86-773-15325

REPORT ON 09/87

GEOLOGICAL, GEOCHEMICAL, GEOPHYSICAL

SURVEYS

ON THE

GOLDEN DYKE JOINT VENTURE

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

RILEY GROUP		PHANTOM GROUP	
Point 1-2	Ant	Stib	Ceasar
Beer Strike	Shields	Shield 1-5	Not All There
Shaft 1-2	Hemlock 1-2		
Riley 1-2	Rumplestiltskin 5		
Sol 1-4			

N.T.S. 103F/7E & 8W

53° 21.9' N 123° 24.7' W

SKEENA MINING DIVISION

Owners: B.D. Fairbank
J.S. Christie
Umex Inc.
Hycroft Resources and
Development Corporation
G.G. Richards

Authors: R.G. Wilson
J.M. Britton
L.C. Bradish

Operator: Noranda Exploration Co., Ltd. (N.P.L.)

Date: December 1986

FILMED

CLAIM OWNERSHIP

CLAIM NAME	OWNER
ANT 384(6), STIB 385(6)	UMEX INC.
NOT ALL THERE 763(8) CEASAR 764(2)	Gordon Richards
BEERSTRIKE 659(7) SHIELDS 511(2) SOL 1 to 4 439(9),440(9),441(10),442(10) RUMPLESTILTSKIN #5 1185(3) HEMLOCK 1 & 2 509(2), 510(2)	James S. Christie
RILEY #1 443(10) RILEY #2 444(10)	HYCROFT RESOURCES AND DEVELOPMENT CORPORATION
SHIELD #1 4914(9) SHIELD #2 4915(9) SHIELD #3 4916(9) SHIELD #4 4917(9) SHIELD #5 4918(9) POINT #1 4919(9) POINT #2 4920(9) SHAFT #1 4921(9) SHAFT #2 4922(9)	B.D. Fairbank

ADDRESS FOR ALL OF THE ABOVE

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BOX 2380
VANCOUVER, B.C.
V6B 3T5

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1.0 INTRODUCTION

This report encompasses work completed during November/December 1985 and August/September 1986 on the Riley and Phantom Groups, on Graham Island, Queen Charlotte Islands. The Riley and Phantom Groups cover a contiguous set of 147 2-Post and Modified Grid claim units stretching 15 kilometers NW-SE along the Riley Creek alteration trend in the Renell Sound area. The Riley Creek alteration trend is an epithermal system in Jurassic Yakoun Formation volcaniclastics that is related to feldspar porphyry dyke intrusions of possible Tertiary aged Masset Formation. A number of zones of stronger alteration and mineralization, including gold, were explored, the details of which are contained herein. Recommendations including deep drilling of the Courte-Stib zones are made based on the results of the present studies.

1.1 Location and Access

The Golden Dyke Joint Venture Property is situated 30 km NW of Queen Charlotte City on Graham Island, Queen Charlotte Islands, B.C The claims stretch approximately 15 km from Gospel Point on Renell Sound southeast along Riley Creek to the headwaters of Phantom Creek.

Access to the property is via the MacMillan Bloedel logging road mainline north from Queen Charlotte City to Phantom Creek and then west via Phantom Main to Bonanza Main in the Renell Sound area. Bonanza Main and subsidiary branches provide good access to most parts of the property.

Helicopter access to higher portions of the property is available from Sandspit on Moresby Island. Round trip ferry time is .7 hour by Bell Jet Ranger 206B.

Crews were accommodated in an eight person bunkhouse belonging to Ray Fornier of Rough Cut Enterprises Ltd., Queen Charolotte City. The camp is located at the lower bridge on Bonanza Creek at the northwestern end of the claims.

1.2 Topography and Physiography

The topography over the length of the Golden Dyke claims varies from flat river swamp to very steep hillsides with slopes up to 60°. Hillsides are moderately to deeply incised by ravines and have gently rolling summits. The Riley Creek valley is generally flat bottomed, gently sloping and ranges in width from 100m wide near its headwaters to over 1 km wide near tide water.

The Golden Dyke property lies within the Queen Charlotte Ranges subsection of the Queen Charlotte Mountains division of the Insular Mountains physiographic zone. This zone is characterized by rugged, glacially carved relief to 3500' elevation.

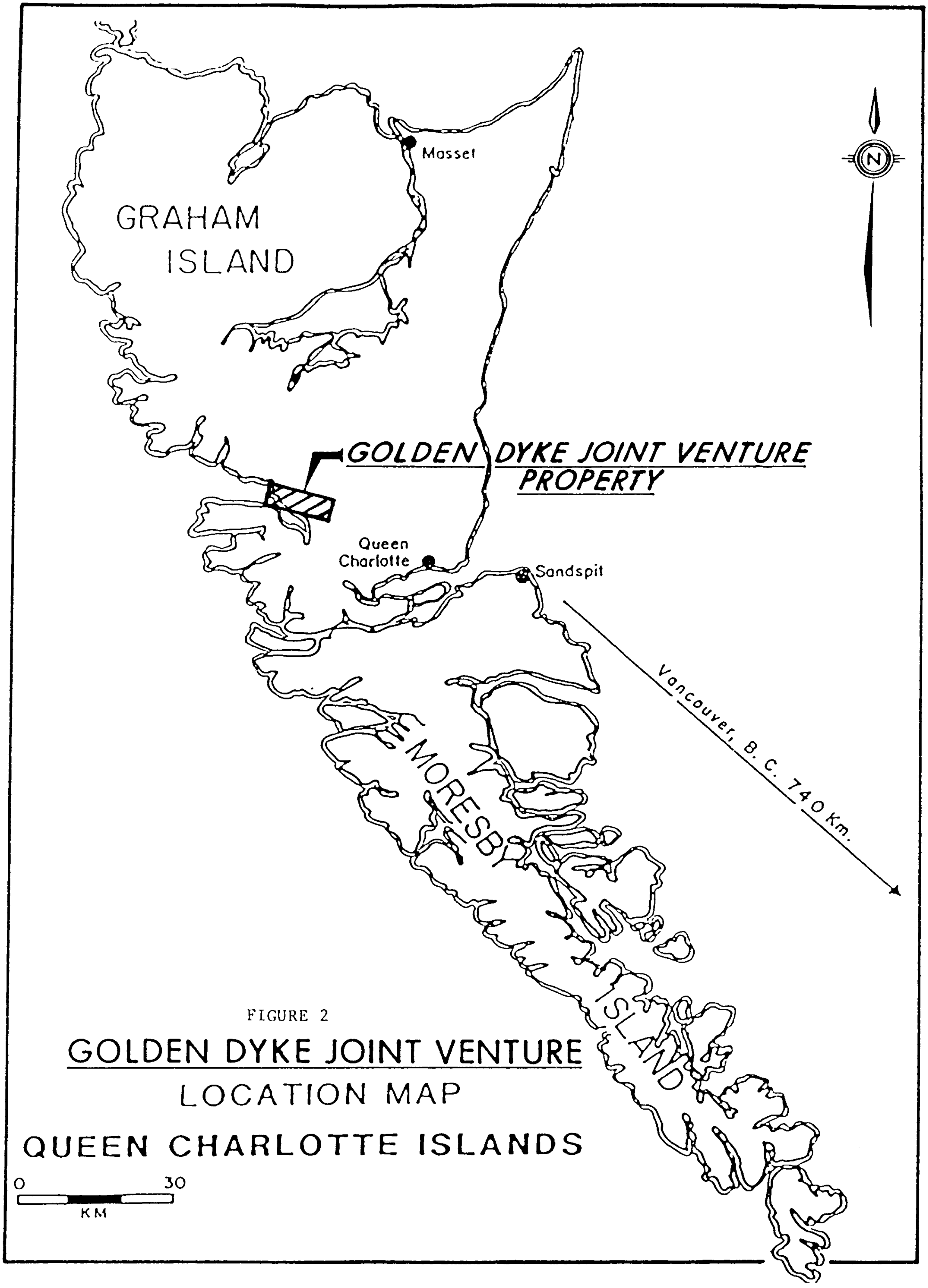


FIGURE 2

GOLDEN DYKE JOINT VENTURE

LOCATION MAP

QUEEN CHARLOTTE ISLANDS

1.3 Climate and Vegetation

The claims lie within the coastal rain forest climatic zone with weather patterns dominated by a warm, damp summer and cool, very wet fall, winter and spring. Heavy rain is possible throughout the year although July, August and September are considered to be the driest months. Freezing temperatures and short lived snows are possible from November to April.

The November to December 1985 programme encountered freezing conditions with overnight temperatures to -26ºC and up to 40 cm of snow accumulation. The August 1986 programme enjoyed an unusually dry and sunny summer season.

Vegetation reflects the amount of rainfall with rain forests dominated by spruce, cedar and hemlock. Mature timber has open, windfall-strewn forest floors blanketed in a thick moss cover. Foresty cutblocks are replanted with spruce and hemlock, with natural cedar regeneration. Second growth plots are very thickly vegetated, often choked by fast growing alder. Clear-cut blocks represent 30-40% of the claim area.

1.4 Claims

The Golden Dyke project consists of two groups of claims totalling 147 equivalent claim units covering 3662.7 hectares. The Riley Group (grouped September 8, 1986) is made up of 90 modified grid claim units in 13 claims and 3 two-post claims. The Phantom Group (grouped September 8, 1986) consists of 54 modified grid claim units in 8 claims. All claims lie within the Skeena Mining Division. Table 1 below is a summary of the claim names and important dates.

1.5 Previous Work

Earliest known work in the Riley Creek valley was by prospectors Victor Courte, Robert Mickle and Solomon Wilson who first staked the Courte Zone in 1948. In 1974 Quintana Minerals Ltd. completed geochemical and geological surveys on the Courte Zone. Umex located the Ant and Stib claims adjacent to the Courte showing in 1977 and by 1981 had completed geological, geochemical and airborne geophysical surveys and six short diamond drill holes.

JMT Services Corp. optioned the Courte showing claims in 1977 and assigned part interest to Chevron Canada Limited. Geological, geochemical surveys by JMT for Chevron in 1977 and 1978 were followed up by drilling 15 holes in 1979, 1980 and 1981 before Chevron terminated their option in 1983.

TABLE 1: CLAIM INFORMATION

Claim Name	Record Number	# of Units	Record Date	Record Year	Area (Hectares)	Expiry
RILEY GROUP						
Point 1	4919(9)	12	Sep 10	1985	300	1988
Point 2	4920(9)	8	Sep 10	1985	200	1988
Beerstrike	659(7)	15	Jul 24	1978	375	1994
Shaft 1	4921(9)	2	Sep 10	1985	50	1988
Shaft 2	4922(9)	2	Sep 10	1985	50	1988
Riley 1	443(10)	4	Oct 03	1977	100	1994
Riley 2	444(10)	12	Oct 03	1977	300	1994
Sol 1	439(9)	2	Sep 16	1977	50	1994
Sol 2	440(9)	2	Sep 16	1977	50	1994
Sol 3	441(10)	8	Oct 03	1977	200	1994
Sol 4	442(10)	8	Oct 03	1977	200	1994
Ant	384(6)	9	Jun 21	1977	225	1993
Shields **	511(2)	1	Feb 10	1978	20.9	1994
Hemlock 1 **	509(2)	1	Feb 10	1978	20.9	1994
Hemlock 2 **	510(2)	1	Feb 10	1978	20.9	1994
Rumplestiltskin 5	1185(3)	6	Mar 29	1979	150	1994
PHANTOM GROUP						
Stib	385(6)	9	Jun 21	1977	225	1993
Shield #1	4914(9)	6	Sep 10	1985	150	1988
Shield #2	4915(9)	8	Sep 10	1985	200	1988
Shield #3	4916(9)	4	Sep 10	1985	100	1988
Shield #4	4917(9)	15	Sep 10	1985	375	1988
Shield #5	4918(9)	2	Sep 10	1985	50	1988
Ceasar ***	764(9)	2	Sep 08	1978	50	1988
Not All There	763(9)	8	Sep 08	1978	200	1991
					3662.7	

** Two-post claims
*** sic

In 1985 a joint venture between Noranda Exploration Company, Limited, Umex Inc., and Noramex Minerals Inc. acquired by option and staking the mineral rights to the entire 15 km of the Riley Creek alteration trend. In late 1985 the Joint Venture re-established and sampled a grid over the Courte area. All previous drill holes were re-logged to establish a consistent field rock nomenclature across the property. Results of that survey are detailed in a Noranda company report entitled "1985 Summary Report, Golden Dyke Joint Venture" by B.K. Bowen (February 1986). Table 3 summarize all historical work on the Riley Creek alteration trend as reported in various government assessment, and company reports as were available to the joint venture. The present report describes all work completed during the November and December 1985 and August-September 1986 projects.

TABLE 2: HISTORICAL WORK: RILEY CREEK ALTERATION TREND

Year \ Area	Gospel Point	Strike	Needles	Gumbo	Branch 8	Courte	Stib	Shield	Phantom
Pre 1974						VC/SW/BM Pros			
1974						Ontn Geol Geoc(P,R)			
1977						Chev (JMT) Geol Geoc(P,R)	Umex Geoc(P)		
1978			JMT Geol Geoc (P,S,R)	JMT Geol Geoc (P,S,R)	JMT Geol Geoc (P,S,R)	Chevron (JMT) Geoc (P,S,R) Geol	Umex Geoc(P)		JMT (Prism) Geoc(S)
1979	Umex Plcr Geol Geoc(P,R,S) Geop(AB)(VLF)	Umex Chevr Geop (AB) Geol Geoc (P,R)	Umex Geop(AB)	Umex Geop(AB)	Umex Geop(AB)	Umex Geop(AB)	Umex Geop(AB)	Umex Geop(AB)	Umex JMT Geop(AB) Geol Geoc(P,R)
1980			Chev Dril	Chev Geoc(P,R) Geol Dril	Chev Geoc(P,R)	Chev Geoc(P,R) Geol	Umex Geol Geoc(R)	JMT Geol Geoc(P,S,R)	JMT Geol Geoc(P,S,R)
1981			Chev Geoc(P,R) Geol	Chev Geoc(P,R) Geol Dril	Chev Geoc(P,R) Geol Dril	Chev Geoc(P,R) Geol Dril	Umex Geol Geoc(P) Dril	JMT Umex Geol Geoc(P,R)	JMT Geoc(R,S) Geol
1982									JMT Geol Geoc(P,R)
1983			HYCR Geol Geoc(R,P)						JMT Geol Geoc(P,R)
1984									
1985						GDJV Geol Geoc	GDJV Geol Geoc		
1986	GDJV Geoc(P,R)					GDJV Geol Geoc(P,) Geop (IP,Mag) Dril	GDJV Geol Geoc(P,R) Geop (IP,Mag) Dril		GDJV Geoc(P,S)

KEY FOR TABLE 2

COMPANIES

CHEV	:	Chevron Standard Ltd.
GDJV	:	Golden Dyke Joint Venture Noranda Exploration Company Limited (No Personal Liability) Umex Inc. Noramex Minerals Inc.
HYCR	:	Hycroft Resources and Development Corp.
JMT	:	JMT Services Ltd.
PLCR	:	Placer Development Ltd.
QUTN	:	Quintana Minerals Corporation
UMEX	:	Umex Corporation Ltd.
VC/SW/BM	:	Victor Courte/Solomon Wilson/Bob Mickle (Prospectors)

WORK TYPE

PROS	:	Prospecting
GEOL	:	Geology
GEOC	:	Geochemistry
P	:	Soil
S	:	Silt
R	:	Rock
GEOP	:	Geophysics
AB	:	Airborne
IP	:	Induced Polarization
MAG	:	Magnetometer
VLF	:	VLF Electromagnetics
DRIL	:	Diamond Drilling

1.6 Personnel

The writers acknowledge the effort and contributions of the project crew (Table 3) who worked in difficult terrain in weather that was at times less than hospitable.

TABLE 3: Crew Personnel

NAME	POSITION	PROJECT DATES	MAN-DAYS
NOV-DEC 1985			
B. Bowen	Project Geologist	Nov 2 - Dec 20, 1985	49
J. Britton	Geologist	Nov 2 - Dec 20, 1985	49
J. Robinson	Field Assistant	Nov 2 - Dec 14, 1985	43
P. Roberts	Field Assistant	Nov 2 - Dec 14, 1985	43
G. Mowat	Field Assistant	Nov 2 - Dec 14, 1985	43
S. Courte	Field Assistant	Nov 12 - Dec 14, 1985	33
AUG-SEPT 1986			
R. Wilson	Project Geologist	Aug 1 - Sept 30, 1986	39
J. Britton	Geologist	Aug 5 - Sept 30, 1986	44
R.J. Robinson	Geological Assistant	Aug 14 - Sept 9, 1986	27
S. Courte	Field Assistant	Aug 9 - Sept 10, 1986	33
D. Hutchinson	Field Assistant	Aug 9 - Sept 4, 1986	27
K. Lillie	Geophysical Operator	Aug 24 - Sept 1, 1986	9
A. Lippert	Geophysical Operator	Aug 24 - Sept 1, 1986	9
M. Porter	Cook	Aug 14 - Sept 9, 1986	27

Management Committee members were as follows:

D. Bent	Noranda (1985)
G. Dirom	Noranda (1986)
F. Felder	Umex
B. Fairbank	Noramex

2.0 TECHNIQUES AND PRODUCTION

2.1 Overview

Exploration programs were conducted in two stages primarily due to the availability of funding and manpower but also to allow for data analysis, reduction and interpretation. The two stages were as follows:

DATES	WORK COMPLETED
November 2 - December 14, 1985	Grid establishment, soil profiles, soil geochemistry, core relogging, geological mapping.
August 1 - September 14, 1986	Road repair, grid extention, soil profiles, soil geochemistry, geological mapping, induced polarization survey, magnetometer survey.

2.2 Road Repair

Access to the Courte-Stib Zones was blocked by several slides across logging road Branch 8 on the Riley 1, Sol 3, and Ant claims. A D-6 cat was employed for 3 days in August 1986 to clear the road of mud and logging debris. Dalby Kendall, a construction contractor from Queen Charlotte City, was contracted to complete the road repairs.

2.3 Grid Construction

A 6.8km cut baseline and 18.75 km of crosslines each 750m in length and spaced 100 m apart were completed in a period of 110 man days. The baseline was cut to a one metre width and marked with flagging. A Wild transit with a built-in magnetic compass was used to establish the baseline. The origin of the baseline was in Sol Creek 50m downstream from the Courte Showings. Baseline stations were at 25m intervals along the line which ran azimuth 297°/117° (magnetic declination 25° east).

Crosslines were established at azimuth 027°/207° and were tight chained, slope corrected, blazed and flagged. A tie-line was established along the Branch 8 logging road to provide crossline control.

Baseline and/or crossline construction occurred on parts of the following contiguous claims: Riley 2, Sol 4, Ant, Shields, Hemlock 1 and 2, Sol 1 and 2, Rumplestiltskin 5 and Stib.

All maps within the Needles to Stib Zones are plotted on orthotopo bases originally produced for Chevron Canada Ltd. Base maps for the Point, and Phantom zones are photoenlarged government 1:50,000 topographic maps.

2.4 Geology

Detailed geological mapping was completed at 1:2500 scale along grid lines, creeks, and road cuts, mainly south of Riley Creek (east of L100W) but also in the vicinity of the Courte and Needles showings. A total of .75 square kilometers was mapped. Geological mapping occurred on the Stib, Sol 1 and 2, Ant, Hemlock 1 and 2 Shields, and Riley 2 claims.

2.5 Geochemistry

The geochemical program consisted of soil profiles, grid soil samples, rock chip samples and slit core sample. Table 4 summarizes the number and type of samples taken at each main zone.

TABLE 4: Geochemical Summary

Zone	Soils		Rock Chip	
	Nov-Dec'85	Aug-Sept'86	Nov-Dec'85	Aug-Sept'86
Gospel Point	Ø	25	Ø	21
Strike	Ø	27		
Courte/Stib	800	241	50	53
Phantom	Ø	49	Ø	Ø
Soil Profiles	40	20	Ø	4
Total	840	362	50	78

Geochemical sampling centered mainly on the Point 2, Shaft 2, Riley 1 and 2, Sol 4, Ant, Shields, Hemlock 1 and 2, Sol 1 and 2, Rumplestiltskin 5, Stib, and Shield 4.

2.6 Geophysics

Magnetometer and Induced Polarization geophysical surveys were conducted on the Courte-Stib Zone grid. Table 5 outlines the production for both surveys. Geophysical survey lines were completed on the Ant, Hemlock 2, Sol 1 and 2, and Stib claims.

TABLE 5: Geophysical Summary

Type of Survey	Aug-Sept '86	Total
Magnetometer	17.450 km	17.450
Induced Polarization *	2.720 km	2.720 km

*The Aug-Sept '86 survey recorded values to N6 (six separations).

