LOG NO: 0119 RD.
ACTION:

FILE NO:

GEOCHEMICAL AND PETROGRAPHIC REPORT

ON

GOLD SUPPLEMENTAL CLAIM GROUP

GOLD 1-4 2-POST CLAIMS
RECORD # 5975-5978 INCL.

NOV METRIC GRID CLAIM
RECORD # 6817

OMINECA MINING DIVISION

NTS: 93N/7W

LATITUDE: 55° 17.7' N (UTM = 6129000M N)

LONGITUDE: 124° 46.9' W (UTM = 387000M E)

OWNERS: Eric A. Shaede - Gold Claims

J. Duane Poliquin - Nov Claim

OPERATOR: Eric A. Shaede

Author: Eric A. Shaede

Date: December 31, 1987

GEOLOGICAL BRANCH
ASSESSMENT REPORT

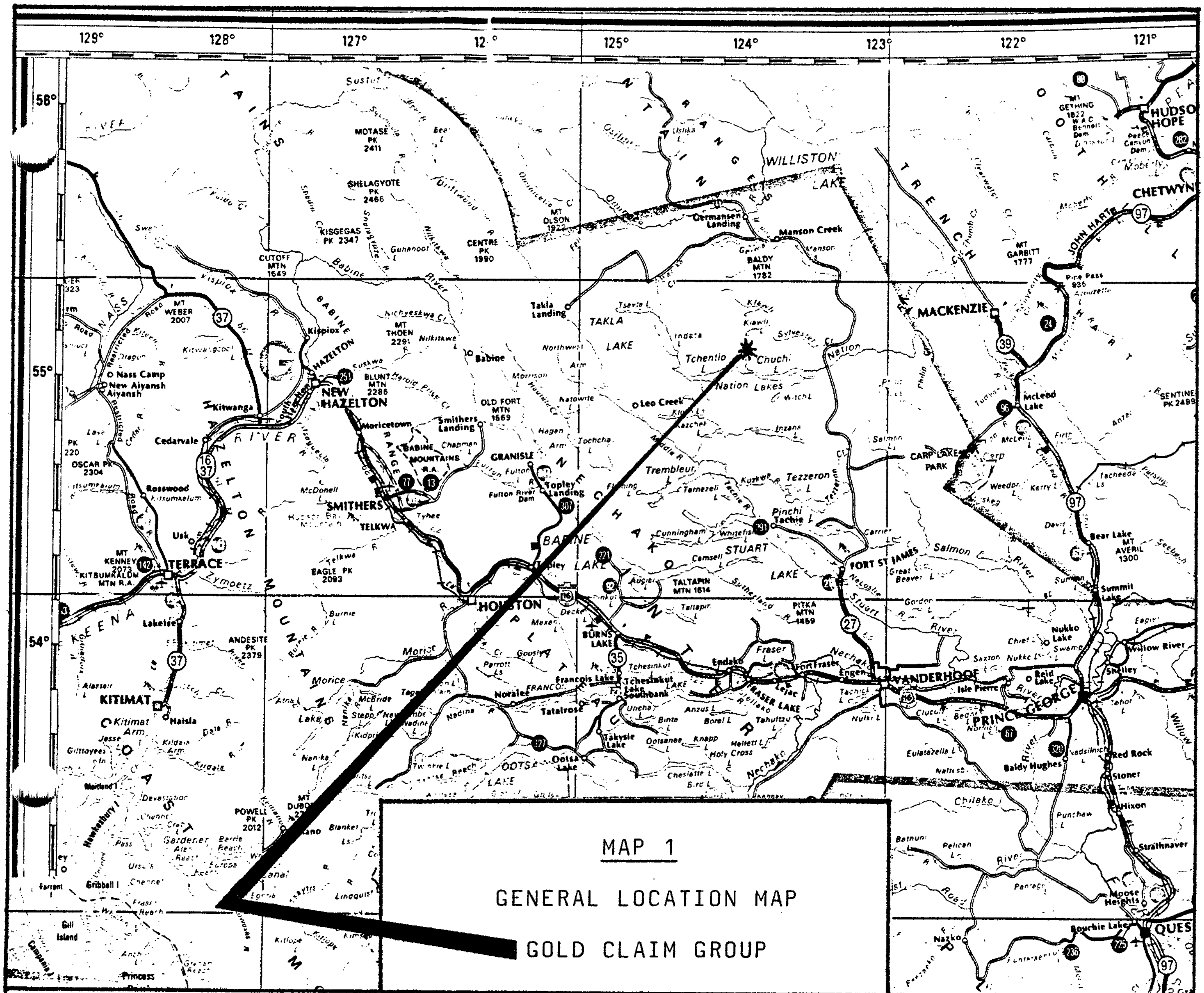
16,865

TABLE OF CONTENTS

INTRODUCTION:

1. Property Description: The GOLD SUPPLEMENTAL CLAIM GROUP property consists of a group of 4-2 post claims, Gold 1-4, record numbers 5975-5978 inclusive, in the Omineca Mining Division, and a 16 unit metric grid claim named Nov, record number 6817. The Gold claims are owned by Eric A. Shaede of R.R. #1, Sicamous, B.C., VOE 2VO and their anniversary date is November 7. With the applicatio of the work reported herein, these claims will be in good standing until 1989. The Nov claim is owned by J. Duane Poliquin of 16876-26th Avenue, Surrey, B.C., V4B 5E7 and with the application of the work reported herein, this claim will be in good standing until November 20, 1988. Mr. Poliquin also holds an unrecorded option interest in the Gold claims.

2. Location and Access: The Gold claim group is located about 1 kilometer upstream from the mouth of a small creek which flows northwesterly into the Klawli River about 12 kilometers north of its confluence with Chuchi Lake. The closest town is Fort St. James located about 100 kilometers to the southeast. The Omineca Mining Road passes about 35 kilometers east of the property and a logging road branches west from this main road just north of the Nation River bridge. The logging road provides access along the north side of Chuchi Lake to within about 10 kilometers of the property. Thus current access is limited to helicopter from Fort St. James with a round trip flying time of about 1.2 hours. A good helicopter landing site is present near the old workings and a small old cabin is available for shelter. Maps 1,2 and 3 show the claims relative



BRITISH COLUMBIA

Road Map and Parks Guide

SCALE 1 : 2 500 000

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

1 INCH EQUALS APPROXIMATELY 40 MILES   ELEVATIONS IN METRES ABOVE SEA LEVEL

ROADS

Interchange

- Multi - Lane Highway - with or without interchange
- Major Highway - paved
- Major Highway - improved gravel
- Other Highway - paved
- Other Highway - gravel
- Road - paved
- Other Road - gravel or dirt

ROUTES

- Trans - Canada Highway
- Crowsnest Highway
- Yellowhead Highway
- Interstate Highway - U.S.A.
- Major or Other Highway

DISTANCES

- 21 Kilometres Between Major Locations and Junctions

TRANSPORTATION

- Railroad
- Ferry
- Scheduled Airline Stop
- Scheduled Harbour Landing

BOUNDARIES

- Local Time Zone
- Tourist Region
- International
- Provincial
- State

LOCATIONS

- VANCOUVER — Major city
- VICTORIA — Capital City
- QUESNEL — City
- SALMON ARM — District
- PARKSVILLE — Town
- GOLD RIVER — Village
- Albert Canyon — Settlement
- Bear Cove — Ferry Landing

TOURIST FEATURES

- Tourism British Columbia Information Centre (See reverse side for listings)
- Rest Area With Toilet
- Parks With Vehicle/Tent Campsites
- Vehicle/Tent Campsite locations within major parks
- Parks Without Vehicle/Tent Campsites

NOTE: For further information on parks refer to Parks Index on reverse side.

- Ski Area
- Ports of Entry - 24 hour / enquire locally
- Crowsnest Pass — Pass (See reverse side for elevations)
- Mica Dam — Dam

