FAIRBANK
ENGINEERING LTD

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Consulting
Geologists
and
Engineers

Soil Geochemical Survey of the STIB and SHIELD Claims, Golden Dyke Joint Venture Graham Island, Queen Charlotte Islands, B.C.

Claims: STIB
SHIELD

NTS Ref: 103F/7&8
Longitude: 123° 26'W
Latitude: 53° 23'N

Consultant: Fairbank Engineering Ltd.
Prepared by: Reginald L. Faulkner
Work Dates: August 11 to August 30, 1988
Report Date: October 24, 1988

Golden Dyke Joint Venture:

Noramex Minerals Inc.
Noranda Exploration Co. Ltd.
UMEX Inc.

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1. INTRODUCTION

In the period August 11 to August 30, 1988 a program of soil and stream sediment heavy mineral sampling was carried out on the Golden Dyke Joint Venture claims, Graham Island, Queen Charlotte Islands. The work undertaken was to follow up an arsenic soil geochemical anomaly on the Stib claim.

2. LOCATION AND ACCESS

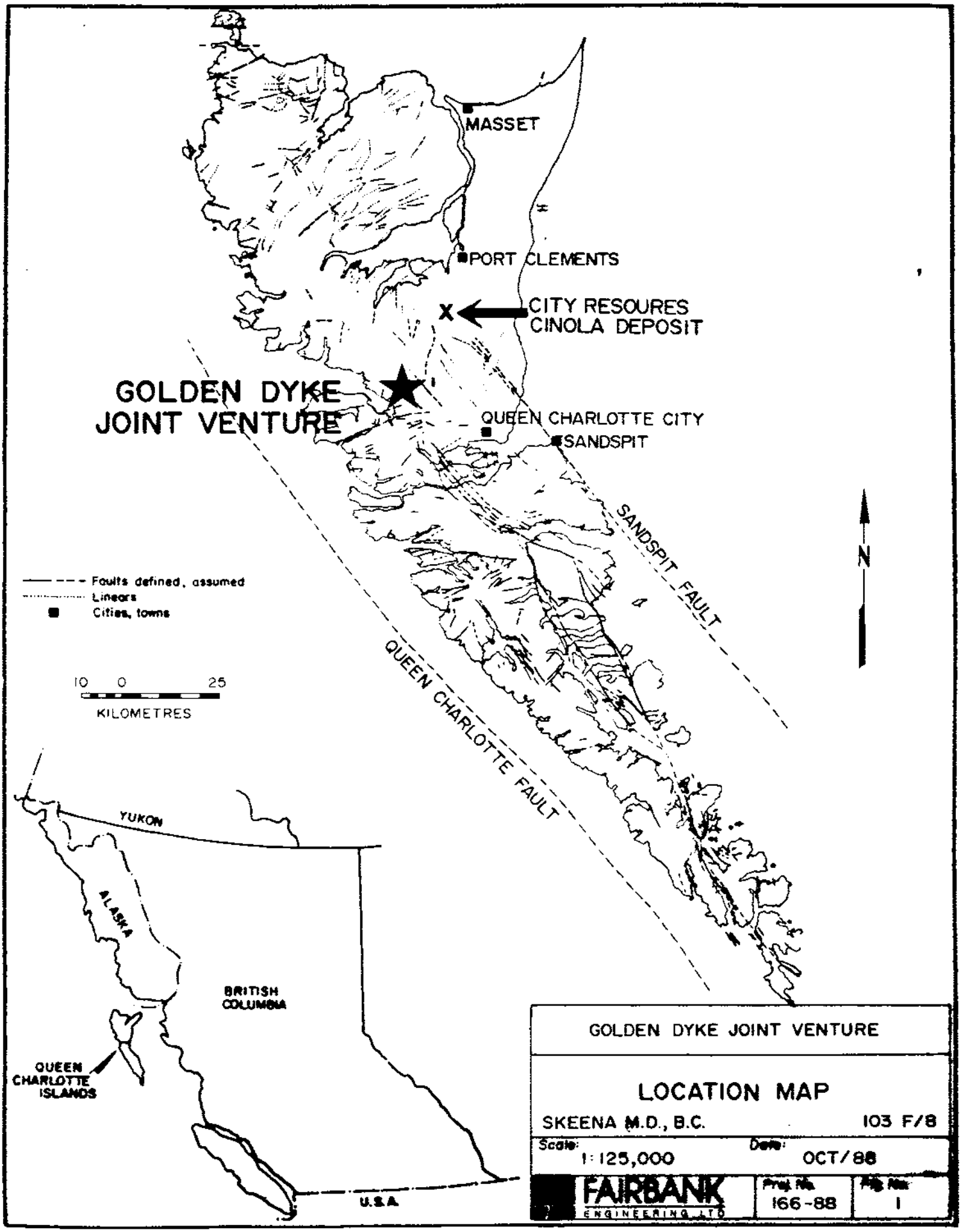
The Golden Dyke Joint Venture Property is situated on Graham Island, Queen Charlotte Islands, British Columbia, 30 kilometres northwest of Queen Charlotte City (FIGURE 1). The Shield and Stib claims on which the field work was conducted are located between Shields Bay and Yakoun Lake at the headwaters of Riley and Phantom Creeks.