3.0 GEOLOGY

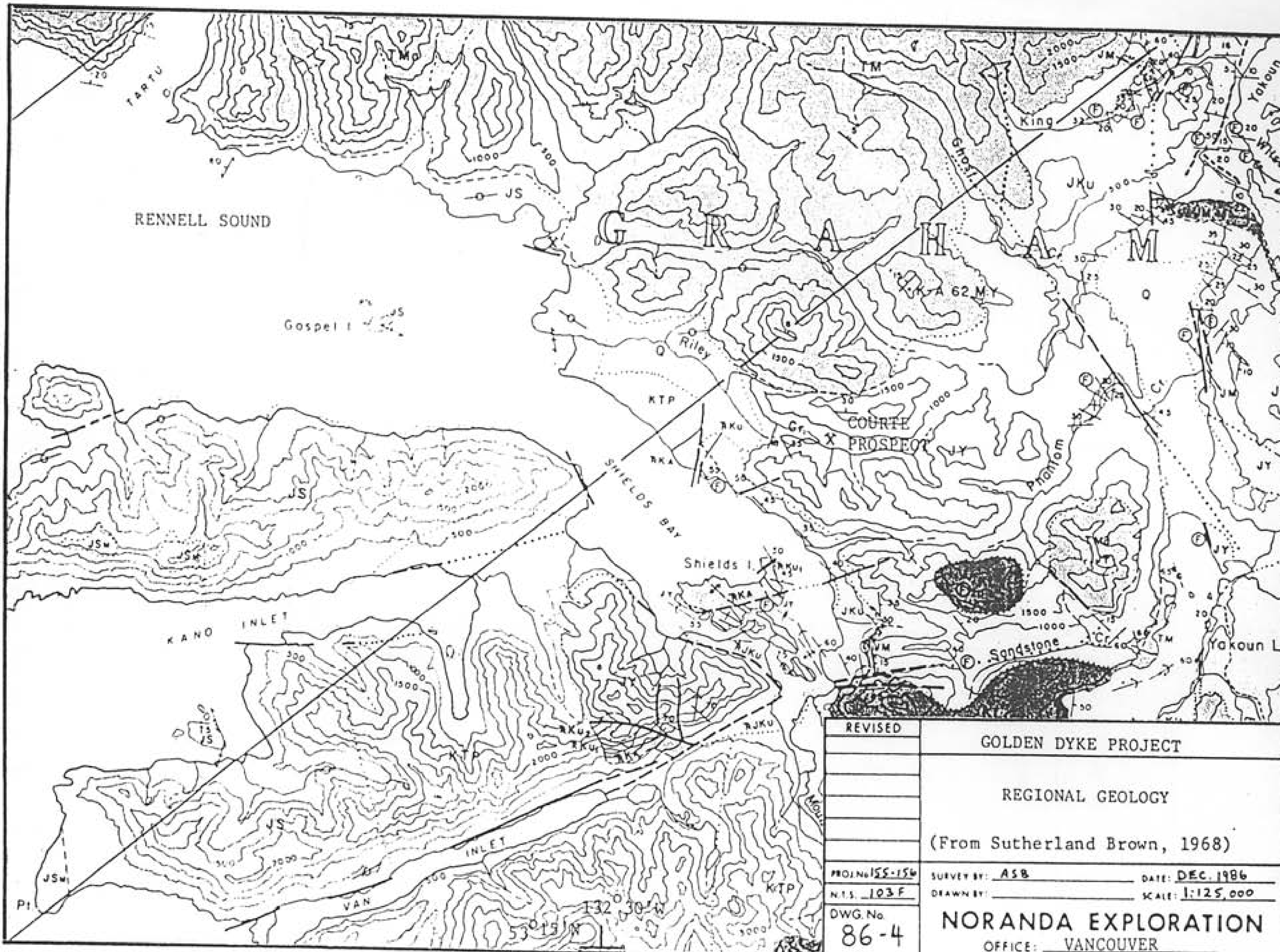
3.1 Geologic Setting

The regional geology has been mapped at 1:125,000 scale by Sutherland Brown (1968, Figure 86-4). Golden Dyke Project claims are situated on the faulted western limb of a broad synclinorium that extends the breadth of Graham Island. The property is underlain by sedimentary and volcanic strata of Upper Triassic to Lower Tertiary age that have been intruded by plutons and dykes of Jurassic to mid Tertiary age. Folding is limited to tilting of Mesozoic strata to give moderate to steep easterly dips. Tertiary strata are more or less flat-lying. No regional faults have been mapped in the area of the claims apart from short northeast striking to normal faults with small right lateral off sets, (Figure 86-4). North-northwesterly faults of regional extent do occur, however, to the south and east of the property and are part of what is termed the Rennell Sound - Louscoone Inlet Fault Zone of Sutherland Brown (1968).

The main unit underlying the property is the Yakoun Formation, a thick sequence of pyroclastic rocks with intercalated, waterlain sedimentary rocks of Middle to Upper Jurassic age. The Yakoun Formation is underlain by flaggy limestone and shales of Upper Triassic to Lower Jurassic Kunga formation, exposed off the property along Shields Bay. Overlying the Yakoun Formation, in the southeast, are conglomerates of Cretaceous Longarm Formation and in the north, volcanic flows and tuffs of Tertiary Masset Formation. Karmutsen Formation (Upper Triassic) is in fault contact with Yakoun Formation, and is exposed only on the south side of Shaft 2 and Riley 2 claims.

Mesozoic strata have been intruded by Jurassic(?) syn-tectonic plutons and Cretaceous - Tertiary post-tectonic plutons, which are exposed along lower Riley Creek (Shaft 2 and Beerstrike claims) and the coast (Point claims). Large hypabyssal intrusions coeval with Masset extrusives are exposed southeast of the property near the headwaters of Phantom Creek. Dykes related to Masset Formation hypabyssal stocks, and possibly Mesozoic plutons, have been mapped by previous investigators (Christie and Richards, 1978; Felder, 1980) and are considered to have a genetic relationship with known alteration and mineralization.

The primary exploration targets are areas of Au-Sb-As mineralization, hydrothermal alteration, veining, faulting, hypabyssal intrusions, and anomalous soil geochemistry (Au, As, Hg) that lie along along a WNW-trending zone up to 15 km long and 500m wide, located northeast of Shields Bay in the Phantom and Riley Creek drainages. This zone has been variously referred to as the Riley Creek fault system (Bowen, 1986) and the Rennell - Louscoone fault system (Christie, 1983). The areas of interest along the zone are identified for convenience, by names tied to local features such as topographic or claim names. From east to west these areas are the Phantom, Shield, Stib, Courte, Branch 8, Gumbo, Needles, Strike and Point Zones. This report deals only with work done on the Phantom, Stib, Courte, Gumbo, Needles and Point Zones (Figure 86-3).


RENNELL SOUND
Gospel I.
G R A H A M
COURTE PROSPECT
Riley
SHIELDS BAY
Shields I.
KANO INLET
VAN INLET
Phantom
Sandstone Cr.
Yakoun L.
King
Ghost
132°30'W
53°15'N
REVISED
GOLDEN DYKE PROJECT
REGIONAL GEOLOGY
(From Sutherland Brown, 1968)
PROJ.No. 155-156
N.T.S. 103 F
DWG. No. 86-4
SURVEY BY: ASB
DRAWN BY:
DATE: DEC. 1986
SCALE: 1:125,000
NORANDA EXPLORATION
OFFICE: VANCOUVER

LEGEND FOR FIGURE 86-4

REGIONAL GEOLOGY

(from Sutherland Brown, 1968)

Q	Quaterary alluvium and till.
TM	Tertiary (Paleocene-Eocene) Masset Formation: Subaerial basalt, dacite, rhyolite flows and tephra (TMa,b,e,). Hypabyssal equivalents (TMd,e).
KTP	Cretaceous - Tertiary Post-tectonic Plutons: quartz monzonite; granodiorite; quartz diorite.
KHo	Cretaceous Honna Formation: conglomerate.
KHa	Cretaceous Haida Formation: siltstone; greywacke; conglomerate.
JS	Jurassic (?) Syn-tectonic Plutons: hornblende diorite; quartz diorite.
JSm	Jurassic(?) Migmatite: mixed hornblende diorite and amphibolite.
JY	Jurassic Yakoun Formation: porphyritic andesite agglomerate and flows; lapilli tuff; volcanic sandstone and conglomerate; tuffaceous shale; coal.
JM	Jurassic Maude Formation: argillite; shale; siltstone.
TrJKu	Jurassic and Triassic Kunga Formation: limestone; argillite (includes JKu; TrKu; $TrKu_1$; $TrKu_2$).
TrKa	Triassic Karmutsen Formation: Basalt flows; pillow lavas; tuffs; interlava sedimentary rocks.

3.2 Courte Zone

The data base for the geological description that follows includes: surface mapping in Sol, EH and WH Creeks, and along Branch 8-3, and re-logging of diamond drill core from Holes C79-1, C80-1, 81C-3, 81C-4, 81C-9 to 11, SB1-81 to SB6-81.

3.2.1. Lithology

The Courte Grid is underlain by sediments and volcanics of the Jurassic Yakoun Formation which have been intruded by a number of dacitic feldspar porphyry dykes of possible Tertiary age (Figure 86-5).

Yakoun sediments (Unit 1A) consist of thinly bedded tuff, black argillite and mixed argillite and volcaniclastics. They crop out mainly along Branch 8-3, west of WH Creek.

Yakoun volcanic rocks (Unit 1B) include porphyritic and non-porphyritic andesitic flows and andesitic pyroclastics (tuff, lapilli tuff, and agglomerate). They are shown as undivided on Figure 86-5. Andesite and diorite dykes and/or sills (Unit 1c) were intersected in many of the drill holes and were noted at two localities in the lower reaches of Sol Creek. They may be feeders for andesitic flows that are common in the upper part of the exposed Yakoun section.

Tertiary (?) feldspar porphyry dikes (Unit 2b) have been intersected in drill holes 81C-10, C80-1, 81C-9, and SB3-81 to SB5-81. The dykes occur along a strong fault zone.

The largest dyke crops out in Sol Creek and has been intersected in drill holes C79-1, C-80-1, and 81C-9. The dyke is at least 200 metres long, varies in width from about 20-50 metres and persists to depth to at least 140 metres vertically below the outcrop in Sol Creek. It may be offset by a cross-fault immediately to the east of Sol Creek, based on the fact that drill hole C79-1 terminated abruptly in relatively fresh andesite. Narrower porphyry dykes occur in the lower portions of drill hole 81C-9 (in the structural footwall of the main dyke) and in the top few metres of drill holes SB3-81 and SB4-81 on the Stib claims.

Other possible (2b) dyke occurrences include two small outcrops of rusty weathering, pale grey quartz porphyry dacite on a small tributary of WH Creek and very rusty weathering, pale grey, argillically altered feldspar porphyry which crops out in EH Creek.

3.2.2. Structure

Within the Courte Grid map area, faults are the dominant structural feature. A major fault zone, along which the feldspar porphyry dykes occur, lies to the north of and roughly parallels Base Line 100+00N. This fault zone appears to dip either vertically or near vertically north or south. Width of the zone is on the order of 100 metres where it is cut by drill hole 81C-9.

A subsidiary structure, possibly correlative in drill holes 81C-3, 81C-1 and SB6-81, trends subparallel to the above structure and lies about 200 metres to the south of it. The dip of the structure was not measured in drill core, but is inferred as steep northerly. It may be a splay off the main structure. Maximum width of the fault zone is estimated to exceed 15 metres in drill hole SB-6-81. No feldspar porphyry dykes have been observed in the three drill holes that intersect this structure. Subordinate fault and shear directions are northeasterly and northwesterly. Inferred northerly trending cross-faults may disrupt or offset the main structure.

3.2.3. Alteration

The most prominant alteration features are zones of intense pervasive sericite-clay-carbonate-minor quartz that are intimately associated with major fault zones and feldspar porphyry dykes. The pervasive alteration varies from weak to moderate (patchy), where primary textures (e.g. fragmental, phaneritic) are still recognizable, to intense, where textures become vague and the original lithology cannot be distinguished in hand specimen. Contacts between alteration zones of varying intensity are gradational. Width of the altered zones varies from a few 10s of metres to greater than 70 metres. Field observations suggest that sericite is subordinate to clay, but limited thin section work (Littlejohn, 1984) indicates that sericite is present in greater amounts than clay. Carbonate is present as calcite veinlets and ankerite(?) which is locally pervasive and imparts a distinct tan to buff colouration to the rock. Minor quartz is present as veins and veinlets, as thinly layered chalcedonic veinlets, as weak groundmass disseminations (which in part may be primary), and as strongly silicified zones over narrow widths.

Other alteration features include: pervasive propylitic alteration (chlorite + carbonate) which is widespread throughout the Courte Grid; intensely chloritized and/or argillized gouge material within the major fault zones; a carbonate veinlet stockwork which occurs in several areas near the hangingwall boundary of the main fault zone; and narrow clay alteration envelopes associated with minor faults in the EH Creek area.

One last feature of note, which appears to be of thermal metamorphic and not hydrothermal origin, is the hornfelsed tuffs(?) which crop out in the lower reaches of Sol Creek. The tuffs are strongly fractured, dense, hard (siliceous), brittle, and locally concoidally fractured.

3.2.4. Mineralization

Pyrite is the most abundant and widespread sulphide. In propylitized volcanic rocks exposed in Sol Creek and intersected in the Chevron and Umex drill holes, it generally occurs in amounts from trace to 2%, and in some fault zones, is concentrated in amounts up to 10% or more. Modes of occurrence include disseminations, fracture fillings, in carbonate veinlets and much less commonly, in quartz veinlets. The altered zones generally contain 2-3% pyrite. Greater amounts occur in SB1-81 (up to 5%) and SB6-81 (locally 3-4% and bottoming in greater than 5%).

To the west of the drill area, in EH and WH Creeks, minor pyrite occurs in locally clay altered volcanic rocks, in narrow clay-altered porphyry dykes, in rare quartz veins, as trace amounts in propylitized rocks, and in clay-altered shears and faults.

Minor pyrite also occurs in relatively fresh feldspar porphyry dyke intercepts in the lower portions of 81C-9, in 81C-10, and in the top few metres of SB3-81 and SB4-81. Diorite and andesite dykes also carry minor amounts of pyrite.

Stibnite is the second most common sulphide mineral observed and is found mainly in zones of pervasive sericite-clay-carbonate-(quartz) alteration. In outcrop it is present in the pervasively altered zone exposed in Sol Creek and occurs as veins (either massive or with quartz and pyrite) and disseminations. Visible stibnite in drill core was observed in SB1-81, SB3-81, SB5-81, 81C-1 and 81C-10. It is most abundant in SB1-81 and noted at only one locality in 81C-1. Mode of occurrence include disseminations, fracture fillings (usually with pyrite), and with quartz veinlets or very localized zones of silica flooding.

Minor arsenopyrite was observed with pyrite-carbonate veinlets in altered volcanic rocks in the hangingwall of the main feldspar porphyry dyke intersected in 81C-9. Disseminated arsenopyrite (1-2%) occurs in pervasively altered rocks in SB3-81.

Minor amounts of chalcopyrite were noted in the previous logs of 81C-1 and 81C-9 and Thicke (1981) noted disseminated pyrrhotite in the lower portion of 81C-1. Bowen (1985) noted one occurrence of sphalerite in SB6-81.

Hematite was noted in the bottom portion of C80-1 and in the top portions of 81C-4, 9, 10 and 11 where it is associated with chlorite on slickensided fracture surfaces near the northern boundary of a major fault zone.

3.3 Stib Zone

The data base for the geologic description that follows includes surface mapping of grid lines and creeks in the area south of Riley Creek, east of L100W, with limited observations in the vicinity of the Courte showing (Figure 86-6).

The purpose of mapping this area was to upgrade reconnaissance (1:5000) geological maps prepared by UMEX (Felder, 1980) and to resolve a fundamental difference in interpretation between JMT/Chevron and UMEX as to the nature and extent of dyking and alteration in the host rocks to the mineralization. JMT/Chevron (Christie and Richards, 1978) consider that the mineralized alteration zones are mainly altered Yakoun Formation volcanics and pyroclastics locally intruded by subordinate hypabyssal dykes. Based on a genetic model developed elsewhere in the Charlottes (F. Felder, pers. comm., November 1986) UMEX consider the host rocks to be mostly altered hypabyssal dyke swarms intruding variably altered Yakoun Formation rocks.

3.3.1. Lithology

The map area (Figure 86-6) is underlain almost entirely by pyroclastic rocks and waterlain sediments of the Jurassic Yakoun Formation, locally intruded by a diverse suite of dykes. Mappable subdivisions within the Yakoun are difficult to make owing the textural variability and generally gradational contacts between units. Stratigraphic correlation between outcrops is hindered by the absence of diagnostic textures in some units, repetition of units, absence of marker horizons, rapidly gradational changes within and between units, variable persistence of units along strike, and minor intraformational faults. Post-depositional alteration obliterates textures as well.

The Yakoun Formation has been divided into three main units (4, 5 and 6 in Table 6). These are stratified rocks (Unit 4, including bedded tuffs, greywackes, shales and conglomerates), massive volcanic rocks (Unit 5, mainly heterogeneous tuffs, and possible flows, of andesitic to rhyodacitic composition) and hypabyssal intrusives (Unit 6) that are cogenetic with the tuffs.

Stratified rocks of Unit 4 occur mainly in Chasm Creek, Notch Creek, and Red Creek although thin lenses of green tuffs crop out near baseline 100N around L89W, and between L90W and L91W. These rocks appear to represent both reworking of subaerial (?) pyroclastic deposits as well as the direct deposition of tephra into a marine or lacutrine basin which would facilitate size sorting and stratfication. Gradational contacts between massive lapilli tuff and tuffaceous siltstone have been observed (in lower Red Creek) but more commonly contacts are sharp, conformable, and the locus of minor faults.

Massive rocks of Unit 5 include some units (e.g. 5 e,f,i) that are undoubtedly pyroclastic in origin. Others are more equivocal. The absence of flow tops, flow breccias and vesicles and the rather common grading of lapilli-bearing zones into lapilli-free, but compositionally identical, rocks suggests that most of these rocks are massive pyroclastics. Subunits 5a to 5f are typically green and greenish grey, chlorite-rich, and assumed to be of andesitic to dacitic composition. These are grouped as Unit 5a* on Figure 86-6 in order to identify gross lithlogical divisions.

Subunits 5g to 5j (grouped as 5g* in Figure 86-6) are lighter grey, tougher breaking, more siliceous in appearance, and locally carry quartz phenocrysts. They are considered to be dacitic to rhyodacitic in composition. Their similar textural variations and internal contacts are similar to these of the andesitic to dacitic subunits. However, rocks of intermediate to felsic composition have not been reported in the literature as being part of the Yakoun Formation. Contacts between andesitic and rhyodacitic subunits are ill defined, poorly exposed, and commonly obscured by alteration. Until demonstrated otherwise they are considered to be more felsic variants within the Yakoun Formation.

At least three ages of dykes cut Units 4 and 5. These include a single andesitic dyke (near L96W, 96+75N) that is sufficiently altered (propylitized) to be considered a hypabyssal equivalent to Yakoun pyroclastics (i.e. Unit 6); several feldspar porphyry and felsite dykes (assigned to Unit 10); and at least two andesitic or diabasic dykes (Unit 12) that resemble the post-mineralization suite of dykes exposed on the shore of Altimeter Bay in the Point Zone (Section 3.6). Unit 10 dykes most commonly occur in zones of pervasive argillic alteration, but they do not constitute the bulk of the rocks exposed in these areas. These dykes typically are a few decimeters to at most 10m thick, commonly have chilled margins, and are aphanitic to finely (feldspar) porphyritic.

3.3.2. Structure

Stratified rocks strike consistently southeasterly to south-southeasterly and dip moderately to steeply to the east-northeast. No folds were observed but some variation in strike was observed in Chasm Creek and lower Red Creek. In Chasm Creek this may represent flexures associated with faults. In Red Creek this may represent a regional shift in attitudes from more southerly strikes in the eastern part of the grid to more southeasterly strikes in the western part of the grid (see also Figure 86-5).

Faults are the main structural feature in the map area. They occur most commonly either along bedding planes, or contacts (e.g. in Chasm Creek, Red Creek, and the ravine adjacent to the LCP for Rumpelstiltskin #5) as thin, impersistent gouge zones up to 50cm wide, or as east-west striking cross faults with short (<30m) displacements. These are probably more common than have been mapped but in the absence of distinct lithological contrasts (as for example in Notch and Red Creeks) they remain unobserved. In Red Creek cross faults locally swing into the plane of bedding and become bedding plane faults. Slickensides are common on all observed faults.

