ROCK GEOCHEMISTRY, LITHOLOGICAL CLASSIFICATION AND ALTERATION STUDIES IN VOLCANIC ROCKS FROM THE CENTRAL PART OF THE FIN PROPERTY

Fin Claim Group, Omineca Mining Division, British Columbia

NTS 94E-2E Latitude 57° ~~14'~~ 12'30" N Longitude 126° 41'42" W

Report for

Owner/Operator: BRADFORD D. PEARSON

by

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534 Ellis St., North Vancouver, B.C.

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INTRODUCTION

The author was retained by Bradford D. Pearson to carry out a study designed to provide additional data on the distribution of rock types, alteration and trace element contents on the Finlay Property.

The present study extends that of Woodcock and Gorc (1982), using samples collected by those workers but not previously analysed. It concentrates on the western half of the Fin 2 claim, where volcanic rocks are predominant. By comparison, Woodcock and Gorc had been concerned principally with the intrusive complex which underlies the north-eastern end of the property.

The property contains showings of porphyry-type Cu-Mo mineralization in the intrusive rocks, and of Cu and minor Au associated with magnetite alteration in volcanics in a zone of possible hornfelsing near the intrusive contact. Woodcock and Gorc concluded, from the distribution of soil and rock geochemical values and the directions of glacial movement, that the gold in soil anomalies on the property came from the volcanic terrain in the south-west. This provides the principal justification for the present study.

Work consists of fill-in rock geochemistry and of petrographic work to provide improved definition of volcanic rock types and alteration features. It was carried out during the period July - September, 1987.

Location and Access

The Fin claims are located in the Omineca Mining District of British Columbia, approximately 20 km north-east of the northern end of Thutade Lake. These claims are centered at latitude 57° 14'N, longitude 126° 41'W on map sheet 94E-2. See Index Map, Figure 1.

There is no road access to the property. The nearest main centre is Smithers, some 260 km to the south. There is an airstrip at Sturdee River, 27 km west of the property.

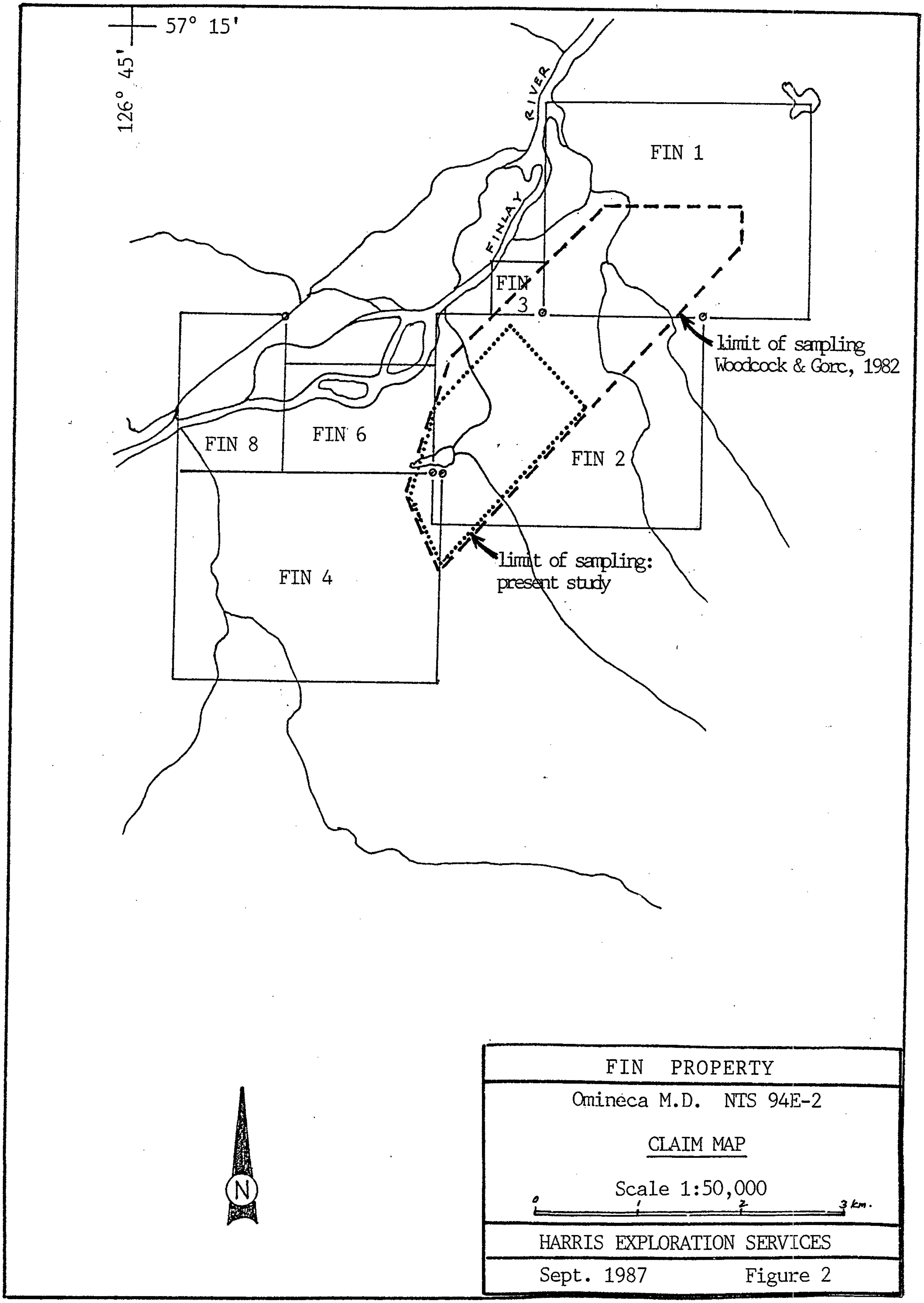
History and Previous Work

The Fin claims cover portions of an area that was worked by Kennco Explorations (Western) Ltd. during the period June 1968 to April 1973. Kennco's work included soil and silt sample surveys, ground and airborne magnetic surveys, reconnaissance I.P. and geological mapping. Details of this work are documented in B.C. Mines assessment reports 1846, 1886, 1983, 2035, 2326, 2380, 3031, 3120, 3266 and 4396.

Bradford D. Pearson staked the Fin claims in 1978, and in October 1978 he optioned the ground to Riocanex.

Work by Riocanex in 1979 included line cutting, geological mapping, soil and silt sampling and 377 meters of diamond drilling in 2 holes.

In 1980, Riocanex drilled an additional 10 diamond drill holes totalling 977 meters. The drilling was confined to the south-western and central parts of the property and included 2 holes (80-5 and 80-9) in the area of the present study.



FIN PROPERTY

Omineca M.D. NTS 94E-2

CLAIM MAP

Scale 1:50,000

HARRIS EXPLORATION SERVICES

Sept. 1987 Figure 2

Details of the Riocanex work are documented in assessment reports 7750, 8331 and 8686.

In 1982 the property was optioned to Brinco Mining Ltd. A programme of geological mapping at a scale of 1:5000, plus rock sampling and geochemical analyses, was carried out over the central and north eastern part of the property. This work is the subject of a report by Woodcock and Gorc, 1982 (assessment report 11032) of which the present study is an augmentation. It also provided the sample material for the present study.

Property and Claim Status

The Fin Property currently consists of six mutually contiguous mineral claims totalling 73 units (see Claims Map, Figure 2). The claims, their record numbers and expiry dates are given in the table below.

Claim Name	Record Number	Expiry Date
FIN 1 (20 units)	3062 (7)	July 31, 1988
FIN 2 (20 units)	3063 (7)	July 31, 1988
FIN 3 (1 unit)	3064 (7)	July 31, 1989
FIN 4 (20 units)	1864 (7)	July 3, 1988
FIN 6 (6 units)	1946 (8)	Aug. 3, 1988
FIN 8 (6 units)	2418 (1)	Jan. 14, 1988

Regional Setting and General Geology

The Fin Property is situated near the south-east margin of the Toodoggone precious metal camp.

