

LOG NO: 0728	RD.
ACTION:	
FILE NO:	

Geological Report
on the
Monument Property
Grohman Mountain Area
Slocan Mining Division
British Columbia, Canada

Prepared For:

Robert M. Mackenzie
1409 Front Street
Nelson, British Columbia
V1L 4C5

Covering:

Monument Claim Group

	Units	Record No.
Mineral Lease No. M-111		
Monument #3	1 cg	L.5011
Monument #2 Fr	Fr cg	L.5013
Monument #2	1 cg	L.5014
Monument	12 units	4397(5)
Annex	20 units	5763(7)

Located:

Latitude Longitude
49° 38' 117° 20'
 NTS 82F/11W

Elevation: 6000 feet (1829 meters) - 7500 feet (2786 meters)

Prepared by:

P. J. Santos, P. Eng. **GEOLOGICAL BRANCH**
Anginel Resources Ltd **ASSESSMENT REPORT**
626 - 9th Ave.
Castlegar, B. C.
V1N 1M4
July 14, 1989

18,934

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1. INTRODUCTION

This report was written at the request of Robert M. Mackenzie owner of the Monument Group of Claims who resides at 1409 Front Street, Nelson, British Columbia, Canada, V1L 4C5.

Geological investigations were conducted by P. J. Santos, P. Eng. on the property on October 8, and 11, 1988 accompanied by Robert M. Mackenzie.

2. LOCATION AND ACCESS

The Monument Claim Group is located in the Grohman Mountain (Monument Peak) area ten aerial miles (16 kilometers) north of Nelson, British Columbia (see Plate 1) in the highlands drained by Monument Creek, Baldface Creek, and 4th Fork Lemon Creek at an elevation of 6000 feet (1829 meters) to 7500 feet (2286 meters) above sea level. The property lies at latitude $49^{\circ} 38'$ and longitude $117^{\circ} 20'$ and is plotted on NTS 82F/11W (see Plate 2). The claims are partly in the Nelson Mining Division and mostly in the Slocan Mining Division of B. C. but the LCP'S (Legal Corner Posts) of the claims are in the Slocan Mining Division.

The topography of the property is moderate to very steep in places and is partly above the tree line. Part of the property is covered by commercial timber and it has been logged in the past.

Access to the property is by way of the Lemon Creek road thence by way of the Monument Creek road. It is 5 miles (8 kilometers) from the property to the junction of the Monument Creek road and the Lemon Creek road and 6.9 miles (11 kilometers) to the junction of Lemon Creek road and Highway No. 6 at the community of Lemon Creek. From Lemon Creek it is 56 miles (90 kilometers) to Trail, British Columbia.

3. PROPERTY DESCRIPTION AND HISTORY

The Monument Property owned by Robert M. Mackenzie consists of three (3) crown-granted claims held under Mineral Lease No. M-111 and two (2) located claims totaling 32 claim units as shown on Plate 2. Details of these claims are listed below:

<u>Claim</u>	<u>Record No.</u>	<u>Area</u>	<u>Due Date</u>
Mineral Lease No. M-111		116.21 Acres	Mineral Lease
Monument #3 c.g.	L.5011	(47.2 hec.)	good to 2006,
Monument #2 Fr. c.g.	L.5013		paid til Nov. 29,
Monument #2 c.g.	L.5014		1989
Monument	4397(5)	12 units	May 22, 1990
Annex	5763(7)	20 units	July 22, 1989

The located claims Monument and Annex overlap entirely the crown-granted claims and the property has therefore an area of 800 hectares (1976.8 acres). Except for the crown-granted claims (Mineral Lease No. M-111) no legal surveys have been done on the property.

The three crown-granted claims were originally part of a group of 8 crown-granted claims that were staked prior to the turn of this century. Several short adits and surface cuts were driven into the quartz veins in the 1900's, presumably for gold and silver. In 1964, Robert M. Mackenzie acquired the property through Mineral Lease No. M-111 and discovered tungsten, then made several more cuts for sampling purposes. Canadian Exploration Limited (Placer Ltd.) has evaluated the property for tungsten in 1967 and was considered as a possible source of mill feed at their tungsten mine which was then in operation at Salmo, B. C. No systematic exploration has ever been done on the property up to this date. Later, the Annex and the Monument located claims were staked by R. M. Mackenzie.

4. REGIONAL GEOLOGY

The area around Mount Grohman (Monument Peak) is underlain by metamorphosed volcanic rocks and metamorphosed sedimentary rocks belonging to the Jurassic Rossland Group and by granite belonging to the Cretaceous Nelson Intrusives (see Plate 3). In this area, the rock units of the Rossland Group occur as a series of roof pendants within the Nelson Intrusive.