Access to the property is via the Macmillan Bloedel logging road main line north from Queen Charlotte City to Phantom Creek and then west via Phantom Main. Subsidiary branches provide good access to most parts of the property. Access to higher portions of the property is by helicopter, from Sandspit on Moresby Island.

3. TOPOGRAPHY AND VEGETATION

Topography varies from flat river swamp to very steep hillsides with slopes up to 60°. Hillsides have moderately to deeply incised ravines and gently rolling summits up to 1066 m. ASL. The Riley Creek valley is generally flat bottomed, gently sloping and at its headwaters is 100 metres wide.

The vegetation reflects a coastal rain forest climatic zone dominated by spruce, cedar and hemlock. Where mature,



GOLDEN DYKE JOINT VENTURE

LOCATION MAP

SKEENA M.D., B.C. 103 F/8

Scale: 1:125,000 Date: OCT/88

FAIRBANK ENGINEERING LTD

Proj. No. 166-88

Fig. No. 1

the forest has moss covered windfall-strewn floors and where cut it is thickly vegetated with alder.

4. CLAIMS

The work undertaken on the STIB and SHIELD 2 claims is applied to the SHIELD #1, SHIELD #2 and SHIELD #4 Modified Grid claims of the Golden Dyke Joint Venture Property (FIGURE 2). All claims lie within the Skeena Mining Division. TABLE 1 summarized the pertinent claim information.