Two conjectured faults of larger displacement are noted. One, in Chasm Creek is NNW striking and has a 60m right-lateral offset of a distinctive coarse feldspar porphyry dacite (Unit 5d, possibly a hypabyssal intrusion). The other lies in Riley Creek valley, is nowhere exposed, but on the grounds of poor stratigraphic continuity across the creek, apparent offset of Arsenic soil geochemistry contours (Section 4.0, Figure 86-9), and a notable break in magnetic susceptibility (Section 5.0, Figure 86-16), this fault is thought to strike roughly east-northeast and have on the order of 500 to 1000m left-lateral strike slip displacement.

3.3.3. Alteration and Mineralization

All Yakoun Formation rocks are weakly but pervasively propylitized. The main effects of this are the chloritization of mafic minerals and the saussuritization of plagioclase.

Two types of argillic alteration have been mapped, which differ mainly in sulphide content. Small zones of moderate to strong argillic alteration, generally lacking pyrite or other sulphides, occur in isolated areas in upper Chasm Creek and Red Creek. These zones are typically limonitic and locally are associated with felsic dykes of Unit 10. Shear, fracture and gouge zones are common in these alteration zones.

Larger areas of moderate to strong argillic alteration, dyking and mineralization constitute the main areas of exploration interest. Two, apparently separate, areas occur. One occupies the lower reaches of Chasm and Six Creeks; the other occurs as a northwesterly trending swath, up to 250 m wide, that cuts across the stratigraphy extending from Trial Creek to baseline 100N, L92W. Within these zones, rocks are characterized by rusty weathering, bleached outcrops, and variable argillic alteration, commonly to the point of obliterating primary (diagnostic) textures. These argillic alteration zones commonly have along their margins zones of barely altered, but very rusty weathering rocks flanking them. Exceptions are seen in upper Trial Creek where the alteration limit coincides with a lithologic contact. Pyrite content probably increases in the vicinity of argillized zones but this is not very evident.

Pyrite, arsenopyrite, stibnite, galena, pyrrhotite and sphalerite have been observed within the major argillic alteration zones. Pyrite occurs as fine to coarse disseminations, clots, lenses and seams, particularly in felsite dykes (Unit 10). Arsenopyrite occurs as trace to 1% disseminations locally in Chasm six and Trial Creeks, but is up to 10-15% of altered rocks in the vicinity of L91W, 100N to 99N. Disseminated pyrrhotite was observed mainly in the vicinity of L91W 100N, but also in a thin vein in lower Six Creek, and at L89W,99N. Stibnite occurs as massive 1-5cm lenses in a thin (<5cm) quartz vein in lower Chasm Creek. The association of stibnite-quartz veins, felsite and very rusty, argillically-altered pyroclastics is essentially the same as the Courte showing in Sol Creek. Spahlerite was observed in the relogging of DDH SB6-81 (Bowen, 1985). Galena, with pyrite, pyrrhotite and arsenopyrite occurs in a thin quartz vein in lower Six Creek.

Quartz veins are uncommon in the map area. Most are white, massive to coarsely crystalline and low in sulphides; locally vuggy quartz veins occur. Calcite vein and stockworks are more abundant. Only locally are these associated with sulphides, and pyrite is the only sulphide observed in these veins.

3.4 Needles Zone

The data base for the geological description that follows includes surface mapping in Needles, Yak and Mas Creeks and relogging of diamond drill core from Hole R80-1 (November - December, 1985).

The area was mapped and sampled as part of the general review of the property but also specifically to check the presence of Masset Formation shown by Thicke (1981) to host the reported Au-mineralization, and to test the hypothesis advanced by Montgomery (1983) that the main trend of alteration/mineralization is offset by a left lateral fault located immediately west of the Needles showing.

3.4.1. Lithology

The Needles Zone is underlain by Jurassic Yakoun volcanics (andesitic porphyry flows and coarse pyroclastics), Tertiary rhyolite and dacite flows(?) of the Masset Formation was observed in a few scattered outcrops north of Yak Creek (see Figure 86-7). Feldspar porphyry dykes cut the Yakoun volcanics at two localities on the surface and are numerous in the lower portion of R80-1 where they are associated with a major argillically altered fault zone. Masset Formation volcanics do not host pyrite-gold mineralization in this zone.

3.4.2. Structure

Within the Needles Zone, faults are the dominant structural feature. A major fault zone, along which the feldspar porphyry dykes occur, lies just to the north of and roughly parallels Base Line 100+00N. The structure appears to dip vertically or near vertically. Width of the zone varies from about 10 metres where exposed on the north bank of Needles Creek to greater than 30 metres in the lower part of R80-1. Subsidiary, roughly parallel structures include a .5 to 4 metre wide clay gouge zone (the "Needles Showing") located at elevation 117 metres in Yak Creek and a 10 metre wide clay gouge zone exposed in Mas Creek. Steeply dipping, northerly trending cross structures are present and lie to the immediate southeast of the main fault exposure in Needles Creek.

There is no evidence to suggest a fault offset of the main mineralized structure. The terminaton of the Needles Showing can be more readily accounted for by pinching and swelling along a series of subparallel faults. Between outcrops on either side of Yak Creek, a distance of 15m, the fault containing the Needles Showing decreases in width from 4 m to less than 5 cm.

3.4.3. Alteration

The most prominant alteration features are zones of intense clay-sericite (?) alteration associated with WNW trending faults and feldspar porphyry dykes. The width of the clay altered zones is similar to that of the fault zones themselves, with some less intense patchy clay alteration extending for some distance into the propylitized (chlorite-carbonate) Yakoun volcanics. The northerly trending structures are also intensely clay-sericite(?) altered. Very minor quartz, as veinlets and infilling to fault breccia, is also present.

3.4.4. Mineralization

Within the zones of intense alteration pyrite is present as disseminations, as veins, and in rare quartz veinlets and very localized zones of quartz flooding. Total sulphide content of the intensely altered zones is generally a few percent (locally 5-10%). Minor pyrite is present locally in the propylitized Yakoun volcanics.

Minor arsenopyrite is associated with crushed pyrite veins in the fault zones at a few localities and possible stibnite was noted at the Needles Showing. Other minerals include limonite (abundant in fault zones) and hematite (in altered wallrocks).

3.5 Gumbo Zone

The data base for the geological description that floows includes a brief examinaton of surface outcrops at the Gumbo showing and relogging of diamond drill core from Holes C80-2, 81C-5 and 81C-6. Hole C80-3 was not reloggied because the core was not located.

3.5.1. Lithology

The Gumbo Zone is underlain by Jurassic Yakoun volcanics (andesitic porphyry flows and fine to coarse pyroclastics). No feldspar porphyry dykes were recognized in outcrop or drill core. Several andesite dykes were observed in C80-2.

3.5.2. Alteration

Several narrow (5-20 metres drill intercept length) zones of mainly patchy to pervasively altered clay-carbonate-(sericite?) rocks are present in C80-2 and 81C-5. Similar zones of alteration in 81C-6 are localized in minor shears and faults. Significantly, quartz-carbonate-pyrite-(± arsenopyrite) veinlets were observed only in the lower portions of C80-2 where they are associated with highly anomalous Au and As geochemical values.

3.5.3. Structure

Hole C80-2 cut several fault zones a few to several metres in width. Minor faults and shears are common in all the holes.

3.5.4. Mineralization

In the altered zones, pyrite is present as disseminations and veins and occurs in quartz-carbonate-(± arsenopyrite) veinlets in the lower portion of 80C-2, as previously mentioned. Total sulphide content of the altered zones is 1-2% (up to 10% locally - e.g. the Gumbo showing). Minor disseminated pyrite is present locally in the propylitized volcanics.

Arsenopyrite occurs in C80-2 as noted above and also is present as disseminations with pyrite in clay-altered gouge at the Gumbo Showing. Hematite with chlorite on fractures occurs at several localities in 81C-5.

3.6 Point Zone

Previous work by Pentland (1980) covered most of the claims with grid-based soil (Au, As, Hg) and VLF-EM surveys, and geologic mapping. However the main zone of alteration and mineralization did not appear to have been adequately sampled, nor were results published.

Work at the Point Zone was therefore limited to detailed rock chip sampling of the main area of alteration and mineralization, in the absence of published results, and attempting to trace the zone eastwards through a series of short soil lines (Figure 86-13). Results are discussed in section 4.5.

4.0 GEOCHEMISTRY

4.1 Soil Profiles

Soil profiles were completed during both the Nov-Dec '85 and Aug-Sept '86 programs. Table 7 lists all the soil profile locations with general comments on each site. Figure 86-8 shows the location of soil profile sites with respect to the entire claim outline. Appendix II contains the soil profiles and detailed descriptions.

Generally soil profile holes were 50-120cm deep exposing several soil horizons from A_0 and A_1 to several layers of B and extending into top layers of C and possibly to D (bedrock). The soil ranged from undisturbed (generally in mature timber) to disturbed, in logging slashes. Frequent evidence of slumpage, even in mature timbre attests to the lack of slope stability. Most soil is totally water saturated even in the driest months.

Organic and humus (A_0 and A_1) layers are frequently combined as the soil column shows a mixture of Juvenile mountain to Mature temperate representations.

A leached Ao horizon was seen occassionally but does not occur frequently enough to be of great concern.

The B horizon soils were frequently clay rich and upon drying yielded extremely lightweight but rock hard spheres. Powdering of these spheres yielded moderate amounts of -80 mesh soil but often not sufficient for a 20 gram sample due to the low density of the soil. Organic material mixed with B horizon soil even from hole depths of 50 to 60 cm further hindered the analysis of the soils, expecially for gold. Extra studies, including neutron activation of organics and multiple mesh soil analyses may be required with any further surveys to optimize the sampling medium.

C horizon soils, which are simply weathered till or bedrock, were present in areas of thin overburden. Often, highly argillically altered rock produced a grey gouge or clay as typified by the Gumbo Zone. A high percentage of "B" horizon clay rich soils may in fact be remnants of an older C horizon soil.

The soil appears somewhat transported, mainly by slumping and care must be exercised to not explore directly beneath anomalies especially in areas of high slope angle.

TABLE 7
LIST OF SOIL PROFILE SITES
GOLDEN DYKE PROJECT

SAMPLE NO.	LOCATION COMMENT	REMARKS
GDSP-A	Branch 8 at 8-1	Disturbed area (logging slash). Outside of As anomalous area.
GDSP-B	Branch 8 east of 8-1	Disturbed area (logging slash). Within As anomalous area (Branch 8 Zone).
GDSP-C	Needles Zone	Undisturbed area (timbered). Within As anomalous area.
GDSP-D	Lower Riley Creek Valley, west of Needles Creek.	Disturbed area (logging slash). Flat. Boggy. Outside of As anomalous area. Auger sample.
GDSP-E	Lower Riley Creek Valley, west of Camp Creek.	Undisturbed area (timbered) Flat. Boggy. Within As anomalous area (Beerstrike Zone) Auger sample
GDSP-F	Bonanza Main, South of Riley Creek	Disturbed area (road cut). Outside of As anomalous area.
GDSP-G	At B.L. 100+00N, 112+50W	Undisturbed area (timbered) Outside of As anomalous area.
SP86-1	L105+00W, 101+00N	Moderate to gently sloping bench with geological 'alteration' zone and geochemical anomaly.
SP86-2	L105+00W, 101+50N	At a major break in slope at bottom of A 45° slope on a 15° slope. Within geological alteration zone and geochemical anomaly.
SP86-3	L105+00W 98+35N	Flat plateau 25m above (north) of a sharp break in slope. A distinct 'lip" exists at the edge of the break in slope (slump). Outside geochemical anomalous zone.
SP86-4	L100+00N, 92+25W	Area of moderate slope (30°). Slides and slumping have occurred nearby. Within geochemically anomalous zone.
SP86-5	92+10W, 99+25N	On 30° hillslope outside geochemical anomalous zones.

Results of November 1985 sampling are referenced from an internal company report by Bowen (1986) and are reproduced below:

> "Seven soil profiles, approximately one metre each in depth, were taken at various localities on the property. This work generated 44 samples which were analyzed for Au, Ag, Sb, As and Hg.
>
> Only As and Hg show any amount of profile relief. Of these two, the downhole variation in As was considered more relevant because of its known and more direct association with Au on the property. In general, As shows a near surface depletion in the organic horizons and then a gradual increase with depth. From this work, an optimum sample depth of 40-50 cm was chosen."

August 1986 sampling from five soil profiles from between .50 and 1.1 m deep yielded 20 soil and 4 rock samples. Results are generally unchanging with horizon and depth for Au, Ag, and Pb. Cu showed a mild increase with depth at Some localities while As and Zn showed the strongest increase with depth. Optimum sampling depth for As, Cu and Zn was in B_1-B_2 horizon between 30-60 cm depth.

4.2. Courte/Stib Zones

The Courte/Stib zones encompass two discrete, but related, areas of anomalous As separated by the Riley Creek Valley. The Courte zone extends from line 106+00W east to Riley Creek while the Stib zone continues SE of Riley Creek to the eastern limit of sampling grid sampling the anomaly is open to the SE, Figure 86-9.

4.2.1. Soils

Soil sampling was completed in two phases, the first during November-December 1985 and the second during August 1986. The samples were analyzed for Au, Ag, As. Climatic conditions between the two periods influenced sample comparability in that frozen soil in 1985 restricted sampling to A_1 horizon and/or top of the B horizon. Sampling in 1986 of deeper into the B horizon produced relatively higher results of As, as was predicted from soil profiles. Contouring of first, second and third order thresholds of each survey interpretated separately, however, produced comparable anomalies. No significant difference in values from 1985 and 1986 sampling was found in Au or Ag results.

For the discussion of results each survey will be treated separately with a summary statement on the anomalies treated as a whole. The 1985 survey results are referenced Bowen (1985).

4.2.2. 1985 Sampling (Courte Zone)

Soil sampling (by mattock) was carried out at 25 m intervals along the entire length of the baseline and along crosslines between L112+00W and 94+00W. Approximately 800 soil samples were collected.

Frozen ground (8 - 20cm frozen organic material and some mineral soil) limited somewhat the depth to which one could reasonably sample. Sample depths averaged 15 to 20 cm and samples were of A and AB horizon material.

As

A large As anomaly (≥ 100 pm), which covers an area of about 1400 metres by 200-500 metres, has been partially delineated on the Courte Grid. The anomaly extends from the end of Base Line 100+00N at 91+25W to about L.106+00W. Grid coverage has closed off the anomaly to the northwest; to the southeast it remains open. The apparent discontinuity of the anomaly between L.95+00W and L.96+00W is probably caused by mixing of residual and alluvial material in the Riley Creek Valley bottom.

Drill hole analytical data has shown that anomalous As values are associated with the intensely altered zones. It can therefore be inferred that the above described As anomaly is a reflection of the general distribution of altered and mineralized structures within the Courte Zone area. A large embayment area of low values and a divergence of the anomaly pattern from L.102+00W to L.106+00W may suggest a general splaying of structures to the WNW. Areas of stronger As response in soils are probably reflecting zones of more intense alteration in bedrock.

The strongest area of As response is along Base Line 100+00N, from L.94+00W to the end of the Base Line at 91+25W. Values are generally greater than 1000 ppm, with a peak value of 3700 ppm. The high values may be associated with alteration/mineralization features similar to those seen in Hole SB-81-6, drilled about 100 metres to the southwest. Throughout its length, the hole encountered highly anomalous As values (1000-8000 ppm) within a faulted and altered tuff unit containing abundant finely disseminated pyrite.

Au

Within the Courte Grid, Au is conspicuous in its absence in the 1985 soil sampling results. The few anomalous (≥ 20 ppb) results obtained include values of 110, 40 and 280 ppb in the vicinity of the Courte showing on Sol Creek and a value of 80 ppb in a sample located about 30 metres west of hole SB5-81. The anomalous values are about the same order of magnitude as those generated by previous workers. However, density or "clustering" of anomalous values is much less than expected, given the fact that anomalous concentrations of Au occur in most drill holes. The few higher values obtained are in the vicinity of known higher concentrations (0.03 - >0.10 oz/t) of Au in rock.

Ag

Like Au, Ag shows a very weak response. Elevated values (≥ 0.5 ppm) are scattered throughout the grid area. Some are associated with high As values (≥ 1000 ppm) and some, with low (as little as 1 ppm) As values. There is no correlation between elevated Ag and Au values. These results reflect what was previously known in the drill holes - and that is that Ag is uniformly low (0.2 ppm ±) and that there is no obvious relationship between Ag concentrations and zones of Au-As-Sb mineralization.

Base Line 100+00N Extension

Base Line 100+00N was sampled beyond the Courte Grid through the Gumbo and Needles Zones to 140+00W (see Figure 86-4). As values were anomalous at several localities, including around 115+00W (between the Courte and Gumbo Zones), at the Gumbo Zone (in the vicinity of Holes C80-2 and C80-3) and at the Needles Zone. The highest As value is 6300 ppm in the vicinity of C80-3. Scattered anomalous Au(to 280 ppb) and Ag (to 2.6 ppm) are associated with the zones of higher As response.

4.2.3. 1986 Sampling (Stib Zone)

Soil sampling (by shovel) continued at 25m intervals along new crosslines constructed between lines 93+00W and 89+00W. Sampling also continued along the baseline to 83+25W. Samples were of B horizon material from holes of 30-40cm average depth.

As

A large, wedge-shaped As anomaly starts at L94+00W and increases to 350m in width by L89+00W. It is open to the SE. It is associated with an argillically altered volcanoclastics of rhyodacitic to dacitic composition commonly containing several percent arsenopyrite. Soil values of As range to a maximum of 11,200 ppm with the majority of the strongly anomalous zones between 1100 and 5500 ppm. Background As values range between 20 and 90 ppm. Baseline values drop to between 110 and 390 ppm grid E of 90+75W and may be a lower valley between a bifurcating anomalous trend.

Au

Silver values over the Stib zone have a background of 0.2 ppm which is also the limit of detection. Anomalous values ranging between 0.6 and 2.2 ppm are spotty, but generally fall only within anomalous As zones. No signinificant information is realized from analysis of Ag in soils hence no further analysis of this element is recommended.

4.2.4. Rocks

Rock sample locations and analytical results for the Courte Zone are shown in Figure 86-5 and for the Stib Zone in Figure 86-10.

Rock samples were collected from the Courte Zone to test the association of specific rock types, alteration effects, and structures with abundances of gold and other indicator elements. A few samples were taken from the Courte showing in Sol Creek to check previously reported results. Courte Zone rocks were analysed for Au, Ag, As, Hg and Sb. Values in Sol Creek are elevated relative to those in the WH-EH Creek area, but no anomalous Au values were detected in the latter area. The highest Au values were obtained in Sol Creek: in pyritized and afgillically altered feldspar porphyry dyke(?) (4755B; 250ppbAu) and quartz-stibnite-pyrite veins (0.014 - 0.022 oz/ton Au; 4753B;4754B). These assay values are 50 to 75% less than previously reported values (Christie, 1974; Christie and Richards, 1978). Silver is background only (0.2 ppm or 0.02 oz/ton) except in a single quartz vein sample from the Courte Showing (0.12 oz/ton Ag; 4753B). Mercury, antimony and arsenic show a positive correlation with Au values, although a value of 600 ppb Hg from EH creek (4776B) shows no associated gold.

Detailed rock samples from the Stib Zone (Figure 86-10) were collected in order to assess the variation of gold, silver, and arsenic across the main argillic alteration zones. Chip samples were collected, 10 or 25 m intervals in Chasm, Six and Trial Creeks.

The alteration zone explosed in Chasm Creek, which includes a stibnite-quartz vein, is geochemically very flat with background gold and silver values only. Anomalous As (>100 ppm) occurs in three samples, two of which are 1 metre chip samples across the vein and an arsenopyrite + pyrite bearing altered tuff. Despite widespread sulphides and alteration gold and associated elements are lacking.

In Six Creek two quartz vein samples returned values of 330 and 1240 ppb Au respectively. The vein with 1240 ppb Au was mineralized with pyrite, pyrrhotite, arsenopyrite and galena and had 27,400 ppm As, 21.2 ppm Ag, 1540 ppm Zn, 5400 ppm Pb and 24 ppm Cu. Arsenic values are stongly anomalous in the lower most and uppermost 40m of the section sampled. This coincides with disseminated arsenopyrite mineralization, particularly in the vicinity of L94W 99+50N. Silver values were slightly elevated (0.6 - 0.8 ppm) in much of the area sampled. Gold values were background, apart from the two, veins and two, 10m sections adjacent to the veins (120 and 60 ppb Au).