The metamorphosed volcanics in the Rossland Group are originally fine grained andesites which have been altered to greenstones. These rocks are the host rocks of gold-bearing copper sulfide veins known in the area as the Rossland-type ore and as breccia-zones, a gold ore type recently discovered in the area and is currently the object of intense exploration by several companies.

The meta-sediments in the Rossland group are black argillites and tuffaceous slates that are generally pyritic.

The Nelson Intrusives consist of medium to coarse grained granite that often grades to very coarse grained porphyritic granite wherein large pink feldspars occur as phenocrysts. In proximity to other rocks, the intrusives are often foliated. The Nelson Intrusives are host rocks to high grade gold and silver quartz veins. Several of these mines with this ore-type were in production in the past and several properties of this type are currently under active exploration and development in the area.

Lamprophyre dykes and feldspar pegmatite dykes usually cut the rock units of both the Nelson and Rossland Group.

5. LOCAL GEOLOGY AND MINERALIZATION

In the property are a series of banded greenstones (altered andesites) and black fissile argillites (meta-sediments) belonging to the Rossland Group that strike Az 140° and dip 30° SW. The greenstones are usually well epidotized and the black argillites have disseminated pyrite. These meta-volcanics and meta-sediments form a series of roof pendants in the granite intrusive.

The granite intrusive grades from a medium grained, homogeneous granite to a coarse grained porphyritic-textured granite which becomes foliated in proximity with the Rossland rock units with the gneissic texture parallel to the banding of the Rossland rock units.

In the property quartz veins 4 feet (1.22 meters) to 8 feet (2.44 meters) thick cut both the Rossland and Nelson rock units. The quartz veins contain stringers and disseminations mainly pyrrhotite and pyrite, some galena and sphalerite and in some cases marcasite. Scheelite forms parallel streaks and disseminations in the quartz usually independent of the sulfides. Assays of samples taken by the author, R. M. Mackenzie, and O. E. Bradley, P. Eng. show significant values in silver, tungsten, lead and zinc and some significant

indications of gold (see Appendix for sample description and assays). An ICP analysis of a composite vein sample showed elevated values of copper, lead, zinc, iron, bismuth, and tungsten.

An 8-feet (2.44 meters) quartz vein cutting Rossland meta-volcanics at the contact with Nelson granite is exposed on the original Monument c.g. (L5012) east of Mount Grohman at elevation 6740 feet (2054 meters). A 15-meter (49 feet) crosscut with a shaft at the end (see inset on Plate 4) was driven to intersect this vein. The vein contains streaks and disseminations of pyrrhotite, pyrite, sphalerite and galena. A 2½ feet (.76 meter) sample taken from the hanging wall side gave an assay of .002 oz per ton Au, 7.15 oz per ton Ag, .38% Pb, .99% Zn, 5.05% Fe, <.01% Cr, .09% Bi, and <.01% W. The vein can be traced for 40 feet (12.19 meters) along strike and is covered by overburden on either side. This vein strikes Az 130° and dips 30° SW and appears mineralogically and structurally similar to the veins exposed on the northwest side of Mount Grohman (Monument 2 c.g.).

On the northwest side of Mount Grohman, a short crosscut exposes a 4-feet (1.22 meters) thick quartz vein at the east end of a bulldozer road and approximately 1000 feet (305 meters) to the northwest, a cut exposes what is presumed to be the

same vein (see Plate 4). Small cuts, trenches, and the road exposes the quartz vein in several places between these two points. These cuts were sampled by P. J. Santos as shown on Plate 4 during the geological investigation. The samples assayed from L.001 to .004 oz per ton Au, 5.60 to 20.9 oz per ton Ag, .23 to .97% Pb, .01 to .22% Zn, 1.5 to 4.53% Fe, .08 to .36% Bi, and .01 to .78% W. The vein is fairly consistent in silver but quite erratic in tungsten and gold. There is a direct association of the silver with the galena while there appears to be a relationship of the gold with the bismuth. The tungsten is independent of all the other metals. A sample of the Rosslund meta-sediments with disseminated pyrite gave some values in copper and tungsten.

O. E. Bradley, P. Eng. has estimated a reserve of 22,000 tons between station 9E to the adit assuming down dip continuity of 150'. Assuming that the vein is continuous for 1000 feet, there is a potential tonnage of 100,000 tons in this side of the property. At the Monument claim southeast of Mount Grohman, assuming the vein is continuous for a strike length of 200 feet and a down dip extension of 150 feet, there is a potential tonnage of 20,000 tons.

On the Annex claim four old crown granted claims (Great Western, Great Northern, Grand Trunk, and Northern Pacific were staked by

the old timers at about the same time as the Monument. It is reported they found quartz veins similar to those in the Monument. A couple of samples from the Annex submitted by R. M. Mackenzie consisted of brown rusty quartz with disseminated pyrite. These samples were not assayed. This part of the property was not investigated by this author.