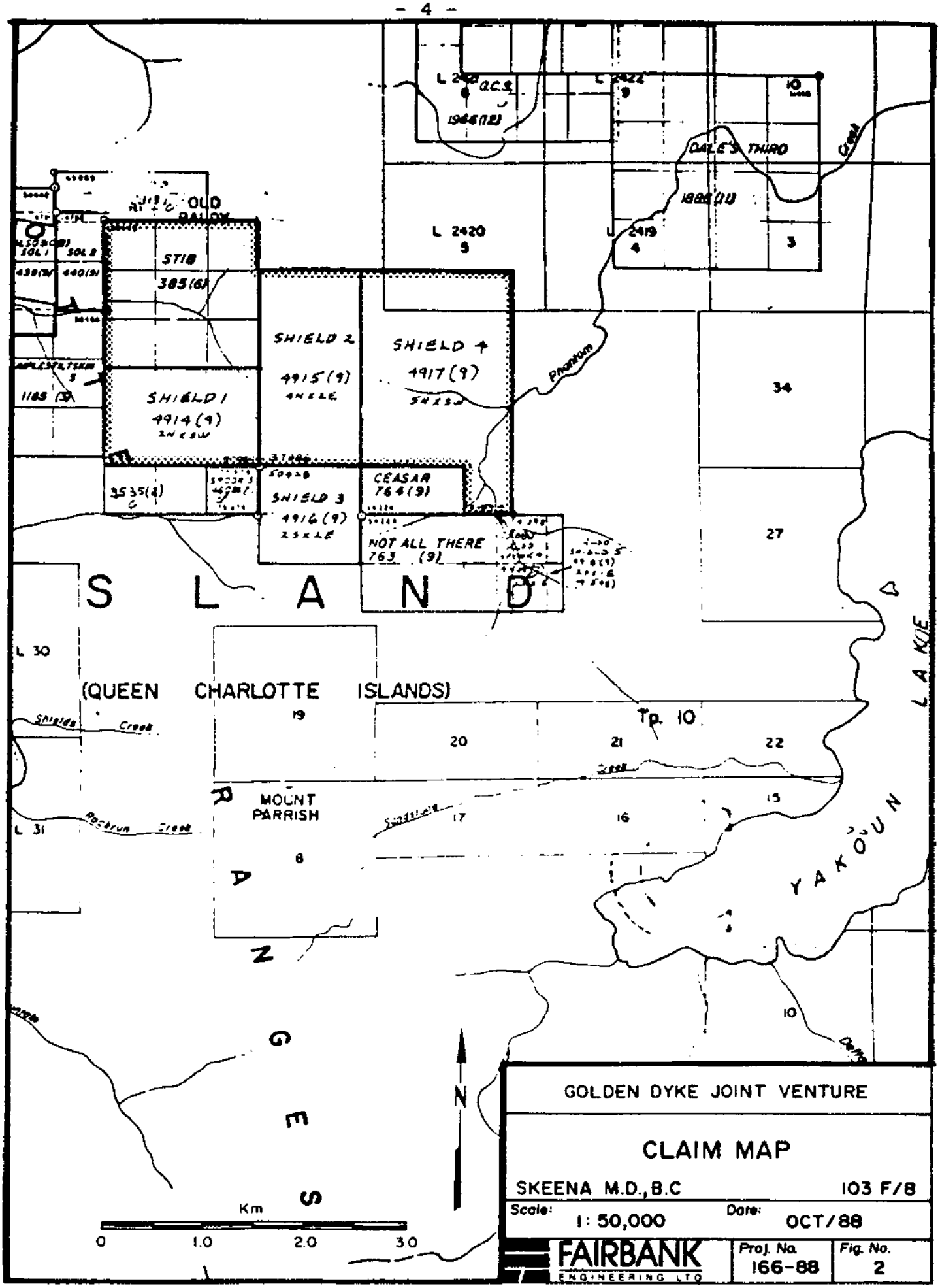
TABLE 1
CLAIM INFORMATION

Claim Name	Record Number	No. of Units	Record Date	Expiry Year	Owner
STIB	385(6)	9	Jun 21/77	1993	Umex Inc.
SHIELD #1	4914(9)	6	Sep 10/85	1988	B.Fairbank
SHIELD #2	4915(9)	8	Sep 10/85	1988	B.Fairbank
SHIELD #3	4916(9)	15	Sep 10/85	1988	B.Fairbank

Notice to group number 1993 recorded Sept. 8, 1986, Phantom Group.

5. PREVIOUS WORK

In this area the first claims were staked in 1948 with additional staking occurring in 1977 and 1985. Up to 1985 numerous geological, geochemical, and geophysical surveys were performed over the different properties by various companies. Follow up to and associated with these surveys was diamond drilling during which 21 holes were put down.



GOLDEN DYKE JOINT VENTURE

CLAIM MAP

SKEENA M.D., B.C 103 F/8

Scale: 1 : 50,000 Date: OCT/88

FAIRBANK ENGINEERING LTD

Proj. No. 166-88

Fig. No. 2

Inc. acquired by option and staking, mineral rights to 15 kilometres of the Riley Creek alteration trend. The joint venture partnership re-established and extended old grids, performed soil sampling and soil profiling, core re-logging, geological mapping, geophysical surveys, and diamond drilling in 1985 and 1986.