Volcanic strata on the south-east flank of the property are assigned to the Lower Jurassic Hazelton Group. Some basic volcanics in the Finlay River valley are mapped as Takla Group (Upper Triassic).

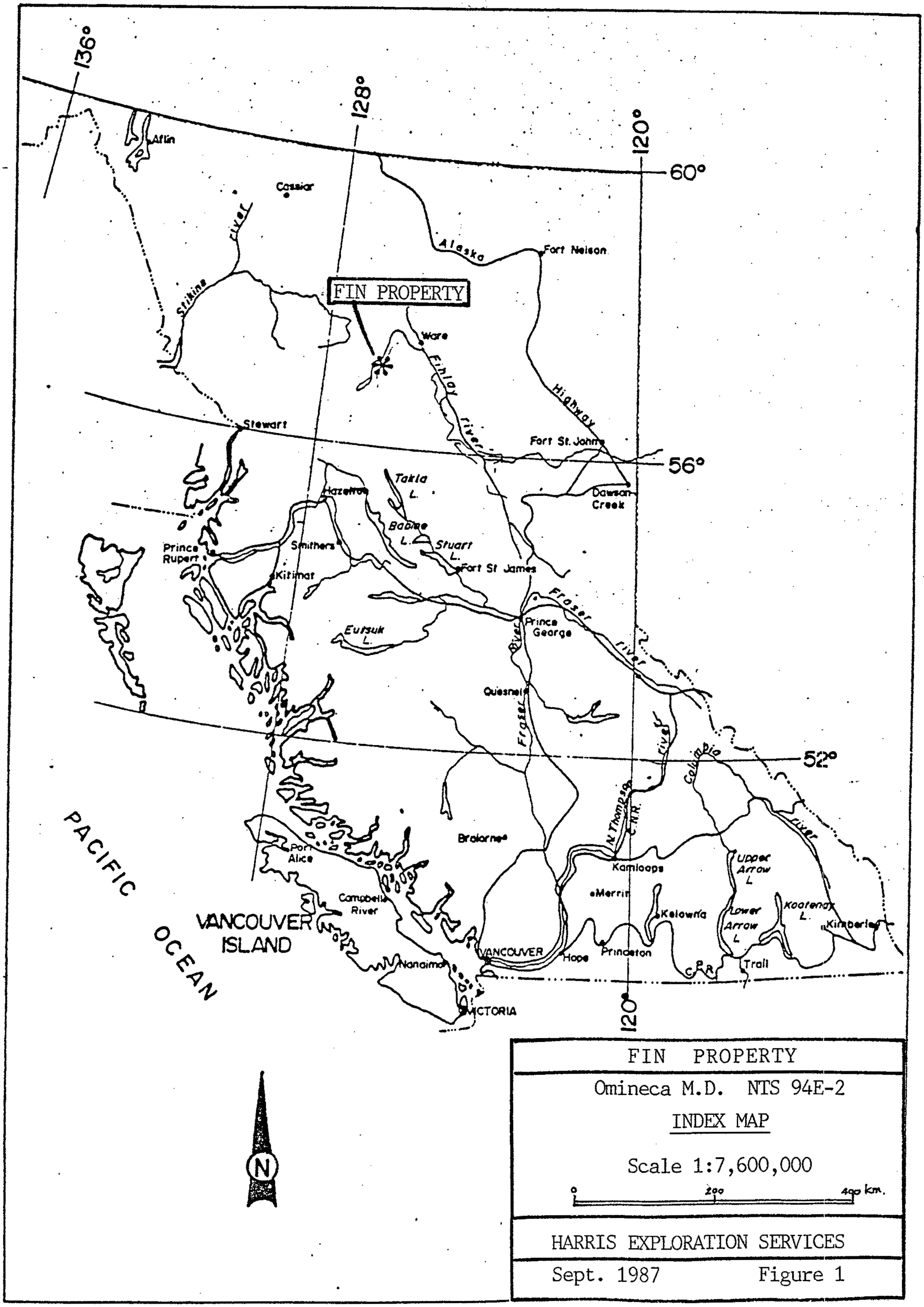
To the east of the Finlay River, in the northern part of the property, the volcanics are intruded by Omineca intrusions of Jurassic and Cretaceous age. Plutonic rocks include biotite and hornblende granodiorites which are host to porphyry-type Cu-Mo mineralization. There is also a diverse suite of dyke rocks which appear to be of somewhat younger age.

Sample Selection

Material for the present study consisted of small hand specimens collected by Woodcock and Gorc in 1982, but never chemically analyzed or examined in detail. These had been stored in the interim by B. Pearson. These samples are of the group distinguished on Woodcock and Gorc's sample numbers map by the suffix 'sp'.

The budget for the present study allowed for work on 56 samples. These were selected from the available material using a combination of the following criteria:

1. Concentrate on the south-western (non-plutonic) portion of the area
2. Fill in gaps in existing rock geochemical coverage
3. Emphasize possible geochemically anomalous areas indicated by the existing data.



FIN PROPERTY

Omineca M.D. NTS 94E-2

INDEX MAP

Scale 1:7,600,000

HARRIS EXPLORATION SERVICES

Sept. 1987 Figure 1

Some of the preferred samples proved to be missing, or had illegible numbers. Substitutes had therefore to be made from what was actually available.

The samples chosen are distinguished on Figure 5 by underlining, with a solid circle for the location point. Specific sample numbers are listed on Tables 1 and 2. The approximate areas of Woodcock and Gorc's work, and of the present study, are shown on Figure 2.

ROCK GEOCHEMISTRY

The purpose of the rock geochemical component of this study was to augment existing data in the predominantly volcanic area making up the south-western part of the area covered by Woodcock and Gorc in 1982.

The area in question is bounded by the line shown on Woodcock and Gorc's geochemical maps dividing volcanics (including tuffs), cut by a variety of minor intrusive (dyke) phases, from plutonic rocks.

120 samples (including volcanics and dyke rocks) from this area were analyzed for various elements in the original work. The present study adds another 56 samples.

The samples of the present study were analysed for Au by fire assay/neutron activation analysis, and for a multi-element suite by I.C.P. Analyses were performed by Chemex Labs Ltd. Complete data are included as Appendix 1.

The elements Au, Ag, Cu, Pb, Zn, Mo and Mn have been plotted as additions to the maps by Woodcock and Gorc (Figures 6 - 12). The samples of the present study are identified by a distinctive symbol and larger value numerals.

Analytical data for the 7 plotted elements are compiled in Table 1.

The following discussion examines the combined data base for the volcanic area, with the view to defining threshold levels and recognizing any significant groupings of anomalous values.

Gold

Of the 56 samples in the present study, 43 gave analyses of <5 ppb Au.

Woodcock and Gorc plotted only values of 5 ppb or better on their geochemical map for Au, and that value is, by implication, their chosen threshold. This convention has been retained in the revised map (Figure 11); however, general experience suggests that values of 5 - 10 ppb can hardly be considered significantly anomalous, and the threshold for the purposes of this discussion is taken as 15 ppb.

On this basis, 6 of the present 56 samples are anomalous. Of the total 176 in the volcanic area, 14 are anomalous.

The majority of these occur within a belt about 300 m. wide, following the inferred volcanic/plutonic contact. The strongest grouping, containing 5 samples having Au contents ranging from 22 - 170 ppb, is just to the north-west of the baseline, at about Line 5+00 W. These samples are from an area about 150 m. x 150 m. mapped by Woodcock and Gorc as crystal tuffs, highly magnetic in outcrop, locally hornfelsed, and containing specks of chalcopyrite.

Another 4 of the anomalous samples come from within an extensive area of anomalous Au in soils between lines 12+00 W and 18+00 W.

Only one isolated anomalous value occurs in the extreme south-west of the sampled area.

