1.15	24	20	< 0.5	< 2	0.99	15.0	16	51	811	9.28	< 10	0.06	< 10	0.65	>10000	20
RX 51067	205	274	25	12.8	2.83	102	30	< 0.5	< 2	0.38	7.0	32	40	1045	11.60	< 10	0.06	< 10	1.09	>10000	15
RX 51068	205	274	5	1.4	3.14	12	60	< 0.5	< 2	4.06	4.5	16	22	111	6.41	< 10	0.58	< 10	1.92	>10000	5
RX 51069	205	274	< 5	0.6	4.99	8	160	< 0.5	< 2	2.11	< 0.5	27	49	105	7.59	10	0.83	< 10	3.65	3320	2
RX 51070	205	274	< 5	0.6	4.94	8	170	< 0.5	< 2	3.63	1.0	21	46	225	6.66	10	1.45	< 10	2.99	3570	2
RX 51071	205	274	< 5	< 0.2	5.30	6	260	< 0.5	2	0.45	0.5	29	37	70	9.10	10	1.00	< 10	3.27	1540	2
RX 51072	205	274	20	44.4	0.73	2	20	< 0.5	< 2	0.93	8.5	14	90	4620	12.65	< 10	0.14	< 10	0.45	>10000	10
RX 51073	205	274	35	124.0	0.99	6	30	< 0.5	52	3.40	7.0	17	56	>10000	14.20	10	0.14	40	0.67	>10000	7
RX 51074	205	274	30	76.0	0.62	2	10	< 0.5	< 2	0.44	13.0	17	83	7650	13.80	< 10	0.09	< 10	0.58	>10000	15
RX 51075	205	274	15	12.4	1.40	16	20	< 0.5	< 2	5.12	13.5	19	76	1095	9.08	< 10	0.18	< 10	0.73	>10000	30
RX 51076	205	274	< 5	0.8	0.32	12	80	< 0.5	< 2	6.07	0.5	10	56	77	3.52	< 10	0.04	< 10	2.16	1395	1
RX 51077	205	274	15	10.4	1.31	22	80	< 0.5	< 2	1.95	39.5	15	62	963	5.94	< 10	0.43	< 10	0.76	>10000	7
RX 51078	205	274	10	4.2	2.84	2	210	< 0.5	< 2	1.01	5.5	21	100	565	8.55	< 10	1.13	< 10	1.48	>10000	2
RX 51079	205	274	45	96.0	1.39	2	60	< 0.5	< 2	0.56	27.0	22	87	>10000	14.35	< 10	0.30	< 10	0.64	>10000	5
RX 51080	205	274	15	18.0	0.89	2	30	< 0.5	< 2	1.08	26.0	19	75	2350	13.20	< 10	0.12	< 10	0.96	>10000	10
RX 51081	205	274	15	13.0	0.95	2	30	< 0.5	< 2	0.46	18.5	20	104	1090	11.65	< 10	0.24	< 10	0.46	>10000	25
RX 51082	205	274	25	7.8	2.20	2	60	< 0.5	< 2	6.38	48.0	22	56	498	5.32	< 10	0.51	< 10	1.70	>10000	7
RX 51083	205	274	20	5.8	1.40	6	20	< 0.5	< 2	5.58	34.0	17	50	739	6.09	< 10	0.28	< 10	0.99	>10000	13
RX 51084	205	274	20	14.0	0.47	2	10	< 0.5	< 2	0.45	3.0	22	61	4520	13.90	< 10	0.09	< 10	0.63	>10000	20
RX 51085	205	274	15	2.4	2.72	18	30	< 0.5	< 2	8.40	27.5	14	67	160	5.31	< 10	0.39	< 10	2.19	>10000	12
RX 51086	205	274	40	>200	0.90	18	20	< 0.5	60	0.54	28.0	27	18	>10000	>15.00	10	0.21	20	0.86	>10000	17
RX 51087	205	274	15	5.8	0.88	20	20	< 0.5	< 2	7.26	63.5	17	46	368	3.48	< 10	0.06	< 10	0.66	>10000	4
RX 51088	205	274	20	8.6	1.53	44	60	< 0.5	< 2	5.33	80.0	19	48	726	5.70	< 10	0.23	< 10	0.83	>10000	5
RX 51089	205	274	10	5.2	2.86	46	50	< 0.5	< 2	3.54	43.0	23	78	620	4.79	< 10	0.33	< 10	1.66	>10000	6
RX 51090	205	274	10	4.2	0.27	14	40	< 0.5	< 2	11.70	27.5	8	28	168	1.23	< 10	0.05	< 10	1.19	>10000	18
RX 51091	205	274	15	11.8	0.86	12	20	< 0.5	< 2	0.40	6.0	19	23	1370	13.70	< 10	0.13	< 10	0.66	>10000	4
RX 51092	205	274	20	11.4	1.35	6	40	< 0.5	< 2	0.34	25.0	22	23	1640	9.82	< 10	0.41	< 10	0.80	>10000	9
RX 51093	205	274	15	21.8	0.64	126	80	< 0.5	< 2	3.57	12.0	17	24	1820	9.69	< 10	0.19	< 10	0.62	>10000	9
RX 51094	205	274	20	19.4	0.86	40	20	< 0.5	< 2	0.68	11.0	16	30	3480	14.70	10	0.24	< 10	1.00	>10000	3
RX 51095	205	274	15	4.6	0.99	140	10	< 0.5	< 2	5.69	5.5	19	33	497	9.16	10	0.08	< 10	1.26	>10000	< 1