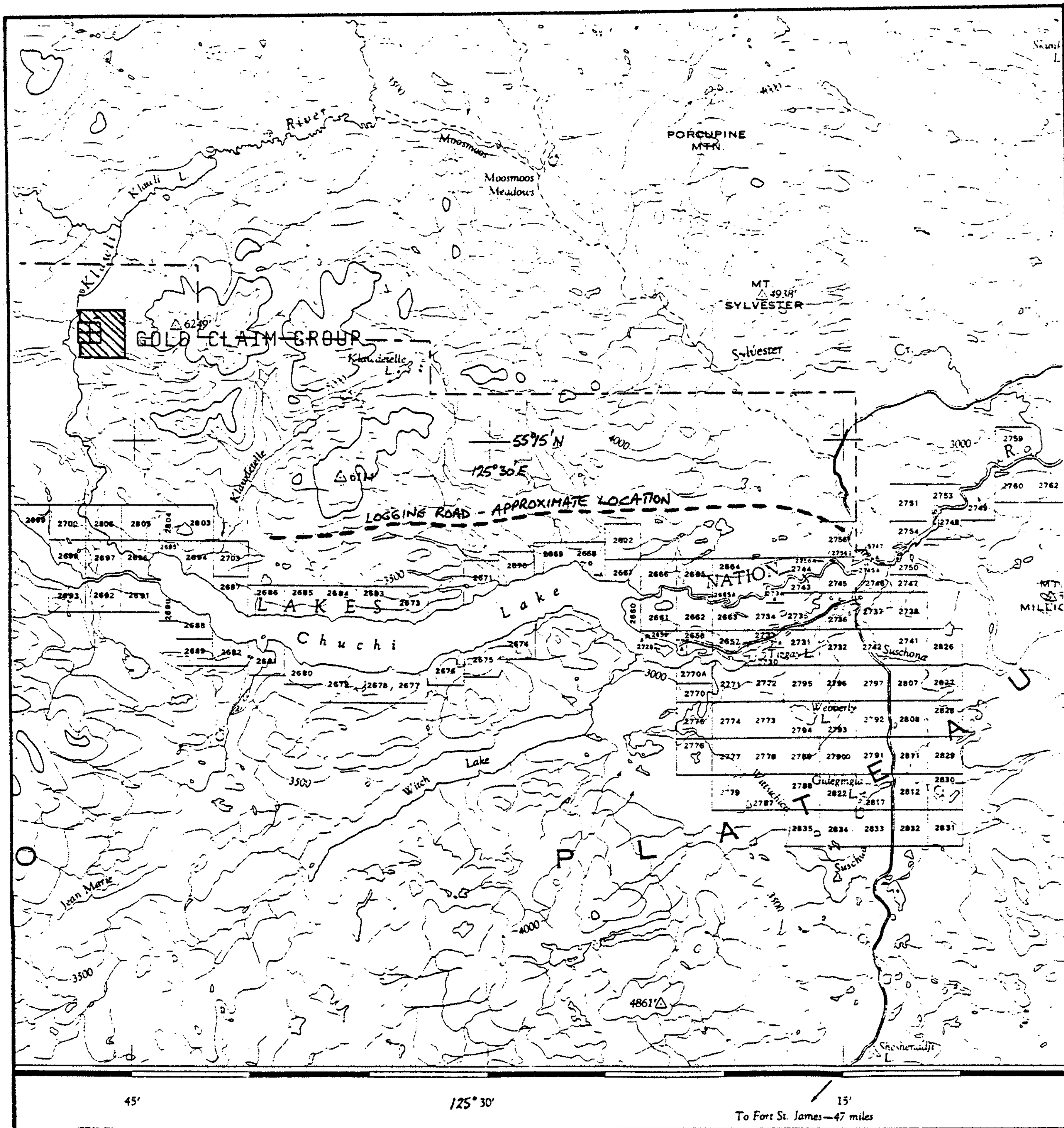
NOTE: Tunnels and bridges are toll free

Published by the Ministry of Tourism in cooperation with the Ministry of Lands, Parks and Housing.

Map Base from Surveys & Resource Mapping Branch, Ministry of Environment.

Cartography by G.A. Reimer Custom Drafting Ltd., Victoria.

Printed in Canada by Agency Press for Queen's Printer of British Columbia © Victoria, 1985.



MAP 2

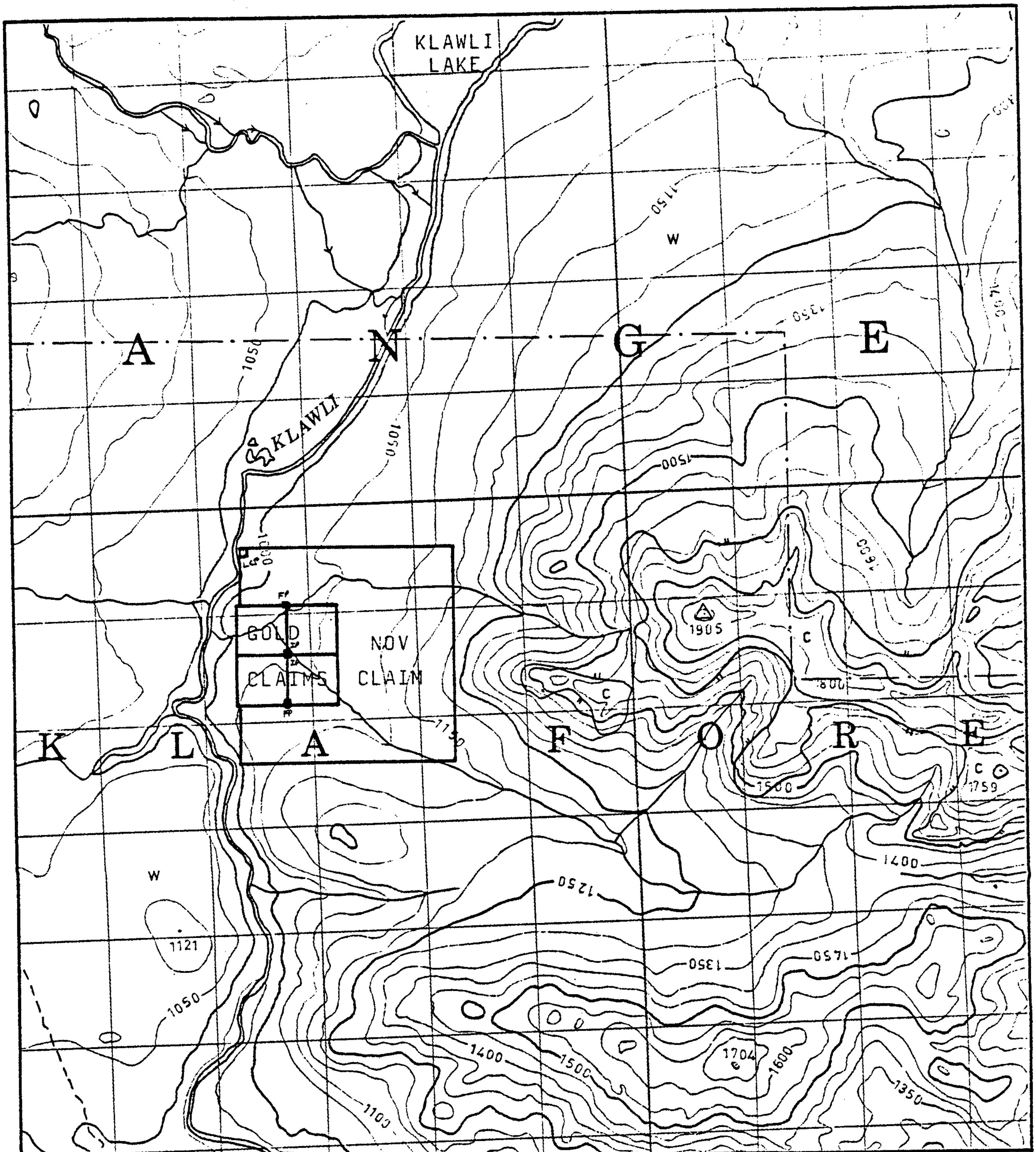
INDEX MAP

GOLD CLAIM GROUP

NTS 93N Scale = 1:250,000

0 5 10

kilometers



MAP 3

DETAILED INDEX MAP

GOLD CLAIM GROUP

NTS: 93N/7 Scale = 1:50,000

to highways, secondary roads and topography.

3. Physiography: The claim group is at an elevation of about 1100 meters on the western flank of a 1900M mountain. The area is covered with a pine and spruce forest with heavy underbrush and some wet and swampy places. Outcrop is generally scarce except along the creek in the vicinity of the camp. Elsewhere an unknown thickness of glacial overburden exists. The small creek flowing through the claims would provide an adequate source of water for mining exploration purposes and larger quantities are available from the Klawli River. Power is not available but hydro potential exists on the Klawli River in the narrow canyon section just south of the claims. Snowfall is expected to be moderate in the area and the claims are probably snowfree from May until November.

4. Previous Work: The copper-silver-gold showings covered by the claims are known as Klawli or Kohse Copper and were originally discovered in the 1920's. The MinFile reference number is 93N/32. Cominco did some trenching and sank two shallow shafts on the showings in the 1920's. The claims were restaked by Ed Kohse in 1944 and optioned to Quebec Gold Corporation who did some more trenching and sampling. Tro-Buttle Exploration Limited did a geochemical survey in 1967 and Phelps-Dodge also surveyed the area in 1971. Between 1971 and 1983, when the author staked the ground, there is no record of any work being done on the showings. The author did a small amount of prospecting and filed assessment report #12908 in 1984. Hawk Mountain Resources conducted a limited

soil geochemical survey, VLF-EM and Magnetometer surveys over the claim group in 1985 and filed assessment report #14579.

There has been no detailed geological mapping done on the property or in the vicinity. The old GSC reports describe the showing as being a major shear zone in green andesites which have been altered to chloritic and talcose schists. Narrow quartz-carbonate veins occur in the shear zone and are abundantly mineralize with chalcopyrite, pyrite and minor azurite and malachite. Quartz feldspar and grey andesitic porphyrys are also reported to outcrop on the claims. The Hogem batholith is reported to outcrop about 2.5 kilometers south of the showings.

Samples of the well mineralized narrow quartz-carbonate veins have returned assays up to 0.41 oz/ton gold, 35 oz/ton silver and 6.7% copper. Assays of the intervening sheared wall rock have indicated low but significant gold and silver values.

The soil sampling survey by Hawk Mountain Resources did not succeed in locating any anomalies which might reflect extension of the known mineralization or new mineralization. However, it is believed that this failure is due to the presence of substantial glacial overburden. Their VLF-EM and magnetometer surveys did locate some anomalies but these have not been explored further.

5. Scope of the Present Work: There has been no trace element geochemical data or petrographic work reported for the showings. Thus the present study was aimed at obtaining multi-element analyses and petrographic examination of the mineralization with the

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objective of determining the trace elements and minerals present and the degree and nature of the alteration.