In Trial Creek samples were collected over 25m intervals across the main alteration zone. Gold values are background (5 ppb) over the entire zone except for a single 25m interval (R092899) east of L89W, 98+75N which has 20 ppb Au. Given the dilution of effect of 25m of rock chips, this must be considered anomalous. Arsenic varies from background, over the southern half of the sampled section to a high of 13,200 ppm (R76257) in a 0.5m grab sample. The northern 200m of the sampled section averages 1800 ppm As, with a range of from 210 to 4900 ppm

Silver values are slightly elevated above background (0.4 - 0.6 ppm) in the northern 200m except for a 50m section (east of 89W, 98N) which averages 1.2 ppm Ag.

Grab samples from various parts of the grid were intended to test various rock types, veins, alteration effects, and structures for Au, As, and Ag. At BL100N 91W a sample with visible arsenopyrite returned >40,000 ppm As, 2.0 ppm Ag but only background Au (0.5 ppb). Arsenic values are anomalous (>100 ppm) in most samples collected from the main alteration zone. This appears to be due to widespread disseminated arsenopyrite mineralization.

4.3 Needles - Gumbo Zone

4.3.1 Soils

Grid soil samples from the Needles-Gumbo are discussed in Section 4.2.2, "Base Line 100+00N Extension".

A single reconnaissance soil line across the southern edge of the Shaft 2 and Riley 2 claims was sampled in order to test gold and arsenic abundances in soils developed on Triassic Karmutsen Formation basalts and Cretaceous-Tertiary Post-tectonic intrusives.

With the exception of a single anomalous (100 pm As) sample, both gold and arsenic have background values only. Two samples (92776, 92777) known to be underlain by Karmutsen Formation, have notably less As than soils underlain by post-tectonic granitic rocks.

4.3.2 Rocks

Continuous rock chip samples over 1.0 m (or less) were collected over limonitic, altered fault zones near the confluence of Yak and Needles Creeks in the area identified as the Needles Showing (Christie and Richards, 1979). In addition, other samples were collected in Yak and Mas Creeks in altered fault zones in order to test the structural association of gold and other indicator elements.

Gold values from the Needles showing were an order of magnitude less than the results reported by Christie and Richards (1979). They reported 7500 ppb Au (approximately 0.2 oz/t Au) from a chip sample across 2.5 m of fault gouge. Resampling in 1985 (Bowen, 1986) gave an average value of 0.027 oz/t over three consecutive 1 metre chip samples from the fault gouge exposed on the east side of Yak Creek. Other limonitic fault gouges returned negligible gold (0.001-0.003 oz/t).

Antimony is generally weakly to moderately anomalous (20 to >50 ppm) in the fault zones exposed in Needles Creek and at the Needles showing in Yak Creek. Weakly anomalous values are also associated with clay altered wallrocks and feldspar porphyry dykes.

Arsenic is highly anomalous (up to 4300 ppm) in the fault zone at the Needles Showing and weakly to moderately anomalous (generally 100-500 ppm) in other fault zones and adjacent clay-altered wallrocks in the area. The higher (500 to 4300 ppm) values are generally associated with higher Au and Sb values. There appears to be a good positive correlation between As and Au.

Weakly anomalous mercury values (100-200 ppb) are present in most of the 1985 surface chip samples.

At the Gumbo Zone, a chip sample across 0.3 metres within clay-altered fault gouged returned vaules of 0.02 oz/t Ag 0.001 oz/t Au, 20ppb Hg, 10ppm Sb and 10,000 ppm As. Abundant disseminated arsenopyrite was noted in outcrop.

4.4. Phantom Zone-Soil and Silt

Soil and silt samples were collected from an unsampled area on the Shield 4 claim in order to test the hypothesis that the main structural trend controlling mineralization and alteration crossed to the north of previous geochemical coverage (Richards, 1979; Richards and Christie, 1979a,b,c; 1981). Results are shown in Figure 86-12. Only background values in Au and As were detected in all samples.

4.5 Point Zone

4.5.1. Soils

Soil samples were collected from four short lines east of the main zone of alteration and mineralization in order to test for continuity of this zone under overburden. Results are shown in Figure 86-13.

Gold is background over the entire grid.

The westernmost line and the northern end of the next line east show elevated (>40 ppm As) to anomalous (>100 ppm As) values. The results suggest that the area of arsenic mineralization does not extend more than 500m east of Altimeter Bay.

4.5.2. Rocks

Detailed continuous rock chip samples were collected from the main area of argillic alteration and pyrite-arsenopyrite mineralization in Masset Formation banded to massive rhyodacite tuffs located immediately north and east of Altimeter Bay. Sample locations and results are shown in Figure 86-13.

Au values range from below detection limit (5 ppb) to a high of 110 ppb at the northern limit of altered rocks (R92851). Five values are strongly anomalous ($\geq$80 ppb): four from the cliffs east of Altimeter Bay; one from the north side of the bay. Most of the rest of the results are higher than typical gold values found in other parts of the project area, which are usually at or below detection limit.

Ag values are at or below detection limit in all samples.

All but two As values are consistently higher than in other parts of the project area and comparable to areas (e.g. Needles Zone; Courte Zone) known to host sub-ore grade gold values >0.05 oz/t). However As values are lower than anticipated in view of reported abundances (up to several percent) of arsenopyrite. Evidently visual assessments of arsenopyrite are erroneously high. Arsenopyrite probably occurs as very thin films on fractures which gives the impression of large concentrations. When diluted with large volumes of unmineralized rock in the continuous chip samples, more realistic concentrations are obtained.

Cu values range from 8 to 55 ppm with no apparent correlation with sulphide content, gold values, or arsenic values.

Pb values range from below detection limit (2 ppm) to 78 ppm High Pb values generally correlate with low Cu values except in sample R92864 which is also anomalous in zinc. This suggests there is a trace amount of copper, lead, zinc sulphide mineralization in this sample.

Zn values show a restricted range without any anomalous samples.

Mo is background in all but two samples, one of which coincides with high As.

Base metal abundances, apart from As, do not appear to be useful as indicators of Au mineralization.

5.0 GEOPHYSICS

5.1 INSTRUMENTATION

5.1.1. G.836 Magnetometer System

"UNIMAG" G.836 Proton Precision magnetometers manufactured by Exploranium Geometrics of Ontario were utilized on this programme. The Total Field measurement is read with a resolution of 10 gammas and all values were corrected for diurnal and day to day variations. Correction values were determined from repeat readings taken by an automatic recording base station. A Readings were recorded at 12.5m intervals along grid lines 100m apart.

5.1.2. Induced Polarization System

The I.P. Surveys employed Frequency Domain equipment and utilized the dipole-dipole array. The equipment manufactured by Phoenix Geophysics (Willowdale, Ontario) consisted of an IPV1 transmitter and an MG2 2000 watt generator. Specific field parameters are as follows:

Array	:	Dipole-Dipole
Size	:	25 meters
Separation	:	n=1..6
Frequencies	:	0.25 Hz, 4.0 Hz
Electrodes	:	Potential : porous

5.2 Discussion of Results

Induced Polarization and Magnetometer surveys were completed on the Golden Dyke grid by Noranda Exploration crews. A total of 4 lines were surveyed with I.P. and 24 lines surveyed with a magnetometer.

Generally well defined but low amplitude I.P. anomalies were recorded by the survey. The survey employed a dipole length of 25 metres with readings recorded down to the sixth separation on the lines.

Line 9200W: A broad zone of above background (> 3.0%) P.F.E. was recorded between 29800N and 30100N. Within this broad zone a narrow package of high P.F.E. is observed between 30025N and 30100N. The shape of the source is spectulated to be tabular and steeply dipping (relative to the slope of the survey line) towards grid south. The source should also be at or near surface. There is no readily apparent resistivity "anamaly" associated with the tabular zone, however, it appears that the zone lies within a low resistivity environment and in contact with a high resistivity unit to the south.

Line 9500W: An anomalous zone of P.F.E. (>3.0%) is defined between 29900N and 29950N. The character of this zone differs from that on L.9200W in that the amplitude is suppressed and the source is deeper, within 10 m of surface. No dip can be inferred. Generally a low resistivity signature is seen with this P.F.E. anomaly.

Line 10000W: The I.P. survey identified three zones of anomalous readings. The zone between 30000N and 30050N appears to be the continuation of the responses identified on the above lines. This zone has decreased in amplitude somewhat and is poorly defined. Secondary zones are interpreted at 29862.5N-29937.5N and at 29800N to an undefined point south of the surveyed line. There are no outstanding associated resisitivity or magnectic signatures recorded along with the anomalous P.F.E. values.

Line 10500W: One discrete P.F.E. anomaly is evident between 29975N and 30025N. This zone has little magnetic expression and has no readily apparent resistivity signature, however, it does lie grid north (below ?) of a very distinct low resisitivity anomaly.

The magnetometer survey recorded values between 353 and 1550 nT on a 55,500 nT datum. Three distinct magnetic domains are clearly evident from the data.

The high susceptibility domain is evident north of the baseline and west of Line 9500W. This area corresponds with a mapped volcanic package. Within this package sub-domains are seen, in particular a lower susceptibility unit between Line 10500W and 10500W. Narrow dyke-like responses typify this package.

A low susceptibility unit is mapped south of the high susceptibility unit and grid west of Line 9300W. The remaining area covered by the grid is of moderate susceptibility and contains a high spatial frequency component.

A magnetic structural feature is evident between the north end of L.9100W and the south ends of Lines 9900W and 9800W. This is characterized by a magnetic high with an east flanking magnetic low (amplitude of 200+nT).

5.3 Conclusions

The I.P. survey has defined a zone of moderate P.F.E. amplitude between Lines 9200W and 10500W. This zone varies between 100 metres in width down to 25 metres (or less). Generally this discontinuous zone is offset between lines in place, and is associated with distinctive low and high resisitivity features. Targets can be selected along this zone.

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Courte-Stib Zone

Of all the areas in the Golden Dyke Project this remains the most promising target for continued exploration. It is also the best understood and offers several well-defined targets for follow-up surface exploration and drilling. The combination of Au-As-Sb mineralization with well defined alteration zones, soil (As) anomalies, lithologies, structures, IP, and magnetic anomalies indicate that gold-bearing hydrothermal systems have been active along structurally controlled segments of the Rennell-Louscoone fault system. Surface expression of this hydrothermal activity are the zones of argillic alteration, pyrite-arsenopyrite-stibnite-pyrrhotite mineralization, and quartz-calcite veins.

A follow-up program of soil and rock sampling, geologic mapping, IP and drilling is recommended, as follows.

Soil arsenic anomalies are open to the east. It is recommended that five more lines (L88W-84W) be installed and sampled. These lines would also cover the location of a single anomalous rock sample (1650 ppb Au) collected by UMEX (Felder, 1980).

Detailed rock sampling should be contributed in Six Creek (at 1 m intervals), Trial Creek (at 5m intervals) and tributaries to Sol Creek, east of the Courte showing in order to better define elemental distribution and controls.

Geologic mapping at 1:2500 should be continued on the north side of Riley Cree, east of L105W, in order to establish stratigraphic continuity across the inferred Riley Creek fault, and to resolve differing interpretations of the nature, extent, and controls of alteration and mineralization.

IP anomalies appear to be aligned with the main structural trend but lines are rather widely spaced. Further IP is recommended on lines 104W to 101W, 99W to 96W, and 93W-89W (excluding L92W), in order to trace the known conductors and relate them unequivocally with fault, alteration, and mineralized zones.

Drilling to date has been relatively near surface less than 115m vertical distance in all holes drilled, except 81C-9 (Harivel and Christie, 1980; Thicke, 1981). All holes have tested mainly the clay alteration envelope that may surround a zone of silicification and "bonanza-type" quartz veins that, according to certain epithermal models (Buchanan, 1981), lies from 300 to 500m below the paleosurface extent at the time of hydrothermal activity. Subject to the results of IP surveys and detailed geologic mapping at least three drill holes are recommended. One of these should test the deep structure beneath the

Courte showing and should be oriented to pass 200-300m below the intersections of the Courte structure encountered in C79-1 and 81C-9. Another hole should test westward extensions of the Courte structure between L100W and L105W. A third hole should be located in the Stib Zone to test the subsurface extent, configuration and gold content of the major alteration zones mapped so far. A hole beneath SB6-81 or in the vicinity of L93W to L89W, BL100N, oriented parallel the grid crosslines would best transect both the stratigraphy and alteration.

6.2 Needles - Gumbo Zones

Spotty sub-ore grade (<0.1 oz/ton) gold analyses from surface samples and drill core (C80-2, C80-3) warrant further exploration in this area. It is recommended that detailed geological mapping (1:2500 scale) be done from 120W to 140W and 200 to 300m on either side of the base line in order to better define the assoication of mineralization, alteration, lithology and structure. IP surveys on 100 m crosslines over this area are also recommended, particularly the main alteration zones.

6.3 Phantom Zone

The area examined had no anomalies, but the orientation of the reconnaissance lines may not have been optimal for detecting WNW-ESE trending structures. Previous work (Christie 1983a, Richard and Chrisite, 1979a, 1979b, 1979c, 1981) has concentrated on the southern parts of the area now covered by Shield 2 and 4 claims. The northern parts of the claims, although difficult of access, have not been explored even in a a cursory fashion. It is recommended that reconnaissance soil lines, oriented north-south, spaced 200-300m apart, be sampled (on 50m intervals) and prospected in order to test for eastward extensions of the Stib Zone anomalies that may have been cross faulted to the north.

6.4 Point Zone

Previous (Pentland, 1980) and present surveys have covered all but the northeast corner of Point 2 claim where possible extensions of the altered and mineralizaed zones exposed around Altimeter Bay may occur. It is recommended that this area, and adjcent ground to the east, be prospected and soil sampled on two to four reconnaissance lines, oriented north-south, with 200m line spacing and 50m sample spacing.

TABLE 6 TABLE OF FORMATIONS - STIB ZONE

TERTIARY

12. Andesitic-basaltic dykes.

11. MASSET FM. Banded to massive, dacitic to rhyolitic flows and tuffs; quartz and feldspar porphyritic. (Not exposed in area mapped).

Felsic dykes and sills. Fine grained, aphyric to feldspar (+ quartz) porphyritic, dacitic, rhyodacitic, and rhyolitic dykes or sills. Locally pyritiferous. White to pale grey, greenish grey; medium to dark grey where unaltered. May be hypabyssal equivalents of Unit 11.

9. Post-tectonic intrusives. Granite, granodiorite, diorite.

LOWER CRETACEOUS

LONGARM FM. Siltstone, greywacke, conglomerate. (Not exposed in area mapped.)

MIDDLE JURASSIC

7. Syn-tectonic intrusives: quartz diorite.

4,5,6. YAKOUN FM. Andesitic to rhyodacitic pyroclastic rocks and/or flows; tuffaceous sediments; synvolcanic intrusives (sills, dykes, plugs). Units 4 and 5 are intercalated.

6. Synvolcanic intrusives. Andesitic to dacitic sills, dykes, and plugs. Hypabyssal equivalents of Unit 5.

5. Massive volcanic rocks: mainly pyroclastic. Lapilli tuff; crystal tuff; porphyritic and non-porphyritic. May be, in part, flows.

Sub-units 5a - 5f (5a*) are andesitic to dacitic; Sub-units 5g - 5i (5g*) are dacitic to rhyodacitic. No stratigraphic order is implied.

5a. Medium to dark green or greenish grey, fine to medium grained, aphyric to microporphyritic andesite (or dacite) (tuff or flow).

5b. Medium to dark green or greenish grey, (biotite$\pm$) hornblende + feldspar porphyritic andesite (crystal tuff or flow).

5c. Green to greenish grey, medium (to coarse) feldspar-porphyry andesite (or dacite) (crystal tuff or flow).

5d. Medium greenish grey, very coarse feldspar-porphyry dacite/andesite (Chasm Creek porphyry). May have hornblende phenocrysts $\pm$ scarce lithic clasts. Possibly a dyke.

5e. Grey to greenish grey, lithic lapilli tuff.

5f. Grey to greenish grey, crystal-lithic lapilli tuff.

5g. Light to dark grey, quartz-feldspar porphyry rhyodacite (tuff or flow).

5h. Light to dark grey, fine grained, feldspar porphyry rhyodacite (tuff or flow).

5i. Light to dark grey, (crystal) lithic lapilli tuff; rhyodacite.

5j. Medium to dark grey, fine grained, aphyric rhyodacite.

4. Stratified rocks: water-lain tuffs; reworked tephra; alluvial, lacustrine, or marine clastic sedimentary rocks.

4a. Light to medium green, thinly bedded tuff, with coarser fragmental interbeds.

4b. Black and green, fine to coarse, crudely layered tuff and lapilli tuff.

4c. Black, fissile, fine grained argillite.

4d. Salt and pepper grey, medium grained, poorly bedded greywacke (lithic wacke).

4e. Medium to dark grey, fine grained, poorly bedded, tuffaceous siltstone.

4f. Polymictic granule-pebble conglomerate.

LOWER JURASSIC

3. MAUDE FM. Argillite, shale, lithic sandstone. (Not exposed in area mapped.)

UPPER TRIASSIC - LOWER JURASSIC

2. KUNGA FM. Limestone, argillite, siltstone. (Not exposed in area mapped.)

UPPER TRIASSIC

1. KARMUTSEN FM. Basalt flows, tuffs, interflow sediments. (Not exposed in area mapped.)

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APPENDIX I

ANALYTICAL TECHNIQUES

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

APPENDIX II

SOIL PROFILES

G.D. S.P.85-A

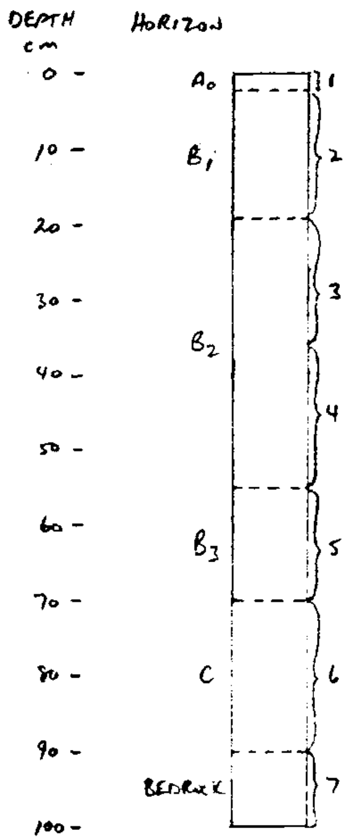
(BRANCH 8 AT 8-1)

Depth (cm)	Horizon	Sample	Description	Au ppb	Ag ppm	Sb ppm	As ppm	Hg ppb
0 –	A_0	1	DARK BROWN HUMUS	10	0.2	1	32	140
10 –	B_1	2	MED. REDDISH BROWN ORGANIC-RICH STONY SILTY SAND	10	0.4	1	14	100
20 – 30 –	B_1	3	INCREASING STONES, DECREASING ORGANICS WITH DEPTH	10	0.2	1	66	40
40 –	B_2	4	TAN BROWN TO MED. BROWN, ORGANIC STONY, CLAYEY SAND.	10	0.2	2	44	200
50 –	B_2	5		10	0.2	4	44	180
60 –	B_3	6	MEDIUM TO DARK BROWN ORGANIC SANDY CLAY, WITH STONES	10	0.2	2	40	140
70 –	B_3	7		10	0.2	2	44	180
80 – 90 – 100 –	C(?)	8	LIGHT GREENISH GREY, STONY CLAYEY SAND; HARD, COMPACTED (TILL)	10	0.2	14	62	340
110 – 120 –	C(?)	9		10	0.2	14	94	500

PROFILE SCALE: 1CM = 10 CM

G.D. SP85-B

(BRANCH 8 EAST OF F-1)

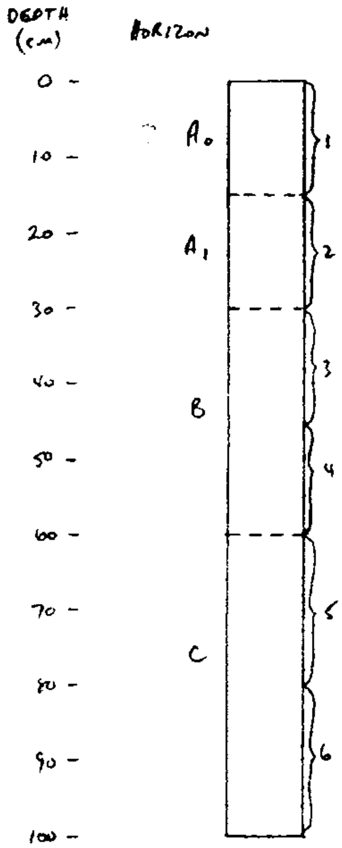


Horizon	Sample	Description	Au ppb	Ag ppm	Sb ppm	As ppm	Hg ppb
A_0	1	HUMUS	-10	0.2	4	56	400
B_1	2	LIGHT TAN BROWN ORGANIC SANDY CLAY	-10	0.2	10	76	520
B_2	3	LIGHT RUSTY BROWN SANDY CLAY	-10	0.2	14	64	580
B_2	4		-10	0.2	10	54	300
B_3	5	MED. TO DARK BROWN SANDY CLAY, WITH ROTTING ROOTS.	-10	0.2	2	60	600
C	6	LIGHT GREY TO RUSTY BROWN STONY CLAY	-10	0.2	10	50	940
BEDROCK	7	RUSTY WEATHERING FRACTURED BEDROCK (ALTERED VOLCANICS)	-10	0.2	4	34	1600
	8	ADJACENT BEDROCK	-10	0.2	1	20	220

PROFILE SCALE: 1CM = 10 CM

G.D. 5 P85-C

(NEEDLES AREA)



DEPTH (cm)	HORIZON	Sample	Description	Au ppb	Ag ppm	Sb ppm	As ppm	Hg ppb
0 – 15	A₀	1	DARK BROWN MATTED ORGANICS (HUMUS)	- 10	0.2	1*	6	440
15 – 30	A₁	2	DARK BROWN TO BLACK, CLAYEY HUMUS	- 10	0.2	1*	2	240
30 – 45	B	3	MED. BROWN STONY CLAY WITH SOME SAND.	- 10	0.2	1*	32	80
45 – 60	B	4		- 10	0.2	1*	34	180
60 – 80	C	5	LIGHT GREYISH BROWN, STONY CLAY. MUCKY, SATURATED TILL	- 10	0.2	1*	30	120
80 – 100	C	6		- 10	0.2	1*	40	160

1* = 1 or 2 ppm.