CERTIFICATION:

*Hart Beckler*



# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers  
 212 Brooksbank Ave., North Vancouver  
 British Columbia, Canada V7J 2C1  
 PHONE: 604-984-0221

To: INCO EXPLORATION AND TECHNICAL SERVICES INC.  
 ATTN: JIM MORIN  
 2690 - 666 BARRARD ST.  
 VANCOUVER, BC  
 V6C 2X8

Page Number :1-B  
 Total Pages :2  
 Certificate Date: 14-SEP-93  
 Invoice No. :19319963  
 P.O. Number :  
 Account :KPJ

Project : 60501-80001  
 Comments: ATTN: JIM MORIN

\*PLEASE NOTE

## CERTIFICATE OF ANALYSIS A9319963

SAMPLE	PREP CODE	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
RX 51056	205 274	< 0.01	13	230	22	< 2	8	8	0.03	< 10	< 10	560	40	3410
RX 51057	205 274	< 0.01	11	120	32	< 2	6	6	< 0.01	< 10	< 10	504	50	5480
RX 51058	205 274	0.03	23	480	20	2	22	47	0.12	< 10	< 10	376	40	1545
RX 51059	205 274	0.08	40	630	12	8	28	32	0.12	< 10	< 10	316	20	202
RX 51060	205 274	0.01	5	290	32	2	9	44	0.06	< 10	< 10	1155	60	4500
RX 51061	205 274	< 0.01	2	190	14	4	4	108	0.03	< 10	< 10	918	20	1235
RX 51062	205 274	< 0.01	12	300	22	< 2	12	30	0.05	< 10	< 10	489	50	6350
RX 51063	205 274	< 0.01	16	800	28	2	17	57	0.03	< 10	< 10	440	40	1960
RX 51064	205 274	< 0.01	9	1280	24	6	18	48	0.01	< 10	< 10	161	30	208
RX 51065	205 274	0.01	18	1340	4	2	23	20	0.09	< 10	< 10	176	20	98
RX 51066	205 274	< 0.01	9	240	12	< 2	7	21	0.01	< 10	< 10	697	20	2850
RX 51067	205 274	< 0.01	14	330	46	4	12	27	0.01	< 10	< 10	903	20	1385
RX 51068	205 274	0.01	11	1220	12	4	19	34	0.10	< 10	< 10	278	30	744
RX 51069	205 274	0.16	20	1360	4	2	34	28	0.15	< 10	< 10	262	20	164
RX 51070	205 274	0.16	16	1120	< 2	6	27	36	0.15	< 10	< 10	208	30	120
RX 51071	205 274	0.02	13	1450	< 2	4	24	12	0.04	< 10	< 10	163	10	188
RX 51072	205 274	< 0.01	6	130	32	< 2	6	11	0.02	< 10	< 10	568	20	1680
RX 51073	205 274	0.01	7	350	50	< 2	6	25	0.02	< 10	< 10	607	20	1665
RX 51074	205 274	< 0.01	12	140	26	< 2	6	9	< 0.01	< 10	< 10	498	20	2940
RX 51075	205 274	< 0.01	9	310	24	< 2	9	67	0.01	< 10	< 10	701	40	2900
RX 51076	205 274	0.02	7	400	6	8	6	162	< 0.01	< 10	< 10	43	10	72
RX 51077	205 274	< 0.01	12	340	28	< 2	6	17	0.08	< 10	< 10	357	40	6750
RX 51078	205 274	0.01	24	510	< 2	2	18	22	0.20	< 10	< 10	297	30	1275
RX 51079	205 274	0.01	18	310	12	< 2	11	10	0.09	< 10	< 10	376	20	6230