RESULTS AND DISCUSSION:

The author spent part of October 31, 1987 on the property collecting a suite of samples for analysis. The time available on site was limited by the time available for the helicopter to stand by rather than having it make two trips and double the expense. A total of 13 samples of rock from the old trenches and outcrop in the creek bed were collected and submitted to Acme Analytical Laboratories in Vancouver for multi-element and geochemical whole-rock analyses using their ICP procedures. Specimens of 10 of these rock samples were also sent to Vancouver Petrographics for polished thin section preparation and petrographic examination by a qualified geologist. In addition, a grab sample of fine muck was taken from each shaft dump in order to test the metal content of these dumps.

The sample locations and major element analyses are given on Map 4. Table 1 gives a brief description of each sample taken. A copy of all analyses certificates are included in Appendix 1. All analyses were performed by Acme Analytical Laboratories using the procedures listed at the top of the certificates. Two of the samples were found to contain significant gold and silver and the pulps of these samples were assayed for gold and silver and for additional trace elements by ICP/MS. The rejects of these two high grade samples were repulverised and screened on 100 mesh and the two fractions assayed for gold to determine if any free gold was present.

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TABLE 1

GOLD CLAIM GROUP

GEOCHEMICAL SAMPLE DESCRIPTIONS

SAMPLE NUMBER	DESCRIPTION*
3986	Altered andesite with pyrite from outcrop just west large trench which is a short distance east of West shaft.
3987	Altered andesite with pyrite and minor chalcopyrite from north end, west edge of large trench which is just east of the West shaft.
3988	Altered andesite from near a narrow quartz vein from north end, west edge of large trench which is just east of the West shaft.
3989	Vein quartz with pyrite and chalcopyrite from muck pile at north end of large trench. Grab sample of several heavily oxidized pieces which appear to be very similar to the vein in place in the trench.
3990	Altered andesite with pyrite from outcrop in small trench just west of the East shaft.
3991	Highly altered andesite (bleached) from small trench just west of East shaft.
3992	Grab sample of fine muck from surface of the dump at the East shaft.
3993	Vein quartz with chalcopyrite and pyrite from bottom of muck pile at East shaft. Grab sample of several heavily oxidized pieces. One piece with a 3cm quartz vein with chalcopyrite was selected for petrographic examination. Analysis sample was a piece of this sample plus several others.
3994	Grab sample of fine muck from surface of the dump at the West shaft.
3995	Green andesite with pyrite from outcrop a few meters north of the Gold claims initial post, just west of the West shaft.
3996	Bleached and altered andesite with quartz veins and pyrite from small outcrop on north edge of creek about 100M northwest of West shaft.

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TABLE 1 cont.

SAMPLE NUMBER	DESCRIPTION*
3997	Grab sample of quartz vein (?) with pyrite from outcrop of altered andesite about 2M upstream from sample 3996.
3998	Altered, bleached andesite with pyrite from outcrop about 5M downstream from sample 3996.
3999	Feldspar porphyry dyke (?) rock from small outcrop on north bank of creek at point where creek turns to west.
4000	Altered green andesite with pyrite from small outcrop about 5M downstream from sample 3999.

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*Note: All samples except where noted otherwise, are grab samples of several fist sized pieces taken from outcrop. One piece was then selected and cut with a diamond saw to produce a specimen for petrographic examination and the remainder was sent to the analysis laboratory.

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The majority of the samples collected were found to contain geochemically significant gold and silver values. The two highest grade samples, 3989 and 3993, assayed 5.0 and 35.7 oz/ton silver and 0.10 and 0.67 oz/ton gold respectively. Although these samples represent only narrow discontinuous veins, their assays do indicate that substantial gold and silver concentrations are present in the system. The screen test on these samples indicated that some metallic native gold is present. The precious metals seem to be associated with the chalcopyrite mineralization but no direct relationship is evident from the limited data available. The more highly mineralized samples were also found to contain significant quantities of mercury, lead, zinc, bismuth and molybdenum but relatively minor amounts of arsenic and antimony.

The whole rock analyses revealed some considerable variations in the chemistry of the samples. Since only 13 samples were analysed and most contained significant mineralization and alteration, it is not possible to make a detailed analysis of the variations observed. However, several large differences are immediately evident from the data. The two most intensely altered and mineralized samples, 3989 and 3993, contained substantially less aluminum, magnesium, calcium, sodium and barium than the other samples. These samples also contain more iron than the others. The barium and potassiium values of most of the samples are significantly higher than would be expected for unaltered andesites.

The additional trace element analyses run on the two well mineralized samples confirmed the presence of substantial bismuth and relatively low arsenic values but gave a conflicting result for antimony. A small amount of selenium was also indicated by the

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ICP-hydride analysis procedure. The validity of this data is however in some doubt due to the fact that these samples contain about 4% copper and such high base metal content apparently causes some interferences in the procedure. The ICP-mass spectrometer analyses for rare earth elements did not reveal any unusual values. A small amount of tungsten was indicated for both samples.

The muck samples, 3992 and 3994, taken from the shaft dumps, did not contain any unusual concentrations of base or precious metals.

The petrographic examination report on 10 of the 13 rock samples is included as Appendix 2 at the back of this report. The rocks were all identified as porphyritic andesites except for the two most highly altered samples, 3989 and 3993, which could not be conclusively identified due to the intense alteration. Most of the samples were strongly altered with quartz, sericite, carbonate, chlorite and epidote being the major alteration minerals. Pyrite, magnetite and chalcopyrite were found in some of the samples. Please refer to the detailed report in the Appendix for a complete description of the samples.

CONCLUSION:

The geochemical and petrographic studies of the samples from the mineralized outcrop has further characterized the mineralization and the associated alteration zone. These data should be of use in planning future work on the property. No firm conclusions as to

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the origin or economic potential of the mineralization can be drawn from the limited data obtained but the intensity of the alteration and the substantial gold, silver and base metal values found in some of the samples are sufficiently encouraging to conclude that further work on the showings and the surrounding area is warranted. Future work recommended would include cleaning out of the old trenches and detailed geological mapping of them and all available outcrops. An IP geophysical survey would also be useful in attempting to determine the lateral extent of the mineralized shear zone and to search for other mineralized structures which may occur in the vicinity.

REFERENCES

B.C. Assessment Report #'s 14,579, 12,908.

B.C. Ministry of Mines Bulletin #70, J.A. Garnett, "Geology and mineral occurences of the Southern Hogem Batholith", 1978.

G.S.C. Memoir #252, 184-185, 1944.

B.C. Ministry of Mines Annual Report 1967,119.

B.C. Ministry of Mines GEM 1971,201.

G.S.C. Paper 45-9,18,1945.

G.S.C. Map 907A, 1948.

A.A. Beus and S.V. Grigorian, "Geochemical Exploration Methods for Mineral Deposits", 1976.

DETAILED COST STATEMENT

Labour - 2.0 days travel Sicamous-Ft.St.James-Sciamous.
- 0.5 day collect rock samples on claims - October 31/87.
- 0.5 day sample cutting, labelling and packaging.
- 1.5 days report writing, typing, drafting, copying.
- 4.5 days at $150.00/ day = total labour.........$675.00

Geochemical analyses - Acme Labs - 15 samples............$503.50

Petrographic examination - Vancouver Petrographics.......$737.50

Helicopter charter - Northern Mountain...................$665.16

Truck travel - Sicamous-Ft.St.James - 1800km@ $0.20......$360.00

Field accomodation and meals - 3 days 2 $35..............$105.00

Freight on samples - Greyhound Express...................$ 21.15

Miscellaneous supplies - flagging, sample bags...........$ 10.00

Report costs - copies, maps, air-photos, blueprints......$ 60.00

TOTAL COSTS = $3137.31

Statement of Exploration and Development - November 02= $1100.00

Statement of Exploration and Development - November 20= $1700.00

TOTAL S.E.D. = $2800.00

Balance to PAC account of Eric A. Shaede.

ACKNOWLEDGEMENT

Funding in the amount of $800.00 was received from Hawk Mountain Resources Ltd. for this project and is gratefully acknowledged.

AUTHOR'S CERTIFICATE

I, ERIC ALBERT SHAEDE, of 411 Coach Road, R.R. #1, Sicamous, B.C., VOE 2VO, do hereby certify that:

-I am a graduate of the University of B.C. and I received the degrees of B.Sc., M.Sc., Ph.D. from that University in 1966, 1968 and 1971 respectively.

-I have been employed in the mining industry from 1973 to 1984 at various positions ranging from metallurgist to mill superintendent to mine manager.

-I have successfully completed the Province of B.C., Ministry of Energy, Mines and Petroleum Resources, Mineral Exploration Course for Prospectors on May 18, 1985.

-I personally conducted the work reported herein and personally wrote this report based on that work and information gathered from other published reports

Dated at Sicamous, B.C., December 31, 1987

Eric A. Shaede, Ph.D.

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 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 Chips AU** ANALYSIS BY FA+AA FROM 10 GM SAMPLE. HG ANALYSIS BY FLAMLESS AA.