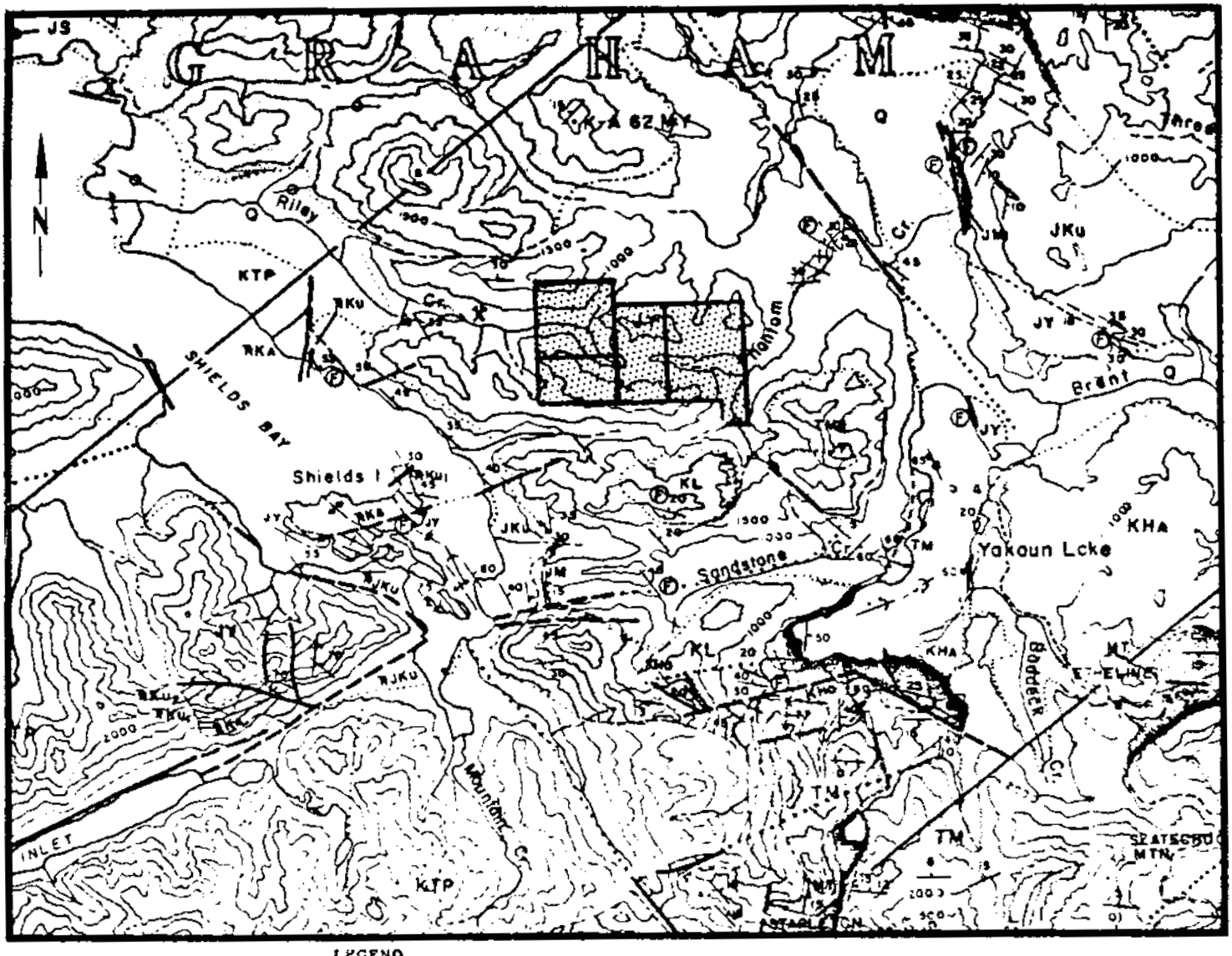
6. GENERAL GEOLOGY

Regional geology after Sutherland-Brown (1968) is shown in FIGURE 3.

The SHIELD and STIB claims are situated on what is called the Riley Creek alteration trend. This west-northwest trend is an epithermal system in Jurassic Yakoun Formation volcano-clastics that is related to feldspar or porphyry dyke intrusions possibly of the Tertiary Masset Formation (Wilson et al., 1986).

Underlying the STIB claim are three main units of the Yakoun Formation, stratified rocks, massive volcanic rocks and hypabyssal intrusives. Cutting the stratified rocks and the massive volcanic rocks are three ages of andesitic or diabasic dykes. Bedded rocks strike southeast to south-southeast and dip moderately to steeply to the east-northeast. Faults follow bedding contacts or occur as east-west striking cross faults with short displacements (<30 metres).

The Yakoun Formation is pervasively propylitized and locally contains small zones of argillic alteration that lack sulphides. Larger areas of major argillic alteration with sulphides and dykes are the exploration targets. Sulphides observed are pyrite, arsenopyrite, stibnite, galena, pyrrhotite and sphalerite (Wilson et al., 1986).



LEGEND

QUATERNARY

QS Quaternary overlying Skonun Fm

TERTIARY

PALEOCENE-EOCENE

TM MASSET FORMATION: subaerial basalt flows and breccias, rhyolite ash flows, lesser dacite

TM - Undivided Masset Formation

Divided Tartu Facies

TMc -- Basalt Member
TMb - Rhyolite member
TMa - Mixed member

CRETACEOUS

QUEEN CHARLOTTE GROUP

KHo HONNA FORMATION: conglomerate with granitic cobbles, arkosic grits, minor shale

KHa HAIDA FORMATION: green glauconite and grey sandstone, grey silty shale and siltstone, buff calcaceous siltstone

VANCOUVER GROUP

JURASSIC

JY YAKOUN FORMATION: porphyritic andesite agglomerate and flows, calcareous scoraceous lapilli tuff, volcanic sandstone and conglomerate, minor tuffaceous shale, coal

——— Geological Contact
——— Fault
..... Lineaments
Bedding
Primary foliation, plutonic rocks

From A. Sutherland Brown, 1958-63

GOLDEN DYKE JOINT VENTURE

REGIONAL GEOLOGY

SKEENA M.D., B.C. 103 F/9

Scale: 1:125,000 Date: OCT/88

FAIRBANK ENGINEERING LTD. Proj. No. 166-88 Fig. No. 3

7. GEOCHEMISTRY

In 1988 crosslines 88+00W, 86+00W, 84+00W, 82+00W were cut along the 1986 STIB Grid base line (100+00N) extension from 97+00N to 101+00N. These crosslines were sampled at 25 metre intervals plus samples were taken on existing line 89+00W from Station 98+00N to 100+00N at 25 metre intervals. The 76 samples were taken from B horizon material at depths of approximately 30-40 centimetres. They were analyzed for gold, copper, arsenic and antimony at Noranda's Laboratory, 1050 Davie St., Vancouver, British Columbia.

Analytical techniques are outlined in APPENDIX A and the certificates of analysis are in APPENDIX B. Sample locations and associated values are plotted on FIGURE 4.

Stream sediment heavy mineral samples (GDP 1 to 5) were taken to assess the ability of this technique to test for anomalous gold in the 1988 sampling area. Heavy mineral samples were sieved to -80 mesh material in the field. At each location enough -80 mesh material was produced to fill a standard Kraft paper silt/soil sample bag. The samples were sent to Min-En Laboratories, 705 West 15th street, North Vancouver, for magnetic separation and analysis of the non-magnetic fraction. Elements analyzed for were gold, silver, copper, lead, zinc, arsenic, antimony and mercury. Gold and silver were determined by atomic absorption and the others by Inductively Coupled Plasma techniques.