TABLE 1. ROCK GEOCHEMICAL DATA

Sample No.	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Mn (ppm)
C 06	8	1.0	8	68	5	< 1	25
C 15	< 1	0.6	5	36	63	< 1	932
C 18	3	0.2	15	22	57	< 1	754
C 20	40	1.2	17	102	77	< 1	895
C 21	2	0.4	64	20	32	< 1	363
C 22	1	0.4	9	10	76	< 1	847
C 27	2	0.2	6	14	74	< 1	764
C 38	2	0.4	3	24	49	< 1	529
C 41	< 1	0.2	3	18	110	< 1	1050
C 43	1	0.2	1	16	25	< 1	488
C 47	1	0.2	3	16	63	< 1	310
C 50	9	0.2	8	20	28	1	311
C 53	< 1	0.2	6	36	74	< 1	1115
C 54	3	0.2	3	16	73	< 1	574
C 57	< 1	0.2	6	20	103	1	925
C 58	52	0.2	2	10	94	< 1	821
C 59	2	0.4	9	50	85	1	681
C 60	4	0.4	3	36	130	< 1	1100
C 62	2	0.2	8	16	104	< 1	891
C 63	4	0.2	4	24	98	< 1	949
C 65	< 1	0.2	1	6	46	< 1	255
C 67	8	0.2	7	10	61	5	1310
C 69	2	0.2	< 1	10	137	< 1	723
C 71	4	< 0.2	3	14	117	< 1	1175
C 72	2	0.2	< 1	20	103	< 1	959
C 74	< 1	0.2	8	10	222	< 1	1020
C 76	2	0.4	2	6	200	< 1	819
G 403	22	0.2	7	6	116	< 1	812
G 405	49	0.2	475	16	300	2	2130
G 421	< 5	0.4	26	< 2	35	< 1	351
G 436	< 1	< 0.2	4	2	28	< 1	395

Table 1 cont.

Sample No	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Mn (ppm)
G 449	7	0.8	4	32	73	< 1	1200
G 455	< 1	0.2	< 1	2	125	< 1	1700
G 459	18	0.2	233	8	95	4	1215
G 475	2	< 0.2	3	18	98	< 1	1135
G 476	2	< 0.2	4	8	117	< 1	1365
G 483	< 1	< 0.2	24	8	97	< 1	670
G 487	3	0.4	7	< 2	137	< 1	1655
I 09 c	6	0.6	84	22	45	< 1	515
I 10	1	0.2	8	4	3	5	29
I 12	4	0.2	3	20	105	< 1	1320
I 14 a	2	0.2	22	4	63	< 1	694
I 19 c	2	0.2	17	8	93	< 1	590
I 21	< 1	< 0.2	3	6	103	< 1	888
I 24 c	11	0.4	27	166	148	< 1	1680
I 27	1	< 0.2	< 1	8	2	1	75
I 31 g	4	0.2	4	4	105	< 1	1355
I 33 b	4	0.4	7	92	104	< 1	1345
I 34 g	< 1	< 0.2	< 1	10	221	< 1	2530
I 36	11	0.2	9	20	139	< 1	1430
I 38	1	< 0.2	1	16	65	< 1	839
I 42 a	< 1	< 0.2	< 1	4	66	< 1	572
I 42 e	15	0.2	16	10	192	< 1	2080
I 43 a	< 1	< 0.2	< 1	10	53	< 1	723
I 44 c	< 1	0.2	22	12	87	< 1	763
I 44 d	< 1	< 0.2	1	8	62	< 1	898

Silver

Analytical values are plotted in Figure 10.

In Woodcock and Gorc's work, the analytical method used in the plutonic rocks was I.C.P. analysis, and the background range for Ag appears to be in the range 0.1 - 0.5 ppm. Their samples in the volcanic area were analyzed by a specific element technique (atomic absorption) and the indicated background range for Ag is much higher (0.5 - 1.5 ppm). This difference is considered by these authors as probably a function of analytical method rather than a real lithogeochemical characteristic. The discrepancy appears to disappear at levels above about 2.0 ppm.

Analyses in the present study were by I.C.P., and the background range is very low, resembling that found by Woodcock and Gorc for this method.

Establishing a threshold for the combined data in the volcanic area is complicated by the background discrepancy effect. Levels are typically very low in the 56 samples of the present study, more than 90% of which report as <0.5 ppm Ag. However, values up to 1.0 ppm or more are commonplace in Woodcock and Gorc's data for the same area.

A compromise threshold for the combined data may be set at 1.0 ppm, bearing in mind that values in the 1 - 2 ppm range are unlikely to represent significant anomalies.

Overall the volcanic area is low in Ag. Of the total 176 samples, only 6 show values of 2.0 ppm or more, and the maximum value is 3.2 ppm.

The higher values occur in two clusters close to the plutonic contact, coincident with areas of weak anomalous Au.

Copper

Analytical values are plotted in Figure 6.

Background Cu contents of these rocks are rather low by absolute standards, but consistent with their predominantly felsic igneous character. Threshold is established from frequency distribution histograms as 25 ppm.

Of the 56 samples in the present study, 6 are anomalous. Of the total 176 samples from the volcanic area, 28 are anomalous; however, only 7 of these are above 100 ppm (with a maximum of 475 ppm).

The principal grouping of anomalous values is coincident with anomalous Au and Ag (q.v.) in an area just to the north-west of the baseline around line 5+00 W.

Values towards the southern end of the sampled volcanic area are generally very low.

Lead

Analytical values are plotted in Figure 9.

Woodcock and Gorc noted a discrepancy in background levels (similar to that discussed under silver) between those samples analyzed by I.C.P. and those by atomic absorption. However, the data of the present study show no obvious difference from the previous data.

Pb levels in rocks of the volcanic area are notably variable and appear somewhat high by absolute standards - though probably normal for igneous rocks of predominantly potassic type.

Threshold appears to be 50 ppm. On this basis 5 samples of the 56 from the present study are anomalous. Of the total 176 samples in the volcanic area, 21 are anomalous.

Anomalous values range up to 263 ppm. They are rather scattered in their distribution, but show some clustering in two areas: to the north-west of the baseline around line 14+00 W, and to the south-east of DDH 80-5. The area of anomalous Cu, Au and Ag in rocks near the plutonic contact does not show elevated Pb.

Zinc

Analytical values are plotted on Figure 8.

Zn values in the present study are consistent with the previous data. As is typical of this element, the frequency distribution of values is highly dispersed, with no clear-cut distinction between background and anomalous ranges. Threshold is tentatively set at 150 ppm.

On this basis, 5 of the present 56 samples are anomalous. Of the total 176 from the volcanic area, 23 are anomolous. Values range up to 575 ppm.

High values tend to be scattered, but some groupings are recognizable. These include the area of elevated Au, Ag and Cu near the baseline on Line 5+00 W and small clusters to the south of DDH 80-5 and in the extreme south-west of the area on Line 25+00 W. some higher values also occur in, and to the west of, the area of elevated Au near the plutonic contact around Line 9+00 W.

Manganese

Analytical values are plotted in Figure 12.

Mn is similar to Zn in showing a typically dispersed distribution of values. Threshold is arbritrarily set at 1500 ppm.

Of the 176 samples from the volcanic area, 16 are anomalous. These are randomly distributed, without significant grouping of higher values. High and low values commonly occur in close proximity, and Mn in rock does not appear to be a useful geochemical guide in this section.

Molybdenum

Analytical values are plotted in Figure 7.

Mo values in the volcanic area are generally very low. Of the total 176 samples, only 16 show values greater than 3 ppm, with a maximum of 12 ppm.

Like the majority of the analysed elements, higher Mo shows a tendency to concentrate in the northern part of the sampled area, near the plutonic contact.

Conclusions

The additional rock geochemistry has not materially altered the picture established by the work of Woodcock and Gorc. The distribution of higher values serves, however, to confirm the groupings indicated by that work.

No previously undetected centres of elevated trace gold content in the volcanic portion of the property are indicated.

The rocks of the volcanic terrain are demonstrated as relatively low in Cu and Mo compared with the plutonic area, and relatively enriched in Au, Pb and possibly Zn.

PETROGRAPHY

Portions of the same 56 samples used for the rock geochemical work were prepared as thin sections for petrographic study. The corresponding cut-off blocks were stained to facilitate estimation of feldspar proportions.