6. RECOMMENDATIONS

In view of the fact the Monument Property contains gold and silver-bearing deposits in rock units known to host such deposits, the following are recommended:

- (a) Conduct a detailed geologic mapping of the property and sample thoroughly the exposed veins(s) to determine the relationship of the gold mineralization to the sulfide-bearing vein,
- (b) Conduct a geochemical soil sampling program using the parameters identified by the vein sampling program,
- (c) Conduct geophysical (EM and magnetics) surveys to locate the sulfide-bearing part of the vein, and,
- (d) Conduct a 5000-foot exploration drilling program on the property on the vein now exposed and on the possible extension of the vein that will be indicated by the geochemical and geophysical work.

7. SUMMARY AND CONCLUSION

The Monument Property, located in the Slocan Mining Division of British Columbia, owned by Robert M. Mackenzie of Nelson, B. C. is a gold-silver and base metal prospect with a potential tonnage of at least 120,000 tons. The property has never been systematically explored either by drilling, geophysics, or geochemistry.

The property is located in an area underlain by rock units which are hosts to gold and silver deposits which are currently under active exploration and development.

A program of geologic mapping and sampling, geochemical soil sampling, EM and magnetics, and diamond drilling is recommended for the property.

8. BIBLIOGRAPHY

- | | |
|---------------------------|--|
| Bradley, O. E.
1967 | Mackenzie tungsten prospect,
Monument creek, Nelson, B. C.,
Canadian Exploration Limited
memorandum report, 6 pp. |
| Little, H. W.
1960 | Nelson map area, west half,
British Columbia; GSC Memoir
308, 205 pp. |
| Metcalfe, S.
1971 | Spectrochemical analysis of
Monument samples, 17 pp. |
| Minister of Mines
1901 | B. C. Ministry of mines annual
report, p. 1109. |

9. STATEMENT OF QUALIFICATIONS

I, Perfecto J. Santos, of 626 - 9th Avenue, of the City of Castlegar, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geological Engineer with the firm of Anginel Resources Ltd. whose offices are located at 626 - 9th Avenue, Castlegar, British Columbia, Canada,

That I am a registered Professional Engineer in the Province of British Columbia, Canada,

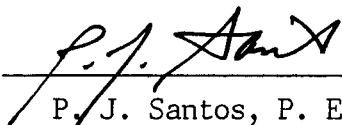
That I am a graduate of the College of Engineering, University of the Philippines with a Bachelor of Science degree in Mining Engineering (Geology Option),

That I have been practicing my profession continuously for the past twenty-eight years,

That I have prepared this report based on personal work conducted on the property during the periods Oct. 8 and 11, 1988 as described in this report on the Monument Property owned by Robert M. Mackenzie of Nelson, British Columbia, Canada,

That I have not received directly or indirectly nor do I expect to receive any interest direct or indirect in the Monument Property.