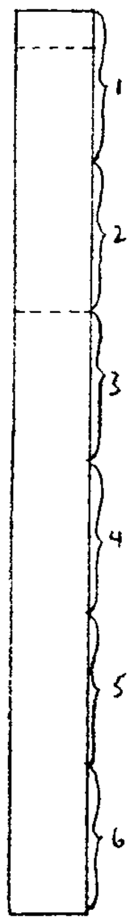
PROFILE SCALE: 1 CM = 10 CM

G.D. : 5PBS-D

(LOWER RILEY CR. VALLEY, WEST OF NEEDLES CR.)
(AUGER SAMPLE)

Depth (cm): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120

Horizon: (?)A_0 (0–5 cm), (?)A_1 (5–40 cm), (?)B (40–120 cm)



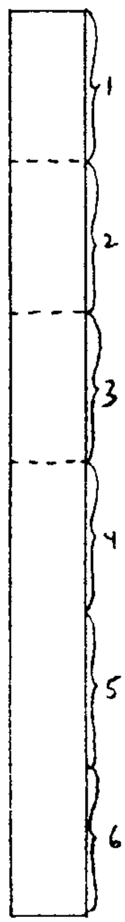
Sample	Description	Au ppb	Ag ppm	Sb ppm	As ppm	Hg ppb
1	DARK BROWN ORGANIC SILT; DARK BROWN ORGANIC SAND	- 10	0.2	1*	270	680
2	LIGHT TO MED BROWN ORGANIC SANDY CLAY.	- 10	0.2	1*	400	620
3	LIGHT GREYISH BROWN, SAND AND CLAY; SAND INCREASES WITH DEPTH	- 10	0.2	1*	48	1900
4	LIGHT GREYISH BROWN CLAYEY COARSE SAND.	- 10	0.2	1*	42	1100
5	LIGHT GREY, CLAYEY COARSE SAND; SOME WOOD.	- 10	0.2	1*	48	1100
6	LIGHT GREY CLAYEY COARSE SAND; MORE WOOD CHIPS.	- 10	0.2	1*	48	980

PROFILE SCALE : 1 CM = 10 CM

1* = 1 or 2 ppm

G.D 5 PBS-E

(LOWER RILEY CR VALLEY; WEST OF CAMP CREEK)
(AUGER SAMPLE)



DEPTH (cm)	HORIZON	SAMPLE	DESCRIPTION	Au ppb	Ag ppm	Sb ppm	As ppm	Hg ppb
0 – 20	? A_0	1	DARK BROWN, HUMUS (WITH CLAY?) MUCH WOOD AND ROOT DEBRIS	10	0.2	1*	2	240
20 – 40	? A_1	2	DARK BROWN TO BLACK HUMUS; POSSIBLY CLAYEY; SOME MAJOR ROOTS	10	0.2	1*	6	260
40 – 60	? A_2 or B_1	3	MEDIUM BROWN ORGANIC-RICH CLAY	10	0.2	1*	14	200
60 – 80	? B_1	4	MEDIUM BROWN ORGANIC-RICH CLAY WITH TRACE OF SILT	10	0.2	4	30	300
80 – 100	? B_1	5	LIGHT TO MED. BROWN ORGANIC-RICH SILTY CLAY; WITH WOOD CHIPS.	10	0.2	4	32	240
100 – 120	? B_1	6	LIGHT TO MED. BROWN ORGANIC SILTY CLAY WITH ROTTEN WOOD	10	0.2	1*	28	200

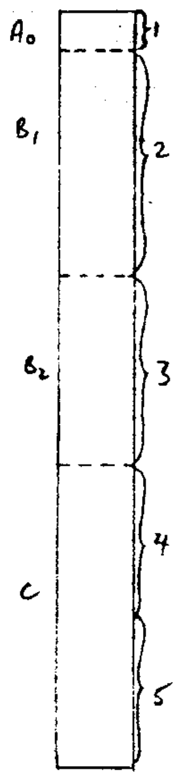
PROFILE SCALE: 1CM = 10CM

G D SP85-F

(BONANZA MAIN, SOUTH OF RILEY CR.)

DEPTH (cm): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

HORIZON: A_0, B_1, B_2, C



Sample	Description	Au ppb	Ag ppm	Sb ppm	As ppm	Hg ppb
1	FROZEN MOSS, HUMUS	- 10	0.2	1*	18	140
2	LIGHT TO MED. BROWN, ORGANIC SILTY CLAY. ORGANICS DECREASE STONINESS INCREASES WITH DEPTH	- 10	0.2	1*	22	120
3	MED. TO DARK BROWN CLAY-RICH STONY SAND (FAIRLY COARSE)	- 10	0.2	1*	20	200
4	LIGHT GREENISH GREY, STONY CLAYEY SAND COMPACTED; TILL.	- 10	0.2	1*	24	160
5		- 10	0.2	1*	28	480

PROFILE SCALE: 1CM = 10 CM

1* = 1 or 2 ppm

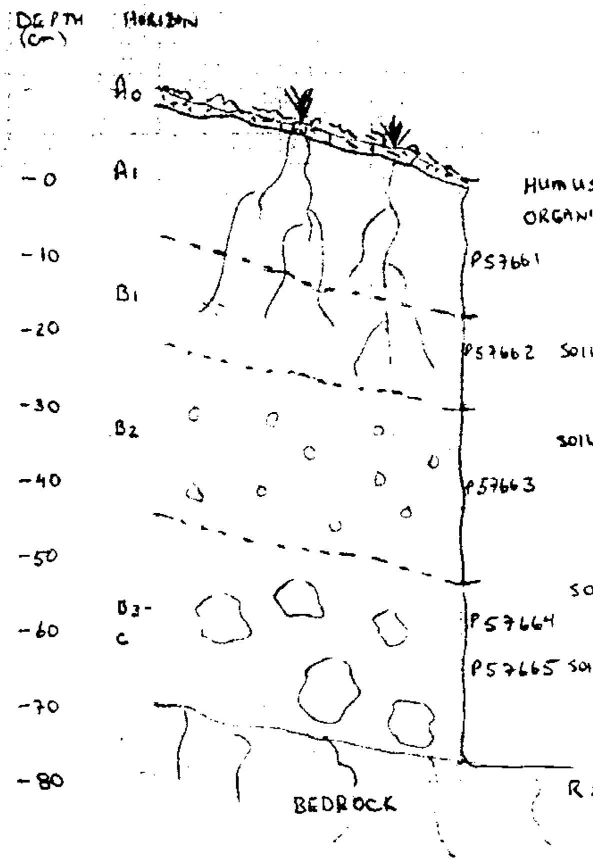
G.D S.P.85-G

(AT BL 100+00N, 112+50W)

DEPTH cm	HORIZON	Sample	Description	Au ppb	Ag ppm	Sb* ppm	As ppm	Hg* ppb
0 – 10	A₀	1	DARK BROWN ORGANIC RICH HUMUS (FROZEN)	10	I.S.		I.S.	
10 – 20	B	2	MEDIUM BROWN ORGANIC RICH CLAY AND SILTY CLAY.	10	0.2		14	
20 – 40	B	3	SANDIER AND STONIER IN BOTTOM 5 cm AT CONTACT WITH B-C	10	0.2		8	
40 – 50	B-C	4	LIGHT GREENISH GREY, SOFT, STONY CLAY (PROB. DERIVED FROM TILL).	10	0.2		16	

PROFILE SCALE: 1 CM = 10 CM

* G.D. SP.-G not analyzed for Sb and Hg



Sample	Description	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
	HUMUS: STICKS, NEEDLES, MOSS, GRASS						
P57661	ORGANIC: DARK BROWN, WET ROOTS, AND ROTTED ORGANIC MATERIAL SOME CLAY	10	0.2	20	20	1	52
P57662	SOIL: MEDIUM TO LIGHT BROWN -20% CLAY -40% ORGANIC -40% SAND AND SILT	10	0.2	26	22	1	56
P57663	SOIL: MEDIUM TO DARK BROWN -20% CLAY -20% SAND -60% SILT	10	0.2	34	22	1	38
P57664	SOIL: BROWN SANDY SOIL WITH ORANGE WEATHERED ROCK TO 5cm DIAMETER	10	0.2	24	20	1	46
P57665	SOIL: BROWN GREY CLAY (LATERALLY)	10	0.2	20	20	2	36
R57666	ORANGE WEATHERING, GREEN, FINE TO VERY FINE GRAINED VOLCANIC. MODERATELY SOFT, WITH VERY FINE DISSEMINATED SULPHIDES	5	0.2	26	16	14	92

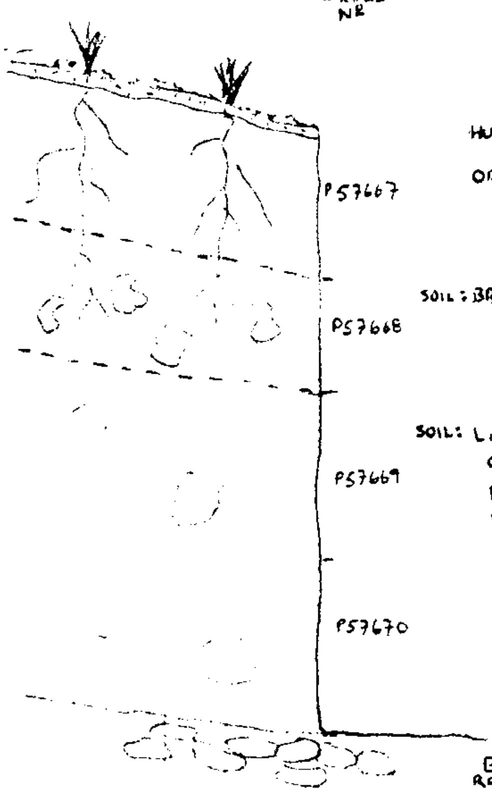
SP 86-1: L105+00W, 101+00N

LOCATED ON A MODERATELY TO GENTLY DIPPING BENCH, WITHIN GEOLOGICAL 'ALTERATION' ZONE

0 10 20
cm

REVISED	
	GOLDEN DYKE PROJECT
	SOIL PROFILE SP86-1
PROJ. No. 155/156	SURVEY BY: RGW DATE: SEPT 1986
N.T.S. 103F/8	DRAWN BY: SCALE: 1:10
DWG. No.	NORANDA EXPLORATION OFFICE: VANCOUVER

DEPTH (cm) | HORIZON | SAMPLE NR



Depth (cm)	Horizon	Sample Nr	Description	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
	Ao		HUMUS : MOSS, BARK, NEEDLES						
-0 to -10	A1	P57667	ORGANIC : DARK BROWN TO BLACK, ROTTED BARK, NEEDLES, FREQUENT ROOTS	N/A	0.2	12	20	2	36
-20	B1	P57668	SOIL : BROWN, WITH ROCKS TO 5cm DIAMETER, ROOTS STILL PRESENT. EVEN MIXTURE OF CLAY, SILT AND SAND.	10	0.2	12	24	2	36
-40 / -50	B2	P57669	SOIL : LIGHT BROWN, WITH MINOR ORANGE BROWN ROCK FRAGMENTS. SANDY SOIL WITH MINOR CLAY.	10	0.2	22	36	1	72
-60 / -70		P57670		10	0.2	16	40	1	76
-80	C?		BEDROCK OR COARSE ROCK LAYER.						

Depth scale: -0, -10, -20, -30, -40, -50, -60, -70, -80

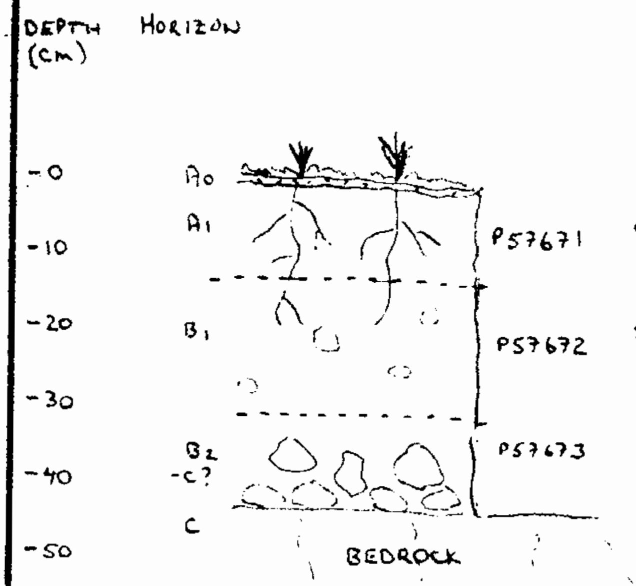
SP 86-2 :- L105+00W , 101+50 N

- LOCATED AT A MAJOR BREAK IN SLOPE AT BOTTOM OF 45° SLOPE, ON 15° SLOPE

0 10 20
cm

REVISED	GOLDEN DYKE PROJECT
	SOIL PROFILES SP 86-2
PROJ. No: 155/156	SURVEY BY: RGW DATE: SEPT 1986
N.T.S. 103F/8	DRAWN BY: SCALE: 1:10
DWG. No.	NORANDA EXPLORATION OFFICE: VANCOUVER

VANCAL 11927



Sample / Horizon	Description	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
Ao	HUMUS: STICKS, NEEDLES, MOSS, GRASS						
P57671 (A1)	ORGANIC: DARK BROWN TO BLACK, NEEDLES, ROOTS, BARK, TREE MULCH, MINOR CLAY	N/A	0.2	460	28	1	34
P57672 (B1)	SOIL: YELLOW, ORANGE-BROWN, MINOR ROOTS, MINOR ROCKS MAINLY CLAYS AND MINOR SAND	10	0.2	700	28	1	40
P57673 (B2-C?)	SOIL + ROCK: GREEN BROWN TO YELLOW BROWN, ROCKS TO 5 Cm DIAMETER, INCREASING ROCKS WITH DEPTH	10	0.2	200	36	1	52
P57674	CLAY SOIL IN ROCK FRACTURES	10	0.2	290	30	2	52
R57675	ROCK ORANGE WEATHERING, ARGILLICALLY ALTERED QUARTZ FELDSPAR PORPHYRY WITH FINE GRAINED GREEN, MODERATELY SOFT MATRIX	5	0.2	60	6	10	60

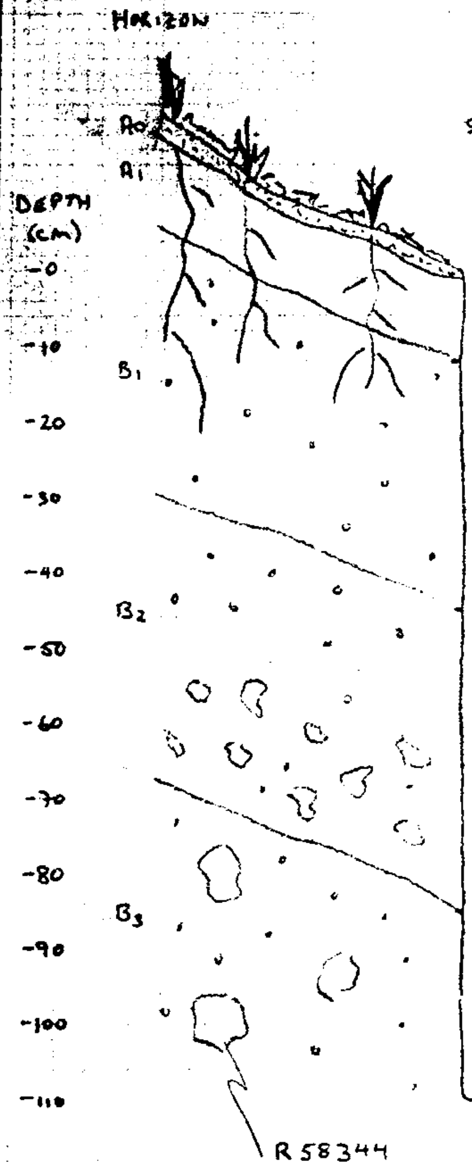
SP 86-3 L105+00W, 98+35 N

- LOCATED ON A FLAT PLATEAU 25 m NORTH OF A SHARP BREAK IN SLOPE. A DISTINCT 'LIP' EXISTS AT THE EDGE OF THE BREAK IN SLOPE.

0 10 20
cm

REVISED	
	GOLDEN DYKE PROJECT
	SOIL PROFILES SP 86-3
PROJ. No. 155/156	SURVEY BY: RGL DATE: SEPT 1986
N.T.S. 103F/8	DRAWN BY: SCALE: 1:10
DWG. No.	NORANDA EXPLORATION OFFICE: VANCOUVER

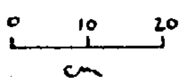
VANCAL 11887



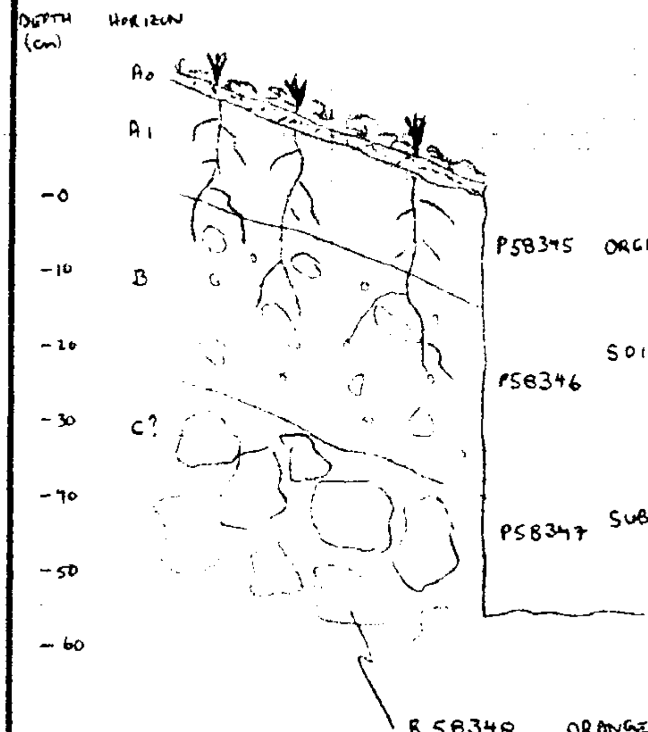
SAMPLE No	Description	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
P58340	ORGANIC: DARK REDDISH BROWN TO BLACK. ROOT, DECAYED NEEDLES, BARK AND TREE MULCH	N/A	0.8	240	36	4	80
P58341	SOIL: REDDISH BROWN, ROOTS AND ORGANIC MATTER PRESENT. PEBBLES TO 1 cm DIAMETER. 20% CLAY, 30% SILT, 10% SAND, 20% ORGANIC, 20% ROCK FRAGMENTS	10	2.0	750	56	10	110
P58342	SOIL: YELLOW BROWN, ROCK FRAGMENTS COMMON, INCREASING IN SIZE DOWNWARD. 20% CLAY, 40% SILT, 20% SAND, 0% ORGANIC, 20% ROCK FRAGMENTS	10	0.4	750	60	8	170
P58343	SOIL: BANDED YELLOW-BROWN AND BROWN. UNSORTED ROCK FRAGMENTS. 30% CLAY, 20% SILT, 20% SAND, 0% ORGANICS, 30% ROCK FRAGMENTS	10	0.2	510	56	4	120
R 58344		5	0.2	74	36	12	100

SP 86-4 ℄ 100+00N, 92+25W

- TAKEN IN AN AREA OF MODERATE SLOPE (30°). SLIDES HAVE OCCURED NEARBY AND SLUMPING IS EVIDENT. BEDROCK WAS NOT REACHED OR EVIDENT IN SLIDE BANKS WHICH EXPOSE 2m+ OF OVERBURDEN.



