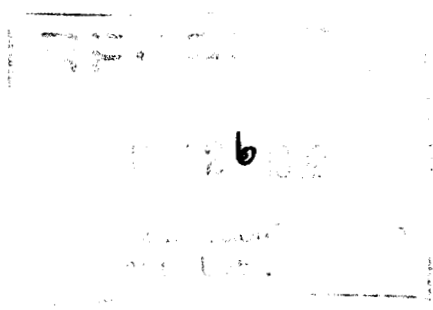


LOG NO:	DEC 07 1992	RD.
ACTION:		
FILE NO:		



**PROSPECTING REPORT
ON THE IROQUOIS GROUP**

NELSON MINING DIVISION
BRITISH COLUMBIA
NTS 82F/6W

LATITUDE 49° 25' .3N"
LONGITUDE 117° 18' .2E"

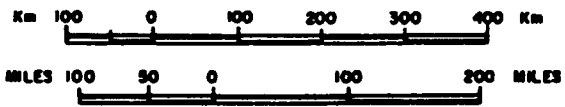
BY LLOYD ADDIE
NOVEMBER 20, 1992

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

22,662

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1

PROPERTY LOCATION		
NELSON MINING DIVISION		
SOUTHEASTERN BRITISH COLUMBIA		
Date: June 1989	N.T.S.	FIGURE: 1.
Drawn: by J.W.	82F/6W	

LOCATION AND ACCESS

The Iroquois Group is located on Toad Mountain (NTS 82F 6W), 6 km south of the city of Nelson, B.C. access to the property is by mainline logging road off the Nelson-Salmo Highway 4 km south of Nelson.

TOPOGRAPHY AND VEGETATION

The topography of the project area is moderately steep, with elevations ranging from 1650 m to 1900 m. The main showings are on a north easterly trending steep sided ridge with a plateau like top. Mature second growth larch, douglas fir, and hemlock cover much of the property. Kootenay valley sawmills plans to log a portion of the area around the Golden Dale claim in 1993.

EXPLORATION HISTORY

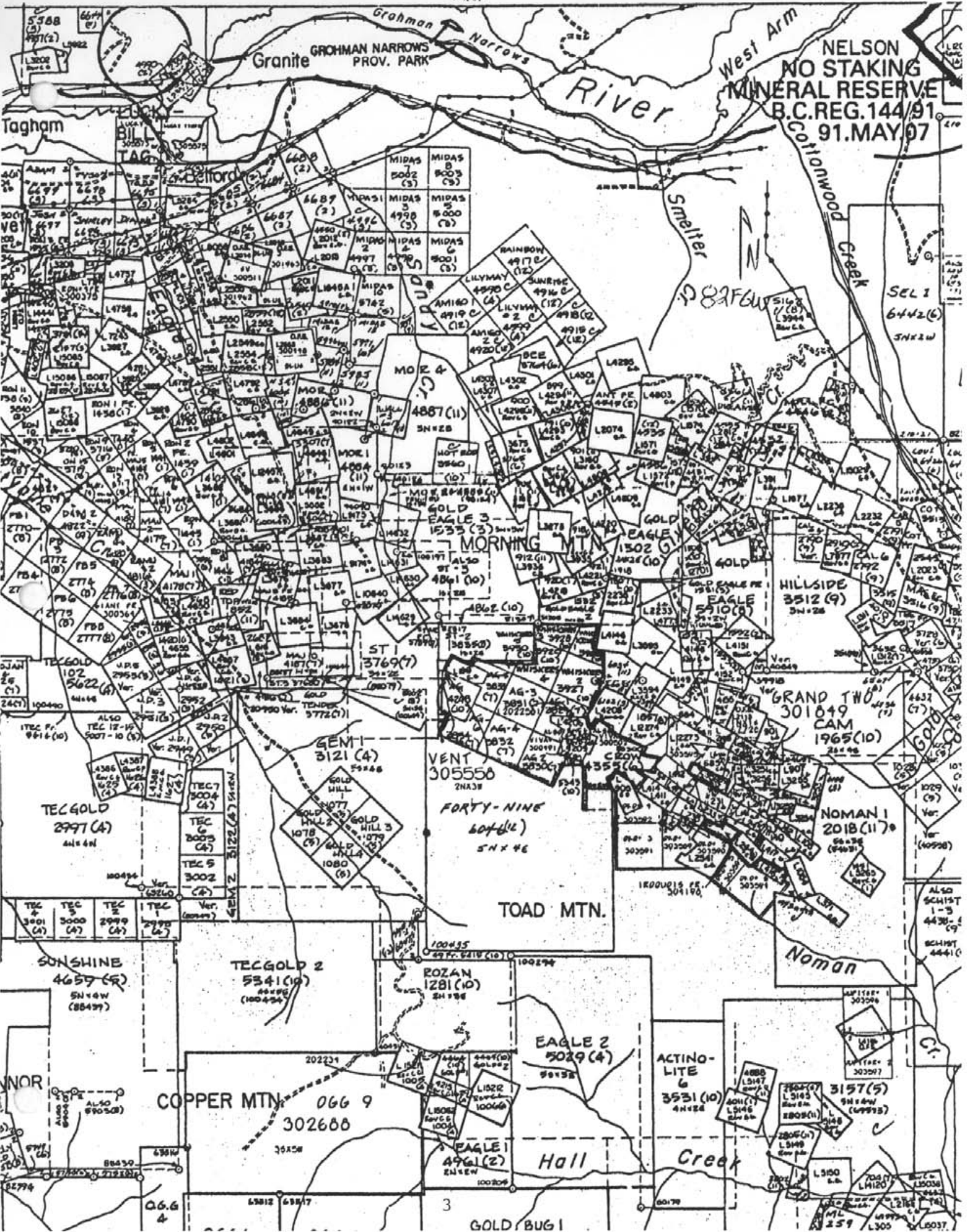
The Iroquois Group has had little exploration despite the fact that it is only 400 m away from the Silver King Mine. The Iroquois Claim had two adits driven on the zone in the 1890's, little was done on the property until 1967 when 5 ax diamond drill holes were drilled by New Coronin Babine Mines Ltd. The results of the 1967 drilling were disappointing to the operator. No assay results were listed in the report on the 1967 drilling, only the statement that the drill intercepts were from 6 to 32 feet and that no commercial mineralization was located. In 1973, Sproatt Silver Mines carried out a soil sample survey as well as an induced polarization survey (assessment report #4701). The property remained dormant until 1981 when hectate gold corporation undertook an evaluation of the property and a report was written by G. Wiswall.

The latest work was --

--In 1983 when Mine Quest Exploration Associates Ltd. carried out drilling program for Host Ventures Ltd. on the property.
(Assessment Report #12611)

PROPERTY STATUS

The Iroquois Group consists of modified grid and two post claims as well as reverted crown grants. The property contains 21 units, all of which are owned by Lloyd Addie except the two reverted crown grants which are owned by Richard Palmer.



NELSON
NO STAKING
MINERAL RESERVE
B.C. REG. 144/91
91.MAY.07

Granite GROGHMAN NARROWS PROV. PARK

River

West Arm

SEL 1
6442(6)
5N x 2W

Tagham

BILL TAGGART

Smelter

Cottonwood Creek

MOR 4
4887(11)
5N x 2E

MOR 1
4004(11)
5N x 2E

ST 1
3769(7)
5N x 2E

GEM 1
3121(4)
5N x 4E

VENT
30555
2N x 3E

FORTY-NINE
6046(4)
5N x 4E

TOAD MTN.

ROZAN
1281(10)
5N x 2E

EAGLE 2
5029(4)
5N x 2E

EAGLE 1
4961(2)
5N x 2E

GOLD BUG 1

TECGOLD
2991(4)
4N x 4E

SUNSHINE
4659(5)
5N x 4W
(88497)

COPPER MTN.
066 9
302688

GOLD BUG 1

TECGOLD 2
5341(10)
4N x 4E
(100494)

TECGOLD
3007(4)
TECGOLD
3003(4)
TECGOLD
3002(4)

TECGOLD 2
5341(10)
4N x 4E
(100494)

TECGOLD
3007(4)
TECGOLD
3003(4)
TECGOLD
3002(4)

ACTINO-LITE
6
3531(10)
4N x 2E

ACTINO-LITE
6
3531(10)
4N x 2E

ACTINO-LITE
6
3531(10)
4N x 2E

ACTINO-LITE
6
3531(10)
4N x 2E

NOMAN 1
2018(11)
5N x 4E
(84091)

NOMAN
3157(5)
5N x 4W
(49913)

NOMAN
3157(5)
5N x 4W
(49913)

NOMAN
3157(5)
5N x 4W
(49913)

ALSO
SCHIST
1-3
4438-4
C9
SCHIST
4441
C9

ALSO
SCHIST
1-3
4438-4
C9
SCHIST
4441
C9

ALSO
SCHIST
1-3
4438-4
C9
SCHIST
4441
C9

ALSO
SCHIST
1-3
4438-4
C9
SCHIST
4441
C9

<u>CLAIM NAME</u>	<u>TENURE #</u>	<u>EXPIRY DATE</u>
LA	303595	Aug 25/94
OKO #1	303589	Aug 27/94
OKO #2	303590	Aug 27/94
OKO #3	303591	Aug 27/94
OKO #4	303592	Aug 27/94
OKO #5	303593	Aug 27/94
OKO #6	303594	Aug 27/94
IROQUOIS FR.	304198	Sept 12/94
IVANHOE	310445	June 14/95
VENT	305558	Oct 2/93
CROW	233416	June 19/2000
DELIGHT	L.4206	March 15/93
ATLANTIC	L.4209	March 15/93

REGIONAL AND PROPERTY GEOLOGY

The region south west of Nelson is underlain by Jurassic Rossland volcanics consisting of andesitic to basaltic flows and flow breccias with subordinate agglomerate, arginite, and tuff which have been intruded by numerous small stocks ranging from Jurassic to Eocene in age.