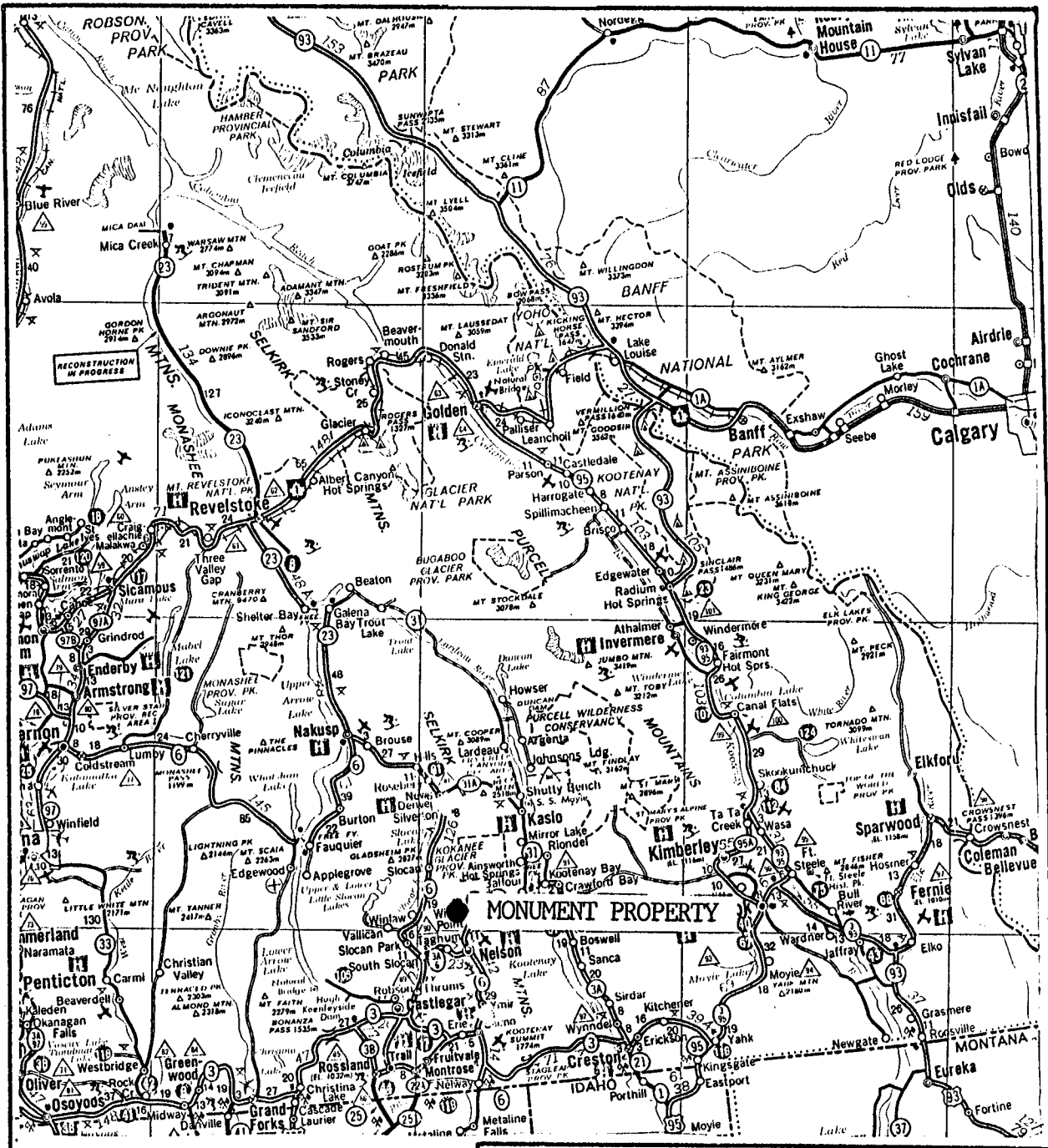
DATED at Castlegar, British Columbia, this 14th day of July, A. D. 1989.



P. J. Santos, P. Eng.

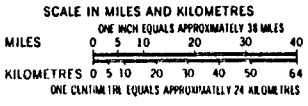
10. APPENDIX

- (a) Maps and Illustrations
- (b) Description of Samples
- (c) Assay Certificates
- (d) Statement of Costs and Days Worked