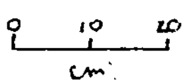
REVISED	
	GOLDEN DYKE PROJECT
	SOIL PROFILE SP 86-4
PROJ. No. 155/156	SURVEY BY: RGW DATE: SEPT 1986
N.T.S. 103F/8	DRAWN BY: SCALE: 1:10
DWG. No.	NORANDA EXPLORATION OFFICE: VANCOUVER, B.C.



Sample	Description	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
P58345	ORGANIC : DARK RED-BROWN, ROOTS AND BARK AND TREE MULCH, NEEDLES	N/A	0.2	30	26	2	48
P58346	SOIL : MEDIUM BROWN, SOME ROOTS PRESENT, PEBBLES 1 TO 5 CM 20% CLAY 20% SILT 30% SAND 10% ORGANICS 20% ROCK FRAGMENTS	10	0.2	100	64	1	44
P58347	SUBCROP? : INTERSTITIAL SOIL GREY-GREEN-BROWN, CLAY RICH, DENSELY PACKED BETWEEN PIECES OF FRACTURED BEDROCK	10	0.2	190	100	2	160
R 58348	ORANGE BROWN, PERVASIVE ARGILLIC ALTERATION OF ANDESITE! PORPHYRY. NO SULPHIDES	5	0.2	56	78	6	86

SP 86-5: 92+10W, 99+25N

- LOCATED ON 30° HILLSLOPE TYPICAL OF THIS PART OF THE GRID. SUBCROP OR BEDROCK REACHED WITH A CLAY LAYER (ROTTED ROCK?) SURROUNDING ALL FRAGMENTS.



REVISED	GOLDEN DYKE PROJECT
	SOIL PROFILE SP 86-5
PROJ. No. 155/156	SURVEY BY: RGW DATE: SEPT 1986
N.T.S. 103F/9	DRAWN BY: SCALE: 1:10
DWG. No.	NORANDA EXPLORATION OFFICE: VANCOUVER, B.C.

VANCAL 11927

APPENDIX III

ROCK SAMPLE REPORT

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS Ag	Au	Hg	Sb	As			SAMPLED BY
4751B	Location: Courte Zone, Sol Creek, elevation 197 m	Random Chip	--	0.2	10	20	46	18			BKB
	Description: Dark green andesite porphyry with 2-3% disseminated pyrite. Very siliceous.										
4752B	Location: Courte Zone, Sol Creek, elevation 256 m	Random Chip	--	0.2	90	100	56	204			BKB
	Description: Strongly argillized, fine grained textureless rock, with 2-3% pyrite as disseminations and 2-5 mm clots.										
4753B	Location: Courte Zone, Sol Creek, elevation 259 m	Composite Grab	--	0.12*	.022*	800	0.10*	1040			BKB
	Description: Bull quartz vein with minor pyrite and trace stibnite (?). Width of vein = a few cm.										
4754B	Location: Courte Zone, Sol Creek, elevation 263 m	Composite Grab	--	.02*	.014*	340	11.50*	262			BKB
	Description: 6 cm wide stibnite-quartz vein.										
	* Assay.										

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS Ag	Au	Hg	Sb	As			SAMPLED BY
4755B	Location: Courte Zone, Sol Creek, elevation 265 m	Random	--	.8	250	340	440	140			BKB
	Description: As per 4752B	Chip									
4756B	Location: Courte Zone, Sol Creek elevation 343 m	Random	--	.2	10	380	600	12			BKB
	Description: Possible fragmental volcanic rock.	Chip									
	Chloritized, with minor carbonate veining.										
4757B	Location*: Needles Zone, Needles Creek, about	Continu-	1.0m	.02*	.001*	160	30	34			BKB
	20 m NE of 136+37W on B.L. 100+00N	ous Chip									
	Description: Limonitic clay altered fault gouge.										
4758B	Location: Immediately to SW of 4757B, on same	Continu-									
	line of sample.	ous Chip	1.0m	.02*	.001*	200	40	400			BKB
	Description: As per 4757B.										
4759B	Location: Immediately to SW of 4758B, on same	Continu-	1.0m	.02*	.003*	140	28	380			BKB
	line of sample.	Chip									
	Description: As per 4757B										

* - Sample No's 4757B to 4774B all taken in the same general area - see Geology Map.

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS							SAMPLED BY
				Ag *	Au *	Hg	Sb	As			
4760B	Location: As per 4759B										
	Description: 3 cm crushed sulphide seam contained	Grab	--	.02	.005	160	44	900			BKB
	within sample No. 4759B										
4761B	Location: Immediately to the SW of 4759B, on	Continu-	1.0m	.02	.001	120	18	52			BKB
	same line of sample.	ous Chip									
	Description: As per 4757B										
4762B	Location: Immediately to the SW of 4761B, on	Continu-	1.0m	.02	.001	120	26	26			BKB
	same line of sample.	ous Chip									
	Description: As per 4757B.										
4763B	Location: Immediately to the SW of 4762B on	Continu-	1.0m	.02	.001	80	30	42			BKB
	same line of sample.	ous Chip									
	Description: As per 4757B.										
4764B	Location: Immediately to the SW of 4763B, on	Continu-	1.0m	.02	.002	60	46	40			BKB
	same line of sample	ous Chip									
	Description: As per 4757B										
4765B	Location: 0.4 m SW of the SW end of 4764B, on	Continu-	1.0m	.02	.001	100	34	22			BKB
	same line of sample.	ous Chip									
	Description: As per 4757B										

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS							SAMPLED BY
				Ag *	Au *	Hg	Sb	As			
4766B	Location: West end of sample is about 6 m west of NE end of sample no. 4757B Description: Clay altered, groundmass has greenish-tan cast, possible quartz eyes present. Dike(?)	Continuous Chip	0.6m	.02	.001	80	92	492			BKB
4767B	Location: Immediately east of 4766B, on same line of sample. Description: Rusty clay altered fault zone.	Continuous Chip	1.0m	.02	.012	120	32	600			BKB
4768B	Location: Immediately east of 4767B, on same line of sample Description: As per 4767B.	Continuous Chip	1.0m	.02	.001	140	24	176			BKB
4769B	Location: Immediately east of 4768B, on same line of sample. Description: As per 4767B	Continuous Chip	1.0m	.02	.001	160	22	50			BKB
4770B	Location: Immediately east of 4769B, on same line of sample Description: Competent wallrock. Textures vague granular, light greenish-grey, pervasive argillic alteration.	Continuous Chip	.5m	.02	.001	100	16	26			BKB

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS							SAMPLED BY
				Ag *	Au *	Hg	Sb	As			
4771B	Location: West end of sample is about 4 m east	Cont.	1.0m	.02	.001	80	16	16			BKB
	of east end of sample no. 4770B	Chip									
	Description: Tan coloured, argillized rock.										
	Textures vague - possible fragmental. Pyrite										
	disseminated and on rusty fractures.										
4772B	Location: Immediately east of 4771B, on same	Cont.	.75m	.02	.001	220	20	40			BKB
	line of sample.	Chip									
	Description: Fault zone - rusty clay gouge plus										
	competent clay altered horst material										
4773B	Location: Immediately east of 4772B, on same	Cont.	.75m	.02	.001	380	16	42			BKB
	line of sample.	Chip									
	Description: As per 4772B.										
4774B	Location: Immediately east of 4773B, on same	Cont.	1.0m	.02	.001	160	24	26			BKB
	line of sample.	Chip									
	Description: Tan coloured argillized wallrocks,										
	textures vague.										

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS Ag *	Au *	Hg	Sb	As			SAMPLED BY
4776B	Location: Courte Grid, EH Creek, elevation 197 m	Chip	1.0m	.02	.001	600	18	186			JMB
	Description: Rusty pyritiferous quartz vein (or										
	veins) in plagioclase porphyry andesite.										
4777B	Location: Courte Grid, EH Creek, elevation 360 m	Grab	--	.02	.001	80	14	52			JMB
	Description: black, pyritiferous clay gouge.										
4778B	Location: Courte Grid, EH Creek, elevation 309 m	Grab	--	.02	.001	200	8	94			JMB
	Description: Pale grey, argillically altered										
	scarce plagioclase porphyry pyritiferous andesite										
	(or possibly dacite).										
4779B	Location: Courte Grid, WH Creek, elevation 341 m	Chip	.15m	.02	.001	120	8	106			JMB
	Description: Rusty gouge and fracture zone in										
	massive andesite.										
4780B	Location: Courte Grid, WH Creek, elevation 309 m	Grab	0.5m	.02	.001	320	14	26			JMB
	Description: Rusty weathering, pale grey, pyriti-										
	ferous, quartz porphyry dacite(?) (dike?)										JMB

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS Ag*	Au*	Hg	Sb	As			SAMPLED BY
49781B	Location: Courte Grid, WH Creek, elevation 269 m	Grab	--	.02	.001	60	6	16			JMB
	Description: Very rusty, fractured, argillically altered, fine-grained fragmental (?) andesite.										
4782B	Location: Courte Grid, spur road off Branch 8, elevation 263 m	Chip	.75m	.02	.001	20	2	28			JMB
	Description: Fault zone (75 cm wide) in plagioclase porphyry andesite.										
4783B	Location: Needles Zone, Yak Creek, elevation 117 m	Cont. Chip	.5m	.02	.001	60	38	30			JMB
	Description: Pale to medium green, mafic porphyry andesite. This is the (apparent) hangingwall of the fault zone.										
4784B	Location: Immediately SW of 4783B, on same line of sample.	Cont. Chip	1.0m	.02	.028	160	60	1320			JMB
	Description: Strongly argillically altered, white and rusty sheared (plagioclase?) porphyry textured rock; friable, pyritiferous.										

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS							SAMPLED BY
				Ag *	Au *	Hg	Sb	As			
4785B	Location: Immediately SW of 4784B, on same line of sample. Description: as per 4784B	Cont. Chip	1.0m	.02	.034	100	84	2100			JMB
4786B	Location: Immediately SW of 4785B, on same line of sample Description: As per 4784Bm but mainly rusty weathering. Very friable. Has possible stibnite as well as pyrite. Porphyry texture is barely preserved.	Cont. Chip	1.0m	.02	.018	100	100	4300			JMB
4787B	Location: Immediately SW of 4786B, on same line of sample. Description: Rusty weathering, pale to medium green, hornblende porphyry andesite, similar to 4783B, but coarser textured. Has trace of pyrite	Cont. Chip	1.0m	.02	.001	140	64	152			JMB
4788B	Location: As per 4783B, except on opposite (west) side of Yak Creek. Description: Light greenish-grey andesite (?), medium grained mafics visible, weak chlorite (clay) alteration.	Cont. Chip	1.0m	.02	.001	120	32	38			BKB

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS							SAMPLED BY
				Ag *	Au *	Hg	Sb	As			
4789B	Location: Immediately SW of 4788Bm on same line	Cont.	.5m	.02	.012	140	86	2100			BKB
	of sample	Chip									
	Description: Rusty fault gouge abundant limonite										
	+ hematite and mixed with strong clay alteration.										
4790B	Location: Immediately SW of 4789B, on same line	Cont.	1.0m	.02	.001	60	14	56			BKB
	of sample.	Chip									
	Description: As for 4788B.										
4791B	Location: Needles Zone, Mas Creek, elevation 115m	Chip	1.0m	.02	.001	240	4	28			JMB
	Description: White, locally rusty weathering										
	argillically altered volcanic rock.										
4792B	Location: As per 4791B	Chip	3.0m	.02	.001	240	8	200			JMB
	Description: Black (carbonaceous ?) filled										
	breccia zone in altered volcanic.										
4793B	Location: Needles Zone, Yak Creek, elevation	Grab	1.0m	.02	.001	100	10	24			JMB
	147 m										
	Description: Pale green, aphanitic, felsite										
	dyke; rusty weathering has trace of pyrite.										

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E,8W

PROPERTY GOLDEN DYKE JOINT VENTURE

DATE November, 1985

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS							SAMPLED BY
				Ag*	Au*	Hg	Sb	As			
4794B	Location: As per 4793B, except elevation 145 m	Grab	1.0m	.02	.001	60	4	36			JMB
	Description: Zone of intense argillic alteration,										
	brecciation and black carbonaceous (?) infilling,										
	in probable andesite.										
4795B	Location: Gumbo Zone, about 70 m SW of 124+69W	Chip	.3m	.02	.001	20	10	10,000			JMB
	on B.L. 100+00N. Elevation = 300 m										
	Description: Pale grey clay-altered volcanic (?)										
	with disseminated pyrite and arsenopyrite (total										
	sulphides ~ 10%). In part a shear or gouge										
	zone.										

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE - ROCK SAMPLES FROM SOIL PROFILE PITS

DATE 26 AUGUST 1986

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS Mo	Cu	Ag	Zn	Pb	Au	As	SAMPLE BY
R57666	Orange weathering, green, very fine-grained volcanic(?). Moderately soft. Fine grained sulphides (pyrite). Sample is from outcrop at the bottom of soil profile SP86-1 (L105W 101N)	GRAB		1	16	0.2	92	14	5	26	RGW
R57675	Orange weathering, argillically altered quartz-feldspar porphyry. Quartz eyes and feldspar crystals are up to 2mm diameter. Fine grained, greenish, moderately soft matrix. From the bottom of soil profile SP86-3 (L105W 98+30N)	GRAB		1	6	0.2	60	10	5	60	RGW
R58344	Same rock type as R57675. Talus sample from bottom of soil profile SP86-4 (BL 100N 92+25W)	GRAB		1	36	0.2	100	12	5	74	RGW
R58348	Orange-brown, clay altered, moderately soft porphyritic rock. Lacks sulphides. Suboutcrop at bottom of soil profile SP86-5 (near L92W 99+25N)	GRAB		1	78	0.2	86	6	5	56	RGW

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE-COURTE ZONE

DATE Dec'86

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH m	ASSAYS Ag(ppm)	Au(ppb)	As(ppm)					SAMPLE BY
R76251	10-15m N of BL100N, 114+25W.	GRAB	1.0	0.2	5	52					
	Rusty weathering, pale greenish grey argillically altered										
	felsite with trace of disseminated pyrite.										
R76252	25m on 110° from L111+00W, 98+25N at head of	GRAB	1.0	0.2	5	1160					
	small ravine. Limonitic,grey clay gumbo zones										
	in (Yakoun) feldspar porphyrtic andesite. Zones										
	are up to 2m wide but rather badly slumped										
	locally.										

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE - STIB ZONE

DATE Dec '86

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH metres	ASSAYS Ag(ppm)	Au(ppm)	As(ppm)				SAMPLED BY
R76253	From south bank of Chasm Cr., south of L89+00W, 95+00N. Friable limonitic, clay-altered fine grained feldspar porphyry andesite(?) and tuffaceous sediments (Yakoun Fm.)	CHIP	2	.2	5	56				
R76254	From SW bank of Chasm Ck between L90+00W, and L91+00W. Limonitic, clay altered shear zone in argillically altered tuffaceous sediments (Yakoun Fm)	CHIP	1	0.2	5	68				
R76255	From NE bank of Trial Ck, near L89+00W, 99+00N. Pale grey, argillically altered, felsite dyke with trace of disseminated pyrite.	CHIP	0.5	0.2	5	52				
R76256	From SW bank of Trial Ck near L89+00W, 99+00N. Fracture and gouge zone up to 50 cm wide in medium to dark grey siliceous volcanic rock (Yakoun Fm). Zone is limonitic, clay altered, with trace of disseminated pyrite.	CHIP	0.5	0.2	5	140				
R76257	Trial Ck, east of L89+00W, 98+50N. Limonitic argillic alteration zone in quartz-feldspar porphyry rhyodacite(?) with disseminated pyrite and arsenopyrite. Minor gouge zones.	GRAB	0.5	0.6	5	13200				

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE - STIB ZONE

DATE Dec'86

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH meters	ASSAYS							SAMPLED BY
				Ag (ppm)		Au (ppb)		As (ppm)			
R76258	From east bank of Trial Ck, northeast of 100+00N 89+00W. Thin limonitic gouge zones, with pyrite in mixed argillite-felsite-lapilli tuff.	grab	0.5	0.2		5		86			
R76259	50m grid west of L90+00W, 97+75N. Rusty weathering argillic altered, pale grey feldspar porphyry dacite with trace of pyrite and arsenopyryite.	GRAB	0.5	0.2		5		144			
				Mo (ppm)	Cu (ppm)	Ag (ppm)	Zn (ppm)	Pb (ppm)	Au (ppb)	As (ppm)	
R76260	25m on 150° bearing from picket L95+00W, 95+75N, on east cut bank of Chasm Ck. Rusty weathering, argillically altered coarse feldspar porphyry with disseminated pyrite and arsenopyrite. Site of Umex sample SBI-80-11.	GRAB	.25	1	16	0.4	100	20	5	780	
R76261	In gully of Six ck 34m NE of DDH SB-6. Rusty weathering, argillically altered felsite with thin (less than 2cm) vuggy quartz veins; minor pyrite in thin seams.			1	16	1.4	32	10	330	1120	
R76262	at L91+00W, 99+95N; rusty weathering, argillically altered felsic volcanics/volcaniclastics with 5-10% pyrite and arsenopyrite.	GRAB	.30	1	12	2.0	60	52	5	40000+	

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE- STIB ZONE

DATE Dec'86

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS Mo (ppm)	Cu (ppm)	Ag (ppm)	Zn (ppm)	Pb (PPm)	Au (ppb)	As (ppm)	SAMPLED BY
R76263	Approximately 20m to NW of picket L90+00W, L98+00N argillically altered feldspar porphyry with + 2% pyrite and arsenopyrite.	GRAB	.5	1	26	0.2	92	12	5	196	
R76264	L90+00W, 98+50N. Rusty weathering, fine grained pale grey to white altered felsic rock- possibly argillically altered feldspar porphyry. sulphide poor.	GRAB	.1	1	24	0.2	66	6	5	108	
R76265	10m to west of picket L91+00W, 95+00N; rusty weathering, fine grained felsite dyke in contact with moderately argillically altered feldspar porphyry dacite/andesite. For 2m on contact is breccia zone, up to 8 cm thick, with vuggy quartz-calcite veins.	GRAB	.1	1	32	0.4	42	6	5	56	
R76266	Near L94+00W, 99+50N, in lower part of Six Ck, (that flows below SB-6(DDH)). In heterogeneous rusty weathering, argillically altered, fine grained to porphyritic textured (?) tuffs; small shear zone with pyrite, galena and possibly arsenopyrite.	CHIP	.25	1	24	21.2	1540	5400	1240	27400	
R76267	L96N, 95+50W. Rusty shear zone, in lapilli tuff	CHIP	1	1	36	0.6	110	48	5	262	

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE - STIB ZONE

DATE Dec' 86

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH meters	ASSAYS							SAMPLED BY
	CHASM CREEK: Detailed chip and grab samples over 25m intervals (except as noted) starting at 0+25m at 95+00W, 98+75N and continuing upstream to 2+25m from that point. Distances are slope corredted. Rocks are rusty weathering, pale grey, strongly argillized Yakoun pyroclastics locally cut by felsite dykes. Pyrite is disseminated throughout the area; arsenopyrite occurs only ~~locally in the lower reaches of Chasm CK~~										
				Mo (ppm)	Cu (ppm)	Ag (ppm)	Zn (ppm)	Pb (ppm)	Au (ppb)	Ag (ppm)	
R92822	0+25- 0+50m	CHIP	25	1	20	0.4	92	16	5	298	
R92823	0+55m: pyrite-stibnite-quartz vein in felsite	CHIP	1	1	16	0.2	30	2	5	780	
R92824	0+50m - 0+75m	CHIP	25	1	16	0.4	74	26	5	60	
R92825	0+75m - 1+00m	CHIP	25	1	24	0.6	76	8	5	34	
R92826	1+00m - 1+25m	CHIP	25	1	42	0.4	74	6	5	22	
R92827	1+25m - 1+50m	CHIP	25	1	26	0.2	82	10	5	22	
R92828	1+50m - 1+75m	CHIP	25	1	18	0.4	88	14	5	18	
R92829	1+75m - 2+00m	CHIP	25	1	24	0.4	82	14	5	20	
R92830	2+00m - 2+25m	CHIP	25	1	22	0.4	76	10	5	38	
R92831	1+90m: rusty, gouge zone in centre of creek	CHIP	1	1	74	0.4	72	4	5	28	