RX 51080	205 274	< 0.01	8	200	4	< 2	7	10	0.03	< 10	< 10	820	60	5690
RX 51081	205 274	< 0.01	11	330	46	< 2	6	12	0.03	< 10	< 10	997	20	3100
RX 51082	205 274	0.01	9	420	16	< 2	13	40	0.06	< 10	< 10	516	50	9790
RX 51083	205 274	< 0.01	5	300	26	< 2	8	46	0.02	< 10	< 10	435	50	6700
RX 51084	205 274	< 0.01	7	60	12	2	4	1	< 0.01	< 10	< 10	447	20	570
RX 51085	205 274	< 0.01	12	390	42	< 2	13	58	0.07	< 10	< 10	716	60	5720
RX 51086	205 274	0.02	20	280	1145	< 2	5	5	0.02	< 10	< 10	459	30	7750
RX 51087	205 274	0.01	32	270	80	< 2	1	47	0.03	< 10	< 10	196	60	>10000
RX 51088	205 274	< 0.01	13	250	102	< 2	6	34	0.07	< 10	< 10	524	70	>10000
RX 51089	205 274	0.16	45	660	66	< 2	12	159	0.09	< 10	< 10	407	60	6730
RX 51090	205 274	0.01	1	440	172	< 2	2	131	0.02	< 10	< 10	1315	40	7530
RX 51091	205 274	< 0.01	8	250	54	< 2	8	4	0.02	< 10	< 10	249	50	1780
RX 51092	205 274	0.01	10	400	66	< 2	10	13	0.02	< 10	< 10	375	40	4510
RX 51093	205 274	< 0.01	8	220	92	< 2	6	70	0.01	< 10	< 10	426	70	2410
RX 51094	205 274	< 0.01	10	230	138	< 2	6	10	0.01	< 10	< 10	539	90	2750
RX 51095	205 274	< 0.01	12	230	70	2	8	78	< 0.01	< 10	< 10	480	80	1140

CERTIFICATION:

*Handwritten signature*

### CONCLUSIONS

The Del group is underlain by volcanic and sedimentary rocks of the Lower Jurassic Nilkitkwa Formation, a submarine assemblage which was deposited in an island-arc environment during a period of rift-type volcanism.

The sedimentary and volcanic rocks are intruded by biotite granodiorite and by quartz feldspar porphyry, with resultant thermal metamorphism of the intruded rocks.

Geochemical soil surveys show anomalous values in copper, zinc and silver with anomalies scattered throughout the grid area, mostly striking in a north-northwesterly direction.

Conductors identified by HLEM and VLF surveys are shallow conductors and no attempt has been made to discover conductors at greater depths.

Encouraging intersections of copper-zinc-silver mineralization were discovered in trenches and in drill core, but all physical work has been concentrated in a very small area of outcropping mineralization and no deep holes have been drilled. Total drilling by three different companies over a period of nine years is less than 400 meters.