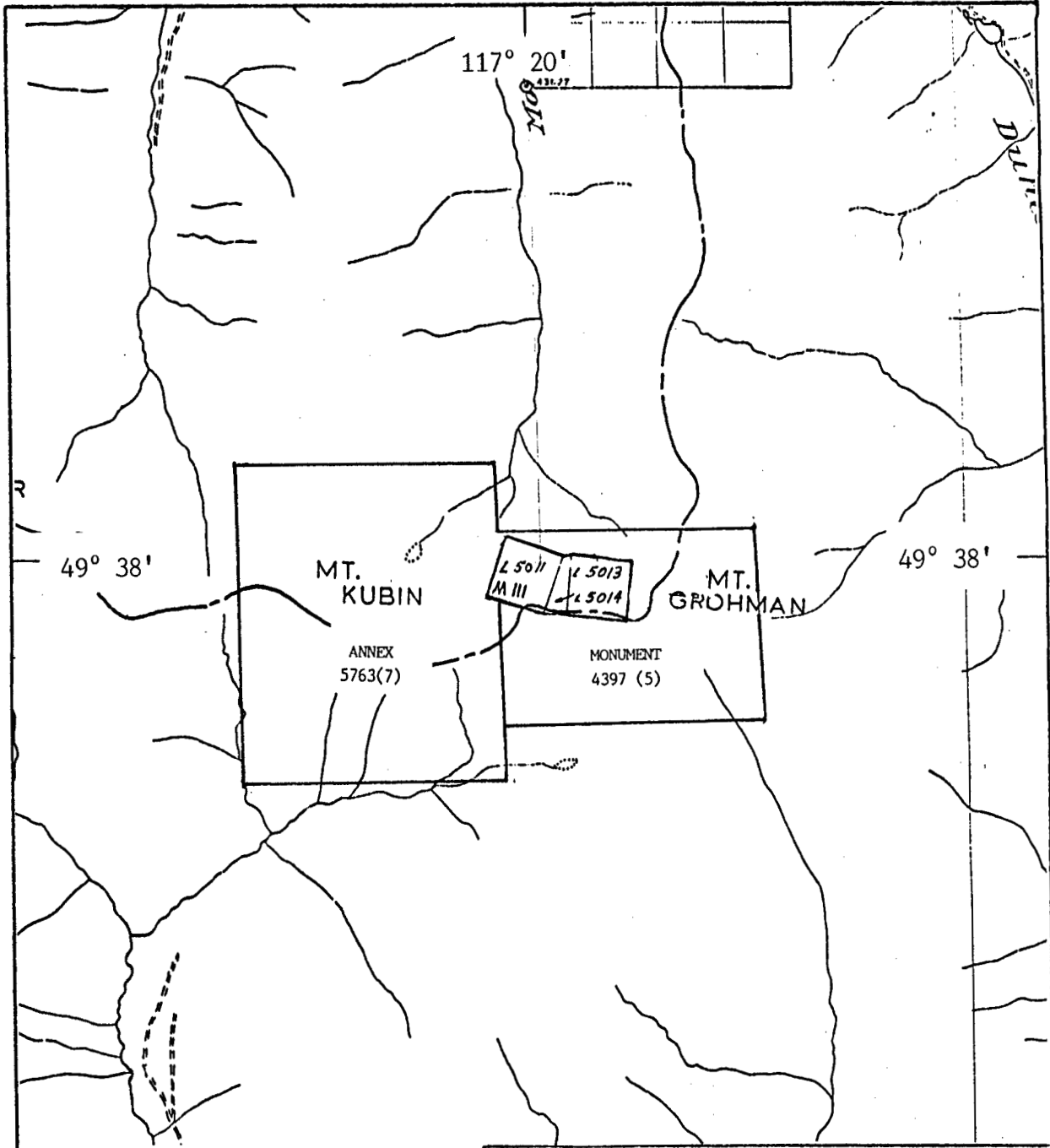


LEGEND and SYMBOLS

○ MONUMENT PROPERTY



<p>P. J. (PEC) SANTOS P. ENG. <i>Consulting Geologist</i></p>	
<p>Project Title</p> <p style="text-align: center;">INDEX MAP</p> <p style="text-align: center;">MONUMENT PROPERTY SLOCAN MINING DIVISION BRITISH COLUMBIA, CANADA</p>	
DATE	Dec. 1988
SCALE	AS SHOWN
DRAWN BY	PLATE NO.
P. J. SANTOS	1



LEGEND and SYMBOLS


 MONUMENT PROPERTY

P. J. (PEC) SANTOS P. ENG.
Consulting Geologist

Project Title

CLAIM MAP
 MONUMENT PROPERTY
 SLOCAN MINING DIVISION, B.C.

DATE · December 1988

SCALE · 1: 50 000

DRAWN BY · P. J. SANTOS

PLATE NO. 2



LEGEND

Cretaceous

- 20 VALHALLA PLUTONIC ROCKS
- 19 NELSON PLUTONIC ROCKS

Jurassic

- 16 ROSSLAND FORMATION

Triassic

- 13 SLOCAN FORMATION

Permian and Pennsylvanian

- A MILFORD SERIES



Geology by H.W. Little, GSC Memoir 308
Map 1090A

P. J. (PEC) SANTOS P. ENG.
Consulting Geologist

Project Title

GEOLOGIC MAP
LEMON CREEK AREA
Slocan Mining Division
B.C., Canada

DATE
Oct. 1984

SCALE
1 in = 4 Mi

DRAWN BY

PLATE NO. 3

TABLE OF MONUMENT SAMPLES

<u>Sample No.</u>	<u>Description</u>
# 0201	Composite Sample from Monument Property taken by Bob Mackenzie. Rusty quartz with pyrite, pyrrhotite, rosettes of MoS_2 , and minor specks of scheelite.
# 58076	Rusty to white quartz with streaks and disseminations of pyrrhotite, pyrite, sphalerite, and galena.
# 58077	Rusty to white quartz, streaks and disseminations of pyrite and pyrrhotite.
# 58078	White quartz with disseminated pyrite, galena, sphalerite, stibnite (?).
# 58079	White quartz with disseminated pyrite, marcasite, galena, sphalerite.
# 58080	Rusty quartz with abundant scheelite, disseminated pyrrhotite.
# 58081	Meta-sediments (argillites and quartzite), disseminated pyrrhotite and pyrite.
# 58082	Rusty and white quartz with streaks of pyrrhotite and pyrite, occasional cross-tails of scheelite.