DATE RECEIVED: NOV 18 1987 DATE REPORT MAILED: Dec 3/87 ASSAYER. D. Toye. DEAN TOYE, CERTIFIED B.C. ASSAYER

ERIC A. SHAEDE PROJECT-KLAWLI RIVER File # 87-5771

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	HG PPB
K 3986	1	8	2	103	.1	46	8	1576	4.44	2	5	ND	1	85	1	2	2	42	3.81	.170	9	57	1.71	421	.01	2	1.44	.02	.31	1	5	5
K 3987	2	4204	94	164	11.0	45	25	1498	7.49	13	5	ND	2	47	1	2	52	32	2.46	.101	2	20	.75	23	.01	2	1.20	.01	.32	6	540	30
K 3988	1	5937	119	276	22.5	71	30	1700	9.29	10	5	ND	1	48	1	2	113	48	2.28	.097	2	31	.92	26	.01	2	1.84	.01	.29	2	660	20
K 3989	15	41394	1821	1224	179.6 ✓	27	15	697	13.15	43	5	ND	1	8	18	2	325	23	.35	.041	2	9	.34	11	.01	7	.95	.01	.16	1	2760	220
K 3990	1	28	2	47	.1	70	10	1082	4.46	2	5	ND	1	73	1	2	2	70	3.00	.168	7	75	1.76	67	.01	2	1.86	.03	.21	1	8	10
K 3991	1	243	13	44	.7	35	12	1064	3.66	8	5	ND	1	63	1	2	2	16	4.05	.169	2	10	1.07	43	.01	2	.45	.02	.32	1	9	20
K 3992	3	273	41	489	2.6	40	19	1723	6.33	18	5	ND	1	58	3	2	2	24	2.52	.134	3	18	.83	56	.01	2	1.13	.01	.31	1	159	270
K 3993	22	37610	2981	3121	570.9 ✓	33	23	1424	13.20	16	5	19	2	8	32	2	4150	24	.32	.083	2	11	.29	42	.01	4	.78	.01	.25	1	34150	600
K 3994	1	55	2	50	.1	34	15	1132	3.96	9	5	ND	1	86	1	2	2	21	4.44	.136	3	13	1.26	114	.01	4	.88	.01	.28	1	51	160
K 3995	1	141	10	87	4.6	45	11	970	3.96	2	5	ND	1	69	1	2	2	89	1.74	.163	2	76	2.47	44	.14	4	2.48	.03	.29	1	38	20
K 3996	1	64	7	61	1.3	14	12	1365	4.60	8	5	ND	2	114	1	2	2	19	5.70	.107	2	6	1.79	64	.01	3	.48	.01	.23	1	51	5
K 3997	1	27	8	32	1.2	6	10	814	3.92	6	5	ND	1	45	1	2	2	5	2.03	.055	2	2	.69	24	.01	3	.36	.01	.22	1	22	5
K 3998	2	37	27	84	4.1	17	15	1115	7.90	6	5	ND	1	86	1	2	2	19	4.36	.102	2	6	1.53	15	.01	4	.68	.01	.25	1	112	5
K 3999	5	14	2	46	.6	8	13	526	2.21	2	5	ND	2	101	1	3	2	35	2.98	.083	11	8	.67	122	.01	5	.94	.05	.20	3	21	5
K 4000	1	164	7	62	.1	64	21	979	5.90	5	5	ND	1	241	1	2	2	94	8.04	.102	10	136	2.27	60	.01	2	3.08	.01	.17	1	42	5
STD C/AU-R	19	60	39	130	7.1	71	29	1064	4.08	41	23	7	36	52	19	20	24	58	.47	.088	39	62	.86	175	.07	32	1.85	.06	.14	11	500	1300

✓ Regular Assay required for correct results.

APPENDIX 1

.../A1-2

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

.../A1-3

WHOLE ROCK ICP ANALYSIS

A .1000 GRAM SAMPLE IS FUSED WITH .60 GRAM OF LIBO2 AND IS DISSOLVED IN 50 MLS 5% HNO3.
- SAMPLE TYPE: Rock Chips

DATE RECEIVED: NOV 18 1987 DATE REPORT MAILED: Dec 3/87 ASSAYER. D. Toye ..DEAN TOYE, CERTIFIED B.C. ASSAYER

ERIC A. SHAEDE PROJECT-KLAWLI RIVER File # 87-5771

SAMPLE#	SIO2 %	AL2O3 %	FE2O3 %	MGO %	CAO %	NA2O %	K2O %	TIO2 %	P2O5 %	MNO %	CR2O3 %	BA PPM	LOI %	SUM %
K 3986	50.07	18.42	8.10	3.69	5.60	2.50	4.14	.82	.47	.19	.01	1115	5.4	99.60
K 3987	57.39	12.80	12.85	1.91	3.42	.05	3.82	.55	.27	.17	.01	2311	5.7	99.33
K 3988	52.72	13.68	15.95	2.15	3.26	.05	4.10	.58	.29	.20	.01	2465	5.8	99.21
K 3989	60.86	6.18	18.95	.76	.52	.05	1.53	.25	.19	.06	.01	582	6.9	96.36
K 3990	54.62	17.14	7.11	3.47	4.53	3.65	3.00	.75	.47	.12	.01	1367	4.6	99.70
K 3991	51.99	16.61	6.76	2.68	5.84	2.28	4.26	.74	.47	.13	.01	1494	7.7	99.72
K 3993	50.53	11.75	20.21	.82	.49	.05	3.42	.51	.31	.16	.01	512	8.3	96.65
K 3995	51.67	17.98	7.79	5.01	6.20	3.34	2.60	.78	.48	.14	.01	1303	3.6	99.82
K 3996	50.20	13.96	7.70	3.69	7.87	1.17	3.76	.63	.28	.17	.01	1434	10.1	99.78
K 3997	66.03	12.77	6.36	1.71	2.85	.49	3.85	.30	.13	.09	.01	1308	4.9	99.71
K 3998	50.24	13.53	12.62	3.31	6.41	1.24	3.77	.62	.29	.14	.01	1837	7.0	99.49
K 3999	60.41	17.90	3.77	1.64	4.25	4.94	2.63	.42	.18	.06	.01	1285	3.3	99.73
K 4000	45.72	15.16	9.71	4.88	11.22	1.64	1.85	.78	.30	.13	.02	303	8.0	99.46
STD SO-4	67.93	10.13	3.36	.98	1.55	1.25	2.21	.55	.18	.07	.01	759	11.4	99.75

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

DATE RECEIVED: DEC 4 1987
DATE REPORT MAILED: Dec. 18/87

ASSAY CERTIFICATE

- SAMPLE TYPE: Pulp AU - 10 GM REGULAR ASSAY.

ASSAYER: ..D Toye.. DEAN TOYE, CERTIFIED B.C. ASSAYER

ERIC A. SHAEDE PROJECT-KLAWLI RIVER File # 87-5771 R

SAMPLE#	AG oz/t	AU oz/t
K 3989	5.03	.094
K 3993	35.70	.664

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

DATE RECEIVED: DEC 4 1987
DATE REPORT MAILED: Dec.10/87.

ASSAY CERTIFICATE

- SAMPLE TYPE: REJECT

ASSAYER: .D.Toye. DEAN TOYE, CERTIFIED B.C. ASSAYER

ERIC A. SHAEDE PROJECT-KLAWLI RIVER File # 87-5771 R

SAMPLE#	SAMPLE wt. gm	AU-100 oz/t	NATIVE Au mg	AVG. oz/t
K 3989 NC	230	.097	.08	.107
K 3993 NC	410	.664	.22	.679

NC = New cut from reject of samples. The new cut was pulverised and screened on 100 mesh to test for the presence of native gold.

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

DATE RECEIVED: DEC 4 1987
DATE REPORT MAILED: Dec 18/87.

GEOCHEMICAL ICP ANALYSIS

.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.
ANALYSIS BY HYDRIDE ICP.
- SAMPLE TYPE: Pulp

ASSAYER: ...D. Toye... DEAN TOYE, CERTIFIED B.C. ASSAYER

ERIC A. SHAEDE PROJECT-KLAWLI RIVER File # 87-5771 R

SAMPLE#	As PPM	Sb PPM	Bi PPM	Ge PPM	Se PPM	Te PPM
K 3989	59.1	49.5	412.4	.5	2.0	.9
K 3993	20.8	46.5	4549.3	.5	7.1	.5

Note: These samples contain approximately 4% copper and this may have caused interference in this procedure.

.../A1-6

ACME ANALYTICAL LABORATORIES 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE 253-3158 DATA LINE 251-1011

WHOLE ROCK ICP-MS ANALYSIS

.100 GRAM SAMPLE FUSED WITH .6 GM LIBO2 AND IS DISSOLVED AND DILUTED TO 50 ML WITH 5% HNO3.
ANALYSIS BY ICP MASS SPECTROMETER
- SAMPLE TYPE: Pulp

DATE RECEIVED: DEC 4 1987 DATE REPORT MAILED: Dec 18/87 ASSAYER. D. Toye .DEAN TOYE, CERTIFIED B.C. ASSAYER

ERIC A. SHAEDE PROJECT-KLAWLI RIVER File # 87-5771 R

SAMPLE#	Be PPM	Rb PPM	Y PPM	Zr PPM	Nb PPM	Sn PPM	Cs PPM	La PPM	Ce PPM	Pr PPM	Nd PPM	Sm PPM	Eu PPM	Gd PPM	Tb PPM	Dy PPM	Ho PPM	Er PPM	Tm PPM	Yb PPM	Lu PPM	Hf PPM	Ta PPM	W PPM	Th PPM	U PPM
K 3989	10	55	18	29	3	3	2	8	21	1	10	16	1	2	1	1	1	1	1	2	1	1	1	12	4	1
K 3993	10	104	38	49	6	1	3	10	29	2	16	47	1	3	1	5	1	3	1	3	1	2	1	7	3	2

.../A2-1

Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE, Ph.D. Geologist

P.O. BOX 39
8887 NASH STREET
FORT LANGLEY, B.C.
V0X 1J0

PHONE (604) 888-1323

Report for: **Eric A. Shaede,**
Klawli Gold,
RR# 1,
SICAMOUS, B.C., VØE 2VØ

Invoice 6946
November 1987

Samples: Gold Claim Group Record #5975-78
Takla Group
3986, 3987, 3988, 3989, 399Ø, 3991, 3993, 3995, 3996, 3998

Summary:

Many of the samples are of porphyritic andesite, with phenocrysts of plagioclase and hornblende in a groundmass dominated by plagioclase. Alteration is very variable, and commonly is strong, with plagioclase phenocrysts commonly replaced by sericite-(calcite) and hornblende replaced either by quartz-sericite-carbonate-sericite or chlorite-calcite. Some samples contain amygdules dominated by chlorite-calcite-epidote-quartz, with lesser tremolite and pyrite.