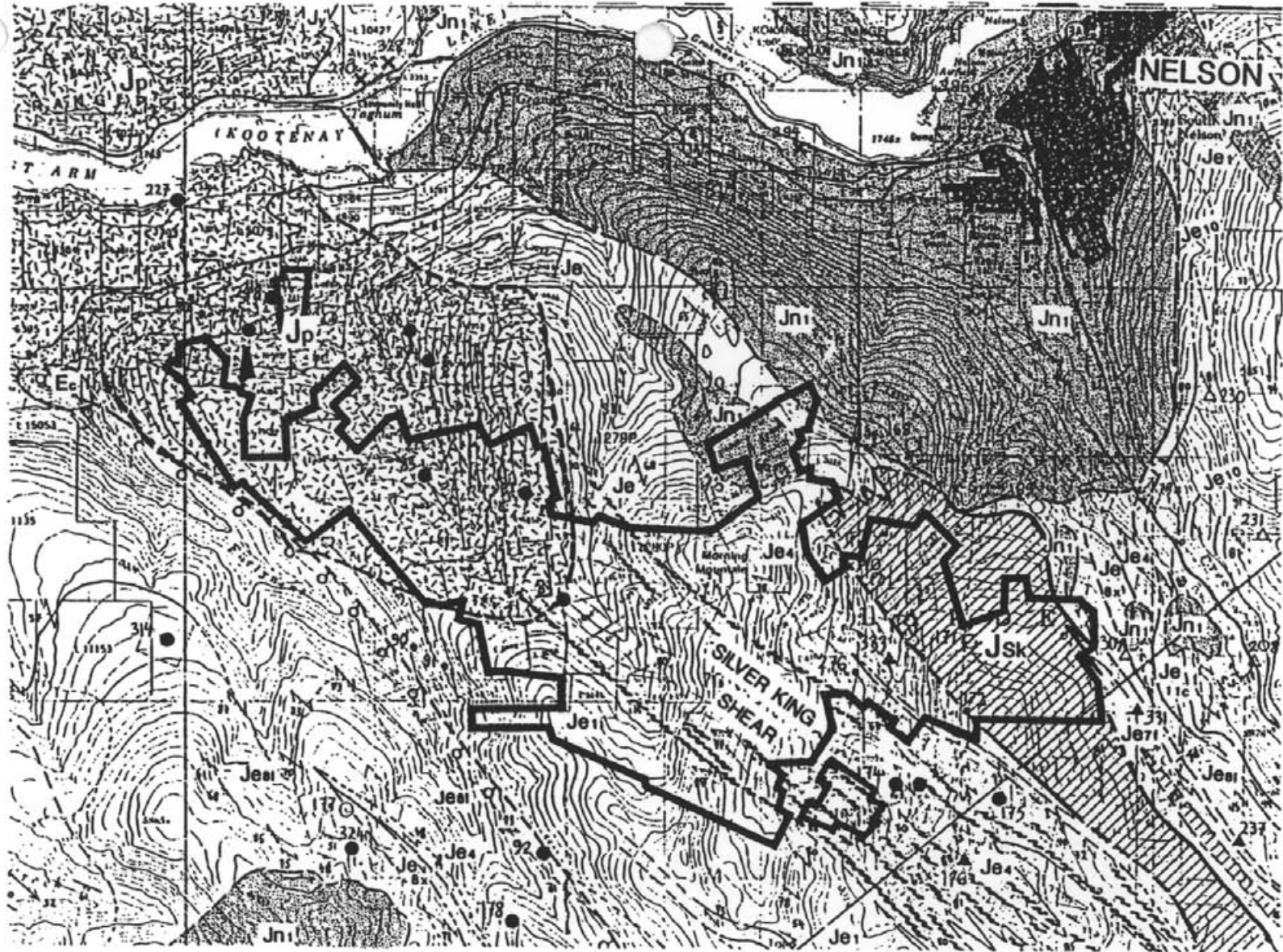
On the Iroquois properties the two main rock groups are the Silver King Porphyry stock, (Plasioclase Porphyry), which is usually proximal to mineralization but not yet seen to be a host to any of the copper, lead, zinc style of mineralization, and the Rossland volcanics which range from augite porphyries and basalts to andesites and possibly trachyte.

The geology of the property is complicated by a large shear zone which has turned most of the property into chlorite schist. The shear which crosses both rock groups is presently thought to be approximately 180 million years old, the same age as the Silver King porphyry stock whereas the Rossland volcanics are thought to be in the 205 million year old range. The shear is thought to occupy the core of a southeast plunging syncline. The shear zone and the geology both trend north west and dip to the south.

All of the rock types are boudinaged and sheared so it is difficult to draw lines from one outcrop to another but one contact that I found to be a good marker was the contact between a thick unit of Augite Porphyry (+300 m thick) and a Hetrolithic Breccia. This contact is located near the southern boundary of the Golden Dale Claim (Lot 236). From this point, the Hetrolithic Breccia consists of angular fragments ranging in size from 1 cm to 30 cm. The rock types in the Breccia are mainly andesite, basalt, and arginite. The rock is fragment supported with no obvious matrix, this leads me to believe that this is a base surge deposit. The fact that there were no augite porphyry fragments in the breccia leads me to believe that tops is to the south.



5



LEGEND

EOCENE

E_c CORYELL INTRUSIONS (syenite, quartz monzonite)

JURASSIC

Jn1 NELSON INTRUSIONS (granodiorite, quartz monzonite)

Jp PSEUDIORITE, PYROXENITE

Jsk SILVER KING INTRUSIONS (plagioclase porphyry)

Je1, Je4, Je71, Je81, Je8x, Je10, Je11c ROSSLAND GROUP VOLCANICS, Elise Fm.
(mafic to intermed. flow, epiclastic & pyroclastic units)

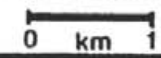
Jy YMIR GROUP METASEDIMENTS (argillite, siltstone, grit)

 SHEAR ZONE

 GEOLOGIC CONTACT

 Au +/- Cu MINERALIZATION

(Geology after T.Hoy, 1988)		
NELSON MINING DIVISION Southeastern British Columbia		
DATE: June, 1989	NTS: 82F/6W	FIGURE: 5



This contact can be seen again on the ridge 1 km north west of Lot 236 near the northern boundary of Lot 623, and again 400 m north west in the west fork of Giveout Creek. The rock type immediately north of the Hetrolithic Breccia is vesicular basalt, followed by trachyte, then a thin unit of augite porphyry. These units are shown in section X -xl. The only rock type to host the Cu, Pb, Zn style of mineralization is trachyte.

South is a thick unit of augite porphyry. From the hetrolithic breccia north the geology is more andesitic with only minor augite porphyry units.

WORKDONE

Over the period of one year soil sampling was undertaken directly on top of the known Iroquois zone in order to locate any high grade areas not already exposed. Rock samples were analyzed for their mineral content as well as for their whole rock components. Ten polished thin sections with stained offcuts were interpreted by Dr. Ken Northcote. Three geological sections were made by the author in order to understand the geology better.

3 days sections	July 20,21,22/92	
1 day soil sampling	Nov.1/91	
2 days hand trenching	July 16,17/92	
2 days collecting rock samples for thin sections		Nov.2,3/91
2 days collecting rock samples for assay	July 18,26/92	
10 days 4 x 4 rental		

SUMMARY AND CONCLUSION

During the work period, every known showing within a 5 km radius was visited by the author. Every showing of the Cu, Ag, Zn, Pb style of mineralization was hosted by trachyte, based on thin section analysis. However, whole rock analysis done on these same rocks and plotted on the Winchester and Floyd charts show these rocks to plot in the basalt field. Either way, the mineralization is intimate with the potassium feldspar horizons. These horizons are sheared and boudinaged to the same extent as the surrounding Rossland volcanics. Although the shearing continues through the 180 million year old Silver King porphyry, both the potassium feldspar horizons and the mineralization are cut off by the Silver King porphyry stock.

The style of the mineralization is open space filling of brecciated trachyte in a carbonate gauge. Based on thin section analysis, I believe that these rocks are trachytes and that these horizons were already enriched in minerals before the Silver King shear zone overprinted and remobilized them into the present open space filling style.

STATEMENT OF QUALIFICATIONS

I Lloyd Addie of 604, 3rd St, Nelson, B.C. have taken and graduated from both the beginner prospecting course given by the Chamber of Mines in 1982 and from the advanced prospecting course given by the provincial government at Mesachie Lake in 1982.

In 1992, I graduated from the petrology for prospectors course given at the Chamber of Mines of Eastern B.C. in Nelson, B.C.

I have been a prospector for 10 years and I have successfully optioned out properties in the past.

COST STATEMENT

15 soil samples at \$13.50 per sample	=	202.50
8 rock samples at \$13.50 per sample	=	108.00
8 whole rock at \$15.00 per sample	=	<u>120.00</u>
		430.50
10 polished thin sections with stained offcuts interpreted by Dr. Ken Northcote		\$570.00
10 man days x \$100.00 per day		1000.00
10 days 4 x 4 rental at \$50.00 per day		500.00
Report Costs		100.00
		<hr/>
		\$2600.00

TRAVERSE NUMBER _____

N.T.S. _____

PROJECT NELSON - Iniquis-Toughant

AREA SOUTHEAST B.C.