Each sample was examined microscopically to obtain data on mineral percentages, textural features, and style and intensity of alteration. This information was used to classify the rocks. Results are summarized in Table 2.

Woodcock and Gorc's map of the geology of the property shows an assigned rock name for every sample (including those designated'sp'). Although their work included petrographic studies of selected samples, assignment of rock names was, for the most part, made on the basis of hand specimen features and field observations.

The more detailed work of the present study naturally leads to some discrepancies in the naming of specific samples.

The breakdown of rock types in the south-western part of the property on Woodcock and Gorc's geology map is as follows:

Volcanic group:

Volcanics (undifferentiated)	V
Crystal tuff	tV
Porphyritic volcanics	pV
Felsic volcanics	fV
Dioritic volcanics	dV
Brick-red volcanics	rV
Hornfelsed volcanics	hV
Contact volcanics ('granitized')	cV
Bleached volcanics (clay, sericite alteration)	bV
Altered volcanics (quartz, sericite, pyrite alteration)	aV

Dykes

Trachyte porphyry	Tp
Quartz latite porphyry	QLp

Plutonic

Quartz monzonite porphyry	(QMp)
Magnetite quartz monzonite porphyry	(mQMp)
Quartz monzonite erratics	(QMe)

Field relationships/macroscopic features and microscopic/petrographic data both play a part in the proper classification of rocks for mapping purposes.

It is generally not possible to say whether a rock is of intrusive or extrusive origin on petrographic evidence alone. For example, the samples classified in the

TABLE 2. ROCK IDENTIFICATIONS

Sample	Petrographic identification	Special features	Alteration	Map Unit (Woodcock & Gorc)
G-403	Porphyritic trachyandesite		Pervasive carbonate in groundmass	Tp
G-405	Porphyritic rhyodacite	Glomeroporphyritic	Quartz veinlets 4% magnetite	tV
G-421	Fine-grained granodiorite	Plutonic-textured. Fresh hornblende, biotite.		QMe
G-436	Latite	Sparsely porphyritic, glassy		QLp
G-449	Crystal tuff (dacitic)		Moderate epidotization. Quartz veinlet with pyrite	aV
G-455	Andesite	Non-porphyritic, diabase texture	Plagioclase turbid	V
G-459	Porphyritic andesite	Relatively coarse. Possibly fragmental (auto-breccia?)	Strong epidotization	tV
G-475	Andesite tuff		Strong epidotization	pV
G-476	Crystal tuff (andesitic)		Strong epidotization	pV
G-483	Porphyritic trachyandesite			Tp
G-487	Trachyandesite	Sparse microphenocrysts	Chlorite in groundmass	QLp
I 9c	Andesite-dacite tuff		Weak epidotization Disseminated pyrite	aV
I 10	Altered dacite		Strongly altered. Pervasive sericitization. Pockets of micro-granular quartz, barite and epidote Disseminated pyrite	bV

Rock Types

I 12	Porphyritic dacite		Strong epidotization, including vein type	aV
I 14a	Quartz monzonite porphyry		Weak epidotization	QMp
I 19c	Porphyritic dacite	Contains a few xenoliths	Weak epidotization Disseminated pyrite	bV
I 21	Porphyritic andesite		Sericitization of phenocrysts and groundmass. Weak epidotization	?
I 24c	Trachyte	Glassy. Weak flow textures. Xenolithic		cV
I 27	Porphyritic quartz latite		Plagioclase phenocrysts argillized	mQMp
I 31g	Altered tuff	Quartz crystal clasts and cherty fragments in silicified matrix	Strongly silicified	bV
I 33b	Crystal tuff	Plagioclase plus minor quartz crystals. Some lithic clasts	Weak epidotization	dV
I 34g	Porphyritic andesite		Strong epidotization	cV
I 36	Porphyritic trachyandesite		Strong epidotization. Also some sericitization of plagioclase phenocrysts	?
I 38	Lapilli-tuff	Clasts of andesite/ trachyandesite 2 - 15mm in size	Moderate epidotization. Some sericitization.	V
I 42a	Porphyritic quartz latite		Moderate epidotization (including diffuse alteration of ground-mass)	QMp

I 42e	Crystal tuff	Clasts mainly plagioclase. Quartz rare.	Weak epidotization	dV
I 43a	Porphyritic quartz latite		Plagioclase turbid. Groundmass has ferruginous carbonate	mQMp
I 44c	Porphyritic trachyandesite	Euhedral phenocrysts to 2mm include fresh pyroxene; associated fine-grained magnetite	Plagioclase phenocrysts turbid, sericitized	mQMp
I 44d	Porphyritic dacite		Strong epidotization. Also pervasive sericitization	V
C 6	Dacite tuff	Fine-grained felsitic clasts	Strongly sericitized	aV
C 15	Dacite tuff	Probably mixture of crystals and lithic clasts	Strongly sericitized. Local carbonate, hematization	V
C 18	Quartz monzonite porphyry		Weak epidotization Plagioclase phenocrysts turbid	QMp
C 20	Altered glassy tuff	Crudely foliated. Elongate masses of possible zeolite	Sericitized. Pervasively ferruginized	aV
C 21	Fine-grained granodiorite	Fresh hornblende, minor biotite	Partial sericitization of plagioclase	QMe
C 22	Porphyritic trachyandesite	Altered mafic phenocrysts to 4mm. Euhedral plagioclase in potassic ground-mass	Strong epidotization	HGd
C 27	Andesite lapilli tuff	Lithic clasts to 10mm.	Sericitic matrix	bV
C 38	Quartz monzonite porphyry	Granophyric ground-mass, plagioclase phenocrysts	Weak epidotization	Tp

C 41	Trachyte	Sparse plagioclase phenocrysts to 1.5mm. Trachytic, flow-textured groundmass.	Plagiocase turbid; Minor carbonate	QLp
C 43	Porphyritic latite	More plagioclase phenocrysts than C-41. Glassy groundmass	Plagioclase turbid	rV
C 47	Latite	Streaky texture: ex-glass		V
C 50	Porphyritic latite	Groundmass contains some quartz	Plagioclase turbid	QLp
C 53	Quartz monzonite porphyry	Micrographic textures in groundmass	Strong epidotization	QMp
C 54	Lapilli tuff	Mixed potassic and andesitic lapilli	Strong epidotization	QMp
C 57	Porphyritic andesite	Plagioclase phenocrysts very small (to 1mm); altered mafics to 3mm	Chloritized ground-mass. Weak to moderate epidotization	V
C 58	Lapilli tuff	Andesitic clasts	Strong epidotization	V
C 59	Porphyritic quartz latite	Groundmass partly variolitic. Notable accessory magnetite	Strong epidotization	QMp
C 60	Porphyritic quartz latite	Groundmass variolitic/micro-graphic	Plagioclase turbid, somewhat sericitized	QMp
C 62	Dacite tuff	Mixed lithic/crystal clasts. Considerable quartz, opaque oxides		V
C 63	Crystal tuff	Feldspar-rich. Rhyodacite composition	Weak epidotization	cV
C 65	Porphyritic quartz latite	Plagioclase phenocrysts to 2mm Variolitic ground-mass is K-spar and quartz		QLp

C 67	Lapilli tuff	Trachyandesitic lapilli to 10mm	Weak epidotization	tV
C 69	Porphyritic latite	Meshwork-textured groundmass	Plagioclase phenocrysts turbid	QLp
C 71	Crystal tuff	Plagioclase and quartz clasts	Strong epidotization	tV
C 72	Porphyritic quartz latite	Similar to C-65 but phenocrysts to 4mm.	Weak epidotization	QMp
C 74	Crystal tuff	Similar to C-71. Dacitic composition	Weak to moderate epidotization	tV
C 76	Porphyritic latite	Identical to C-69		QLp

present study as latites and trachytes are fine-grained rocks with phenocrysts not exceding 2mm in size, texturally similar to the majority of the other volcanic rocks of the suite. However, these prove, in the majority of cases, to be samples mapped by Woodcock and Gorc as trachyte or quartz latite porphyry dykes. Presumably the latter assignment was made on the basis of mappable contact features and should therefore be accepted.