Two samples are probably of siliceous argillite which also was strongly altered to sericite-carbonate-pyrite. Alternately, these may be extremely strongly altered andesites in which original texture was destroyed.

Veins are of several types, dominated by carbonate-quartz-pyrite, with lesser ones of chlorite-calcite-epidote-quartz-pyrite, and a few of calcite-quartz-chalcopyrite-bornite.

Much of the carbonate is calcite. In a few samples, carbonate has high relief, and appears to be ankerite.

Samples are grouped as follow

1. Porphyritic Andesite

3986	Flow breccia, slight differences in texture between fragments and igneous groundmass; veins of calcite-quartz.
399Ø	amygdaloidal; alteration to sericite-chlorite-calcite; amygdules of chlorite-calcite-(tremolite); veins of calcite
3991	alteration to sericite-carbonate, calcite-sericite-quartz amygdules; veins of calcite-(quartz) and seams of sericite- Ti-oxide

(continued)

.../A2-2

3993	alteration to sericite-quartz-(chlorite-pyrite), little original texture preserved; large vein of quartz-chalcopyrite-pyrite-magnetite-sphalerite-(galena); chalcopyrite altered in patches to hematite.
3995	relatively fresh; plagioclase slightly altered to sericite-epidote; hornblende phenocrysts fresh or replaced by chlorite-calcite-epidote or quartz-calcite-(epidote-chlorite-actinolite); amygdules of chlorite-calcite-epidote-pyrite;; veins of calcite-epidote-chlorite-pyrite-K-feldspar-quartz, and of albite
3996	plagioclase phenocrysts altered to sericite; hornblende to quartz-(sericite-calcite); abundant calcite in groundmass; veins of calcite-quartz-chalcopyrite-bornite
3998	plagioclase phenocrysts altered to sericite-calcite; hornblende phenocrysts altered to quartz-sericite-ankerite; carbonate abundant in groundmass; early vein of calcite-pyrite-quartz cut by later veins of calcite-quartz-(barite-sericite)

2. Siliceous Argillite(?)

3987	well banded, layers rich in sericite, quartz, or chlorite; lenses rich in magnetite, pyrite, or chalcopyrite with minor sphalerite and galena; veins of calcite-quartz
3988	patchy rock dominated by sericite, quartz, and lesser chlorite and pyrite, and much less ankerite and magnetite; veins of quartz-calcite-chalcopyrite

3. Strongly Altered Rock (origin uncertain)

3988	see above
3989	quartz-sericite-pyrite-chalcopyrite alteration, minor sphalerite and galena

John G Payne

John G. Payne

3986 Porphyritic Andesite Flow Breccia (Sericite-Carbonate Alteration)

The rock contains fragments up to a few cm across of porphyritic andesite in a groundmass of similar composition. Both contain phenocrysts of plagioclase in an extremely fine grained groundmass dominated by sericite and carbonate. Fragments and groundmass are distinguished by slight variations in groundmass texture and composition. The rock is cut by veins up to 1 mm wide of calcite with much less quartz and plagioclase.

phenocrysts		
plagioclase	20-25%	
hornblende	1	
groundmass		
plagioclase	60-65	(sericite-calcite alteration)
chlorite	7- 8	
Ti-oxide	0.8	
magnetite	0.2	
veins		
calcite-(quartz)	3- 4	

Plagioclase forms subhedral to euhedral prismatic phenocrysts from 0.7-1.5 mm in average length. These are altered moderately to completely to extremely fine grained sericite with lesser patches of calcite.

Hornblende phenocrysts are up to 1 mm in size and range from equant to prismatic. Alteration is complete to extremely fine grained chlorite intergrown coarsely with patches of very fine to extremely fine grained calcite.

The groundmass is dominated by very fine to extremely fine grained plagioclase, altered strongly to completely to extremely fine grained sericite and moderately less abundant patches of extremely fine grained calcite. Chlorite forms scattered, disseminated, extremely fine grains and patches, with the latter commonly concentrated with magnetite or along borders of plagioclase phenocrysts. The groundmass in some of the fragments is somewhat finer grained than that in the enclosing rock, and is slightly to moderately more altered to sericite-calcite.

Magnetite forms equant clusters from 0.1-0.4 mm in size of extremely fine to very fine grained aggregates. It is altered strongly to hematite.

Ti-oxide forms irregular patches up to 0.02 mm in size of extremely fine grained aggregates.

The rock contains veins up to 1 mm in width of very fine grained calcite with minor patches of very fine grained quartz. Some veins have cores of extremely fine grained calcite surrounded by very fine grained calcite. Minor to locally moderately abundant quartz and plagioclase commonly are concentrated as very fine to fine grains along the borders of the veins. Pyrite forms two cubic grains up to 0.02 mm across enclosed in calcite.

.../A2-4

3987 Siliceous Argillite cut by Veins of Calcite-Quartz-(Magnetite-Chalcopyrite)

The rock is a moderately well banded argillite with some layers dominated by sericite and others dominated by cherty quartz. Lenses parallel to foliation and up to 1.5 mm wide contain concentrations of one or more of magnetite, chalcopyrite, and pyrite.

sericite	35-40		
quartz	30-35		
chlorite	7- 8		
ankerite	2- 3		
magnetite	1		
Ti-oxide	0.3		
pyrite	1		
chalcopyrite	minor		
lenses and veins			
calcite	4- 5		
quartz	3- 4		
chalcopyrite	1	sphalerite	0.2
magnetite	1	galena	minor
pyrite	1- 2		

The rock is irregularly banded, with variations between bands in abundance of quartz, sericite, and chlorite.

Sericite commonly forms extremely fine grained patches, either alone or intergrown with chlorite and or ankerite. Less commonly it is intergrown with very fine grained quartz.

Quartz is concentrated in layers up to a few mm wide. Some of these are dominated by interlocking grains of cherty quartz averaging 0.005-0.01 mm in size. These contain wispy seams of sericite and disseminated, in part euhedral grains of ankerite (averaging 0.03-0.05 mm in size). Quartz also forms very fine grained patches scattered through the cherty quartz; these may have formed by recrystallization, and some may be related to the late veins.

Chlorite with disseminated Ti-oxide spots is strongly concentrated in certain layers, where it is intergrown intimately with minor to abundant sericite.

Ankerite forms irregular, very fine to extremely fine grained patches up to 0.5 mm in size, and much smaller ones scattered in sericite-rich patches.

Magnetite forms lenses and patches up to 1 mm in size of subhedral, very fine grains and scattered grains and aggregates from 0.03-0.1 mm in size. It is altered strongly to completely to hematite pseudomorphic hematite.

Pyrite forms disseminated grains and clusters of grains averaging 0.1-0.5 mm in grain size, with a few grains up to 1.5 mm across. A few grains have euhedral cubic outlines, but most are anhedral. Some coarse grained pyrite contains fractures up to 0.01 mm wide filled with chalcopyrite. Some pyrite grains contain moderately abundant silicate inclusions.

Chalcopyrite forms disseminated irregular patches up to 0.2 mm in size.

.../A2-5

3987 (page 2)

Veins and lenses up to 1.5 mm in width are dominated by calcite, quartz or magnetite-chalcopyrite.

Some veins up to 1 mm in width are dominated by very fine grained calcite with minor to locally moderately abundant quartz.

One lens up to 1.5 mm wide contains quartz, magnetite, and chalcopyrite with lesser pyrite and sphalerite. Other lenses rich in sulfides and/or magnetite are parallel to the banding; these are up to 1 cm long and 2 mm wide. Quartz is very fine to fine grained. Magnetite forms aggregates up to 1.5 mm across of grains averaging 0.05-0.1 mm in size. It is altered completely to pseudomorphs of hematite. Chalcopyrite forms patches up to 1.7 mm long, and is in part interstitial to magnetite. Locally, chalcopyrite is altered along borders of grains to thin rims of hematite. Pyrite forms anhedral to subhedral grains up to 0.12 mm in size in chalcopyrite. Sphalerite and galena occur in chalcopyrite-rich patches associated with lesser pyrite. Sphalerite forms colorless grains up to 0.2 mm across in chalcopyrite. Galena forms anhedral patches up to 0.1 mm in size associated with chalcopyrite and sphalerite.