GEOLOGIST(S) D. CAR, T. LAYCOCK

DATE July 18 192

SAMPLE NUMBER	SAMPLE TYPE			SAMPLE LENGTH, WIDTH, AREA	LATITUDE, LONGITUDE and / or U.T.M.	SAMPLE DESCRIPTION Rock type, lithology, character of soil, stream silt, etc. Formation Mineralization, etc.	RESULTS (ppm. / % / oz. per ton)								
	RX Rock, Talus	SX Stream Silt, Soil	Grab, Chip, Channel												
RX 52267	ROCK		GAAB			SAMPLE OF DISSEMINATED SHALEFRITE CHALCO- PYRITE, GALENA IN FELSIC HIGHLY SHEARED MATRIX @ IROQUOIS ZONE - do polished section - from East adit chest? - one sample shows contorted containing discrete masses of sulphide (fragments? or broken up veins?)									
RX 52268						felsic possible fragmental moderately foliated - some possible quartz grains and rhyolitic? fragments to a few mm in diameter - may be a tuff?									
RX 52269						v.f.g. mass? felsic dyke? / tuff? also sheet ~ 1m thick enclosed by felsic schist - also iron carbonate floods part of zone.									
RX 52270						highly foliated andesitic rock w/ >15% iron carbonate? eyes and veinlets - eyes resemble amygdules, but are more likely to be boudins of original veinlets									
RX 52271						very fragmental felsic rock. - rather heterolithic-various felsic clast types and feldspar phenos. - possibly reworked - from dump at Silver King									
RX 52272						at Silver King; disseminated galena and pyrite in felsic fragmental? - numerous quartz eyes, some with fibrous qa?									

APPENDIX A

9

INCO LIMITED

TRAVERSE NUMBER _____
N.T.S. _____

PROJECT CRANBROOK
AREA SOUTHEAST B.C.

GEOLOGIST(S) D. Car, T. Laycock
DATE July 18/92

SAMPLE NUMBER	SAMPLE TYPE			SAMPLE LENGTH, WIDTH, AREA	LATITUDE, LONGITUDE and/or U.T.M.	SAMPLE DESCRIPTION Rock type, lithology, character of soil, stream silt, etc. Formation Mineralization, etc.	RESULTS (ppm. / % / oz. per ton)							
	RX Rock, Talus	SX Stream Silt, Soil	Grab, Chip, Channel											
RX 52273						- hanging wall felsic ^{SEA SCH} rock at Silver King								
RX 52274						schist at footwall at Silver King								
						@ TOUGHNUT, Au is associated with quartz feldspar porphyry that does contain mafic xenos; therefore intrusive								
RX 52275						Toughnut L-0-00E, 125N fine grained very felsic, moderately foliated 1-2% v. fine grained disseminated pyrite and some py crystals to 3mm - some quartz veins to 5mm wide at various angles - rock is loose, obtained from old 100' deep shaft								
RX 52276						" zone " breccia - massive sphalerite ^{nearby} rimming clasts of finegrained beige felsic rock "possible vent breccia"? - considerable secondary veining								
RX 52277						quartz porphyry, highly foliated @ 300'/75SH								
RX 52278						argillite / argillite soft sample unit consists predominantly of argillite with minor quartz amounts of bedded intercalated intercalated / felsic soft? containing several % disseminated galena and disseminated to mass "clasts" of sphalerite								

INCO LIMITED

TRAVERSE NUMBER _____
N.T.S. _____

PROJECT Southeast B.C. REECE
AREA NELSON

GEOLOGIST(S) DWAYNE CAR TARA LAYCOCK
DATE July 26, 92

SAMPLE NUMBER	SAMPLE TYPE			SAMPLE LENGTH, WIDTH, AREA	LATITUDE, LONGITUDE and/or U.T.M.	SAMPLE DESCRIPTION Rock type, lithology, character of soil, stream silt, etc. Formation Mineralization, etc.	RESULTS (ppm. / % / oz. per ton)						
	RX Rock, Talus	SX Stream Silt, Soil	Grab, Chip, Channel										
X 51321						<p>IROQUOIS TIGHTNUT PROPERTY - OVERALL IMPRESSION IS THAT SILVERKING IS A HYDROTHERMAL EPIGENETIC SYSTEM.</p> <p>- SAMPLE; POSSIBLE CHLORITIZED RHYOLITE PORPHYRY (FROM ROCK NORMALLY TERMED ANDESITE).</p>							
RX 51322						<p>intensely sheared chloritic schist from ^{Structural} hanging wall @ IROQUOIS</p> <p>- \rightarrow at 140°</p>							
RX 51323						<p>\approx 200m NW of Silverking</p> <p>- chlorite schist, very fine grained</p> <p>- possibly augite porphyry</p> <p>- lineation at 250° plunging 50° to 250°</p>							
RX 51324	not	assayed				<p>(- get DAVE to check it out)</p> <p>- very chloritic argillaceous sediment? from same site as RX 52278.</p>							
RX 51325	not	analysed				<p>(- cut and etch)</p> <p>- possible chert from same or as RX 52278</p> <p>- highly contorted and possibly boudinaged, hosted by chloritic schist, possibly argillite</p> <p>- chert masses average 8 cm in diameter</p> <p>- foliation at 140° subvertical dip</p> <p>- minor disseminated pyrite in chert and argillite.</p>							



WHOLE ROCK ICP ANALYSIS



Inco Expl. & Tech. Services PROJECT 60501-80001 File # 92-2337

2690 - 666 Burrard St., Vancouver BC V6C 2X8 Submitted by: D. CAR

SAMPLE#	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Sr	Zr	Y	Nb	LOI	SUM
	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	%	%
RX 051315	53.35	13.28	13.21	5.56	8.57	1.63	1.07	.85	.07	.15	.002	181	137	79	22	5	2.1	99.90
RX 051316	46.94	12.88	14.18	9.68	6.52	3.38	.31	2.43	.31	.21	.025	56	110	171	36	8	2.9	99.82
RE RX 051321	44.32	12.96	7.99	5.12	9.37	1.05	7.12	.45	.47	.24	.019	1233	863	134	11	12	10.4	99.84
RX 051321	44.09	12.76	8.11	5.17	9.49	1.06	7.11	.45	.48	.24	.017	1241	869	133	11	12	10.5	99.81
RX 051322	59.72	15.98	6.89	2.33	4.04	2.89	4.34	.64	.29	.14	.002	890	485	139	22	22	2.4	99.90
RX 051323	55.56	17.97	9.88	2.35	.99	5.24	3.77	.67	.65	.13	.002	728	333	61	16	6	2.5	99.88

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LiBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3.

- SAMPLE TYPE: ROCK Samples beginning 'RE' are duplicate samples

DATE RECEIVED: AUG 5 1992 DATE REPORT MAILED: *Aug 18/92* SIGNED BY: *C. Leong* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS



GEOCHEMICAL ANALYSIS CERTIFICATE



Inco Expl. & Tech. Services PROJECT 60501-80001 File # 92-2337

2690 - 666 Burrard St., Vancouver BC V6C 2X8 Submitted by: D. CAR

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 %	Al %	Na %	K %	W ppm	Zr ppm	Sn ppm	Y ppm	Nb ppm	Be ppm	Sc ppm
RX 051315	1	32	11	88	2.5	33	57	1272	9.49	4	5	ND	3	131	.2	6	2	360	6.81	.037	12	6	3.95	334	.59	7.49	1.36	.83	4	10	1	25	1	1	47.2
RX 051316	1	265	4	114	2.5	100	67	1652	10.49	4	6	ND	2	101	.2	2	2	436	4.98	.135	14	149	4.88	75	1.51	7.17	2.83	.19	2	65	4	37	1	1	47.7
RX 051317	1	4979	5	118	9.9	29	16	320	2.86	4	5	ND	9	92	.7	5	2	91	.40	.165	32	46	2.35	875	.26	8.29	1.14	3.68	2	85	1	14	4	2	12.7
RE RX 051319	1	2866	7	75	.2	9	12	398	2.23	4	5	ND	2	11	.4	2	2	22	.57	.207	14	17	1.69	362	.05	2.51	.04	.52	2	25	1	9	1	1	3.6
RX 051318	13	6792	20	62	1.0	15	10	272	2.58	4	7	ND	5	25	.6	2	6	36	.10	.039	22	24	1.03	2028	.08	3.45	.04	1.40	2	36	1	8	1	1	5.5
RX 051319	1	2864	8	81	.2	8	11	382	2.17	4	5	ND	2	10	.3	2	2	21	.55	.200	13	16	1.62	367	.05	2.45	.04	.52	2	24	1	9	1	1	3.5
RX 051320	60	20469	9	91	18.2	11	5	128	.72	62	6	ND	3	61	1.9	2	7	284	.19	.095	7	79	.45	984	.05	1.54	.29	.52	2	21	1	14	1	1	2.3
RX 051321	1	87	38	322	.4	55	27	1858	5.60	4	5	ND	1	756	1.1	2	4	147	6.68	.207	13	102	3.36	1297	.21	7.03	.88	6.44	2	23	1	11	1	1	13.4
RX 051322	1	61	11	78	.9	8	17	1096	4.68	5	5	ND	4	435	.6	4	2	151	2.75	.137	20	13	1.52	1057	.24	7.72	2.57	3.92	2	31	1	13	1	1	13.1
RX 051323	1	12	11	75	1.3	12	26	1016	7.06	4	5	ND	2	238	.2	5	7	284	.62	.290	9	3	1.41	812	.41	7.93	4.57	3.27	2	5	1	7	1	1	9.0
STANDARD HFC	22	62	39	134	7.4	92	45	1161	4.45	38	18	7	36	53	20.7	16	21	79	.50	.112	39	64	.95	229	.08	1.97	.09	.16	9	4	17	7	1	1	5.7

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 10ML HClO₄-HNO₃-HCL-HF AT 200 DEG. C TO FUMING AND IS DILUTED TO 10 ML WITH DILUTED AQUA REGIA. THIS LEACH IS PARTIAL FOR MAGNETITE, CHROMITE, BARITE, OXIDES OF AL, ZR & MN AND MASSIVE SULFIDE SAMPLES. AU DETECTION LIMIT BY ICP IS 3 PPM. AS, CR, SB SUBJECT TO THE LOST OF VOLATILIZATION DURING HClO₄ FUMING.