Similarly, of the 8 rocks in the present suite which are shown on the map as (intrusive) quartz monzonite porphyry, 3 were recognized petrographically as of probable intrusive type, having relatively coarse plagioclase phenocrysts (to 4 or 5mm in size) in a partially micrographic, potassic groundmass. Another 4 were classified as porphyritic quartz latites (volcanics). However, the latter group really differ from the first three only in having marginally smaller phenocrysts and more diverse groundmass textures, and they could very well be all of the same origin.

Conversely, it is often not possible to classify a rock reliably without petrographic information. Thus those rocks of the present suite identified by Woodcock and Gorc as quartz latite porphyries in fact contain very little quartz, and are actually latites, whilst those mapped as trachyte porphyries have too low a ratio of K-spar/plagioclase and are more correctly trachyandesites, or contain significant quartz and are actually quartz latites or quartz monzonite porphyry.

More significantly, the fragmental character of the volcanics appears to have been seriously underestimated in the field mapping. Of the 25 rocks classified by Woodcock and Gorc as non-tuffaceous volcanics of various kinds, 15 are shown by the petrographic work to be tuffs. Conversely, of 5 rocks previously mapped as tuffs, 3 are confirmed but 2 are, in fact, normal volcanics.

The volcanic rocks subdivided by Woodcock and Gorc on macroscopic appearance as 'bleached', 'reddened' etc., are classified in the present study in conventional petrologic terms, on the basis of quartz content and relative proportions of K-feldspar and plagioclase.

31 of the 56 samples of the suite are identified as volcanics.

Of those containing an estimated <10% quartz,

5 are andesites
6 are trachyandesites
9 are latites to trachytes *

Of those containing an estimated 10 - 20% quartz,

5 are dacites to rhyodacites
6 are quartz latites *

The more potassic members of the above group (marked *) may, as discussed earlier, be mainly dykes. The remaining rocks (the extrusives proper) are thus seen to be generally of intermediate and rather quartz-poor character. Almost all are porphyritic and contain moderate to very low proportions of mafics.

19 of the 56 samples of the suite are identified as pyroclastics.

Of these, 11 have principally lithic fragments and are felsic-intermediate in composition. A few are coarse-grained (lapilli-tuffs).

The other 8 are composed predominantly of close-packed crystal clasts (plagioclase and lesser quartz).

Of the remaining 6 rocks in the suite, 4 are identified as quartz monzonite porphyries of probable intrusive type, and 2 are rather fine-grained granodiorites (the quartz monzonite erratics of Woodcock and Gorc).

Table 2 shows the rock names assigned on the basis of the present study, together with comments (where relevant) on alteration and/or special features. The designation of each sample on Woodcock and Gorc's map is also shown.

The flows are rocks of simple composition, consisting essentially of phenocrysts, 0.5 - 2.0mm in size, of plagioclase and, in some cases, minor quartz and/or K-feldspar, set in fine-grained felsitic groundmasses of plagioclase with low to moderate proportions of intergrown K-feldspar. Mafics, as phenocrysts and minor groundmass interstitial material, seldom exceed 10%.

The more potassic rocks of the suite, which may be principally dykes, are of similar general character to the flows, but have more strongly potassic groundmasses, sometimes showing variolitic or granophyric textures and containing fine-grained quartz. Phenocrysts may include minor quartz along with the dominant plagioclase. Phenocrysts in the quartz monzonite porphyries tend to be somewhat coarser (to 5mm) than in most of the flows. The latitic rocks, by comparison, often have only sparse and small phenocrysts.

The pyroclastics are of similar composition to the flows. They show no recognizable bedding on the thin section scale. The component lithic fragments tend to show mixed compositions, and the proportion of matrix to fragments is generally low. They show all gradations from totally lithic fragments to predominantly crystal clasts.

ALTERATION

The rocks of the present study are mostly only mildly altered in an overall sense. However, the mafic constituents (original pyroxene, hornblende and biotite) consistently show almost total breakdown to various proportions of chlorite, epidote, sericite and rutile/leucoxene.

One form of alteration which shows widespread and, in some cases, strong development, is epidotization. This is manifested in the partial to complete alteration of plagioclase phenocrysts to rather coarsely granular epidote. This alteration typically shows a peculiar selectivity, in that some phenocrysts in a given rock may be almost totally replaced, whilst others of the same composition are essentially unaffected.

In its strongest form this alteration includes the growth of rather coarse, sometimes radiate clumps of epidote throughout the rock - probably centred on original feldspar and mafic phenocrysts. In a few cases these epidote clumps are linked by irregular vein-like replacements of the same mineral.

No examples of true fracture fillings were seen in the present study which would correspond with the term 'fracture-type epidotization' as used by Woodcock and Gorc.

In a few cases the epidote clumps include minor intergrown quartz, and in others they show rims or halos of K-feldspar. The latter effect is of uncertain origin, but may represent a remobilization of minor K-feldspar from replaced plagioclase.

The degree of epidotization is rated in Table 2 as weak, moderate or strong.

The spatial distribution of epidotization conforms in general terms to the zonation shown on Woodcock and Gorc's map of alteration, in that samples from the northwestern side of the sampled area lack epidotization. However, the present study shows a substantial concentration of strongly epidotized rocks in the general area of DDH 80-5 - within Woodcock and Gorc's zone of trace to moderate epidotization.

Some inconsistences are also seen in that epidote-free rocks sometimes occur in close proximity to strongly epidotized samples. This may be partly a function of rock type: e.g. the dyke rocks tend to be less strongly, and the tuffs more strongly epidotized than the volcanics. However, this is not a consistent feature.

Other familiar forms of plagioclase alteration such as sericitization and carbonate replacement are rare in these rocks.

Sericitization is observed in some of the tuffs, the volcanics I-21, I-36 and I-44d, and one isolated instance of a very strongly altered volcanic (I-10) which also shows silicification, epidotization and pockets of barite.

Carbonate was noted, as a minor pervasive constituent, in four rocks of the suite: G-403, I-43a, C-15 and C-41.

Silicification is also uncommon. Sparse quartz veinlets were seen in two rocks (G-405 and G-449). Two other samples (I-10 and I-31g) show strong pervasive silicification.

Pyrite is absent from most of the suite. It occurs as faint traces in a few of the tuffs and volcanics, but is present in significant amounts (1 - 3% in disseminated form) in only 3 samples: I-9c, I-10 and I-19c. These are all from the vicinity of DDH 80-5, which appears to be the area of strongest alteration within the present sampling.

One rather prevalent form of alteration is a pervasive turbidity and reddening of plagioclase phenocrysts, probably produced by clays and micron-sized hematite. This is most characteristic of the potassic memebers of the suite, many of which are mapped by Woodcock and Gorc as dykes. The overall reddish body colour shown by some of these rocks is not readily seen in the etched and stained cut-off blocks, which are now all that remain of the samples for reference purposes.

No examples were seen of the secondary biotite development noted by Woodcock and Gorc as possible evidence of hornfelsing. The samples in which they observed this effect are to the north and east of the area of the present samples. Samples G-403 and G-405 would be the closest, and the unusually high content of magnetite in G-405 may be a related effect.

SUMMARY AND CONCLUSIONS

The present study provides an improved knowledge of rock types and alteration in the volcanics of the central part of the Fin Property. It also presents fill-in rock geochemical data to augment the existing coverage.

The study is a follow-up to the mapping and rock geochemical work of Woodcock and Gorc (1982).

Rock geochemistry on an additional 56 samples within the 1500 m. x 700 m. study area did not indicate any significant new groupings of elevated gold values.

Anomalous Au in volcanics appears to occur chiefly within a zone adjacent to the contact with the intrusive complex to the north-east. This is true also of Ag and Cu.

Pb and Zn anomalies are best developed further from the intrusive contact, in the general vicinity of Riocanex DDH 80-5.