A geochemical silt survey during the summer of 1993 produced uniformly low values in copper, zinc and silver. However, all of the drainages which were sampled are very small and flow over the surface of glacial till which has a prominent clay content. Thus, it is considered that the silt samples cannot reflect the geochemical character of bedrock.

The old trenches were resampled during the summer of 1993 and although they were partially sloughed, reasonably representative samples were taken through about 25 percent of the trench walls.

Assays are shown in the assay certificate on page 15 of this report.



RECOMMENDATIONS

Induced polarization surveys and magnetometer surveys are recommended on-strike to the north and to the south from the area of the existing trenches. It is proposed that the survey cover the area from L.2+00N. to L.6+00S. and from 3+00E. to 3+00 W., covering an area 800 meters N-S and 600 meters E-W. Contract costs of the surveys are about \$12,000.00 with an additional \$5,000.00 for grid line preparation.

A recommendation for diamond drilling will await results of the geophysical surveys.

REFERENCES CITED

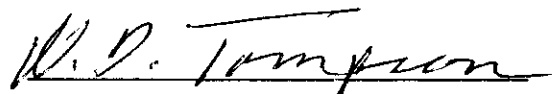
- B.C. Minister of Mines, Annual Report, 1915, p. K 233.
- B.C. Minister of Mines, Annual Report, 1928, pp. C 168, 169.
- B.C. Department of Mines and Petroleum Resources, G.E.M. 1969, p. 120.
- B.C. Ministry of Energy, Mines and Petroleum Resources, G.E.M., 1970, p. 158.
- B.C. Ministry of Energy, Mines and Petroleum Resources, Exploration in B.C., 1976, p. E 150.
- B.C. Ministry of Energy, Mines and Petroleum Resources, Exploration in B.C., 1979, p. 228.
- Brown, D.H., 1970; Geochemical report on Del Saunto and Del Santo claims, Quick, B.C.: private report for Falconbridge Nickel Mines, Ltd. Also recorded for assessment work with B.C. Dept. Mines and Petrol. Resources, Assessment Report no. 2543.
- Harper, G., 1970; Final report, Del Santo property, Omineca mining division, 93-L-10: private report for Falconbridge Nickel Mines, Ltd., 8 p., 12 maps and drill logs.
- Helgesen, D.H., 1970; Geochemical report, Chapman option (Del Santo group), Smithers, B.C.: private report for Falconbridge Nickel Mines, Ltd.
- L'Orsa, A., 1968; Del Santo prospect, Quick, B.C.: private report for Texas Gulf Sulphur Co.
- MacIntrye, D.G., Brown, D., Desjardins, P. and Mallett, P., 1986; Babine project, (93L/10): B.C. Min. Energy, Mines and Petrol. Res., Geol. Fieldwork, 1986, Paper 1987-1.
- Price B.J., 1979; Geological and geophysical report, Del Santo 1-6, Del Santo 7-10 and Del Saunto 31-33 claims: private report for Melvin Chapman and Frances Madigan. Also recorded by B.C. Ministry of Energy, Mines and Petrol. Res. as Assessment Report no. 7286.
- Tipper, H.W. and Richards, T.A., 1976; Jurassic stratigraphy and history of north-central British Columbia: Geol. Sur. Canada Bull. 270.
- White, Glen E., 1978; Del Santo property, P.E.M. Survey: for Great Plains Ltd., letter and 4 plates.

CERTIFICATE

I, Willard D. Tompson, of Smithers, British Columbia do hereby certify:

1. THAT I am a consulting geologist residing at 1380 Cronin Place, Smithers, British Columbia;
2. THAT I hold a Master of Science degree (Geology) from Montana State University, Bozeman, Montana;
3. THAT I am registered as a Professional Geoscientist by The Association of Professional Engineers and Geoscientists of British Columbia;
4. THAT I am a Fellow of the Geological Association of Canada;
5. THAT I have practiced my profession for more than 30 years;
6. THAT this report is based upon a thorough assessment of published and unpublished data on the prospect area at Deep Creek and the surrounding area, the sources for which are recorded in, "References Cited" in this report and upon observations made in June, July and August, 1993 while conducting exploratory work on the claims;
7. THAT I am owner of an interest in the claims described in this report.