The analytical techniques are outlined in APPENDIX A, the certificates of analysis are in Appendix B, and the sample locations and associated values are plotted on FIGURE 4.

8. RESULTS AND CONCLUSIONS

The 1988 soil geochemical results show no elevated values for gold, copper and antimony. Contouring of the plotted arsenic values indicates a continuation of the 1986 anomaly into the 1988 sampling area. This zone decreases in size and appears to terminate before reaching line 82+00W, thereby delineating the area of interest.

Stream sediment heavy mineral sampling generally corroborate the soil sampling results and present two exploration targets. Samples GDP-4 and GDP-5 contain anomalous arsenic values relative to the other, heavy mineral samples, confirming the limits to the arsenic soil anomaly. Sample GDP-4 is strongly anomalous with the highest gold value of 594 ppb, the highest mercury value of 138000 ppb and the second highest arsenic value of 16326 ppm. This sample suggests a gold exploration target between lines 86+00 W and 88+00 W and stations 97+00 N to 100+00 N. Sample GDP-3, whose drainage is from the east away from the grid area, contains high silver (16.8 ppm) and mercury (11500 ppb). These values require further evaluation upstream.

9. REFERENCES

Sutherland-Brown, A., 1968. "Geology of the Queen Charlotte Islands, B.C." Bulletin 54, B.c. Department of Mines and Petroleum Resources, 226p.

Wilson, R.G., Britton, J.M., Bradish, L.C., 1986. "Report on Geological, Geochemical, Geophysical Surveys On The Golden Dyke Joint Venture." Assessment report #15325 for Golden Dyke Joint Venture. 42pp.

APPENDIX A

ANYALYTICAL PROCEDURES

ANALYTICAL METHOD DESCRIPTIONS FOR GEOCHEMICAL ASSESSMENT REPORTS

The methods listed are presently applied to analyse geological materials by the Noranda Geochemical Laboratory at Vancouver.

Preparation of Samples

Sediments and soils are dried at approximately 80°C and sieved with a 80 mesh nylon screen. The -80 mesh (0.18 mm) fraction is used for geochemical analysis.

Rock specimens are pulverized to -120 mesh (0.13 mm). Heavy mineral fractions (panned samples * from constant volume), are analysed in its entirety, when it is to be determined for gold without further sample preparation.

Analysis of Samples

Decomposition of a 0.200 g sample is done with concentrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. Pulps of rock or core are weighed out at 0.4 g and chemical quantities are doubled relative to the above noted method for digestion.

The concentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, V and Zn can be determined directly from the digest (dissolution) with a conventional atomic absorption spectrometric procedure. A Varian-Techtron, Model AA-5 or Model AA-475 is used to measure elemental concentrations.

Elements Requiring Specific Decomposition Method:

Antimony - Sb: 0.2 g sample is attacked with 3.3 ml of 6% tartaric acid, 1.5 ml conc. hydrochloric acid and 0.5 ml of conc. nitric acid, then heated in a water bath for 3 hours at 95°C. Sb is determined directly from the dissolution with an AA-475 equipped with electrodeless discharge lamp (EDL).

Arsenic - As: 0.2 - 0.3 g sample is digested with 1.5 ml of perchloric 70% and 0.5 ml of conc. nitric acid. A Varian AA-475 equipped with an As-EDL is used to measure arsenic content in the digest.

Barium - Ba: 0.1 g sample digested overnight with conc. perchloric, nitric and hydrofluoric acid; Potassium chloride added to prevent ionization. Atomic absorption using a nitrous oxide-acetylene flame determines Ba from the aqueous solution.

Bismuth - Bi: 0.2 g - 0.3 g is digested with 2.0 ml of perchloric 70% and 1.0 ml of conc. nitric acid. Bismuth is determined directly from the digest with an AA-475 complete with EDL.

Gold - Au: 10.0 g sample is digested with aqua regia(1 part nitric and 3 parts hydrochloric acid). Gold is extracted with MIBK from the aqueous solution. AA is used to determine Au.

Magnesium - Mg: 0.05 - 0.10 g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taken to reduce the concentration to within the

range of atomic absorption. The AA-475 with the use of a nitrous oxide flame determines Mg from the aqueous solution.

Tungsten – W: 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

Uranium – U: An aliquot from a perchloric-nitric decomposition, usually from the multi-element digestion, is buffered. The aqueous solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex).

* N.B. If additional elemental determinations are required on panned samples, state this at the time of sample submission. Requests after gold determinations would be futile.