Mo and Mn, the other two elements plotted by Woodcock and Gorc, do not appear to be useful geochemical guides in the volcanics.

The volcanic rocks are shown to be feldspar-rich, mafic-poor, fine-grained porphyritic rocks of dacite-rhyodacite and andesite-trachyandesite composition. They include a substantially higher proportion of pyroclastics than is indicated by the mapping of Woodcock and Gorc.

The suite also includes numerous strongly potassic rocks of latite-quartz latite composition. Some of these are relatively coarse and represent Woodcock and Gorc's quartz monzonite porphyries. Others, which are texturally indistinguishable from the normal porphyritic flow rocks of the suite, are also mapped as dykes by Woodcock and Gorc.

No consistent correlation exists between the field names assigned by Woodcock and Gorc and the rock identifications made on the basis of petrography in the present study (see Table 2). This factor, combined with the uneven and relatively sparse distribution of samples in the present study, precludes the construction of a revised map.

There is a general tendency for flow-type volcanics to be concentrated in the central portion of the study area around Hole 80-5, flanked on the south-east and north-west by predominantly tuffs. Both areas contain potassic rocks of the supposed dyke phases.

The principal alteration type is epidotization. This is strongly developed in some 25% of the rocks of the study suite, principally as replacements of individual feldspar and mafic phenocrysts.

The zonation of strongest epidotization in a belt along the south-eastern flank of the study area indicated by Woodcock and Gorc is substantiated in a general way, in that samples from the north-western part of the area are free of epidotization. However, epidotization is found to be strongly developed in many of the rocks in the central part of the area, around DDH 80-5.

The only other widespread alteration type is a pervasive turbidity (argillization) and reddening (hematization) of feldspars in the latitic rocks.

Infrequent and generally weak development of sericitization, silicification carbonatization and pyritization was observed. These effects are seldom seen outside the central zone of maximum intensity and diversity of alteration around DDH 80-5. Some indication of enhanced alteration (though without epidotization) is also seen in rocks from the extreme north of the sampled area (G-403, 405).

This report respectfully submitted, October 16th, 1987.

J.F. Harris Ph.D.

REFERENCES

WOODCOCK J.R. and D. GORC, December 1982: Geology and geochemistry on the Fin Claims, Omineca Mining Division; for Brinco Mining Ltd. B.C. Mines Assessment Record # 11032.

Harris
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SERVICES

MINERALOGY AND GEOCHEMISTRY

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COST BREAKDOWN

Petrographic and rock geochemical study of samples from the Fin Property for Bradford D. Pearson, July 1987.

Petrographic work		
Preparation: 56 thin sections, including staining and impregnation	$	560.00
Microscopic examinations		2240.00
Geochemical work		
56 samples for Au analysis by fire assay/neutron activation, and I.C.P. multi-element analysis, including preparation		1050.00
Compilation and Interpretation		
Sample sorting and selection, reviewing existing data, compiling report		1750.00
Drafting		650.00
	$	6250.00

CERTIFICATION

I, JEFFREY F. HARRIS of North Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geologist operating under the name of HARRIS EXPLORATION SERVICES, with an office at 534 Ellis Street, North Vancouver, B.C.

2. I am a graduate of the Royal School of Mines, London, England, 1956, (B.Sc.) and of the Australian National University, Canberra, 1965,(Ph.D.).

3. I am a Fellow in good standing of the Geological Association of Canada.

4. I have actively practiced my profession of geologist for 30 years.

5. I have no financial interst of any kind in the Fin Property.

6. I personally carried out the study described in this report. Sample material was provided by the claim holder, and, to the best of my knowledge, came from the Fin Property. I have not personally visited or sampled the property.

Dated at North Vancouver, B.C. this 16th day of October, 1987

APPENDIX 1

ANALYTICAL RESULTS

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
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A8720692

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P.O.# : NONE

Samples submitted to our lab in Vancouver, BC.
This report was printed on 8-SEP-87.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	56	Rock & core: Ring
238	56	ICP: Aqua regia digestion

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
993	56	Au ppb: Fuse 30 g sample	FA-NAA	1	10000
921	56	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
922	56	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	200
923	56	As ppm: 32 element, soil & rock	ICP-AES	5	10000
924	56	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
925	56	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
926	56	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
927	56	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
928	56	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
929	56	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
930	56	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
931	56	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
932	56	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
933	56	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
951	56	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
934	56	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
935	56	La ppm: 32 element, soil & rock	ICP-AES	10	10000
936	56	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
937	56	Mn ppm: 32 element, soil & rock	ICP-AES	1	10000
938	56	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
939	56	Na %: 32 element, soil & rock	ICP-AES	0.01	5.00
940	56	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
941	56	P ppm: 32 element, soil & rock	ICP-AES	10	10000
942	56	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
943	56	Sb ppm: 32 element, soil & rock	ICP-AES	5	10000
952	56	Se ppm: 32 element, soil & rock	ICP-AES	10	10000
944	56	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
945	56	Ti %: 32 element, soil & rock	ICP-AES	0.01	5.00
946	56	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
947	56	U ppm: 32 element, soil & rock	ICP-AES	10	10000
948	56	V ppm: 32 element, soil & rock	ICP-AES	1	10000
949	56	W ppm: 32 element, soil & rock	ICP-AES	5	10000
950	56	Zn ppm: 32 element, soil & rock	ICP-AES	1	10000