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B.C. CERTIFIED ASSAYERS

912 - 1 LAVAL CRESCENT, KAMLOOPS, B.C. V2C 5P5 PHONE (604) 372-2784 FAX 372-1112

**** ASSAY CERTIFICATE ****



To: P.J. Santos
626 - 9th Avenue
Castlegar, B.C.
V1N 1M4

Number: K 9375

Date: Nov. 28, 1988

Proj.: Monument

Attn:

No.	Description	Au ozs/ton	Ag ozs/ton	Pb %	Zn %	W %
1	58076	.002	7.15	.38	.99	--
2	58077	<.001	5.60	.30	.01	--
3	58078	.002	12.5	.80	.05	--
4	58079	.001	20.9	.97	.22	--
5	58080	<.001	5.39	.24	.01	.75
6	58081	<.001	<.01	--	-	--
7	58082	.004	8.17	.23	.01	.78

David A. Sturtevant

B.C. Certified Assayer

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912 - 1 LAVAL CRESCENT, KAMLOOPS, B.C. V2C 5P5 PHONE (604) 372-2784 FAX 372-1112

♦♦ ASSAY CERTIFICATE ♦♦



To: P.J. Santos
626 - 9th Avenue
Castlegar, B.C.
V1N 1M4

Number: K 9394B

Date: Dec. 8, 1988

Proj.: Monument

Attn:

No.	Description	Fe %
1	58076	5.05
2	58077	4.28
3	58078	1.51
4	58079	3.83
5	58080	4.53
6	58081	4.01
7	58082	1.92

David A. Blundell

B.C. Certified Assayer

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**** ASSAY CERTIFICATE ****



To: P.J. Santos
626 - 9th Avenue
Caatlegar, B.C.
V1N 1M4

Number: K 9398

Date: Dec. 14, 1988

Proj.: Monument

Attn:

No.	Description	Cu %	Bi %	W %
1	58076	<.01	.09	<.01
2	58077	<.01	.08	<.01
3	58078	<.01	.17	<.01
4	58079	<.01	.20	.08
5	58080	.01	.12	--
6	58081	.01	<.01	.02
7	58082	.02	.36	--

David A. Stewart

B.C. Certified Assayer

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

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. AU DETECTION LIMIT BY ICP IS 3 PPM.
 - SAMPLE TYPE: ROCK

DATE RECEIVED: NOV 21 1988 DATE REPORT MAILED: *Nov 24/88* SIGNED BY: *C. Long* D. TOYE, C. LEONG, B. CHAN, J. WANG; CERTIFIED B.C. ASSAYERS

BOB MACKENZIE PROJECT MONUMENT File # 88-5933

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Tl	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W
	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	%	PPM	PPM	%	PPM	%	PPM	%	%	%	PPM
X 0201	1	272	2061	397	216.6	✓ 27	80	74	10.48	2	5	ND	1	5	23	9	3176	1	.03	.007	2	9	.08	8	.01	2	.10	.01	.03	1054

✓ Assay required for correct result

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B.C. CERTIFIED ASSAYERS

912 - 1 LAVAL CRESCENT, KAMLOOPS, B.C. V2C 5P5 PHONE (604) 372-2784 FAX 372-1112

**** ASSAY CERTIFICATE ****



To: Mr. P. J. Santos
626 9th Ave.,
Castlegar, B.C.
V1N 1M4

Number: K 9435

Date: Feb. 15, 1989

Proj.: Monument

Attn:

No.	Description	Pt ozs/ton
1	58076	<.01
2	58077	<.01
3	58078	<.01
4	58079	<.01
5	58080	<.01
6	58081	<.01
7	58082	<.01

Steve A. Shindell

B.C. Certified Assayer

(d) STATEMENT OF COSTS AND DAYS WORKED

Geologist:

2 days field work	
2 days research, report writing, data plotting	\$ 1,000.00
Consulting Fee	100.00
Assays and Freight	567.60
Ore Sampling, 2 days	280.00
Drafting, 8 hours	64.00
Typing and secretarial	50.00
Truck rental, 2 days	80.00
Materials, blue printing, photocopying	<u>37.75</u>
Total Cost	\$ 2,179.35