LOWEST VALUES REPORTED IN PPM

Ag – 0.2	Mn – 20	Zn – 1	Au – 0.01
Cd – 0.2	Mo – 1	Sb – 1	W – 2
Co – 1	Ni – 1	As – 1	U – 0.1
Cu – 1	Pb – 1	Ba – 10	
Fe – 100	V – 10	Bi – 1	

EJvL/ie
March 14, 1984

PHONE: (604) 980-5814 or 988-4524

TELEX: 04-352828

MIN-EN Laboratories Ltd.

Specialists in Mineral Environments

Corner 15th Street and Bewicke
705 WEST 15TH STREET
NORTH VANCOUVER, B.C.
CANADA V7M 1T2

ASSESSMENT REPORT FOR:

HEAVY MINERAL SAMPLING AND CONCENTRATIONS

A large sample is collected from stream sediments or soils big enough to yield a minimum of 0.5 kg of the desired minus fraction. After sieving through any of the sieve mesh sizes they are adapted for the survey. After seiving the samples, the minus fraction is grinded to -80 mesh.

Then 0.4 kg of sample is weighed into a suitable centrifuge containers. The prepared concentrations of liquids are added to obtain a 3.1 specific gravity flotation.

The heavy fractions are then washed cleaned and dried. After drying the samples they are separated . The sink float Heavy Minerals are separated into Magnetic and Non Magnetic fractions and both fractions are weighed. The percent of the Magnetic and non Magnetic fractions are calculated and reported with the analytical data.

The analysis are than carried out in the ususal analytical manner by I.C.P. or A.A. method.

APPENDIX B

CERTIFICATES OF ANALYSIS

NORANDA VANCOUVER LABORATORY

PROPERTY/LOCATION: GOLDEN DYKE

B-1

CODE : 8808-090

Project No. : 127 Sheet: 1 of 2 Date rec'd: AUG 17
Material : 85 SOILS Geol.: R.W. Date compl: SEP. 06
Remarks :

Values in PPM, except where noted.

T. T. No.	SAMPLE No.	Cu	As	Sb	PPB Au
2	8200W - 9700N	38	74	4	10
3	9725	28	30	6	10
4	9750	22	56	4	10
5	9775	12	40	6	10
6	9800	12	32	4	10
7	9825	22	6	8	10
8	9850	14	1	4	10
9	9875	24	10	6	10
10	9900	16	16	6	10
11	9925	32	20	8	10
12	9950	30	16	6	10
13	9975	36	10	6	10
14	10000	32	4	8	10
15	10025	28	52	8	10
16	10050	38	6	6	10
17	10075	36	14	6	10
18	8200W - 10100N	22	58	6	10
19	8400W - 9700N	24	2	6	10
20	9725	26	26	6	10
21	9750	56	300	4	10
22	9775	42	100	4	10
23	9800	36	230	2	10
24	9825	32	50	1	10
25	9850	24	14	1	10
26	9875	50	70	1	10
27	9900	30	74	1	10
28	9925	14	2	2	10
29	9950	42	160	4	10
30	9975	12	60	2	10
31	10000	18	24	4	10
32	10050	24	80	6	10
33	10075	28	62	5	10
34	8400W - 10100N	28	16	5	10
35	8600W - 9700N	16	100	4	10
36	9725	20	18	4	10
37	9750	10	26	6	10
38	9775	18	34	1	10
39	9800	40	100	4	10
40	9825	52	120	4	10
41	9850	48	130	2	10
42	9875	16	170	2	10
43	9900	38	100	6	10
44	9925	18	70	2	10
45	9950	34	90	4	10
46	9975	44	90	4	10
47	10000	50	190	1	10
48	10025	20	44	4	10
49	8600W - 10050N	64	70	1	10

T. T. No.	SAMPLE No.	Cu	Ag	Sb	PPB Au	8808-090 Pg. 2 of
50	8600W - 10075N	28	150	2	10	
51	8600W - 10100N	50	86	4	10	
52	8800W - 9700N	22	270	4	10	
53	9725	6	38	4	10	
54	9750	6	230	4	10	
55	9775	12	950	2	10	
56	9800	12	310	4	10	
57	9825	20	280	4	10	
58	9850	24	180	6	10	
59	9875	20	52	2	10	
60	9900	48	28	1	10	
61	9925	48	80	1	10	
62	9950	24	46	1	10	
63	9975	50	170	2	10	
64	10000	36	400	1	10	
65	10025	38	170	6	10	
66	10050	86	150	1	10	
67	10075	52	54	1	10	
68	8800W - 10100N	42	98	1	10	
69	8900W - 9800N	20	30	2	10	
70	9825	22	50	6	10	
71	9850	36	350	2	10	
72	9875	26	720	6	10	
73	9900	22	2000	4	10	
74	9925	34	2300	24	10	
75	9950	34	2200	10	10	
76	9975	40	770	10	10	
77	8900W-10000N	44	210	8	10	