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SAMPLE DESCRIPTION	PREP CODE	Au NAA ppb	Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm
C 06	205 238	8	0.82	1.0	10	590	< 0.5	< 2	0.01	< 0.5	< 1	14	8	0.17	< 10	< 1	0.22	< 10	0.01	25
C 15	205 238	< 1	0.75	0.6	< 5	70	< 0.5	< 2	1.76	0.5	4	36	5	1.93	< 10	< 1	0.18	< 10	0.73	932
C 18	205 238	3	1.53	0.2	5	50	< 0.5	< 2	1.12	< 0.5	7	45	15	2.49	< 10	< 1	0.08	< 10	0.88	754
C 20	205 238	40	5.16	1.2	< 5	50	< 0.5	< 2	3.31	2.0	< 1	9	17	3.06	10	< 1	0.29	< 10	0.31	895
C 21	205 238	2	0.75	0.4	< 5	90	< 0.5	< 2	0.67	0.5	4	65	64	2.68	< 10	< 1	0.19	10	0.48	363
C 22	205 238	1	1.31	0.4	< 5	30	< 0.5	< 2	0.75	< 0.5	4	50	9	1.77	< 10	< 1	0.06	< 10	0.72	847
C 27	205 238	2	1.51	0.2	< 5	270	< 0.5	< 2	0.23	0.5	6	40	6	3.83	< 10	< 1	0.29	< 10	0.58	764
C 38	205 238	2	1.20	0.4	5	70	< 0.5	< 2	0.71	< 0.5	5	94	3	1.76	< 10	< 1	0.12	10	0.63	529
C 41	205 238	< 1	0.73	0.2	5	130	< 0.5	< 2	0.84	1.0	1	68	3	2.33	< 10	< 1	0.15	20	0.44	1050
C 43	205 238	1	0.38	0.2	< 5	70	< 0.5	< 2	0.03	< 0.5	< 1	98	1	0.84	< 10	< 1	0.14	< 10	0.02	488
C 47	205 238	1	0.34	0.2	< 5	790	< 0.5	< 2	0.02	< 0.5	1	53	3	0.37	< 10	< 1	0.15	< 10	0.08	310
C 50	205 238	9	0.46	0.2	5	120	< 0.5	< 2	0.10	< 0.5	< 1	47	8	1.26	< 10	< 1	0.15	10	0.18	311
C 53	205 238	< 1	1.15	0.2	< 5	60	< 0.5	< 2	0.73	0.5	4	82	6	1.60	< 10	< 1	0.11	< 10	0.65	1115
C 54	205 238	3	1.06	0.2	< 5	30	< 0.5	< 2	0.84	< 0.5	3	55	3	1.46	< 10	< 1	0.06	< 10	0.53	574
C 57	205 238	< 1	1.66	0.2	< 5	40	< 0.5	< 2	0.65	< 0.5	4	10	6	1.95	10	< 1	0.07	< 10	1.32	925
C 58	205 238	52	1.42	0.2	< 5	30	< 0.5	< 2	0.88	0.5	5	47	2	1.74	< 10	< 1	0.07	< 10	0.83	821
C 59	205 238	2	1.20	0.4	5	50	< 0.5	< 2	0.71	< 0.5	8	31	9	2.04	< 10	< 1	0.06	< 10	0.86	681
C 60	205 238	4	1.43	0.4	< 5	70	< 0.5	< 2	0.81	0.5	8	34	3	2.42	< 10	< 1	0.10	< 10	1.01	1100
C 62	205 238	2	1.24	0.2	< 5	20	< 0.5	< 2	0.60	0.5	9	38	8	3.10	10	< 1	0.05	< 10	0.84	891
C 63	205 238	4	1.51	0.2	< 5	30	< 0.5	< 2	0.90	< 0.5	6	27	4	2.71	10	< 1	0.07	< 10	1.02	949
C 65	205 238	< 1	0.35	0.2	< 5	40	< 0.5	< 2	0.15	< 0.5	< 1	20	1	0.93	< 10	< 1	0.08	10	0.15	255
C 67	205 238	8	1.18	0.2	5	40	< 0.5	< 2	0.38	< 0.5	1	48	7	1.85	< 10	< 1	0.09	< 10	0.84	1310
C 69	205 238	2	0.77	0.2	< 5	220	0.5	< 2	0.62	2.0	2	18	< 1	2.18	10	1	0.09	10	0.42	723
C 71	205 238	4	1.55	< 0.2	< 5	40	< 0.5	< 2	0.67	0.5	6	13	3	2.42	< 10	< 1	0.12	< 10	1.07	1175
C 72	205 238	2	1.19	0.2	5	30	< 0.5	< 2	0.74	< 0.5	7	32	< 1	1.89	< 10	< 1	0.05	< 10	0.86	959
C 74	205 238	< 1	1.56	0.2	< 5	60	< 0.5	< 2	0.59	1.0	8	17	8	2.24	< 10	< 1	0.21	< 10	1.00	1020
C 76	205 238	2	0.83	0.4	< 5	70	< 0.5	< 2	0.40	1.0	2	15	2	2.32	10	< 1	0.13	10	0.61	819
G 403	205 238	22	0.82	0.2	< 5	200	< 0.5	< 2	0.74	< 0.5	3	50	7	1.81	< 10	< 1	0.18	10	0.47	812
G 405	205 238	49	1.54	0.2	< 5	350	< 0.5	< 2	0.30	2.5	2	29	475	4.66	< 10	< 1	0.29	10	0.89	2130
G 421	205 238	< 5	0.96	0.4	< 5	70	< 0.5	< 2	0.84	0.5	8	24	26	3.10	< 10	< 1	0.22	< 10	0.57	351
G 436	205 238	< 1	0.43	< 0.2	5	50	< 0.5	< 2	0.04	< 0.5	< 1	42	4	0.76	< 10	< 1	0.12	10	0.12	395
G 449	205 238	7	1.33	0.8	5	120	< 0.5	< 2	0.67	< 0.5	1	17	4	1.72	< 10	< 1	0.27	< 10	0.58	1200
G 455	205 238	< 1	2.92	0.2	< 5	100	< 0.5	< 2	2.64	1.5	12	12	< 1	5.16	10	< 1	0.09	< 10	1.33	1700
G 459	205 238	18	1.83	0.2	5	40	< 0.5	< 2	0.82	< 0.5	5	7	233	2.99	10	< 1	0.11	< 10	1.25	1215
G 475	205 238	2	1.32	< 0.2	< 5	40	< 0.5	< 2	0.73	< 0.5	5	50	3	1.72	< 10	< 1	0.10	< 10	0.77	1135
G 476	205 238	2	1.68	< 0.2	< 5	50	< 0.5	< 2	0.71	0.5	3	14	4	2.66	< 10	< 1	0.11	< 10	0.99	1365
G 483	205 238	< 1	0.84	< 0.2	< 5	70	< 0.5	< 2	0.40	< 0.5	3	13	24	1.39	< 10	< 1	0.14	10	0.51	670
G 487	205 238	3	2.46	0.4	15	100	< 0.5	< 2	1.69	1.5	12	< 1	7	5.30	10	< 1	0.06	< 10	1.54	1655
I 09 C	205 238	6	1.17	0.6	< 5	120	< 0.5	< 2	0.31	0.5	2	29	84	3.05	< 10	< 1	0.14	< 10	0.75	515
I 10	205 238	1	0.35	0.2	15	50	< 0.5	< 2	0.01	< 0.5	2	27	8	3.40	< 10	< 1	< 0.01	< 10	0.01	29

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SAMPLE DESCRIPTION	PREP CODE		Au NAA ppb	Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm
I 12	205	238	4	1.46	0.2	5	60	< 0.5	< 2	0.61	< 0.5	1	66	3	2.13	< 10	< 1	0.12	< 10	1.05	1320
I 14 A	205	238	2	1.33	0.2	< 5	90	< 0.5	< 2	0.65	< 0.5	6	70	22	1.85	< 10	< 1	0.09	< 10	0.95	694
I 19 C	205	238	2	1.45	0.2	< 5	40	< 0.5	< 2	0.79	0.5	1	87	17	2.19	< 10	< 1	0.11	< 10	0.68	590
I 21	205	238	< 1	1.11	< 0.2	< 5	130	< 0.5	< 2	0.30	0.5	2	55	3	2.06	< 10	< 1	0.25	10	0.48	888
I 24 C	205	238	11	1.58	0.4	< 5	60	0.5	< 2	1.02	1.5	6	54	27	2.27	< 10	< 1	0.12	< 10	0.80	1680
I 27	205	238	1	0.13	< 0.2	< 5	20	< 0.5	< 2	0.02	< 0.5	< 1	129	< 1	0.24	< 10	< 1	0.06	< 10	0.01	75
I 31 G	205	238	4	1.50	0.2	< 5	50	< 0.5	< 2	0.58	0.5	5	52	4	2.97	< 10	< 1	0.12	< 10	0.71	1355
I 33 B	205	238	4	1.60	0.4	< 5	60	< 0.5	< 2	0.65	0.5	5	66	7	2.98	< 10	< 1	0.14	< 10	0.71	1345
I 34 G	205	238	< 1	2.32	< 0.2	< 5	60	< 0.5	< 2	0.98	1.0	7	17	< 1	2.94	10	< 1	0.20	< 10	1.46	2530
I 36	205	238	11	1.57	0.2	< 5	80	< 0.5	< 2	0.78	0.5	4	54	9	3.13	< 10	< 1	0.12	< 10	1.01	1430
I 38	205	238	1	1.08	< 0.2	5	50	< 0.5	< 2	0.65	< 0.5	2	45	1	1.62	< 10	< 1	0.15	< 10	0.44	839
I 42 A	205	238	< 1	1.37	< 0.2	< 5	30	< 0.5	< 2	1.01	2.0	2	72	< 1	1.60	< 10	< 1	0.06	< 10	0.62	572
I 42 E	205	238	15	2.56	0.2	< 5	60	< 0.5	< 2	1.06	0.5	5	43	16	2.81	10	< 1	0.09	< 10	1.12	2080
I 43 A	205	238	< 1	0.96	< 0.2	5	60	< 0.5	< 2	0.56	< 0.5	3	92	< 1	1.66	< 10	< 1	0.10	10	0.47	723
I 44 C	205	238	< 1	1.89	0.2	< 5	90	< 0.5	< 2	1.79	1.0	6	37	22	4.06	10	< 1	0.18	< 10	0.70	763
I 44 D	205	238	< 1	1.86	< 0.2	5	180	< 0.5	< 2	0.77	< 0.5	1	43	1	2.12	< 10	< 1	0.39	10	0.70	898