- SAMPLE TYPE: ROCK Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: AUG 5 1992

DATE REPORT MAILED:

Aug 18/92

SIGNED BY.....D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS



SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Tl	Al	Na	K	W	Zr	Sn	Y	Kb	Ba	Sc
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
RX 051301	2	81	17	77	.3	3	2	44	.50	4	7	ND	9	31	.3	6	2	11	.26	.005	27	6	.24	1113	.05	6.04	.22	3.03	8	62	3	4	1	2	2.3
RX 051302	1	34	31	61	.2	1	1	36	.42	4	5	ND	9	35	.2	2	2	10	.02	.005	25	4	.24	1189	.05	7.72	.31	3.36	2	65	2	3	1	2	2.1
RX 051304	1	4321	30711	19119	128.0	7	17	5801	9.93	4	5	ND	4	80	96.6	2	279	171	3.23	.084	20	8	2.01	442	.07	4.78	.08	.77	7	31	1	7	1	1	21.4
RX 051306	2	48	168	158	1.0	42	9	303	1.98	104	5	ND	7	84	.6	11	3	53	1.07	.023	20	130	.66	402	.15	3.39	1.02	.92	2	43	2	7	1	1	6.0
RX 051307	1	9	10	300	.2	30	15	1226	5.67	4	5	ND	1	492	.2	2	2	24	12.41	.038	9	18	7.18	113	.06	1.21	.05	.49	2	6	4	6	1	1	2.3
RX 051308	1	29	9	26	.4	67	10	181	1.84	4	5	ND	6	53	.2	2	2	134	.83	.032	23	75	1.25	10028	.36	4.22	.36	1.73	5	58	4	23	5	2	14.6
RX 051309	3	17	89	77	.5	48	12	589	3.28	4	5	ND	4	168	.2	2	6	102	3.53	.054	20	59	1.08	281	.48	5.27	1.48	.14	2	36	1	27	5	1	15.7
RX 051310	2	110	4	12	.6	16	3	87	.34	5	5	ND	2	8	.2	2	5	.19	.011	6	16	.09	73	.02	.50	.02	.22	2	4	1	1	1	1	.6	
RX 051311	5	15	4	14	.8	11	2	85	.30	4	5	ND	1	7	.2	2	5	.14	.007	7	78	.08	41	.02	.53	.01	.24	2	3	1	1	1	1	.4	
RX 051312	1	699	4	7	.3	10	6	53	.40	4	5	ND	2	5	.2	2	2	7	.03	.010	6	17	.05	81	.03	.56	.02	.23	2	4	2	1	1	1	.7
RX 051313	2	567	5	18	.3	14	13	65	.36	13	5	ND	3	4	.4	2	2	31	.06	.018	10	20	.07	62	.03	.82	.02	.42	2	4	1	1	1	1	.8
RX 051314	1	130	992	69	.7	84	49	1312	6.58	4	5	ND	1	133	.2	2	2	187	7.55	.008	4	184	6.02	387	.15	8.21	1.03	1.61	2	4	2	8	1	1	45.0
RE RX 052268	20	1186	2206	13408	37.6	251	114	13217	7.78	104	5	ND	1	425	91.3	297	2	99	12.26	.049	5	71	1.66	122	.03	1.76	.48	1.18	2	9	1	6	1	1	9.3
RX 052267	2	6921	37663	39431	143.5	886	213	54522	9.50	36	5	ND	3	241	431.7	42	4	74	8.52	.037	5	39	2.75	80	.02	1.25	.04	1.11	2	8	1	4	1	1	7.1
RE RX 052271	1	345	363	1034	2.8	38	19	9034	5.00	10	6	NO	3	588	9.1	5	2	122	5.71	.220	12	62	2.04	1447	.22	7.21	.23	8.20	2	18	1	10	1	1	10.9
RX 052268	1	296	212	614	3.8	132	40	5208	4.83	23	5	NO	2	427	4.9	3	4	179	6.24	.176	9	273	2.64	1018	.15	6.32	.06	6.30	1	22	1	10	1	1	23.8
RX 052269	2	255	179	223	1.3	46	16	444	2.19	54	5	NO	3	130	1.1	18	2	81	.82	.118	8	111	.33	1753	.16	5.68	1.26	3.19	4	24	1	6	1	1	6.1
RX 052270	1	43	65	323	1.4	140	41	2256	6.43	4	5	NO	2	348	1.4	6	2	238	7.99	.177	10	281	4.63	551	.22	6.18	1.58	2.39	2	13	1	10	1	1	23.4
RX 052271	1	133	333	962	2.4	41	20	9217	5.20	7	5	NO	2	624	8.6	2	4	125	5.83	.227	11	76	2.16	1524	.21	7.84	.26	7.52	2	18	1	10	1	1	12.0
RX 052272	11	3059	26604	2438	62.2	42	30	3634	5.77	22	5	NO	3	296	27.9	83	2	103	3.84	.242	10	62	1.40	419	.18	7.44	.29	9.36	5	25	1	9	1	1	6.4
RX 052273	1	15	91	378	.9	165	46	7348	7.34	4	5	NO	2	425	.2	2	2	310	6.51	.169	11	323	2.78	1647	.24	6.84	1.99	2.77	2	7	1	12	1	1	28.5
RX 052274	1	15	74	317	.8	128	37	7876	6.98	4	5	NO	1	320	.4	2	2	280	7.53	.176	10	290	3.53	1305	.23	6.55	.66	6.05	2	9	1	10	1	1	26.0
RX 052275	6	575	48	10736	2.0	53	43	9831	8.91	4	5	NO	1	208	75.6	12	2	132	9.97	.054	4	63	6.29	138	.07	2.31	.27	1.58	2	9	1	7	1	1	12.3
RX 052276	12	179	2401	56204	4.5	25	29	3301	7.25	4	5	NO	1	233	446.4	2	4	103	2.62	.074	2	12	1.08	132	.03	4.38	.18	6.28	2	6	1	5	1	1	15.5
RX 052277	1	12	35	266	.2	8	7	794	3.19	4	5	NO	3	564	1.0	2	1	80	2.98	.088	15	17	.60	941	.15	9.40	3.26	3.32	2	19	1	10	1	2	8.3
RX 052278	7	4460	68	26645	7.3	14	32	6356	7.43	4	5	NO	1	773	148.0	2	4	136	3.88	.198	11	3	1.46	144	.25	7.98	3.26	3.88	2	13	1	8	1	1	10.1
RX 052280	1	39	19	246	.2	10	6	368	.73	4	5	NO	2	21	1.4	4	2	15	.24	.011	15	19	.26	837	.06	2.57	.07	2.84	2	3	2	2	1	1	3.6
RX 052281	1	8	14	217	.2	10	1	40	.70	4	5	NO	6	5	1.6	2	3	29	.02	.009	18	40	.25	136	.17	4.15	.03	2.21	2	9	1	3	1	1	5.3
RX 052282	7	31	17	38	.3	14	2	59	.61	4	5	NO	3	13	.2	2	2	11	.07	.008	8	99	.08	65	.03	.91	.03	.40	2	4	1	2	2	1	.8
RX 052283	3	32	9	121	.2	38	6	79	1.84	4	5	NO	2	8	.3	2	3	17	.04	.011	10	23	.06	84	.03	1.82	.03	.44	2	4	3	2	2	1	2.0
RX 052284	1	14	15	28	.2	15	2	64	.75	4	5	NO	1	3	.2	2	5	7	.05	.015	4	14	.27	30	.02	.65	.01	.18	2	3	1	1	1	1	.5
RX 052285	4	10	14	31	.2	18	5	67	1.28	4	5	NO	4	4	.2	2	2	18	.05	.022	6	23	1.63	115	.07	2.81	.03	.84	2	8	3	1	1	1	3.2
RX 052286	4	11	15	47	.2	12	2	584	.99	4	5	NO	2	47	.2	2	2	5	1.16	.022	11	71	.49	129	.02	1.81	1.14	.29	4	11	1	4	1	1	1.3
RX 052287	3	23	26	33	.2	10	2	1079	1.37	4	5	NO	1	40	.2	2	2	5	1.78	.013	11	12	.79	116	.03	1.34	.04	.65	2	9	1	5	1	1	1.4
RX 052288	1	298	5	20	.3	16	3	76	.51	4	5	NO	2	4	.2	4	2	6	.03	.009	6	16	.09	40	.03	.60	.01	.28	3	5	2	1	1	1	.7
STANDARD HFC	22	64	39	130	6.7	94	45	1162	4.38	39	19	7	36	59	21.0	13	21	79	.56	.124	39	63	.03	229	.08	2.08	.09	.15	11	4	15	8	1	1	5.5