COMPANY: NORANDA EXPLORATION CO. NIM-EN LABS ICP REPORT (ACT:F31) PAGE 1 OF 1
PROJECT NO: FAIRBANK 88-06-090 706 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2 FILE NO: 8-1336/P1
ATTENTION: (604)980-5814 OR (604)988-4524 * TYPE HEAVY MINERAL * DATE:AUGUST 30, 1988

(PPM)	GAP-1-HB N-HAS	GAP-2-HB N-HAS	GAP-3-HB N-HAS	GAP-4-HB N-HAS	GAP-5-HB N-HAS
AG	.3	.5	16.8	11.7	3.5
AS	43	135	991	16326	28699
CU	2	115	136	216	144
PB	2	26	89	106	546
SB	9	4	70	68	67
ZN	47	106	109	95	378
AU-PPB	5	20	60	594	65
HG-PPB	37000	5450	11500	138000	9500
HWT	.93	.46	.11	.17	.39

APPENDIX C

STATEMENT OF COSTS

APPENDIX C

STATEMENT OF COSTS

Personnel			
S. Courte, Sr. Field Asst	Aug 11-15	1160.00	
G. Hoekstra, Field Asst	Aug 11-15	890.00	
T. Holgate, Field Asst.	Aug 11-15		
	1/2 Day Aug 17	979.00	
M. Lich, Field Asst.	Aug 11-15		
	1/2 day Aug 17	924.00	
B. Fairbank	Aug 3-5	180.00	
			4133.00
Rentals			
Budget Rent-A-Truck 5 days		488.10	
			488.10
Disbursements			
Room & Board		763.97	
Fuel and Ferry		89.00	
Consumable field supplies, communication		362.71	
Freight		261.31	
Air fares		1095.85	
Analytical Noranda Laboratory		697.00	
Min-En Laboratory		194.75	
Report and reproduction		2000.00	
			5463.59
			10084.69

APPENDIX D

STATEMENTS OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Reginald L. Faulkner of #102 - 1255 West 12th Avenue, Vancouver, British Columbia hereby certify that:

1. I am an exploration geologist and a graduate of the University of British Columbia, with a B.Sc. in Physical Geography/Geology in 1974 with additional course work in Geology in 1977-79 and 1982-83.

2. I obtained a M.A.Sc. from the University of British Columbia in Mining and Mineral Process Engineering in 1988, emphasizing mineral economics.

3. I have practiced as a geologist since 1979 for companies, including RIOCANEX, Vancouver, B.C.; Denison Mines Limited, Vancouver, B.C., Duval International Corporation, Vancouver B.C.; Trigg, Woollett, Olsen Consulting Limited, Edmonton, Alberta; Terra Mines Limited, Edmonton, Alberta, and Fairbank Engineering Limited, Vancouver, B.C.

4. The details of this report are based on work done by Fairbank Engineering from August 11 to August 30, 1988.

Reginald L. Faulkner, B.Sc. M.A.Sc.

October 1988

STATEMENT OF QUALIFICATIONS

I, Brian D. Fairbank, P.Eng. hereby certify that:

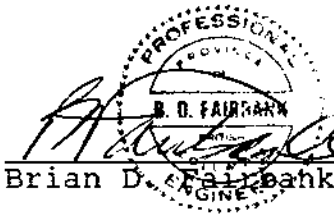
1. My residence address is 320 East Windsor Road, North Vancouver, B.C. V7N 1K1.

2. I am a consulting geologist and principal in the firm of Fairbank Engineering Ltd. with offices at #1201 - 675 W. Hastings Street, Vancouver, B.C. V6B 1N2

3. I hold a B.A.Sc. in Geological Engineering from the University of British Columbia. I have been practicing my profession since 1973, and I am a member of the Association of Professional Engineers (Geological) of the Province of British Columbia.