.../A2-6

3988 Altered Cherty Argillite

The rock has a variable texture, dominated by patches of extremely fine grained quartz, sericite, or chlorite, with moderately abundant disseminated patches of pyrite.

quartz	30-35
sericite	40-45
chlorite	10-12
pyrite	7- 8
ankerite	3- 4
magnetite	2- 3
chalcopyrite	0.3
veins	
quartz-calcite-chalcopyrite	1

The rock consists of patchy intergrowths of extremely fine grained sericite and quartz with locally abundant chlorite and ankerite. Quartz forms extremely fine to very fine grained, slightly to moderately interlocking aggregates. Some extremely fine grained cherty patches contain moderately abundant, disseminated, anhedral to euhedral grains and clusters of grains of ankerite averaging 0.03-0.05 mm in size. A few lenses up to 3 mm long are dominated by quartz from 0.03-0.15 mm in grain size.

A few patches up to 1.5 mm in size consist of extremely fine grained sericite with minor intergrown chlorite of similar texture. These have angular outlines suggesting that they may be altered plagioclase phenocrysts. Elsewhere, sericite forms irregular patches of similar texture, intergrown with minor to moderately abundant quartz and/or chlorite.

Chlorite is concentrated in patches up to a few mm across; it forms extremely fine grained, light olive green aggregates intimately intergrown with sericite along borders of patches, and containing abundant disseminated Ti-oxide spots.

Ankerite occurs in irregular patches of extremely fine grain size in both cherty quartz and sericite-quartz aggregates.

Magnetite forms patches up to 1.8 mm in size. These consist of very fine grained, slightly to moderately corroded aggregates altered to pseudomorphic hematite. A few magnetite grains contain several inclusions up to 0.015 mm in size of pyrrhotite. Chalcopyrite forms interstitial grains and a few inclusions in magnetite.

Pyrite forms disseminated patches of anhedral grains from 0.1-1.5 mm in average size. These commonly contain abundant silicate inclusions. A few have partial overgrowths of subparallel aggregates of quartz up to 0.1 mm in length. Chalcopyrite forms a few grains up to 0.07 mm in size along borders of pyrite grains, and a few inclusions in pyrite up to 0.03 mm in size.

One large vein up to 2 mm wide contains very fine to fine grained quartz and patches of magnetite-chalcopyrite. Chalcopyrite is concentrated along contacts of quartz and magnetite and forms minor disseminated grains in magnetite. Pyrite forms a few anhedral to subhedral grains up to 0.4 mm in size. Veinlets up to 0.2 mm wide contain quartz and calcite, with abundant patches of chalcopyrite.

.../A2-7

3989 Quartz-Sericite Altered Rock with Replacement Patches and Veins of Quartz-Pyrite-Chalcopyrite-(Sphalerite-Galena)

The rock is strongly altered, with no original texture preserved. Quartz, sericite and lesser chlorite form variable, extremely fine grained patches. Pyrite forms very fine to fine grained patches, commonly with interstitial quartz. Late replacement patches and veins are dominated by quartz with moderately abundant patches of chalcopyrite and pyrite, and lesser sphalerite and galena.

quartz	65-70%
sericite	8-10
chlorite	3- 4
pyrite	10-12
chalcopyrite	4- 5
magnetite/hematite	2- 3
sphalerite	0.8
galena	0.2
apatite	minor
Ti-oxide	trace

Quartz occurs as extremely fine grained aggregates, in part intergrown with minor to moderately abundant sericite. It also occurs as fine to medium grained replacement veins and patches; coarser grains in these commonly show moderately strained extinction, and locally were recrystallized along grain borders and narrow shear zones to extremely fine grained aggregates. In quartz-pyrite aggregates, very fine grained quartz commonly is recrystallized into subparallel aggregates perpendicular to crystal faces on pyrite grains. Quartz in these zones grades texturally into extremely fine grained aggregates dominated by quartz. A few patches of very fine grained quartz up to 2 mm long contain abundant tiny inclusions of Ti-oxide , apatite, and lesser chlorite.

Sericite forms a few extremely fine grained patches up to 0.5 mm in size, and is more common as very fine grained to extremely fine grained aggregates intergrown with lesser quartz and chlorite.

Chlorite is concentrated in patches up to several mm in size as extremely fine grained aggregates intergrown with minor to moderately abundant quartz and/or sericite.

Pyrite forms anhedral to locally subhedral grains fromm 0.1-1 mm in average size. Inclusions of silicates are common. Several grains are moderately fractured, with fractures up to 0.02 mm in width filled by chalcopyrite and lesser galena. A few pyrite grains also contain inclusions up to 0.03 mm in size of chalcopyrite and/or galena.

Chalcopyrite forms anhedral patches up to 2 mm in size. In places these surround corroded pyrite grains. Intergrown with chalcopyrite are minor patches of sphalerite and of galena. Chalcopyrite is altered along borders of some patches to bright red hematite in zones up to 0.15 mm wide.

Sphalerite occurs in chalcopyrite as anhedral grains from 0.05-0.3 mm in average size. A few of the larger sphalerite grains contain minor exsolution (?) inclusions of chalcopyrite.

(continued)

.../A2-8

3989 (page 2)

Galena forms patches up to Ø.2 mm in size intergrown with chalcopyrite. In these patches, chalcopyrite commonly is altered to hematite, and galena is rimmed by an extremely fine grained alteration zone of covellite-cerusite(?)-hematite(?).

Magnetite forms scattered anhedral grains from Ø.Ø3-Ø.Ø8 mm in size. They are altered strongly to hematite.

Apatite forms anhedral grains from Ø.Ø2-Ø.Ø5 mm in average size.

The rock is cut by a vein up to Ø.1 mm in width of extremely fine grained chlorite.

.../A2-9

3990 Porphyritic Amygdaloidal Andesite

The rock contains phenocrysts of plagioclase and of hornblende in a groundmass dominated by lathy to anhedral plagioclase with moderately abundant Ti-oxide and disseminated pyrite. Amygdules up to a few mm across are dominated by calcite, quartz and chlorite, with lesser tremolite and pyrite. The rock is cut by veinlets of calcite.

phenocrysts	
plagioclase	15-17%
hornblende	1- 2
groundmass	
plagioclase	60-65
chlorite	2- 3
calcite	1- 2
Ti-oxide	1- 2
pyrite	1- 2
amygdules	4- 5
veins	
calcite	1- 2

Plagioclase forms euhedral to subhedral phenocrysts averaging 0.7-2.5 mm in length. Alteration is to patches of extremely fine to very fine grained sericite, patches and fracture-filling zones of chlorite, and minor patches of calcite. Alteration intensity ranges from slight to moderate in most grains to strong in a few. Some strongly altered grains contain radiating patches of ragged sericite/muscovite flakes up to 0.5 mm in length.

Hornblende forms subhedral phenocrysts up to 1 mm across. Alteration is complete to very fine grained patchy aggregates of chlorite and calcite. Alteration assemblages are somewhat gradational into those of the amygdules.

The groundmass is dominated by unoriented laths of plagioclase from 0.05-0.1 mm in average length. These are contained in anhedral, extremely fine grained plagioclase with minor chlorite and moderately abundant disseminated Ti-oxide spots. Chlorite also forms irregular patches from 0.05-0.1 mm in average size. Calcite forms irregular replacement patches of extremely fine grains.

Pyrite forms anhedral, commonly skeletal replacement grains from 0.1-0.7 mm in size. Some patches from 1 to 2 mm in size contain several skeletal pyrite grains intimately intergrown with the groundmass. Many larger grains contain abundant silicate inclusions. Pyrite patches commonly are surrounded by chlorite and/or calcite.

Subrounded amygdules up to a few mm across contain variable aggregates of very fine to fine grained quartz, patches of chlorite and of calcite, and a few disseminated prismatic grains up to 0.2 mm in length of tremolite. One amygdule 0.8 mm across consists of a rim of fine grained calcite with minor chlorite surrounding a core of about the same thickness of extremely to very fine grained epidote and much less quartz.

The rock is cut by a few veins up to 0.5 mm wide of very fine grained calcite.

.../A2-10

3991 Porphyritic Andesite (Sericite-Carbonate Alteration)

The rock contains phenocrysts of plagioclase and lesser ones of hornblende in an extremely fine grained groundmass dominated by plagioclase. Both phenocrysts and groundmass are altered strongly to completely to sericite and carbonate. Pyrite forms disseminated clusters.

phenocrysts		
plagioclase	17-20%	
hornblende	2- 3	
groundmass		
plagioclase	65-70	(sericite-carbonate alteration)
Ti-oxide	0.5	
pyrite	2- 3	
amygdules	4- 5	
calcite-sericite-quartz		
fragment		
quartz-diorite (altered)	2- 3%	(higher in offcut block)
veins		
calcite-(quartz)	2- 3	
sericite- Ti-oxide	0.2	

Plagioclase forms subhedral to euhedral phenocrysts and clusters of a few phenocrysts, with grains averaging 1-1.5 mm in size. These are altered moderately to completely to extremely fine grained sericite with lesser patches of extremely fine grained carbonate. In a few phenocrysts, sericite forms grains up to 0.05 mm in size.

Hornblende forms a few subhedral prismatic phenocrysts up to 2 mm in size. It is altered completely to very fine grained quartz with abundant patches of extremely fine grained sericite-carbonate, and moderately abundant irregular extremely fine grained patches up to 0.03 mm in size of Ti-oxide.

The groundmass is dominated by lathy to irregular plagioclase grains up to 0.08 mm in length, with abundant patches of calcite and moderately abundant disseminated patches of Ti-oxide. Commonly plagioclase is altered completely to extremely fine grained aggregates of about equal amounts of sericite and carbonate. A few patches in the groundmass up to 1 mm in size consists of very fine grained sericite with lesser carbonate.