Dated at Smithers, British Columbia, this 24<sup>th</sup> day of September in the year, 1993.



Willard D. Tompson, P. Geo.

**APPENDIX I**

**EXPLORATION COSTS  
DEL GROUP, 1993**

EXPLORATION COSTS, DEL GROUP, 1993

Geological		
Field supplies	47.32	
Maps and reports	408.70	
Contracts	<u>500.77</u>	956.79
Geochemical		
Field supplies	260.38	
Geochem. analysis	<u>313.77</u>	591.88
Geophysical		
Contract	<u>481.50</u>	481.50
Assays	<u>598.11</u>	
Transportation		
Truck Rental	1088.00	
Air fares, motels	<u>430.46</u>	1518.46
Communications		
Telephone, FAX	<u>200.00</u>	
Office		
Typing contract	132.14	
Supplies	<u>46.12</u>	178.26
Geological, wages and fees		
W.D. Tompson, Jan 4 - Aug 19, 1993; a total of 26 days @ \$300.00	7800.00	
Al Burrows, June 18-Aug 19, 1993; a total of 11 days @ \$200.00	<u>2200.00</u>	10000.00
Geochemical, wages and fees		
W.D. Tompson, July 15, 16 & 19/93, a total of 3 days @ \$300.00	900.00	
Al Burrows, July 15, 16 & 19/93, a total of 3 days @ \$200.00.	<u>600.00</u>	<u>1500.00</u>
TOTAL COST		\$ 16025.00

**APPENDIX II**

**PETROGRAPHIC REPORT**



# Vancouver Petrographics Ltd.

JAMES VINNELL, Manager  
JOHN G. PAYNE, Ph.D. Geologist  
CRAIG LEITCH, Ph.D. Geologist  
JEFF HARRIS, Ph.D. Geologist  
KEN E. NORTHCOTE, Ph.D. Geologist

P.O. BOX 39  
8080 GLOVER ROAD,  
FORT LANGLEY, B.C.  
VOX 1J0  
PHONE (604) 888-1323  
FAX. (604) 888-3642

Report for: Willard D. Tompson,  
P.O. Box 395,  
SMITHERS, B.C.  
VOJ 2N0

Job 92 0047

December 9th, 1992

## SAMPLES:

3 rock specimens, designated DEL 101, 102 and 103, were submitted for petrographic examination. They were prepared as standard thin sections.

## SUMMARY:

These three rocks all appear to be andesitic volcanics. They vary somewhat in mineral proportions, textural characteristics and intensity of pervasive alteration.

DEL-103 is the least altered. It consists of an equigranular aggregate of rather fresh plagioclase and mafics, with scattered, small phenocrysts of augite. It could be a dyke rock. The sectioned portion is cut by veinlets of prehnite (with carbonate and quartz) and epidote.

DEL-102 is non-porphyrific. It exhibits a classic trachytic texture of slender flow-oriented plagioclase laths in a cryptocrystalline matrix/interstitial phase which probably originated as mafic glass. It is clearly an andesite extrusive. It is largely free of pervasive alteration, but is cut by a network of veinlets of carbonate, prehnite and chlorite.

DEL-101 is strongly altered and of mafic-rich composition. It has an irregularly foliated, clumpy fabric consisting of sericitized plagioclase in a matrix of chlorite speckled with tiny granules of sphene. Carbonate and prehnite form veinlets and replacement(?) pockets. This rock is most likely a deuterically altered, flow-textured/amygdaloidal volcanic, though the clumpy macroscopic fabric and localized differences in degree of alteration of the plagioclase suggest the possibility that it could be fragmental (flow breccia or tuff).

J.F. Harris Ph.D. (929-5867)

## Estimated mode

Plagioclase	12
Sericite	18
Chlorite	50
Carbonate	12
Prehnite	5
Sphene)	3
Rutile)	

Macroscopic examination of the off-cut of this sample reveals a contorted foliaceous texture distinctly different from the rather homogenous, strongly white-etched (plagioclase-rich) appearance of the other two rocks of the suite.