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 10ML HClO4-HNO3-HCl-HF AT 200 DEG. C TO FUMING AND IS DILUTED TO 10 ML WITH DILUTED AQUA REGIA. THIS LEACH IS PARTIAL FOR MAGNETITE, CHROMITE, BARITE, OXIDES OF AL, ZR & MN AND MASSIVE SULFIDE SAMPLES. AU DETECTION LIMIT BY ICP IS 3 PPM. AS, CR, SB SUBJECT TO THE LOSS OF VOLATILIZATION DURING HClO4 FUMING.
 - SAMPLE TYPE: P1 GEO P2 ASSAY Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: JUL 27 1992 DATE REPORT MAILED: *July 31/92* SIGNED BY: *C. Leong* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

AA

LL

SAMPLE#	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	H2O	Cr2O3	Ba	Sr	Zr	Nb	LOI	SUM
	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm		%	%
RX 051301	82.23	10.59	.44	.01	.30	.22	3.17	.10	.01	.01	.002	876	22	85	7	2.8	100.02
RX 051302	78.69	12.71	.42	.05	1.12	.31	3.65	.13	.01	.01	.002	985	45	121	8	2.7	99.99
RX 051304	43.77	9.36	15.81	3.51	5.17	.09	1.08	.68	.23	.83	.010	528	81	60	18	10.3	90.95
RX 051306	81.70	6.43	2.91	.96	1.48	1.24	1.03	.33	.02	.04	.007	284	80	150	12	3.7	99.93
RX 051307	22.69	3.07	6.93	14.95	19.22	.06	.60	.41	.11	.14	.002	81	480	34	5	31.7	99.96
RX 051308	79.49	7.36	2.68	1.74	1.40	.41	1.94	.49	.06	.02	.004	8394	50	137	18	2.9	99.95
RX 051309	71.63	9.31	4.41	1.54	7.98	1.81	.08	.72	.10	.08	.002	198	207	263	24	2.2	99.96
RX 052266	38.42	4.72	11.45	2.88	23.94	.70	1.51	.17	.15	.83	.013	469	493	16	6	9.7	95.62
RX 052267	18.32	3.36	15.41	5.64	15.15	.06	1.62	.13	.10	7.48	.012	1277	286	50	5	18.6	86.14
RE RX 052271	43.34	12.98	6.80	3.08	9.01	.30	9.64	.44	.50	1.09	.008	1424	608	38	9	12.2	99.71
RX 052268	44.28	10.82	6.49	3.72	12.88	.07	6.92	.46	.37	.62	.041	904	467	24	8	12.9	99.78
RX 052269	79.17	8.60	2.89	.30	1.03	1.38	3.37	.31	.24	.05	.009	1296	113	38	5	2.3	99.89
RX 052270	37.61	11.16	8.64	7.02	12.04	2.07	2.93	.48	.43	.28	.050	534	354	28	10	17.0	99.85
RX 052271	43.87	13.25	6.52	3.15	8.20	.29	9.83	.44	.50	1.11	.007	1579	601	37	9	12.2	99.71
RX 052272	51.53	12.28	4.68	2.03	5.13	.31	9.24	.41	.48	.45	.005	1812	297	34	8	9.8	96.69
RX 052273	42.30	11.79	9.86	4.20	9.61	2.46	3.10	.58	.38	.92	.052	1546	417	29	12	14.3	99.87
RX 052274	41.34	10.48	9.04	4.94	10.42	.76	6.70	.50	.38	.90	.047	983	295	25	10	14.2	99.91
RX 052275	36.32	4.97	12.65	8.44	16.33	.34	1.98	.24	.15	1.25	.009	640	221	14	7	14.3	97.12
RX 052276	46.32	6.89	9.02	1.53	5.56	.10	6.15	.35	.16	.40	.002	2315	264	22	6	12.1	86.81
RX 052277	64.56	15.05	3.87	.80	3.84	3.56	3.51	.42	.16	.09	.002	739	513	89	15	3.9	99.96
RX 052278	44.06	13.18	9.98	2.23	5.34	3.80	3.92	.47	.42	.79	.002	2142	812	36	21	8.0	92.66
STANDARD SO-4	69.42	10.09	3.36	.89	1.52	1.25	1.99	.54	.21	.08	.006	829	191	314	22	10.4	99.97

not plotted

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LiBO2 AND ARE DISSOLVED IN 100 MLS 5X HNO3.

- SAMPLE TYPE: P1 GEO P2 ASSAY Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: JUL 27 1992

DATE REPORT MAILED: July 31/92

SIGNED BY: *Cherry* D. TOYE, C. LEONG, J. WANG; CERTIFIED O.C. ASSAYERS

17



WHOLE ROCK ICP ANALYSIS



Lloyd Addie File # 92-0159

604 - 3rd St., Nelson BC V1L 2P9

IR 920015

SAMPLE#	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Sr	La	Zr	Y	Nb	LOI	SUM
	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%	%
ROCK SAMPLE	41.79	12.68	7.08	5.22	10.50	1.02	6.06	.42	.47	.33	.015	1089	930	16	31	5	20	14.0	99.89

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3.

- SAMPLE TYPE: ROCK

DATE RECEIVED: JAN 21 1992

DATE REPORT MAILED: Jan 29/92

SIGNED BY..... D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS



GEOCHEMICAL ANALYSIS CERTIFICATE



Lloyd Addie File # 91-5715
604 - 3rd St., Nelson BC V1L 2P9

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Pa	Sr	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	H-AU*		
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppb		
GOLDEN DALE	1	706	12296	48623	26.7	113	51	11470	4.12	73	5	ND	1	403	652.9	33	11	14.79	.029	3	28	3.51	12	.01	2	.09	.01	.06	2	170	
RAINBOW #30	10	18	2186	22867	7.0	44	3	354	15.70	57	5	ND	1	63	184.2	2	2	6	7.07	.003	2	19	5.40	7	.01	2	.01	.01	.01	1	12
RAINBOW #31S	2	13	37	49646	10.0	5	1	142	1.26	12	5	ND	1	56	905.3	2	2	5	14.71	.007	2	1	8.61	16	.01	2	.01	.01	.01	2	5
RE GOLDEN DALE	1	720	13000	50329	29.0	104	52	12958	4.12	80	5	ND	1	422	690.0	31	12	12	17.00	.030	2	18	3.80	13	.01	2	.09	.01	.07	2	153
STANDARD C/AU R	18	63	40	135	7.3	73	32	1124	3.92	44	20	8	39	54	19.0	15	17	60	.50	.093	39	59	.90	183	10	35	1.92	.09	.14	11	460

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 1:1-2 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. ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK AU* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE. Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: DEC 11 1991

DATE REPORT MAILED: Dec 14/91

SIGNED BY: *Cheng* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

DEC-16-1991 13:47

FROM ACME ANALYTICAL 19

TO 13523013

P.002

TOTAL P.002



GEOCHEMICAL ANALYSIS CERTIFICATE



Lloyd Addie PROJECT IROQUOIS File # 91-5301

604 - 3rd St., Nelson BC V1L 2P9

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
BL 0+00SE	1	901	956	1713	49.2	86	38	5162	7.34	387	5	ND	1	63	7.4	116	2	45	.93	.204	10	50	.59	176	.07	2	1.88	.01	.12	1	20.7
BL 0+10SE	1	569	400	1360	30.8	82	30	3228	6.85	156	5	ND	1	56	2.3	49	2	61	.41	.129	11	81	1.01	196	.09	2	2.53	.01	.10	1	15.8
BL 0+20SE	1	136	60	390	2.5	59	23	1224	5.20	33	5	ND	1	98	.2	2	2	62	.82	.107	11	87	1.30	186	.10	3	2.71	.01	.17	1	4.2
RE BL 0+60SE	1	282	416	1438	23.3	104	34	2041	6.16	23	5	ND	1	53	1.6	5	2	95	.40	.091	10	160	2.14	133	.15	2	3.49	.01	.11	1	14.9
BL 0+30SE	1	119	67	306	2.2	65	36	2164	6.82	55	5	ND	1	38	.2	2	2	78	.36	.183	8	118	1.55	160	.11	2	2.51	.01	.15	1	2.3
BL 0+40SE	1	292	321	2244	16.7	111	36	2458	6.36	32	5	ND	1	95	6.7	19	2	93	.69	.095	10	149	2.11	205	.15	2	3.14	.01	.15	1	8.4
BL 0+50SE	1	146	82	674	2.2	94	29	1502	4.66	8	5	ND	1	135	2.5	2	2	85	.97	.094	8	162	2.30	191	.11	2	2.80	.01	.10	1	4.8
BL 0+60SE	1	282	416	1414	22.6	101	33	1990	6.15	18	5	ND	1	53	1.6	4	2	93	.40	.087	9	159	2.12	132	.15	2	3.44	.01	.11	2	11.1
BL 0+70SE	1	174	130	620	5.6	118	39	1895	6.48	9	5	ND	1	50	.9	2	2	103	.55	.080	9	198	2.51	134	.15	2	3.33	.01	.11	1	2.0
BL 0+90SE	1	434	492	1223	22.7	115	35	2043	7.50	40	5	ND	1	31	2.0	20	2	91	.22	.094	10	171	1.97	131	.14	2	3.11	.01	.10	1	9.1
BL 1+10SE	3	2142	11394	12313	138.5	242	83	32783	12.09	158	5	ND	1	64	96.7	96	2	52	.30	.252	10	63	.66	172	.08	2	2.16	.01	.11	1	150.0
BL 1+20SE	1	275	1263	2148	19.9	197	69	6211	11.65	338	5	ND	1	23	8.2	22	2	56	.21	.261	10	90	.37	142	.04	2	1.51	.01	.09	1	74.9
BL 1+30SE	1	416	1603	2812	30.4	202	82	10485	12.25	342	5	ND	1	20	15.3	73	2	52	.15	.305	10	69	.32	159	.05	2	1.98	.01	.07	1	10.0
BL 1+40SE	1	109	314	828	3.6	122	36	2651	6.14	25	5	ND	1	20	2.0	2	2	86	.25	.147	8	180	1.46	172	.16	2	2.58	.01	.15	1	2.8
BL 1+50SE	1	69	128	540	.7	98	37	2473	6.43	18	5	ND	1	23	.8	2	2	88	.35	.141	9	136	1.28	158	.14	2	2.39	.01	.16	1	2.8
STANDARD G-1	-	-	-	-	-	-	-	-	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
STANDARD C/AU-S	18	57	36	132	6.8	70	33	1058	3.95	39	18	8	37	52	18.8	14	20	55	.50	.091	36	60	.89	177	.09	33	1.90	.05	.15	11	47.2

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: SOIL AU* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE. Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: OCT 29 1991

DATE REPORT MAILED: Nov 4/91.