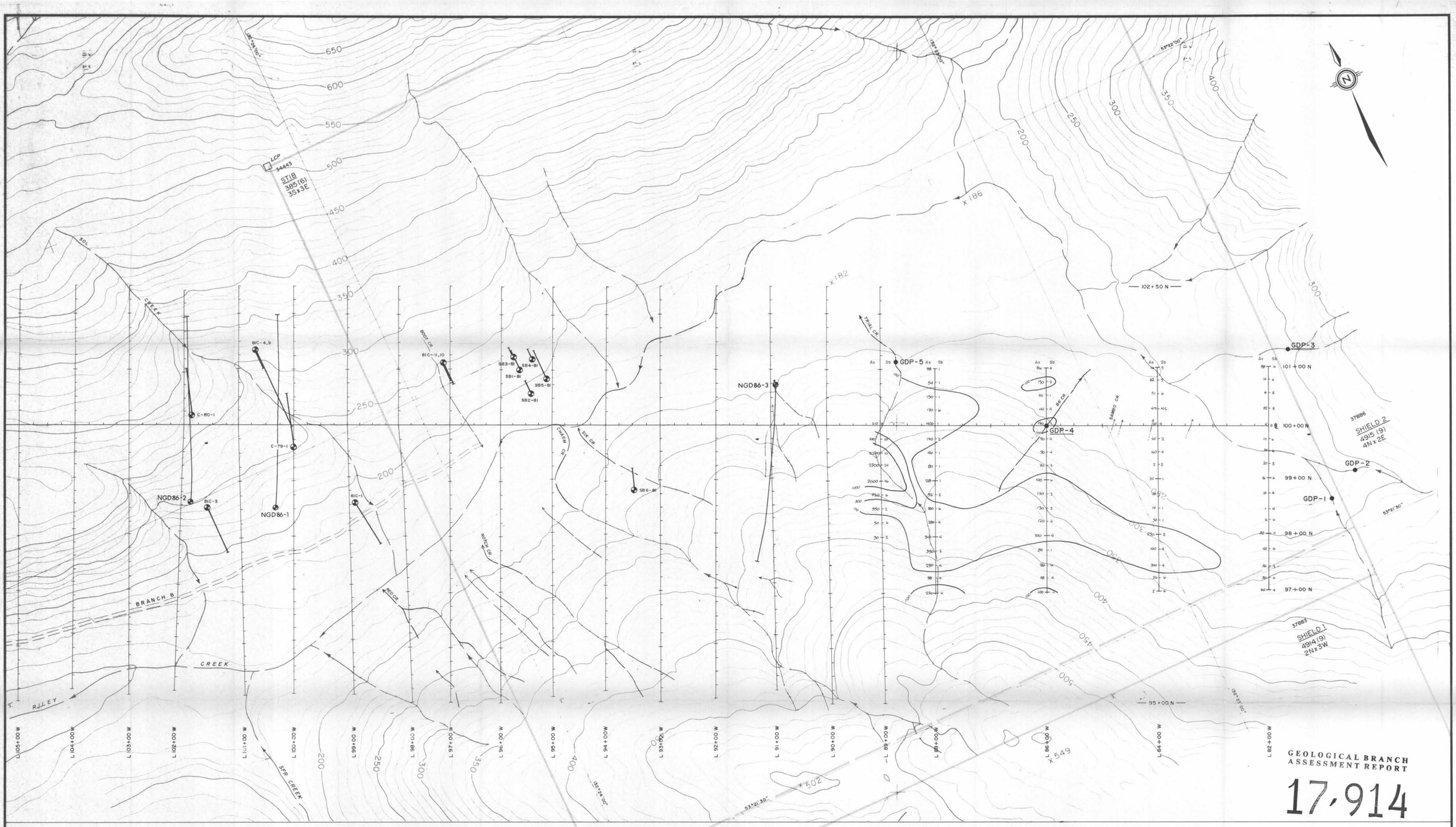
4. I am a Fellow of the Geological Association of Canada and a member of the Canadian Institute of Mining and Metallurgy.

5. I have supervised the work on the Golden Dyke Project.



Brian D. Fairbank, P.Eng.

October 1988



HEAVY MINERAL SAMPLE VALUES

SAMPLE NUMBER	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppb	HM %
GDP-1-NO N-MAG	5	.3	2	2	47	43	9	37000	.93
GDP-2-NO N-MAG	20	.5	115	26	106	155	4	5450	.46
GDP-3-NO N-MAG	60	16.8	136	89	109	991	70	11500	.11
GDP-4-NO N-MAG	594	11.7	216	106	95	16326	68	13800	.17
GDP-5-NO N-MAG	65	3.5	144	546	378	28690	67	9500	.59

SYMBOLS – OTHER

- Longitude and Latitude Co-ordinates
- Grid Line : Full Dash = 100 Metre Interval; Partial Dash = 25 Metre Interval
- 95+00N — Grid Co-ordinate
- Creek
- Road
- 400 — Topographic Contour : 10 Metre Interval
- SB2-81 — DDH Collar Location , Showing Surface Trace of Hole
- 405 × — Spot Elevation in Metres
- GDP-1 ● — Heavy Mineral Sample Location / Anomalous
- 2000 / 48 — Soil Sample Values: Antimony (Sb) ppm; Arsenic (As) ppm
- Contour Intervals: 100/500/1000 ppm As

BASE FROM:
NORANDA EXPLORATION CO. LTD.
VANCOUVER

50 25 0 50 100 150 200 METRES

GEOLOGICAL BRANCH
ASSESSMENT REPORT

17,914

R. B. FAIRBANK
PROFESSIONAL ENGINEER

GOLDEN DYKE JOINT VENTURE

SAMPLE LOCATIONS 1988

SKEENA M.D., B.C.

DATE	
REVISED	OCT/88
PROJECT No	166-88
FIGURE No	
SURVEY BY:	NTS: 103 F/7E, 8W
DRAWN BY:	SCALE 1:2500

FAIRBANK ENGINEERING LTD.