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Analytical Chemists * Geochemists * Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

To: HARRIS EXPLORATION SERVICES

534 ELLIS ST.
NORTH VANCOUVER, B.C.
V7H 2G6

Project :
Comments:

Date : 8-SEP-87
Invoice # : I-8720692
P.O. # : NONE

CERTIFICATE OF ANALYSIS A8720692

SAMPLE DESCRIPTION	PREP CODE		Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Se ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
C 06	205	238	< 1	0.02	< 1	20	68	10	< 10	21	< 0.01	< 10	< 10	5	< 5	5
C 15	205	238	< 1	0.02	1	630	36	5	< 10	22	0.10	< 10	< 10	38	< 5	63
C 18	205	238	< 1	0.03	1	450	22	< 5	< 10	47	0.10	< 10	< 10	71	< 5	57
C 20	205	238	< 1	< 0.01	< 1	1070	102	< 5	< 10	299	0.17	< 10	< 10	47	< 5	77
C 21	205	238	< 1	0.05	2	450	20	< 5	< 10	42	0.14	< 10	< 10	97	< 5	32
C 22	205	238	< 1	0.01	< 1	600	10	< 5	< 10	94	0.09	< 10	< 10	22	< 5	76
C 27	205	238	< 1	0.08	< 1	270	14	< 5	< 10	31	0.11	< 10	< 10	73	< 5	74
C 38	205	238	< 1	0.07	2	360	24	< 5	< 10	77	0.08	< 10	< 10	41	< 5	49
C 41	205	238	< 1	0.06	< 1	730	18	< 5	< 10	47	0.07	< 10	< 10	34	< 5	110
C 43	205	238	< 1	0.06	< 1	110	16	< 5	< 10	4	< 0.01	< 10	< 10	6	< 5	25
C 47	205	238	< 1	< 0.01	< 1	40	16	< 5	< 10	12	< 0.01	< 10	< 10	1	< 5	63
C 50	205	238	1	0.05	< 1	180	20	< 5	< 10	17	0.04	< 10	< 10	10	< 5	28
C 53	205	238	< 1	0.06	1	370	36	< 5	< 10	70	0.10	< 10	< 10	34	< 5	74
C 54	205	238	< 1	0.02	1	720	16	< 5	< 10	80	0.11	< 10	< 10	26	< 5	73
C 57	205	238	1	0.03	< 1	780	20	< 5	< 10	35	0.18	< 10	< 10	47	< 5	103
C 58	205	238	< 1	0.02	< 1	740	10	< 5	< 10	73	0.12	< 10	< 10	30	< 5	94
C 59	205	238	1	0.03	1	460	50	< 5	< 10	68	0.15	< 10	< 10	56	< 5	85
C 60	205	238	< 1	0.04	1	620	36	< 5	< 10	79	0.14	< 10	< 10	61	< 5	130
C 62	205	238	< 1	0.03	2	290	16	< 5	< 10	43	0.19	< 10	< 10	81	< 5	104
C 63	205	238	< 1	0.04	1	600	24	< 5	< 10	90	0.15	< 10	< 10	51	< 5	98
C 65	205	238	< 1	0.04	< 1	160	6	< 5	< 10	21	0.09	< 10	< 10	9	< 5	46
C 67	205	238	5	0.04	< 1	640	10	< 5	< 10	30	0.13	< 10	< 10	39	< 5	61
C 69	205	238	< 1	0.06	< 1	580	10	< 5	< 10	65	0.18	< 10	< 10	40	< 5	137
C 71	205	238	< 1	0.03	< 1	780	14	< 5	< 10	43	0.16	< 10	< 10	41	< 5	117
C 72	205	238	< 1	0.02	2	460	20	< 5	< 10	75	0.13	< 10	< 10	50	< 5	103
C 74	205	238	< 1	0.04	1	760	10	< 5	< 10	41	0.12	< 10	< 10	46	< 5	222
C 76	205	238	< 1	0.05	< 1	430	6	< 5	< 10	26	0.17	< 10	< 10	35	< 5	200
G 403	205	238	< 1	0.04	< 1	380	6	< 5	< 10	18	0.01	< 10	< 10	21	< 5	116
G 405	205	238	2	0.03	< 1	780	16	< 5	< 10	16	0.01	< 10	< 10	57	< 5	300
G 421	205	238	< 1	0.06	1	550	< 2	< 5	< 10	47	0.15	< 10	< 10	132	< 5	35
G 436	205	238	< 1	0.06	< 1	90	2	< 5	< 10	5	0.01	< 10	< 10	6	< 5	28
G 449	205	238	< 1	0.02	< 1	780	32	< 5	< 10	94	0.15	< 10	< 10	23	< 5	73
G 455	205	238	< 1	0.06	< 1	1530	2	< 5	< 10	244	0.06	< 10	< 10	96	< 5	125
G 459	205	238	4	0.04	1	890	8	< 5	< 10	80	0.14	< 10	< 10	66	< 5	95
G 475	205	238	< 1	0.02	< 1	700	18	< 5	< 10	55	0.13	< 10	< 10	28	< 5	98
G 476	205	238	< 1	0.03	1	600	8	< 5	< 10	57	0.16	< 10	< 10	42	< 5	117
G 483	205	238	< 1	0.03	< 1	410	8	< 5	< 10	13	< 0.01	< 10	< 10	16	< 5	97
G 487	205	238	< 1	0.03	< 1	950	< 2	< 5	< 10	13	0.32	< 10	< 10	154	< 5	137
I 09 C	205	238	< 1	0.06	1	770	22	< 5	< 10	37	0.02	< 10	< 10	20	< 5	45
I 10	205	238	5	< 0.01	< 1	40	4	< 5	< 10	20	< 0.01	< 10	< 10	5	< 5	3

CERTIFICATION :

Chemex Labs Ltd.
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SAMPLE DESCRIPTION	PREP CODE		Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Se ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
I 12	205	238	< 1	0.06	1	750	20	< 5	< 10	35	0.12	< 10	< 10	48	< 5	105
I 14 A	205	238	< 1	0.04	3	450	4	< 5	< 10	72	0.13	< 10	< 10	44	< 5	63
I 19 C	205	238	< 1	0.16	1	540	8	< 5	< 10	62	0.10	< 10	< 10	27	< 5	93
I 21	205	238	< 1	0.03	< 1	520	6	< 5	< 10	25	0.05	< 10	< 10	34	< 5	103
I 24 C	205	238	< 1	0.04	< 1	460	166	< 5	< 10	53	0.12	< 10	< 10	63	< 5	148
I 27	205	238	1	< 0.01	1	20	8	< 5	< 10	2	< 0.01	< 10	< 10	2	< 5	2
I 31 G	205	238	< 1	0.05	2	450	4	< 5	< 10	41	0.16	< 10	< 10	52	< 5	105
I 33 B	205	238	< 1	0.07	1	450	92	130	< 10	48	0.16	< 10	< 10	53	< 5	104
I 34 G	205	238	< 1	0.05	1	990	10	< 5	< 10	62	0.14	< 10	< 10	50	< 5	221
I 26	205	238	< 1	0.05	1	630	20	< 5	< 10	54	0.19	< 10	< 10	69	< 5	139
I 38	205	238	< 1	0.03	< 1	820	16	< 5	< 10	42	0.08	< 10	< 10	23	< 5	65
I 42 A	205	238	< 1	0.05	1	370	4	< 5	< 10	116	0.07	< 10	< 10	40	< 5	66
I 42 E	205	238	< 1	0.17	1	820	10	< 5	< 10	102	0.16	< 10	< 10	62	< 5	192
I 43 A	205	238	< 1	0.07	< 1	290	10	< 5	< 10	23	0.01	< 10	< 10	36	< 5	53
I 44 C	205	238	< 1	0.09	< 1	630	12	< 5	< 10	32	0.20	< 10	< 10	146	< 5	87
I 44 D	205	238	< 1	0.09	< 1	930	8	< 5	< 10	66	0.10	< 10	< 10	27	< 5	62

CERTIFICATION : ________