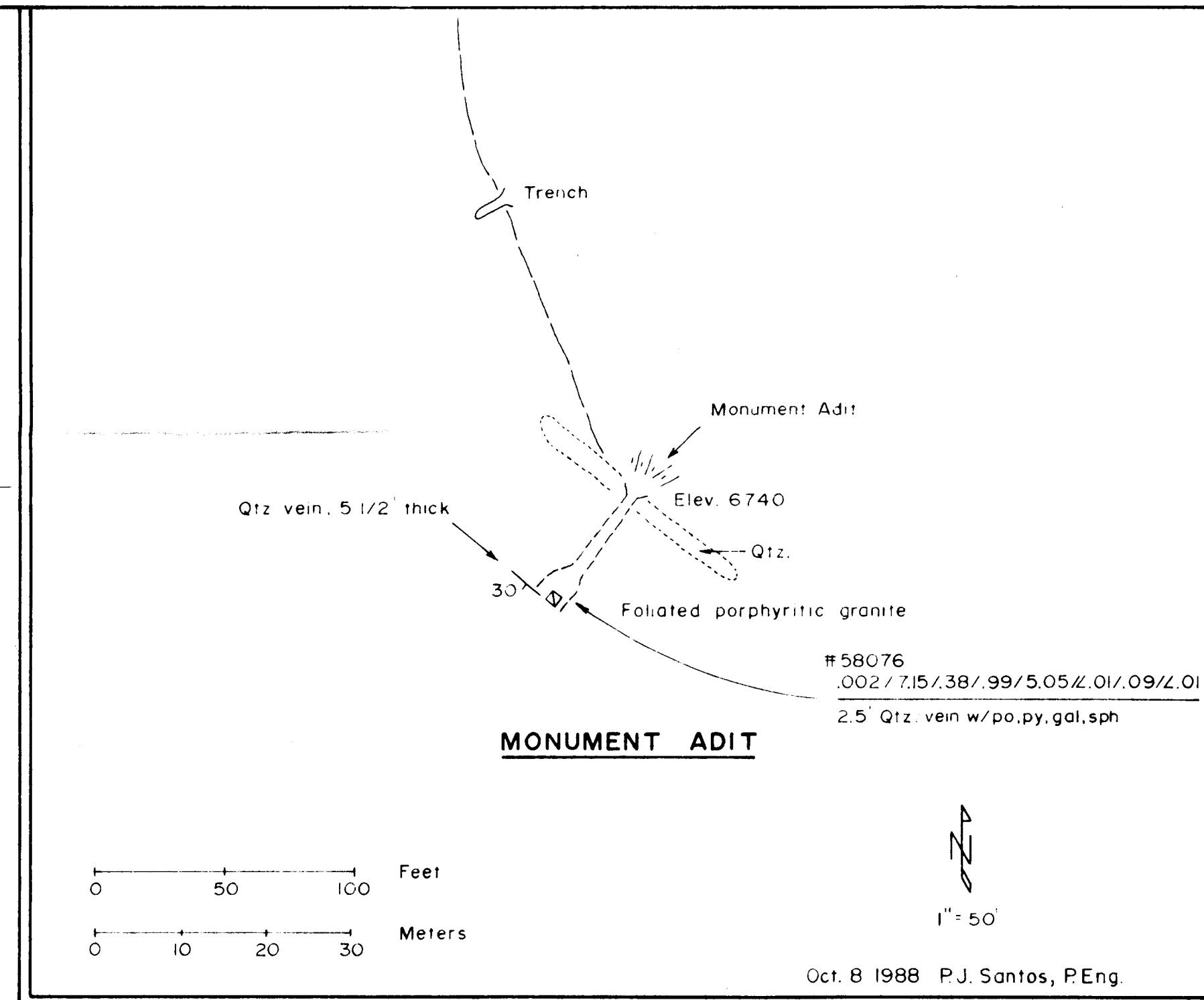
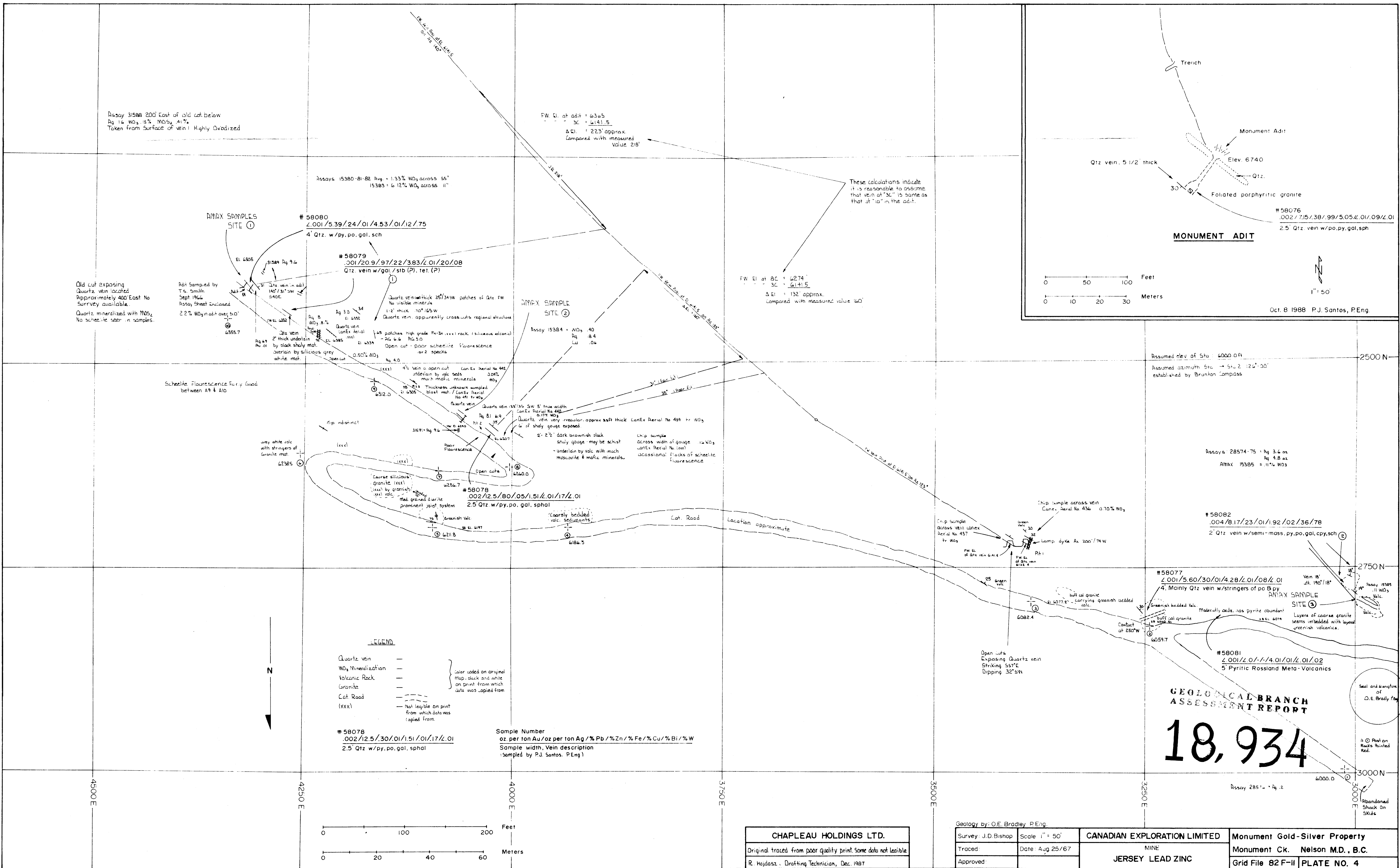
Days Worked:

P. J. Santos (Geologist)
Oct. 8 and 11, 1988
Dec. 14, 1988
July 13, 1989

Robert M. Mackenzie (Prospector)
Oct. 8 and 11, 1988

Robert Hajdasz (Draftsman)
Dec. 15, 1988

Ginny Santos (Typist-secretary)
Dec. 15, 1988
July 13, 1989



Assumed elev of Sta: 6000 ft
 Assumed azimuth Sta → Sta 2 (24° 00') established by Brunton Compass

Assays 28574-75 - Pg 3.6 & Pg 4.8
 AMAX 15385 = 11% W03

#58082
 .004/8.17/23/01/1.92/02/36/78
 2' Qtz vein w/semi-mass. py.po.gal.cpy.sch

#58077
 .001/5.60/30/01/4.28/01/08/01
 4' Mainly Qtz vein w/stringers of po B py
 AMAX SAMPLE SITE 3

#58081
 .001/2.0/-/4.01/01/01/02
 5' Pyritic Rosland Meta-Volcanics

**GEOLOGICAL BRANCH
 ASSESSMENT REPORT**

18,934

LEGEND

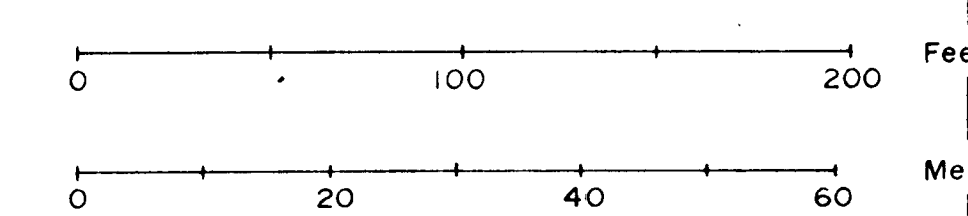
- Quartz vein
- W03 Mineralization
- Volcanic Rock
- Granite
- Cut Road
- (xxx)

Color coded on original Map, black and white on print from which data was copied from.

Not legible on print from which data was copied from.

#58078
 .002/12.5/30/01/1.51/01/17/01
 2.5' Qtz w/py.po.gal.sphal

Sample Number
 oz. per ton Au / oz per ton Ag / % Pb / % Zn / % Fe / % Cu / % Bi / % W
 Sample width, Vein description
 (sampled by P.J. Santos, P.Eng)



CHAPLEAU HOLDINGS LTD.
 Original traced from poor quality print, some data not legible
 R. Hajdasz - Drafting Technician, Dec. 1987
 Updated Dec. 15, 1988 by P.J. Santos, P.Eng

Geology by: O.E. Bradley P.Eng.		CANADIAN EXPLORATION LIMITED		Monument Gold-Silver Property	
Survey: J.D. Bishop	Scale: 1" = 50'	MINE		Monument Ck. Nelson M.D., B.C.	
Traced:	Date: Aug 25/87	JERSEY LEAD ZINC		Grid File 82 F-II	
Approved:				PLATE NO. 4	