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE - STIB ZONE

DATE Dec'86

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS							SAMPLED BY
	SIX CREEK: Detailed chip samples over 10m intervals (slope corrected) starting from L94W, 99+45N (where L94W crosses creek). Samples 92832 to 92840 are sampled upstream from L94W; samples 92841, 42, are sampled downstream. Rocks are very strongly altered (argically) Yakoun dacitic and rhyodacitic tuffs cut by thin irregular felsite dykes and, locally, vuggy quartz veins. Alteration is so intense that original textures, structures and contacts are obscurred. Pyrite and locally arsenopyrite, are disseminated throughout in trace to 2%.			Mo (ppm)	Cu (ppm)	Ag (ppm)	Zn (ppm)	Pb (ppm)	Au (ppb)	As (ppm)	
R92832	0-10m(upstream)(@5m isR76266,quartz vein)	CHIP	10	1	50	0.8	88	26	120	2160	
R92833	10-20m	CHIP	10	1	46	0.6	232	14	5	860	
R92834	20-30m	CHIP	10	1	40	0.4	130	6	5	76	
R92835	30-40m	CHIP	10	1	34	0.6	128	38	5	80	
R92836	40-50m	CHIP	10	1	30	0.4	134	4	5	130	
R92837	50-60m	CHIP	10	1	28	0.4	124	6	5	1200	
R92838	60-70m (@65m is R76261, quartz vein)	CHIP	10	1	36	0.6	192	14	60	1500	
R92839	70-80m	CHIP	10	1	36	0.6	158	14	5	472	
R92840	80-90m	CHIP	10	1	32	0.6	228	12	5	760	
R92841	0-10m downstream	CHIP	10	1	34	0.6	170	20	10	1360	
R92842	10-20m (outcrop ends 20m downstream of L94W	CHIP	10	1	58	0.6	162	58	5	3980	

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE - STIB ZONE

DATE Dec'86

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH metres	ASSAYS							SAMPLED BY
	TRIAL CREEK: Chip and grab samples over 25m intervals (slope corrected) measured from where Trial Ck crosses L89W at 101+50N. Samples collected from both banks and creek bed, starting at600m from 89W, 101+50N, and ending at 250m. Rocks are rusty weathering, pale grey, argillically altered tuffs of Yakoun Fm, locally cut by shear fault gouge and fracture zones, and by thin felsite dykes. Pyrite and locally arsenopyrite, occur as disseminations.			Mo (ppm)	Cu (ppm)	Ag (ppm)	Zn (ppm)	Pb (ppm)	Au (ppb)	As (ppm)	
R92899	6+00 -5+75m	CHIP	25	1	30	0.4	66	24	5	90	
R92890	5+75 -5+50	CHIP	25	1	36	0.2	76	4	5	42	
R92891	5+50 - 5+25	CHIP	25	1	48	0.2	74	4	5	28	
R92892	5+25 - 5+00	CHIP	25	1	22	0.2	60	8	5	132	
R92893	5+00 - 4+75	CHIP	25	1	18	0.2	60	6	5	50	
R92894	4+75- 4+50	CHIP	25	1	14	0.2	58	10	5	36	
R92895	4+50 - 4+25	CHIP	25	1	16	1.0	434	38	5	4900	
R92896	4+25 -4+00	CHIP	25	3	18	1.4	346	120	5	312	
R92897	4+00 -3+75m	CHIP	25	1	32	0.4	106	20	5	2880	
R92898	3+75 -3+50m	CHIP	25	1	26	0.4	178	20	5	2760	
R92899	3+50 - 3+25m	CHIP	25	1	18	0.6	406	20	20	1640	
R92900	3+25- 3+00m	CHIP	25	1	32	0.4	96	14	5	780	
R92901	3+00 -2+75m	CHIP	25	1	34	0.4	114	128	5	210	
R92902	2+75- 2+50	CHIP	25	1	32	0.6	146	860	5	1020	

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/8

PROPERTY GOLDEN DYKE - STIB ZONE

DATE Dec'86

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH metre	ASSAYS							SAMPLE BY
				Mo (ppm)	Cu (ppm)	Ag (ppm)	Zn (ppm)	Pb (ppm)	Au (ppb)	As (ppm)	
R92903	Near the head of Sambo Ck (which crosses BL100N at 84+80W). Approximately 325m (not slope corrected) from BL100W. Rusty weathering, siliceous, altered tuff with 1% combined pyrite and arsenopyrite.	CHIP	4	1	64	0.4	78	6	5	76	

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E

PROPERTY GOLDEN DYKE - POINT ZONE

DATE 26 AUGUST 1986

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS Ag	Au	As					SAMPLE BY
R58349	MASSET FORMATION tuff and banded tuff; clay altered and yellow weathering (due to arsenopyrite?) Gypsum (pale green) and chert blebs occur as altered fragments in tuff. Arsenopyrite and pyrite up to 20% in small pockets.	CHIP	1.5m	0.2	80	620					RGW/JMB
R58350	Continuation of R58349	CHIP	1.5m	0.2	30	334					RGW/JMB
R76451	Same rock as R58349 but along a subparallel zone 20 -25m to the west. Arsenopyrite and pyrite up to 5-10% in pockets.	CHIP	1.5m	0.2	5	274					RGW/JMB

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E

PROPERTY GOLDEN DYKE - POINT ZONE

DATE 3 SEPTEMBER 1986

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH METRES	ASSAYS Cu	Pb	Zn	Mo	Ag	As	Au	SAMPLED BY
R92852	North side of Altimeter Bay, near sample R76451 Altered Masset Fm rhyodacitic tuff with lenses of pyrite and arsenopyrite.	CHIP	1.5	29	< 2	26	3	<0.2	1000	15	RJR/SC
R92851, R92853 to R92868	East side of Altimeter Bay in cliffy exposures adjacent to Bonanza Main logging road. Continuous chip samples, each 2m long, across clay altered, rusty weathering, massive and banded tuffs of rhyodacitic composition (Masset Fm.). Locally the tuffs carry seams, lenses, and disseminations, up to 20% of fine grained pyrite and arsenopyrite. Samples R92851, R92853-R92562 cover the area around a natural cave in the cliff; the remainder cover a quarry south of the cave. Samples are consecutive, with numbers increasing to the south.										RJR/SC
R92851		CHIP	2	226	2	78	1	< 0.2	600	110	
R92853		CHIP	2	48	3	72	2	< 0.2	350	85	
R92854		CHIP	2	286	< 2	42	2	< 0.2	35	< 5	
R92855		CHIP	2	155	2	62	2	< 0.2	27	< 5	

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 103F/7E

PROPERTY GOLDEN DYKE - POINT ZONE (CONTINUED)

DATE 30 SEPTEMBER 1986

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH METRES	ASSAYS							SAMPLED BY
				Cu	Pb	Zn	Mo	Ag	As	Au	
R92856		CHIP	2	77	12	24	2	<0.2	120	<5	
R92857		CHIP	2	204	5	50	3	<0.2	220	<5	
R92858		CHIP	2	120	4	24	2	<0.2	280	25	
R92859		CHIP	2	229	9	52	2	<0.2	300	5	
R92860		CHIP	2	515	22	24	1	0.3	410	10	
R92861		CHIP	2	29	12	27	2	<0.2	450	10	
R92862		CHIP	2	25	25	8	2	<0.2	700	80	
R92863		CHIP	2	8	25	32	2	<0.2	300	85	
R92864		CHIP	2	116	78	150	3	<0.2	290	10	
R92865		CHIP	2	34	8	64	9	<0.2	800	<5	
R92866		CHIP	2	32	20	56	5	<0.2	250	15	
R92867		CHIP	2	29	15	40	3	<0.2	250	10	
R92868		CHIP	2	28	12	40	2	<0.2	280	5	

APPENDIX IV

AUTHORS' QUALIFICATIONS

AUTHORS QUALIFICATIONS

I Rob. G. Wilson of the City of Vancouver, Province of British Columbia, do hereby certify that:

- I am a geologist residing at 3328 West 15th. Avenue, Vancouver B.C.

- I graduated from the University of British Columbia in 1976 with a BSc degree in Geology.

- I have worked in mineral exploration since 1973 and have practised my profession as a geologist since 1976.

- I am presently a Project Geologist with Noranda Exploration Company, Limited.

- I am a member of the Geological Association of Canada (Cordillera Division).

Rob Wilson

AUTHORS' QUALIFICATIONS

I, James M. Britton, of the City of Vancouver, Province of British Columbia, do hereby certify that:

- I reside at 910 Calverhall Street, North Vancouver, B.C., V7L 1Y2
- I am a graduate of the University of British Columbia, (B.A. 1973).
- I have practised my profession as a geologist continuously since 1973.
- I am a Fellow of the Geological Association of Canada.
- I personally did, or supervised, the work described in this report, since the start of this project in November 1985.

James M. Britton

STATEMENT OF QUALIFICATIONS

****

I, Lyndon Bradish of Vancouver, Province of British Columbia, do hereby certify that:

1. I am a Geophysicist residing at 1826 Trutch Street, Vancouver British Columbia.

2. I am a graduate of the University of British Columbia with a B.Sc. (geophysics).

3. I am a member in good standing of the Society of Exploration Geophysicists, Canadian Institute of Mining and the Prospector's and Developer's Association.

4. I presently hold the position of Division Geophysicist with Noranda Exploration Company, Limited and have been in their employ since 1973.

L. Bradish.

APPENDIX V

COST STATEMENT

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT: RILEY GROUP

TYPE OF REPORT: GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL

a) WAGES:

November 2 to December 14, 1985 (42 days)

	RATE/DAY	NO OF DAYS	TOTAL WAGES	
BKB	200	18	3,600.00	
JMB	250	18	4,500.00	
SC	150	33	4,950.00	
JR	150	33	4,950.00	
PR	150	34	5,100.00	
GM	150	34	5,100.00	
		170 man days	$28,200.00	$28,200.00

August 12 to September 8, 1986 (28 days)

	RATE/DAY	NO OF DAYS	TOTAL WAGES	
RGW	160	8	1,280.00	
JMB	250	9	2,250.00	
RJR	200	12	2,400.00	
SC	150	14	1,950.00	
DH	150	9	1,350.00	
KL	160	5	800.00	
AL	160	5	800.00	
MP	150	8	1,200.00	
		70 man days	$12,030.00	$12,030.00

b) FOOD AND ACCOMODATION

November 2 to December 14, 1985 (42 days)
August 12 to September 8, 1986 (28 days)

Board 240 man days $20.00/day	$ 4,800.00
Room 38 days X $50.00	$ 1,900.00

c) TRANSPORTATION

November 2 to December 14, 1985 (42 days)
August 12 to September 8, 1986 (28 days)

(Costs are split 50/50 between Riley and Phantom Groups)

Airfare	: 7 returns Vancouver - Sandspit 7 X $360.00 ÷ 2	$ 1,260.00
Ferries	: Vancouver - Nanaimo Port Hardy - Prince Rupert Prince Rupert - Skidegate	
	3 ferries, 4 returns $1,551.00 ÷ 2	$ 775.50

Truck Rentals:

TRUCK	RATE	RATE/DAY		DAYS	
1	1100/Month	35.50	X	34	$ 1,207.00
2	1000/Month	32.25	X	34	$ 1,096.50
3	1100/Month	35.50	X	14	$ 497.00
4	1000/Month	32.25	X	14	$ 451.50

d) INSTRUMENT RENTAL

August 12 to September 8, 1986
Induced Polarization Unit
$190.00/Day X 4 days
Magnetometer Base and Field Stations
$75.00/Day X 6 days $ 760.00

e) SURVEYS

Geophysical
Accounted under Wages and Instrument Rental

f) ANALSIS

Soil Samples

NO OF SAMPLES	ANALYZED FOR	COST/SAMPLE	
725	Au,Ag,As	$ 6.60	$ 4,785.00
42	Au,Ag,Sb,As,Hg,	$13.35	$ 560.50
19	Au,Ag,Cu,Pb,Zn,Mo,As	$10.50	$ 199.50

Rock Samples

NO OF SAMPLES	ANALYZED FOR	COST/SAMPLE	
4	Au,Ag,As,Cu,Pb,Zn	$12.50	$ 50.00
30	Au,Ag,As,Sb	$11.60	$ 348.00

g) REPORT PREPARATION (Cost apportioned 2/3 to Riley Group, & 1/3 to Phantom Group).

Author:	11 man days	$200.00/Day	X 2/3	$ 1,466.00
Drafting:	12 man days	$200.00/Day	X 2/3	$ 1,600.00
Typing:	5 man days	$100.00/Day	X 2/3	$ 334.00

h) OTHER COSTS (Cost apportioned 2/3 to Riley Group, & 1/3 to Phantom Group).

Road Repair - August 12 to Septmeber 8, 1986
Dalby Kendall & Son Construction

$2,500.00 X 2/3 $ 1,667.00

Supplies

Flagging, Topofil, Teflon Tags, Pickets,
Soil Bags, Rock Bags $ 300.00

TOTAL FOR RILEY GROUP $64,737.00

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT: PHANTOM GROUP

TYPE OF REPORT: GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL

a) WAGES:

November 2 to December 14, 1985 (42 days)

	RATE/DAY	NO OF DAYS	TOTAL WAGES	
BKB	200	3	600.00	
JMB	250	3	750.00	
SC	150	9	1,350.00	
JR	150	9	1,350.00	
PR	150	8	1.200.00	
GM	150	8	1,200.00	
		40 man days	$ 6,450.00	$ 6,450.00

August 12 to September 8, 1986 (28 days)

	RATE/DAY	NO OF DAYS	TOTAL WAGES	
RGW	160	6	960.00	
JMB	250	12	3,000.00	
RJR	200	14	2,800.00	
SC	150	16	2,250.00	
DH	150	13	1,950.00	
KL	160	4	640.00	
AL	160	4	640.00	
MP	150	19	2,850.00	
		70 man days	$15,090.00	$15,090.00

b) FOOD AND ACCOMODATION

November 2 to December 14, 1985 (42 days)
August 12 to September 8, 1986 (28 days)

Board 160 man days	$20.00/day	$ 3,200.00
Room 32 days X	$50.00	$ 1,600.00

c) TRANSPORTATION

November 2 to December 14, 1985 (42 days)
August 12 to September 8, 1986 (28 days)

(Costs are split 50/50 between Riley and Phantom Groups)

Airfare	: 7 returns Vancouver - Sandspit 7 X $360.00 ÷ 2	$ 1,260.00
Ferries	: Vancouver - Nanaimo Port Hardy - Prince Rupert Prince Rupert - Skidegate	
	3 ferries, 4 returns $1,551.00 ÷ 2	$ 775.50

Truck Rentals:

TRUCK	RATE	RATE/DAY		DAYS	
1	1100/Month	35.50	X	8	$ 284.00
2	1000/Month	32.25	X	8	$ 258.50
3	1100/Month	35.50	X	14	$ 497.00
4	1000/Month	32.25	X	14	$ 451.50

d) INSTRUMENT RENTAL

NIL

e) SURVEYS

NIL

f) ANALSIS

Soil Samples

NO OF SAMPLES	ANALYZED FOR	COST/SAMPLE	
406	Au,Ag,As	$ 6.60	$ 2,679.60

Rock Samples

NO OF SAMPLES	ANALYZED FOR	COST/SAMPLE	
20	Au,Ag,As,Sb	$11.60	$ 232.00

g) <u>REPORT PREPARATION</u> (Cost apportioned 2/3 to Riley Group, & 1/3 to Phantom Group).

Author:	11 man days	$200.00/Day	X	1/3	$ 734.00
Drafting:	12 man days	$200.00/Day	X	1/3	$ 800.00
Typing:	5 man days	$100.00/Day	X	1/3	$ 166.00

h) <u>OTHER COSTS</u> (Cost apportioned 2/3 to Riley Group, & 1/3 to Phantom Group).

Road Repair - August 12 to Septmeber 8, 1986
Dalby Kendall & Son Construction

$2,500.00 X 1/3 $ 833.00

Supplies

Flagging, Topofil, Teflon Tags, Pickets,
Soil Bags, Rock Bags $ 200.00

TOTAL FOR PHANTOM GROUP $35,510.60


GOLDEN DYKE JOINT VENTURE
LOCATION MAP
QUEEN CHARLOTTE ISLAND
GOLDEN DYKE JOINT VENTURE PROPERTY
GRAHAM ISLAND
Masset
Queen Charlotte
Sandspit
PACIFIC OCEAN
MORESBY ISLAND
Vancouver, B.C. 740 Km.
KM
LEGEND
Initial Post (No.1)
Final Post (No.2)
(2 Post Claim)
Legal Corner Post (LCP) (Modified Grid Claim)
34443 Claim Tag No.
385(6) Record No. (Month of Expiry)
3S×3E Claim Shape (In Units)
POINT 1 4919(9) 3N×4W
POINT 2 4920(9) 2S×4W
BEERSTRIKE 659(7) 3S×5E
SHAFT 1 4921(9) 1N×2E
SHAFT 2 4922(9) 1S×2W
RILEY 2 444(10) 3N×4W
RILEY 1 443(10) 2S×2W
SOL 3 441(10) 2S×4E
SOL 4 442(10) 2N×4E
SHIELDS 511(2)
HEMLOCK 1 509(2)
HEMLOCK 2 510(2)
ANT 384(6) 3S×3W
STIB 385(6) 3S×3E
RUMPLESTILTSKIN 5 1185(3) 3S×2W
SHIELD 1 4914(9) 2N×3W
SHIELD 2 4915(9) 4N×2E
SHIELD 3 4916(9) 2S×2E
SHIELD 4 4917(9) 5N×3W
SHIELD 5 4918(9) 2S×1E
CEASAR 764(9) 1N×2E
NOT ALL THERE 763(9) 2S×3E
OLD BALDY
GRAHAM PROVINC
CHARLOTTE
ISLAND
Gospel Point
SHIELDS BAY
Richardson Head
Clonard Bay
Shields Rock
Dawson Head
Riley Creek
GEOLOGICAL BRANCH ASSESSMENT REPORT
15,325
SCALE
Metres 400 0 400 800 1200 Metres
GOLDEN DYKE JOINT VENTURE
PROJECT NO. 155&156
REVISED
CLAIMS LOCATION
SURVEY BY J.M.B.
DATE Dec./86
NTS 103F/7E,8W
DRAWN BY
SCALE 1:20,000
DWG NO 86-2
NORAMEX MINERALS INC
NORANDA EXPLORATION CO LTD
UMEX INC

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

50 25 0 50 100 150 200 METRES

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

REVISED	Golden Dyke Project
	CLAIM LOCATION
PROJ. No. 155/156	SURVEY BY: J.M.B. — DATE: DEC./1986
N.T.S. 103F/7E, 8W	DRAWN BY: J. SERWIN — SCALE: 1:2,500
DWG. No 86-2A	NORANDA EXPLORATION — OFFICE: VANCOUVER

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
- Topographic Contour : 10 Metre Interval
- SB2-81 DDH Collar Location , Showing Surface Trace of Hole
- 405 × Spot Elevation in Metres

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

50 25 0 50 100 150 200 METRES

REVISED

Golden Dyke Project

NEEDLES - GUMBO ZONES

CLAIM LOCATION

PROJ. No. 155/156
N.T.S. 103F/7E,8W
DWG. No. 86-2C

SURVEY BY: J.M.B. DATE: DEC. 1986
DRAWN BY: J.SERWIN SCALE: 1:2500

NORANDA EXPLORATION
NORAMEX MINERALS INC.
UMEX INC.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

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

50 25 0 50 100 150 200 METRES

REVISED	Golden Dyke Project
	CLAIM LOCATION
PROJ. No. 155/156	SURVEY BY: J.M.B. DATE: DEC./1986
N.T.S. 103F/7E,8W	DRAWN BY: J.SERWIN SCALE: 1:2500
DWG. No. 86-2B	NORANDA EXPLORATION NORAMEX MINERALS INC. UMEX INC.