Pyrite forms clusters of anhedral grains averaging 0.1-0.8 mm in grain size. Grains generally are irregular in outline and contain abundant, tiny groundmass inclusions. Locally along borders of pyrite grains are subparallel aggregates of quartz up to 0.1 mm in length; these grains are oriented perpendicular to crystal faces of pyrite.

Amygdules up to 5 mm across contain variable amounts of fine grained sericite intergrown with carbonate and much less quartz. A spherical amygdule 2 mm across is dominated by very fine grained calcite with scattered grains of quartz from 0.03-0.15 mm in size, and minor disseminated flakes of sericite.

.../A2-11

3991 (page 2)

In one corner of the rock is an irregular inclusion up to 3 mm in size of altered quartz diorite dominated by fine grained quartz with moderately abundant patches of very fine to extremely fine grained sericite and calcite.

Veins up to Ø.9 mm in width are dominated by very fine to fine grained calcite with lesser patches of very fine grained quartz and a very few fine grains of K-feldspar. Some veins are discontinuous fracture-fillings up to Ø.2 mm in width.

A few wispy seams are dominated by Ti-oxide and sericite. Some of these are associated with the main calcite-quartz vein.

.../A2-12

3993 Altered Andesite cut by Vein of Quartz-Chalcopyrite-Hematite

The rock is strongly altered, with little original texture preserved. It is dominated by extremely fine grained sericite and quartz, with lesser chlorite and ankerite. The vein is up to 15 mm wide and is dominated by quartz and chalcopyrite, with lesser pyrite, magnetite, and sphalerite. Some patches of chalcopyrite are altered to hematite.

rock (60% of hand sample)		vein (40% of hand sample)	
sericite	50-55%	quartz	50-55%
quartz	20-25	chalcopyrite	20-25
chlorite	4- 5	pyrite	5- 7
Ti-oxide	1	sphalerite	2- 3
ankerite	1	magnetite	4- 5
pyrite	3	galena	0.5
magnetite	0.5	hematite	8-10
chalcopyrite	0.3	sericite	minor

The rock is dominated by extremely fine grained sericite intergrown with extremely fine grained quartz, and with disseminated patches of chlorite, of ankerite, and of sulfides. Quartz is moderately concentrated in patches up to 1 mm in size, in part with minor disseminated chlorite. Chlorite patches average 0.05-0.1 mm in size, and commonly contain abundant Ti-oxide inclusions. Some patches also contain moderately abundant ankerite. Ankerite forms disseminated, equant grains averaging 0.03-0.07 mm in size. These commonly are rimmed by limonite.

One subhedral patch up to 1 mm in size consist of a very fine grained aggregate of sericite and much less chlorite; it may represent an altered plagioclase phenocryst.

The rock contains patches from 0.3-1 mm in size which contain abundant opaque intergrown with quartz and ankerite. In some, magnetite (altered strongly to hematite) forms rims around the patch and disseminated grains intergrown with quartz and ankerite in the core of the patch. Some patches contain moderately abundant pyrite and/or chalcopyrite as disseminated, extremely fine grains.

Pyrite also forms a few disseminated cubic grains up to 0.1 mm in size; these commonly contain abundant, tiny silicate inclusions. A few clusters up to 1.5 mm in size consist of intergrowths of pyrite with lesser chalcopyrite surrounded by quartz. Some pyrite grains contain abundant inclusions of magnetite/hematite, suggesting that pyrite formed in part by replacement of oxides.

In the rock along the border of the vein is a mainly continuous zone up to 0.7 mm wide of hematite containing abundant inclusions of chalcopyrite, and minor ones of sphalerite and magnetite. Hematite was formed by replacement of magnetite, chalcopyrite and pyrite. Veins up to 0.9 mm wide extend from the border of the main vein into the host rock for a distance of several mm. These are dominated by chalcopyrite, moderately to strongly altered to hematite.

(continued)

3993 (page 2)

The vein contains medium to coarse grained quartz intergrown with sulfides. Locally quartz is recrystallized to extremely fine to very fine grained aggregates, probably during brecciation which may have predated introduction of sulfides. Chalcopyrite forms patches up to a few mm in size, in part with inclusions of sphalerite. Sphalerite forms colorless grains up to Ø.3 mm in size, containing moderately abundant exsolution blebs of chalcopyrite averaging Ø.ØØ3-Ø.Ø1 mm in size. Galena occurs locally in chalcopyrite as moderately abundant slightly elongate, anhedral grains from Ø.Ø5-Ø.15 mm in size.

Magnetite forms patches up to 1.5 mm in size of very fine grained aggregates intergrown with chalcopyrite. It is altered moderately to strongly to hematite along grain borders.

Pyrite forms clusters of subhedral grains from Ø.2-1 mm in size. Some of these contain inclusions of sphalerite (with exsolution chalcopyrite) and of galena. A few corroded grains of pyrite up to Ø.4 mm in size are enclosed in coarse patches of chalcopyrite. Hematite forms thin replacement rims on many grains of chalcopyrite. In some patches, pyrite grains are enclosed in hematite with a trace of covellite, probably formed by replacement of chalcopyrite.

Sericite forms a few clusters of flakes averaging Ø.Ø3-Ø.Ø7 mm in grain size, mainly associated along borders of quartz grains.

.../A2-14

3995 Porphyritic Andesite with minor veins of Epidote-Chlorite-Calcite- K-feldspar-Pyrite-Quartz-Actinolite; Albite

The rock contains phenocrysts of plagioclase and a few coarse phenocrysts of hornblende in an extremely fine grained groundmass dominated by plagioclase. A few amygdules are dominated by calcite and chlorite. It is cut by veinlets up to 0.2 mm wide of one or more of chlorite, calcite, epidote, K-feldspar, quartz, and pyrite. One vein up to 0.2 mm wide is dominated by albite.

phenocrysts		groundmass	
plagioclase	15-17%	plagioclase	65-70%
hornblende	5- 7	epidote	7- 8
		magnetite	minor
amygdules			
chlorite-calcite-epidote-pyrite	0.5%		
veins			
calcite-epidote-chlorite-pyrite- K-feldspar-quartz	1- 2%		
albite	0.3		

Plagioclase forms euhedral to subhedral prismatic phenocrysts from 0.5-1.5 mm in average length, with a few up to 3 mm long. Composition is An_{30-35}. Plagioclase is altered slightly to moderately to dusty sericite flakes and disseminations of epidote.

Hornblende forms a few phenocrysts and clusters of a few phenocrysts ranging widely in size from 0.5 to 7 mm in grain size. Most phenocrysts are fresh, and a few are altered completely to aggregates of very fine grained chlorite, calcite, and epidote. One hornblende(?) phenocryst 1.5 mm in size is altered completely to an aggregate of fine grained quartz and very fine grained calcite, with lesser epidote, chlorite, and actinolite. A few equant patches up to 0.5 mm in size, consisting of very fine grained aggregates of chlorite with lesser epidote may be secondary after hornblende phenocrysts.

The groundmass contains scattered lathy plagioclase grains averaging 0.05-0.1 mm in length in an extremely fine grained aggregate dominated by plagioclase and epidote. Epidote also forms scattered patches up to 0.05 mm in size. Apatite forms a few anhedral grains up to 0.15 mm in size. Pyrite forms several skeletal grains up to 1.5 mm in length, and a very few disseminated subhedral to euhedral grains up to 0.03 mm in size. Chalcopyrite forms a few patches up to 0.05 mm in size associated with epidote. Magnetite forms a few grains up to 0.25 mm in size. It is moderately corroded and replaced by hematite.

Amygdules up to 1 mm in size consist of very fine grained aggregates of epidote, chlorite, calcite, and minor quartz

Veins are from 0.01-0.2 mm in width and vary moderately in composition. Most are dominated by chlorite, epidote, or calcite, with local concentrations of pyrite, K-feldspar, and of quartz. Pyrite forms scattered grains up to 1.2 mm in size. Pyrrhotite and chalcopyrite each form a few inclusions up to 0.05 mm across in pyrite. Plagioclase phenocrysts bordering some veins are replaced by very fine grained aggregates, probably of albite. One lensy vein up to 0.3 mm wide is dominated by very fine to extremely fine grained, strongly interlocking albite. Similar albite occurs locally in an altered hornblende phenocryst associated with quartz

.../A2-15

3996 Porphyritic Andesite (Carbonate-Sericite Alteration)

The rock contains abundant phenocrysts of plagioclase and of hornblende(?) in a groundmass dominated by calcite and sericite. Plagioclase phenocrysts are altered strongly to sericite and those of hornblende are altered completely to quartz-(sericite-calcite). The rock is cut by veins of calcite-quartz. Because of the strong alteration and diffuse borders, percentage estimates of abundances of phases are not precise.

phenocrysts		
plagioclase	20-25%	
hornblende	12-15	
Ti-oxide	1	
groundmass		
plagioclase	10-12	
sericite	8-10	
calcite	30-35	
quartz	5- 7	
pyrite	1	
Ti-oxide	minor	
veins		
calcite-quartz-chalcopyrite-bornite		2- 3

Plagioclase forms subhedral to euhedral phenocrysts up to 2 mm in size. They are altered moderately to strongly to extremely fine grained sericite with much less abundant, extremely fine grained, disseminated patches of calcite.