SIGNED BY: *C. Leong* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

"A" Feldspar (quartz) porphyry**General/microscopic description**

Composed of altered plagioclase phenocryst pseudomorphs (to >2.0 mm), lesser rounded partly resorbed quartz grains in a very fine altered plagioclase-rich groundmass.

Alteration, sericite > carbonate > tremolite replacement of plagioclase phenocrysts. Weak to moderate microgranular dusting. Partial fracture control. Some ghost-like remnant twinning. Mafics obliterated? Partial resorption of quartz. Groundmass weakly to moderately sericitic, carbonatized. Stained slab indicates absence of K-feldspar.

Disseminated pyrite (euhedral and subhedral outlines)

No photomicrograph

Hand specimen recognizable as feldspar(quartz) porphyry.

"B" Intensely sheared/altered infilled porphyritic trachyte.

Flow or dyke? [Not dacite, quartz introduced]

General/microscopic description.

Small lithic fragments of porphyritic trachyte. In a shear fabric of carbonate >> sericite, quartz.

Lithic fragments, feldspar phenocrysts, K-feldspar and plagioclase(?) in a strongly altered felted groundmass of feldspar K-feldspar?/plagioclase(?) laths Carlsbad twinning, and suggestion of polysynthetic (plagioclase) but has mottled patterns suggestive of K-feldspar (weak quadrille structure/shear?). Interstitial altered K-feldspar. Shear brecciation, alteration overprint. Alteration of lithic fragments includes weak dusting of phenocrysts. Weak alteration as compared to intensity of breccia/shear infilling. Semiopaque dusting of interstitial material in groundmass.

Shear fabric intense carbonate alteration. Superimposed sericite stringers parallel to shear. Quartz, interlocking aggregates as late crackle breccia infilling.

Hand specimen slightly darker than C,D,E. No justification for designation as separate unit. Colour result of alteration not protolith differences.

If alteration assemblage and shear fabric is "subtracted" the protolith would be similar to C,D,E, and F, possibly G.

"C" Intensely sheared/altered, infilled porphyritic trachyte flow or dyke? [Not dacite, quartz introduced]

General/microscopic description

Similar to "B". Sheared altered fabric. Porphyritic trachyte lithic fragments (protolith). Obtained biaxial (-) 2V 70° interference figures for K-feldspar phenocrysts. Quadrille structure conspicuous in some crystals. K-feldspar phenocrysts > plagioclase? (Suggestion of polysynthetic twinning).

Felted groundmass texture coarser than "B". Otherwise similar protolith.

Strong to near massive carbonate alteration. Stringers of very fine and coarser sericite. Tremolite not conspicuous. Quartz in late crackle infilling.

Hand specimen lighter in colour than "B". Colour difference and slightly coarser groundmass is not justification for designation of "B" and "C" as separate units.

Significant sphalerite and other sulphides.

If effects of shearing and alteration/mineralization are subtracted, "C"="B".

Compare photomicrographs of "C", "E" & "F".

"D" Less intensely sheared/altered, infilled porphyritic trachyte flow or dyke?

General/microscopic description

Similar to "B" and "C". Sheared, brecciated but less intensely than "B" and "C".

Protolith fabric is conspicuous although brecciated, crackle breccia/shearing, altered. Protolith; feldspar phenocrysts, (to >4.0 mm). K-feldspar, quadrille structure possible plagioclase(?) not supported by etching in stained slab). K-feldspar-rich matrix. Felted matrix fabric as for "B" and "C".

Patches near massive carbonate alteration, lesser quartz in most intensely brecciated areas. Quartz and calcite also fracture controlled. Strong near parallel sericitic filled shear-crackle breccia network. LESS DISRUPTION OF PROTOLITH FRAGMENTS.

Less conspicuous sulphides, associated with quartz, lesser with carbonate.

"E" Brecciated porphyritic trachyte flow/dyke?**General/microscopic description**

Protolith as for "B", "C", "D". Brecciated, infilled with carbonate, lesser quartz. Very weak crackle brecciation with sericite infilling as compared to "D" etc.

Single and holmerophenocrysts of K-feldspar, plagioclase (which was questioned in previous sections) was not detected in "E" although similar close spaced Carlsbad twinning occurs (disappears @ 45°)

Significant sphalerite and other sulphides. Protolith fabric clearly visible. There are no conspicuous textures/structures which would prove volcanic flow. Appears to have been emplaced as a phenocryst-charged melt with static crystallization of the felted groundmass. [If these are dykes then a volcanic equivalent would be anticipated somewhere in the unit].

Compare photomicrographs "C", "E", "F".

"F" Porphyritic trachyte flow/dyke.**General/microscopic description**

Protolith as for "B", "C", "D", "E". Weak to moderate brecciation, carbonate infilling. Sericite crackle network infilling. Protolith texture, composition clear. Stained slab indicates predominantly K-feldspar phenocrysts and groundmass.

Quartz-chlorite veinlets-strong green/yellow green colour, pleochroism like pumpellyite. Both high (masked) birefringence (very fine grained) and low anomalous birefringence (coarser bladed radiating) are present.

Compare photomicrographs of protoliths "C", "E", "F".

"G" Porphyritic "andesite". (Quartz introduced)**General/microscopic description**

Different unit than "A"; or "B", "C", "D", "E", "F".

Protolith plagioclase phenocrysts (to 5 mm) in a microgranular altered feldspathic (plagioclase?) groundmass. Mafics obliterated(?). Quartz introduced.

Plagioclase phenocrysts, cores strong sericite and less carbonate alteration. Some remnant well developed polysynthetic twinning. "Step-broken" grains.

Groundmass very fine/microgranular feldspathic (plagioclase). Almost complete masking by strong microgranular/very fine sericitic alteration. Foliated fabric because of "shear", crackled

Very minor quartz (introduced) associated with carbonate.

Stained slab indicates K-feldspar absent (weak stain of groundmass-sericite?)


Disseminated euhedral/subhedral pyrite(?)

No remnant textures to confirm flow or dyke origin.

Sample "C"

91 R XVIII-23

X-nicols

 0.1 mm

Porphyritic trachyte protolith, showing K-feldspar phenocryst in felted groundmass. Brecciated, infilled with introduced carbonate, lesser sericite, quartz.

Lloyd Adde.

BL 5 + 50E Tough Nut
Shear vein mineralized, porphyritic trachyte protolith fragments

Summary description

Vein layered/laminated composed predominantly of carbonate, lesser segregated quartz lensoids lesser plagioclase. Foliated sericite partings following narrow shear planes.

Lithic fragments porphyritic trachyte. One fragment contains smaller trachyte lithic fragments in a tuffaceous groundmass. Protolith rather than a result of shearing.

Opaques; 10%, sphalerite, pyrite, chalcopryrite, traces hematite. Strong shear fracture control.

Microscopic description

Vein

Carbonate; 55%, anhedral (<.05 to 0.5 mm). Interlocking coarse grains, finer aggregates in shear planes associated with sericite partings. Clusters of irregular quartz grains lesser plagioclase. Mineralized stringers. Locally strong shear foliation.

Quartz; 15%, anhedral (<.05 to 0.5 mm). Disseminated grains, segregations of lensoidal clusters of grains.

Plagioclase; 5%, anhedral (<.05 to 0.3 mm). Disseminated grains clusters of grains in carbonate.

Sericite; 10%, anhedral (<.05 to 0.2 mm). Foliated clusters of grains form discontinuous partings, foliated networks on shear planes in carbonate.

Lithic fragments; 5%

Porphyritic trachyte; coarser K-feldspar, lesser plagioclase(?) phenocrysts in a fine felted K-feldspar-rich groundmass. Some fragments have less obvious felted more tuffaceous texture.

Note: one lithic fragment contains rounded smaller lithic fragments of felted trachyte in a tuffaceous groundmass. Protolith, not a result of shearing.

Reflected light

Opaques 10%

Sphalerite; 6%, anhedral (<.01 to stringers several mm). Irregular grains, clusters of irregular grains forming discontinuous veinlets. Interstitial to pyrite. Intergrown with and contains minor blebs of chalcopryrite. Strong fracture control.