In thin section it is found to be of notably chlorite-rich composition, and has the aspect of an altered andesite.

The rock consists essentially of sinuously oriented, lath-like plagioclase crystals, 0.1 - 0.5mm in length, rather sparsely and irregularly dispersed through a matrix of chlorite. The latter is speckled with rather abundant tiny granules of sphene, which commonly form trains paralleling the irregular foliation and/or rim or encrust the plagioclase laths.

The plagioclase shows variable degrees of alteration to felted sericite (ranging from essentially fresh to completely pseudomorphed).

Carbonate and prehnite are prominent accessory constituents, occurring as veinlets, discrete pockets and more or less diffuse clumps. Some of these have the aspect of amygdules (or, possibly, totally altered phenocrysts) as do some of the larger, more homogenous areas of chlorite.

The fabric of this rock most likely derives from flow in a strongly altered, mafic-rich andesite - possibly a flow breccia. Alternatively it could be a deformed mafic tuff.

Sample Location; On claim line, 2300 meters north of LCP for Deep and Del mineral claims.



## Estimated mode

Plagioclase	50
Sub-opaques	28
Chlorite	5
Carbonate	10
Prehnite	7

This is a fine-grained rock which exhibits a trachytic texture indicative of extrusive origin. It is of andesitic composition.

It consists predominantly of plagioclase, as an aggregate of slender, prominently elongate laths (up to 0.6mm in length and, typically, 0.01- 0.05mm in width). These show a pronounced preferred orientation of flow-related aspect.

The plagioclase laths are set in a matrix/interstitial phase of minutely fine-grained, sub-opaque material, which probably consists of mixtures of pyroxene, amphibole, chlorite, carbonate and spene - in indeterminate proportions. It has the aspect of an original mafic glass, now more or less devitrified.

Chlorite also occurs as sporadic, discrete, irregular-shaped pockets, 0.05 - 0.2mm in size, which may represent small amygdules.

The rock is cut by multi-directional hairline veinlets (locally coalescing to angular pockets) of intergrown carbonate, prehnite and chlorite. These minerals (particularly the prehnite) also occur in dispersed form as tiny flecks throughout the matrix.

A minor component of somewhat blockier, coarser plagioclase grains (micro-phenocrysts) shows partial replacement by prehnite or sericite.

Sample Location; On claim line, 2250 meters north of LCP for Deep and Del mineral claims.

## Estimated mode

Plagioclase	50
Sericite	4
Pyroxene	15
Amphibole	10
Chlorite	5
Sphene)	2
Rutile)	
Epidote	7
Carbonate	1
Quartz	1
Prehnite	5

This is a homogenous, fine-grained, microporphyritic rock of andesitic composition.

It consists predominantly of an aggregate of stumpy, subhedral/prismatic plagioclase, of grain size 0.1 - 0.2mm, with rather abundant interstitial mafics. Some of the plagioclase shows weak to moderate pervasive sericitization but, overall, is rather fresh.

The mafics are colourless pyroxene (augite) variably modified to olive-brown secondary products - probably mainly amphibole: occasional flecks of epidote are also present. There is also an accessory component of chlorite, as evenly disseminated, tiny pockets, independent of the other mafics.

Sphene and rutile are widespread minor accessories, but opaques are absent.

The rather sparse, equant phenocrysts consist mainly of augite, 0.2 - 1.5mm in size. There are also a few, small, plagioclase microphenocrysts (<0.4mm in size).

The rock is cut by veinlets of various kinds. The most prominent, macroscopically noticeable vein consists of a meshwork of acicular/prismatic prehnite with a core of pockety quartz and carbonate.

A few independent hairline veinlets of carbonate are also present.

The most abundant hairline veinlets (discordant to the prehnite vein) consist of fine-grained, meshwork-textured epidote.

Sample Location; On claim line, 1550 meters north of LCP for Deep and Del mineral claims.