Hornblende forms anhedral to subhedral prismatic phenocrysts from 0.7-2.5 mm in size. It is altered completely to subparallel aggregates dominated by very fine grained quartz(?) intergrown with lesser sericite and patches of calcite. Quartz and sericite commonly are oriented parallel to original c-axes of hornblende. Ti-oxide forms minor disseminated patches up to 0.1 mm in size.

Ti-oxide forms disseminated patches from 0.1-0.8 mm in size. It may be pseudomorphic after sphene.

A few unaltered patches in the groundmass are dominated by extremely fine to very fine grained plagioclase. Most of the groundmass is altered moderately to completely to extremely fine to very fine grained calcite, extremely fine grained sericite, and very fine to fine grained quartz. Pyrite forms disseminated grains and clusters of grains up to 1.5 mm in size. Most larger grains are irregular to skeletal in outline.

Veins up to 0.3 mm wide are dominated by very fine grained calcite with lesser patches of quartz. Chalcopyrite and bornite form intergrowths of grains from 0.05-0.3 mm in size. A few veinlets of bornite cut pyrite grains adjacent to the vein. Locally along the borders of one vein are lenses of strongly brecciated pyrite.

.../A2-16

3998 Altered Porphyritic Andesite cut by veins of Calcite-Quartz-Pyrite and later veins of Calcite-Quartz-(Barite-Sericite)

The rock contains phenocrysts of plagioclase and hornblende in a groundmass dominated by quartz, sericite, and calcite. It is cut by an early vein of calcite-pyrite-quartz, and by later veins of calcite-quartz-(sericite-barite-pyrite).

phenocrysts	
plagioclase	15-17%
hornblende	2- 3
groundmass	
calcite/ankerite	20-25
quartz	12-15
sericite	12-15
Ti-oxide	2- 3
pyrite	2- 3
veins	
calcite-pyrite-quartz	12-15
calcite-quartz-(barite-sericite-pyrite)	10-12

Plagioclase forms euhedral to subhedral phenocrysts up to 2.5 mm in length. Alteration is strong to extremely fine grained sericite and patches of calcite.

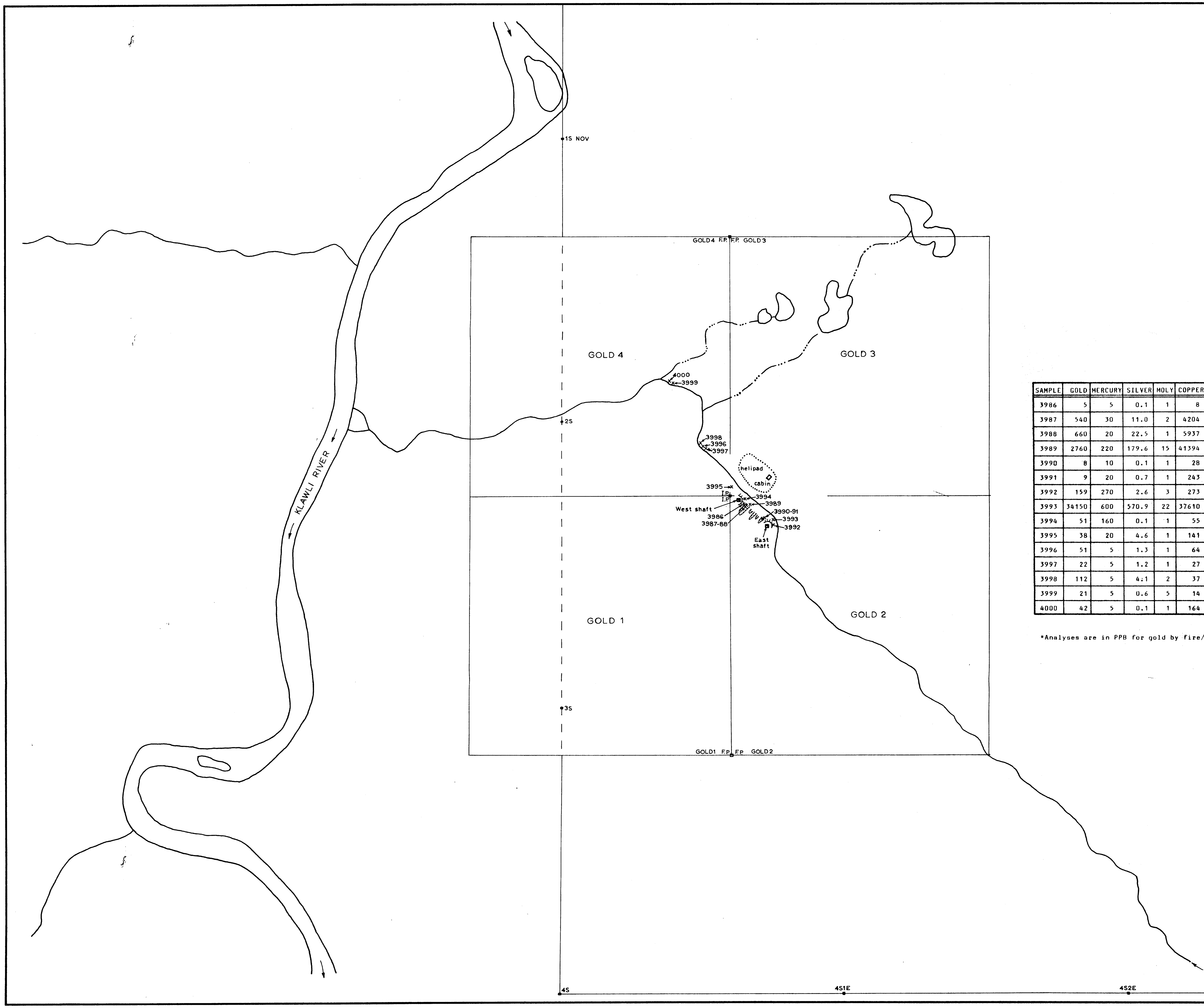
Hornblende forms subhedral phenocrysts up to 2.5 mm in size. Alteration is complete to very fine grained quartz and scattered, ragged flakes of sericite in subparallel orientation parallel to the c-axis of original hornblende, with disseminated patches of ankerite up to 0.07 mm in size. Bordering a few phenocrysts of hornblende are concentrations of very fine grained ankerite.

The groundmass is altered strongly to completely to very fine to extremely fine grained aggregates of quartz and carbonate with lesser sericite. Some carbonate has high relief, suggesting that it is ankerite; much of the carbonate is calcite. Pyrite forms disseminated anhedral to subhedral grains and clusters of grains up to 1.5 mm in size. Some larger grains are skeletal and have very irregular outlines. Ti-oxide forms patches up to 0.6 mm in size, in part associated with hornblende phenocrysts; it may be secondary after ilmenite or sphene.

An early calcite-pyrite-quartz vein is cut by several veins of calcite-quartz-(barite-(sericite). In the early vein, calcite forms anhedral aggregates of grains averaging 0.05-0.1 mm in size. Quartz forms patches of grains from 0.05-0.3 mm in grain size. Pyrite forms anhedral grains up to 1.5 mm in size. Larger grains commonly are coarsely fractured, with fractures filled with quartz and calcite. A few fractures up to 0.01 mm wide in pyrite fragments are filled with chalcopyrite. Pyrrhotite and chalcopyrite form a very few inclusions up to 0.02 mm in size in pyrite.

The late veins are dominated by very fine grained calcite and lesser quartz, with patches of barite and of extremely fine grained sericite. Barite forms aggregates of prismatic grains up to 1 mm in length in one vein, and minor trains of anhedral grains up to 0.1 mm in size in another.

.../END



GEOCHEMICAL ANALYSES*

SAMPLE	GOLD	MERCURY	SILVER	MOLY	COPPER	LEAD	ZINC	ARSENIC	ANTIMONY	BISMUTH	BARIUM	CADMIUM	TUNGSTEN
3986	5	5	0.1	1	8	2	103	2	2	2	1115	1	1
3987	540	30	11.0	2	4204	94	164	13	2	52	2311	1	6
3988	660	20	22.5	1	5937	119	276	10	2	113	2465	1	2
3989	2760	220	179.6	15	41394	1821	1224	43	2	325	582	18	1
3990	8	10	0.1	1	28	2	47	2	2	2	1367	1	1
3991	9	20	0.7	1	243	13	44	8	2	2	1494	1	1
3992	159	270	2.6	3	273	41	489	18	2	2	-	3	1
3993	34150	600	570.9	22	37610	2981	3121	16	2	4150	512	32	1
3994	51	160	0.1	1	55	2	50	9	2	2	-	1	1
3995	38	20	4.6	1	141	10	87	2	2	2	1303	1	1
3996	51	5	1.3	1	64	7	61	8	2	2	1434	1	1
3997	22	5	1.2	1	27	8	32	6	2	2	1308	1	1
3998	112	5	4:1	2	37	27	84	6	2	2	1837	1	1
3999	21	5	0.6	5	14	2	46	2	3	2	1285	1	3
4000	42	5	0.1	1	164	7	62	5	2	2	303	1	1

*Analyses are in PPB for gold by fire/AA, PPB for mercury by AA, PPM for all others by ICP.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,865

0 100 200 300
METERS

MAP 4

SCALE: 1:3000	APPROVED BY:	DRAWN BY E. SHAEDE
DATE: DEC. 28,1987		REVISED

SAMPLE LOCATIONS AND ANALYSES

GOLD CLAIM GROUP

DRAWING NUMBER

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