BL 5 + 50E Tough Nut Continued

Pyrite; >3%, anhedral/subhedral (<.01 to 0.4 mm). Disseminations and irregular clusters of grains associated with sphalerite. Some interstitial chalcopyrite. Strong fracture control.

Chalcopyrite; <1%, anhedral (<.01 to 0.3 mm). Irregular clusters associated with sphalerite. Minor minute blebs in sphalerite.

Hematite, traces, anhedral (<.01 to <.05 mm). Clusters of grains in fractures in sphalerite. Associated with iron staining.

Iroquois West**Mineralized carbonate-(quartz-plagioclase-K-feldspar) vein lensoidal lithic fragments.****Summary description**

Carbonate predominates. Forms veins in a shear structure associated with lesser hydrothermal plagioclase, quartz, K-feldspar, sericite/muscovite. Contains lithic fragments which show gradation in several grains from sericitic foliated rock like "B" to less altered trachyte with felted long narrow plagioclase crystals in a K-feldspar-rich matrix.

Fracture/shear controlled mineralization. In approximate order of abundance, consists of: pyrite > chalcopyrite, sphalerite > galena >> covellite.

Microscopic description**Vein components**

Carbonate; 50%, anhedral (<.05 to >0.5 mm, generally <0.3 mm). Close packed interlocking shear fracture controlled layers containing clusters and cut by irregular segregations /stringers/lensoids of plagioclase, quartz, sericite/muscovite.

Plagioclase; 10%, anhedral (<.05 to 0.2 mm). Occurs as irregular segregations/stringers/lensoids in carbonate. Clear, unaltered conspicuous twinning, R.I. > epoxy indicating composition in low andesine range.

Quartz; 10%, anhedral (<.05 to >1.0 mm, generally 0.2 to 0.4 mm). Irregular interlocking grains. Occurs as single grains clusters of grains with other components but most conspicuous as coarser very irregular discontinuous veins in carbonate.

K-feldspar; <2%, anhedral (<.05 to 0.2 mm). Few unaltered grains associated with plagioclase. Conspicuous quadrille structure on many grains and lower relief distinguishes it from plagioclase.

Sericite/muscovite; <5%, anhedral (<.05 to >1.0 mm, generally <0.5 mm). Foliated irregular partings in carbonate closely associated with lithic fragments.

Lithic fragments; 10%, sericitized lensoidal lithic fragments similar to "B" and less altered of trachyte consisting of very fine grained narrow, diffuse felted plagioclase crystals in a microgranular feldspathic (K-feldspar-rich) groundmass. A few fragments show gradations from sericitized remnants with obliterated textures to trachyte with distinct felted textures.

Iroquois West Continued**Reflected light****Opagues; 15%**

Pyrite; 8%, anhedral/subhedral (<.01 to <0.5 mm). Irregular clusters of grains (to >1.0 mm). Intergrowths with chalcopyrite and sphalerite lesser galena cut by these minerals. Shear fracture controlled.

Chalcopyrite; 3%, anhedral (<.01 to >1.0 mm). Intergrowths with pyrite, sphalerite, lesser galena. Interstitial to pyrite, accompanied by galena.

Sphalerite; 3%, anhedral (<.05 to >1.0 mm). Intergrowths with pyrite, chalcopyrite, galena. Interstitial to pyrite.

Galena; <1%, anhedral (<.05 to 0.3 mm). Isolated grains, intergrowths with above metallics.

Covellite; traces, anhedral, (0.1 mm). One small cluster noted.

Golden Dale**Shear breccia, veined, mineralized porphyritic trachyte.****Summary description**

Lithic fragments are composed of coarse porphyritic (K-feldspar phenocrysts) in a groundmass of long bladed, loose felted, plagioclase in a microgranular K-feldspar-rich matrix. Elongate fragments are aligned parallel to shear foliation.

Vein assemblage is composed mainly of carbonate with lesser irregular clusters, segregations of quartz > twinned plagioclase. Late shears filled with coarser bladed foliated sericite/muscovite.

Fracture controlled sulphide mineralization in approximate order of abundance includes sphalerite, pyrite, galena, tetrahedrite(?).

Microscopic description

Lithic fragments 20%, (concentrated near one end of section)

Porphyritic trachyte; Composed of coarse (to 2.0 mm) phenocrysts of plagioclase and K-feldspar (quadrille structure) in a groundmass of fine long-bladed, loosely felted/weakly foliated plagioclase in a microgranular K-feldspar-rich matrix. Similar to lithic fragments in "B" but "B" does not show coarse K-feldspar phenocrysts. In a vein mineral groundmass. Shows weak sericitic-carbonate alteration and cut by vein minerals.

Vein minerals

Carbonate; 40%, anhedral, (<.01 to >2.0 mm). Wide range of grain size. Widely scattered very coarse crystals clusters to several mm in a groundmass of shear foliated finer aggregates. Intermingling with lesser quartz, plagioclase, sericite muscovite and opaques.

Quartz; 10%, anhedral, (<.05 to 1.0 mm). Clusters, segregations of anhedral grains among carbonate-rich groundmass.

Plagioclase; 10%, anhedral, (<.05 to 0.5 mm). Disseminated grains, clusters of grains. Unaltered, conspicuous twinning. Composition in low andesine range.

Sericite/muscovite; 5%; anhedral (microgranular to 0.5 mm). Narrow partings of coarse foliated grains. Fine felted alteration in lithic fragments.

Reflected light

Opaques 15%

Sphalerite; 8%, anhedral, (<.01 to >1.0 mm). Disseminated grains, elongate irregular clusters and diffuse continuous

Golden Dale Continued

elongate networks/veins to several mm), fracture controlled. Intergrown with pyrite, galena. Sphalerite interstitial to pyrite.

Pyrite; 5%, anhedral/subhedral, (<.01 to 0.5 mm). Disseminated grains elongate irregular clusters (to a few mm). Less continuous than sphalerite. Sphalerite and galena interstitial to and cutting pyrite.

Galena; 3%, anhedral (<.01 to 1.0 mm). Irregular grains, clots associated with sphalerite. Interstitial to and veinlets in pyrite.

Tetrahedrite(?); unconfirmed. One grain has a distinct bluish tint which may be a result of colour contrast between galena and pyrite vs galena and sphalerite. Tetrahedrite(?) and galena were not observed in contact as would be anticipated if tetrahedrite is present.

0 + 00 1 + 50N Tough Nut
Brecciated porphyritic trachyte; crackle brecciation

Summary description

Plagioclase, lesser K-feldspar phenocrysts in matrix of irregular interlocking K-feldspar grains.

Few disseminated clusters of carbonate, more abundantly as veinlets in fractures, breccia infilling with quartz, sericite, opaques.

Opaques; 4%, pyrite, <1% sphalerite, <<1% galena, traces chalcopyrite.

Note: there are wide variations in percentages across short intervals in hand specimen.

Microscopic description

Protolith

Phenocrysts

Plagioclase; 20%, subhedral/anhedral (0.1 to 1.5 mm). Weak alteration dusting, slight sericite alteration. Diffuse margins. Conspicuous twinning indicates a composition in oligoclase range.

K-feldspar(?); <5%, subhedral (0.1 to 0.5 mm). Not conspicuous. Few grains similar in appearance to plagioclase with a suggestion of quadrille structure and lacking polysynthetic twinning of plagioclase.

Groundmass

K-feldspar; 50%, anhedral (<.01 to .05 mm). Irregular interlocking grains. Less altered than phenocrysts.

Carbonate; see veins/breccia below.

Veins/breccia infilling; >25%. Wide variation in percentages over short intervals in hand specimen.

Carbonate; 5%, anhedral, (<.05 to 0.5 mm). Irregular clusters of grains. Disseminated throughout groundmass but most abundantly as fracture-breccia infillings.

Quartz; 10%, anhedral (<.05 to 1.0 mm, generally <0.5 mm). Irregular interlocking grains. Concentrated in veinlets and breccia infillings.

Sericite; <5%, anhedral (<.01 to 0.1 mm). Foliated. In late fractures with some carbonate.

Opaques; >5% see Reflected light, below.

0 + 00 1 + 50N Tough Nut Continued**Accessories**

Sphene/rutile(?); traces, anhedral/subhedral (<.05 mm). Widely disseminated. Strong internal reflection.

Reflected light

Opagues > 5%. Wide variation in percentages across short intervals in hand specimen.

Pyrite; 4%, subhedral/euhedral (<.01 to 2.0 mm). Disseminated grains, clusters of grains. Mainly strong disseminations clusters of grains in fractures.

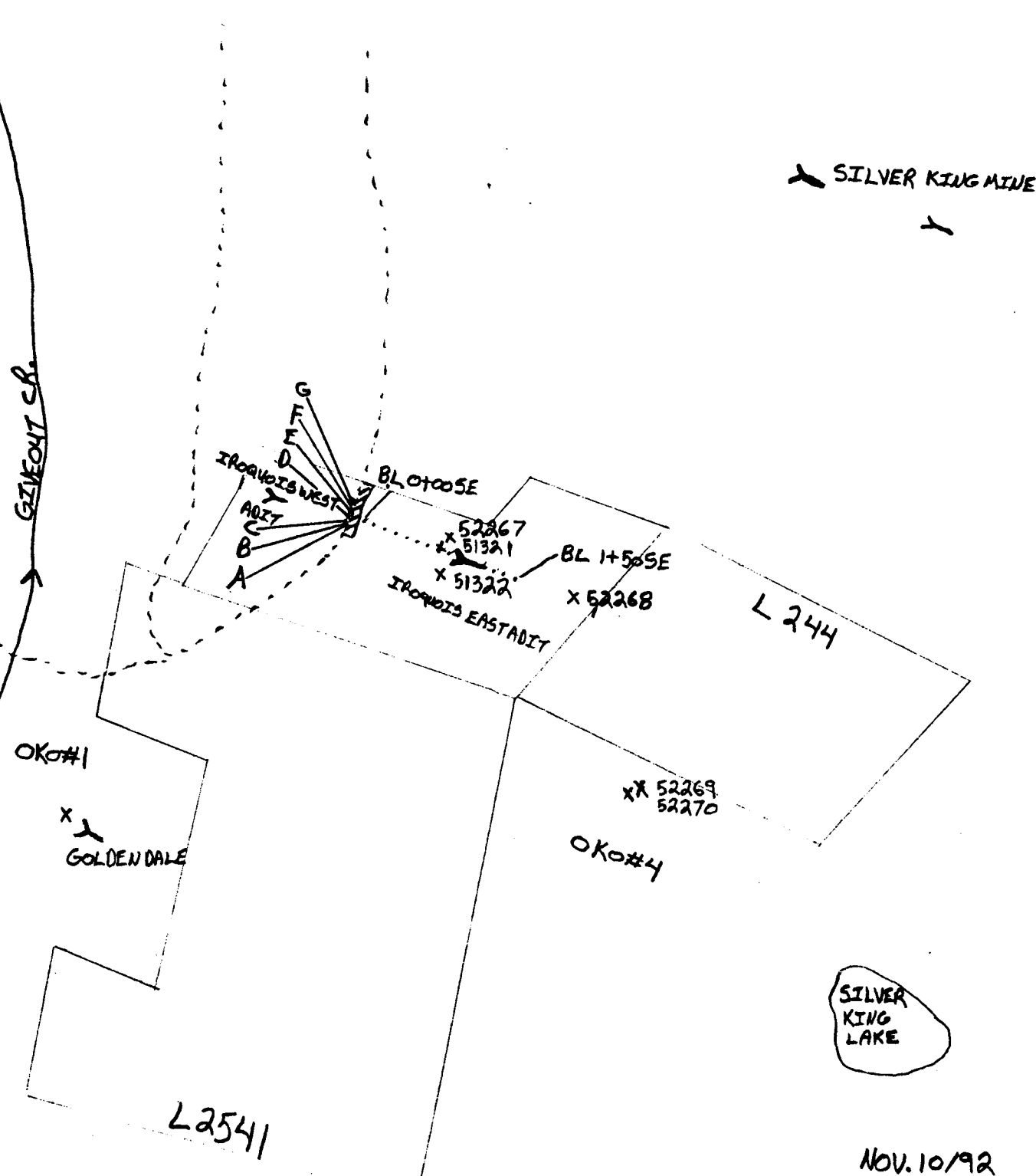
Sphalerite; <1%, anhedral (<.01 to 0.7 mm). Irregular grains with lesser galena in fracture systems later than pyrite. Traces associated chalcopyrite.

Galena; <<1%, anhedral (<.01 to 0.4 mm). Very irregular grains in fracture systems associated with sphalerite. Much more conspicuous and abundant in hand specimen.

Chalcopyrite; traces, anhedral (<.01 to 0.1 mm). Scattered irregular grains in weak association with sphalerite.

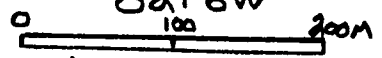
Magnetite; traces, anhedral (<.01 to .05 mm). Weakly disseminated. Few grains show intergrowths with hematite.

Hematite; traces, anhedral, (<0.1 mm) small clusters of grains. Also as intergrowths with magnetite. Silver white. Weak pleochroism. Strong anisotropic. Lacks internal reflection. (ilmenite?)



SAMPLE LOCATION MAP

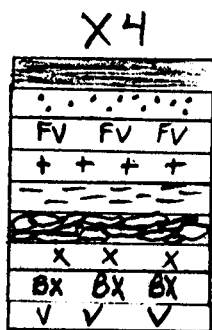
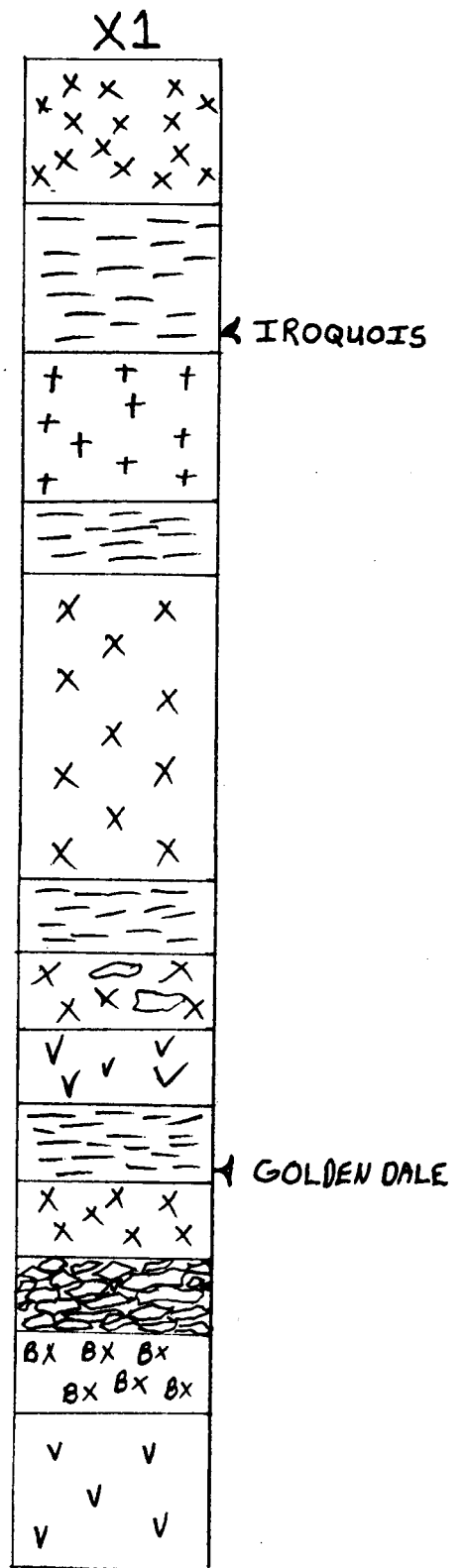
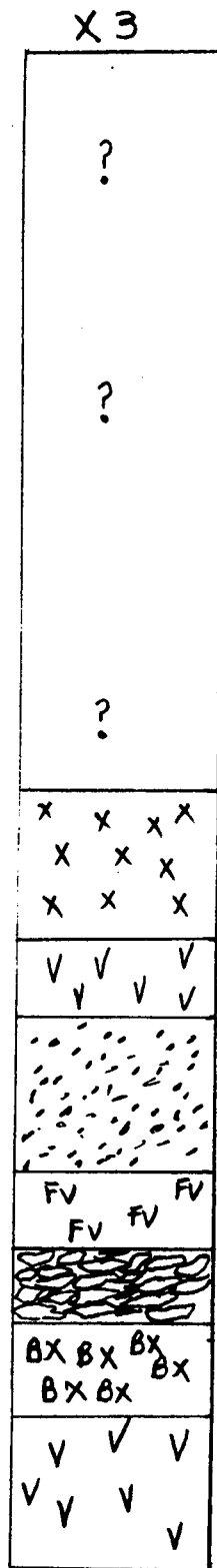
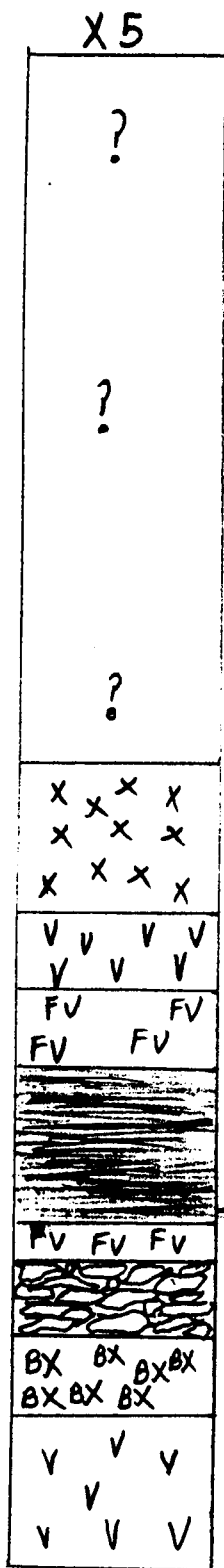
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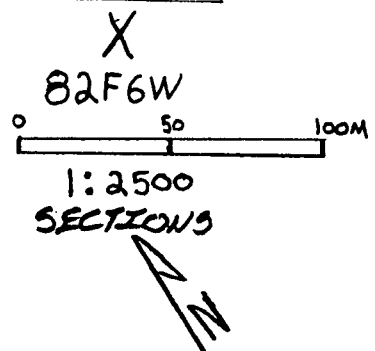
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- X ROCK SAMPLE LOCATION
- SOIL SAMPLE LOCATION
- ▨ TRENCH
- A-G THIN SECTION LOCATION
- ROAD

NOV. 10/92



ARGILLITE
TUFF
FV FV FV
SILVER KING PORPHYRY DYKE
+
TRACHYTE
HETROLITHIC BRECCIA
X X X
ANDESITE
BX BX BX
BASALT
V V V
AUGITE PORPHYRY



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