GOLDEN DYKE JOINT VENTURE
LOCATION MAP
QUEEN CHARLOTTE ISLAND
GOLDEN DYKE JOINT VENTURE PROPERTY
GRAHAM ISLAND
Masset
Queen Charlotte
Sandspit
PACIFIC OCEAN
MORESBY ISLAND
Vancouver, B.C. 740 Km
KM
86-1
POINT ZONE
STRIKE ZONE
NEEDLES ZONE
GUMBO ZONE
OLD BALDY
COURTE ZONE
STIB ZONE
SHIELD ZONE
PHANTOM ZONE
Gospel Point
Riley Cr
Riley Creek
SHIELDS BAY
Richardson Head
Clonard Bay
Shields Rock
Dawson Head
GRAHAM PROVINC
QUEEN CHARLOTTE ISLAND
86-13
86-14
86-5
86-15,16
86-6,9,10
86-7,11
86-12
86-2,3,8
LEGEND
Property Outlines
GEOLOGICAL BRANCH ASSESSMENT REPORT
15,325
SCALE 1:20,000
Metres 400 0 400 800 1200 Metres
GOLDEN DYKE JOINT VENTURE
PROJECT NO. 155 & 156
REVISED
MAPS & GRID
INDEX
SURVEY BY R.G.W.
DATE Dec./86
NTS 103F/7E,8W
DRAWN BY
SCALE 1:20,000
DWG NO 86-3
NORAMEX MINERALS INC
NORANDA EXPLORATION CO LTD
UMEX INC

LEGEND

LITHOLOGY

TERTIARY

MASSET FORMATION

2b	Feldspar Porphyry Dikes
2a	Banded Dacite / Rhyolite , Dacite Porphyry

JURASSIC

YAKOUN FORMATION

Ic	Andesite , Diorite : Dikes and/or Sills
Ib	Porphyritic and Non-Porphyritic Andesitic Flows , Andesitic Pyroclastics (Agglomerate , Tuff , Lapilli Tuff)
Ia	Sediments : Thinly Bedded Tuff , Black Argillite and Mixed Argillite and Volcanic Sediments.

ALTERATION AND MINERALIZATION

ALTERATION MINERALS

Chl - Chlorite
Carb - Carbonate
Clay
Ser - Sericite
Qtz - Quartz

SULPHIDE MINERALS

Py - Pyrite , Stib - Stibnite*, AsPy - Arsenopyrite* (* if Noted)

OTHER MINERALS

Hem - Hematite , Lim - Limonite

Structurally Controlled Features Associated with Fractures , Shears and Faults

For Alteration , Denotes Weak to Moderate Intensity
For Mineralization , Denotes Disseminated Sulphides

Intense Argillic Alteration

Carbonate Veinlet Stockwork

SYMBOLS - GEOLOGY

Limit of Outcrop

Geological Contact : Observed (Attitude Shown if Measurable) ; Inferred

Fault or Shear ; Inclined , Vertical

Fault Zone

Joints or Fractures : Inclined , Vertical

Bedding : Inclined , Vertical

△47958 Rock Geochemistry Sample Site and Number
0.2/10/20/46/18 — Ag(ppm), Au(ppb), Hg(ppb), Sb(ppm), As(ppm)
Values marked with an asterisk (*) have been assayed and should be read as – oz./t Au, Ag & % Sb

Argillic Alteration Zone ; Limonitic ; Sulphide - Rich (Py ± Po ± Aspy ± Sb) ; ± Sericite

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

Topographic Contour : 10 Metre Interval

SB2-81 DDH Collar Location , Showing Surface Trace of Hole

405 × Spot Elevation in Metres

GEOLOGICAL BRANCH ASSESSMENT REPORT

15,325

50 25 0 50 100 150 200 METRES

REVISED	Golden Dyke Project COURTE ZONE GEOLOGY
PROJ. No. 155/156	SURVEY BY: B.B. + J.B. DATE: Feb./1986
N.T.S. 103F/7E,8W	DRAWN BY: J.SERWIN SCALE: 1:2500
DWG. No. 86-5	NORANDA EXPLORATION NORAMEX MINERALS INC. UMEX INC.

TERTIARY

12. Andesitic-basaltic dykes.

11. MASSET FM. Banded to massive, dacitic to rhyolitic flows and tuffs; quartz fan feldspar porphyritic. (Not exploded in area mapped.

10. Felsic dykes and sills. Fine grained, aphyric to feldspar (± quartz) (± quartz) porphyritic, dacitic, rhyodacitic, and rhyolitic dykes or sills. Locally pyritiferous. White to pale grey, greenish grey; medium to dark grey where unaltered. May be hypabyssal equivalent of Unit 11.

9. Post-tectonic intrusives. Granite, granodiorite, diorite.

LOWER CRETACEOUS

8. LONGARM FM. Siltstone, greywacke, conglomerate. (Not exposed in area mapped).

MIDDLE JURASSIC

7. Syn-tectonic intrusives: quartz diorite.

4,5,6, YAKOUN FM. Andesitic to rhyodacitic pyroclastic rocks and/or flows; tuffaceous sediments; synvolcanic intrusives (sills, dykes, plugs). Units 4 and 5 are intercalated.

6. Synvolcanic intrusives. Andesitic to dacitic sills, dykes, and plugs. Hypabyssal equivalents of Unit 5.

5. Massive volcanic rocks: mainly pyroclastic. Lapilli tuff; crystal tuff; porphyritic and non-porphyritic. May be, in part, flows.

Sub-units 5a - 5f (5a*) are andesitic to dacitic; Sub-units 5g - 5i (5g*) are dacitic to rhyodacitic. No stratigraphic order is implied.

5a. Medium to dark green or greenish grey, fine to medium grained, aphyric to microporphyritic andesite (or dacite) (tuff or flow).

5b. Medium to dark green or greenish grey, (biotite±) hornblende ± feldspar porphyritic andesite (crystal tuff or flow).

5c. Green to greenish grey, medium (to coarse) feldspar-porphyry andesite (or dacite) (crystal tuff or flow).

5d. Medium greenish grey, very coarse feldspar-porphyry dacite/andesite (Chasm Creek porphyry). May have hornblende phenocrysts ± scarce lithic clasts. Possibly a dyke.

5e. Grey to greenish grey, lithic lapilli tuff.

5f. Grey to greenish grey, crystal-lithic lapilli tuff.

5g. Light to dark grey, quartz-feldspar porphyry rhyodacite (tuff or flow).

5h. Light to dark grey, fine grained, feldspar porphyry rhyodacite (tuff or flow).

5i. Light to dark grey, (crystal) lithic lapilli tuff; rhyodacite.

5j. Medium to dark grey, fine grained, aphyric rhyodacite.

4. Stratified rocks: water-lain tuffs; reworked tephra; alluvial, lacustrine, or marine clastic sedimentary rocks.

4a. Light to medium green, thinly bedded tuff, with coarser fragmental interbeds.

4b. Black and green, fine to coarse, crudely layered tuff and lapilli tuff.

4c. Black, fissile, fine grained argillite.

4d. Salt and pepper grey, medium grained, poorly bedded greywacke (lithic wacke).

4e. Medium to dark grey, fine grained, poorly bedded, tuffaceous siltstone.

4f. Polymictic granule-pebble conglomerate.

LOWER JURASSIC

3. MAUDE FM. Argillite, shale, lithic sandstone. (Not exposed in area mapped).

UPPER TRIASSIC - LOWER JURASSIC

2. KUNGA FM. Limestone, argillite, siltstone. (Not exposed in area mapped).

UPPER TRIASSIC

1.* KARMUTSEN FM. Basalt flows, tuffs, interflow sediments. (Not exposed in area mapped).

SYMBOLS - GEOLOGY

Limit of Outcrop

Geological Contact : Observed (Attitude Shown if Measurable) ; Inferred

Fault or Shear , Inclined , Vertical

Fault Zone

Joints or Fractures : Inclined , Vertical

Bedding : Inclined , Vertical

△ 47958 Rock Geochemistry Sample Site and Number
0.2/10/20/46/18 — Ag (ppm), Au (ppb), Hg (ppb), Sb (ppm), As (ppm)
Values marked with an asterisk (*) have been assayed and should be read as – oz./t Au, Ag & % Sb

Argillic Alteration Zone , Limonitic ; Sulphide - Rich (Py ± Po ± Aspy ± Sb) , ± Sericite

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

Topographic Contour : 10 Metre Interval

SB2-81 DDH Collar Location , Showing Surface Trace of Hole

405 × Spot Elevation in Metres

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

50 25 0 50 100 150 200 METRES

REVISED	Golden Dyke Project	
	STIB ZONE	
	GEOLOGY	
PROJ. No. 155/156	SURVEY BY: J.M.B.	DATE: SEPT. 1986
N.T.S. 103F/7E, 8W	DRAWN BY: J. SERWIN	SCALE: 1:2,500
DWG. No. 86-6	NORANDA EXPLORATION	
	OFFICE: VANCOUVER	

NEEDLES ZONE ROCK SAMPLES

SAMPLE NO.	WIDTH(M)	Ag(oz/t)	Au(oz/t)	Hg(ppb)	Sb(ppm)	As(ppm)
4757B	1.0	.02	.001	106	30	34
4758B	1.0	.02	.001	200	40	400
4759B	1.0	.02	.003	140	28	380
4760B	0.03	.02	.005	160	44	900
4761B	1.0	.02	.001	120	18	52
4762B	1.0	.02	.001	[illegible]	26	26
[illegible]	1.0	.02	.001	80	30	42
4764B	1.0	.02	.002	60	46	40
4765B	1.0	.02	.001	100	34	22
4766B	[illegible]	.02	.001	100	92	[illegible]
4767B	1.0	.02	.012	120	32	[illegible]
4768B	1.0	.02	.001	140	24	176
4769B	1.0	.02	.001	160	22	50
4770B	0.5	.02	.001	100	16	[illegible]
4771B	1.0	.02	.001	80	16	[illegible]
4772B	0.75	.02	.001	220	20	[illegible]
4773B	0.75	.02	.001	380	16	[illegible]
4774B	1.0	.02	.001	160	24	[illegible]
4783B	0.9	.02	.001	60	38	30
4784B	1.0	.02	.028	[illegible]	60	1320
4785B	1.0	.02	.034	100	84	2100
4786B	1.0	.02	.018	100	100	4300
[illegible]	1.0	.02	.001	140	64	152
4788B	1.0	.02	[illegible]	120	32	38
4789B	[illegible]	.02	[illegible]	140	86	2100
4790B	1.0	.02	.001	[illegible]	14	56

LEGEND

LITHOLOGY

TERTIARY

MASSET FORMATION

- 2b Feldspar Porphyry Dikes
- 2a Banded Dacite / Rhyolite , Dacite Porphyry

JURASSIC

YAKOUN FORMATION

- Ic Andesite , Diorite : Dikes and / or Sills
- Ib Porphyritic and Non - Porphyritic Andesitic Flows , Andesitic Pyroclastics (Agglomerate , Tuff , Lapilli Tuff)
- Ia Sediments : Thinly Bedded Tuff , Black Argillite and Mixed Argillite and Volcanic Sediments.

ALTERATION AND MINERALIZATION

ALTERATION MINERALS

- Chl - Chlorite
- Ser - Sericite
- Carb - Carbonate
- Qtz - Quartz
- Clay

SULPHIDE MINERALS

- Py - Pyrite , Stib - Stibnite*, As Py - Arsenopyrite* (* if Noted)

OTHER MINERALS

Hem - Hematite , Lim - Limonite

- Structurally Controlled Features Associated with Fractures , Shears and Faults
- For Alteration , Denotes Weak to Moderate Intensity For Mineralization , Denotes Disseminated Sulphides
- Intense Argillic Alteration
- Carbonate Veinlet Stockwork

SYMBOLS - GEOLOGY

- Limit of Outcrop
- Geological Contact : Observed (Attitude Shown if Measurable) ; Inferred
- Fault or Shear ; Inclined , Vertical
- Fault Zone
- Joints or Fractures : Inclined , Vertical
- Bedding : Inclined , Vertical
- △4795B Rock Geochemistry Sample Site and Number
- .02*/.001*/20/10/10,000 Ag(oz/t), Au (oz/t) , Hg (ppb) , Sb (ppm), As (ppm)
  *Denotes Assay

SYMBOLS - OTHER

- 132°26'00" 53°22'00" 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

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

50 25 0 50 100 150 200 METRES

REVISED	Golden Dyke Project	
	NEEDLES - GUMBO ZONES	
	GEOLOGY	
PROJ. No. 155/156	SURVEY BY: B.B. + J.B.	DATE: Feb. / 1986
N.T.S. 103F/7E,8W	DRAWN BY: J.SERWIN	SCALE: 1:2500
DWG. No. 86-7	NORANDA EXPLORATION NORAMEX MINERALS INC. UMEX INC.	


GOLDEN DYKE JOINT VENTURE PROPERTY
GRAHAM ISLAND
Masset
Queen Charlotte
Sandspit
PACIFIC OCEAN
MORESBY ISLAND
Vancouver, B.C. 740 Km
GOLDEN DYKE JOINT VENTURE
LOCATION MAP
QUEEN CHARLOTTE ISLAND
KM
LEGEND
x SP-A 1985 SOIL PROFILES (A-G)
x SP-86-1 1986 SOIL PROFILES (1-5)
LIMIT OF CLAIMS
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,325
SCALE 1:20,000
Metres 400 200 0 400 800 1200 Metres
Golden Dyke Project
REVISED
SOIL PROFILE
LOCATIONS
PROJECT No. 155/156
SURVEY BY
DATE DEC./1986
NTS103F/7E,8W
DRAWN BY J. Serwin
SCALE 1:20,000
DWG NO 86-8
NORAMEX MINERALS INC
NORANDA EXPLORATION CO LTD
UMEX INC
GRAHAM PROVINC
QUEEN CHARLOTTE ISLAND
Gospel Point
Riley Ck
Riley Creek
SHIELDS BAY
Richardson Head
Clonard Bay
Shields Rock
Dawson Head
OLD BALDY
Phantom
x SP-E
x SP-D
SP-C x
SP-A
SP-B
x SP-F
x SP-G
SP-86-2
SP-86-1
x SP-86-3
x SP-86-4
x SP-86-5
L 30

LEGEND

260,-,280 As (ppm), Ag* (ppm), Au* (ppb) - on Grid Line

80 As, .6 Ag, – Au } on Base Line

* Ag < .5 ppm not Plotted

* Au < 20 ppb not Plotted

Contours : 100, 300, 500, 1000 ppm for As Values

As VALUES – CONTOURED

≥ 50

≥ 100

≥ 500

≥ 1000

Ag & Au VALUES HIGHLIGHTED

.6 Ag

280 Au

SYMBOLS – OTHER

132°26'00" 53°22'00" 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

GEOLOGICAL BRANCH ASSESSMENT REPORT

15,325

50 25 0 50 100 150 200 METRES

REVISED	Golden Dyke Project
	COURTE-STIB ZONES SOIL GEOCHEMISTRY As · Ag · Au
PROJ. No. 55/56	SURVEY BY: B.B., J.B., R.W. DATE: DEC./1986
N.T.S. 103F/7E,8W	DRAWN BY: J.SERWIN SCALE: 1:2500
DWG. No. 86-9	NORANDA EXPLORATION NORAMEX MINERALS INC. UMEX INC.

LEGEND

Rock-Chip Sample (Across Bar Indicated Width)

Rock-Chip Sample (Across Width Shown in Brackets)

RESULTS As (ppm), Ag (ppm), Au (ppb)

- SP86-3 —— Soil Profile Location
- P57671-57674 — Soil Sample Numbers
- R57675 —— Rock Sample Numbers (Results Shown on Soil Profile Sections)

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

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

50 25 0 50 100 150 200 METRES

COURTE - STIB ZONE

REVISED	Golden Dyke Project
	SAMPLE LOCATIONS & RESULTS SOIL PROFILES & ROCK GEOCHEMISTRY
PROJ. No. 155/156	SURVEY BY: J.M.B. DATE: DEC./86
N.T.S. 103F/7E, 8W	DRAWN BY: J. SERWIN, TTA. SCALE: 1:2,500
DWG. No. 86-10	NORANDA EXPLORATION OFFICE: VANCOUVER

LEGEND

260,-,280 As (ppm), Ag* (ppm), Au* (ppb) - on Grid Line

80 / .6 / — : As / Ag / Au on Base Line

* Ag < .5 ppm not Plotted

* Au < 20 ppb not Plotted

Contours at: 100, 300, 500, 1000 ppm for As, Ag & Au Values not Contoured

As VALUES

⩾ 50	⩾ 500
⩾ 100	⩾ 1000

SYMBOLS - OTHER

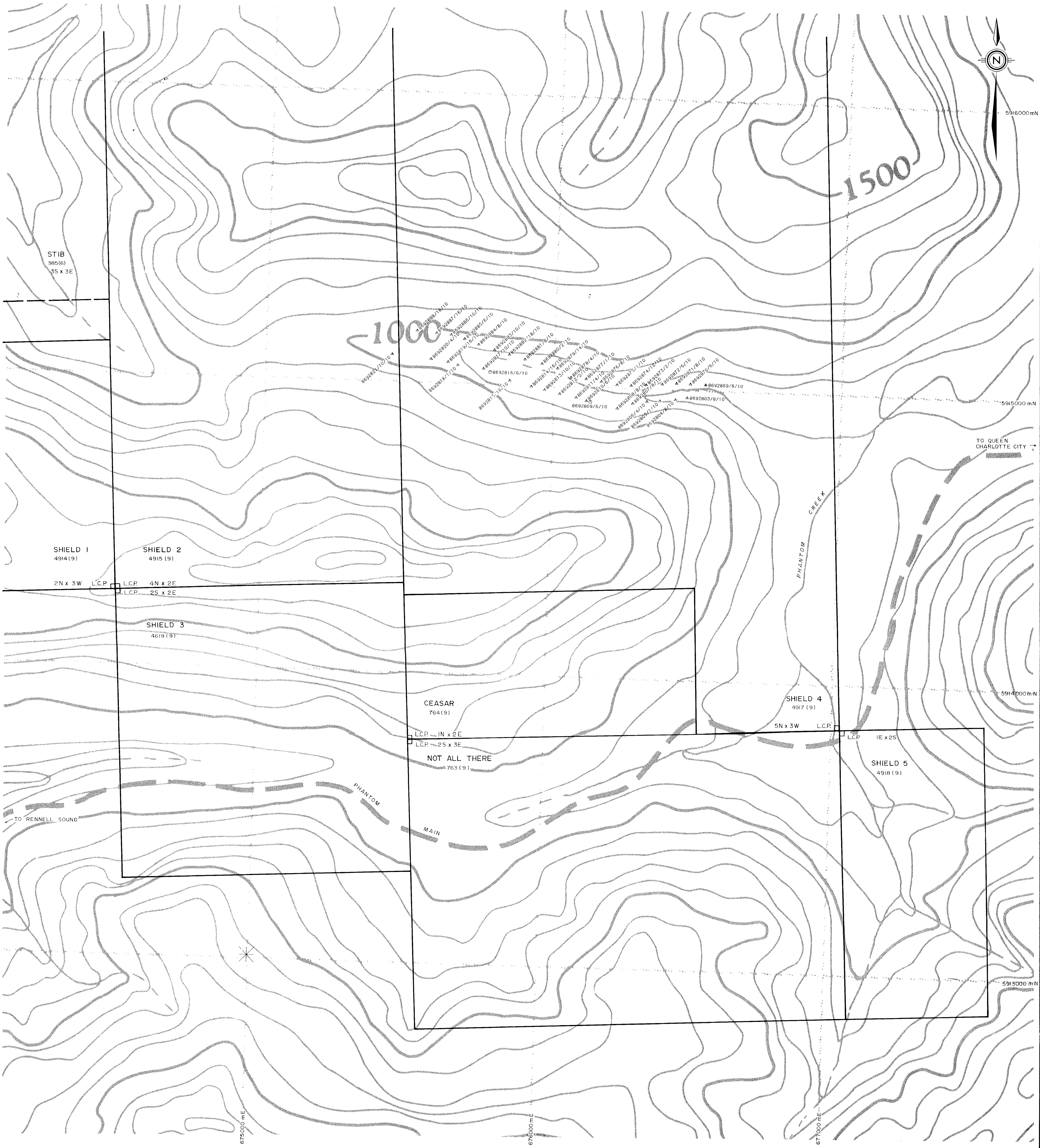
- Longitude and Latitude Co-ordinates
- Grid Line : Full Dash = 100 Metre Interval; Partial Dash = 25 Metre Interval
- 95+00N Grid Co-ordinate
- Creek
- Road
- Topographic Contour : 10 Metre Interval
- SB2-81 DDH Collar Location, Showing Surface Trace of Hole
- 405 × Spot Elevation in Metres

GEOLOGICAL BRANCH ASSESSMENT REPORT

15,325

50 25 0 50 100 150 200 METRES

REVISED	Golden Dyke Project
	NEEDLES-GUMBO ZONES
	SOIL GEOCHEMISTRY As · Ag · Au
PROJ. No. 55/56	SURVEY BY: B. BOWEN — DATE: FEB./1986
N.T.S. 103F/7E,8W	DRAWN BY: J. SERWIN — SCALE: 1:2500
DWG. No. 86-11	NORANDA EXPLORATION NORAMEX MINERALS INC. UMEX INC.



GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

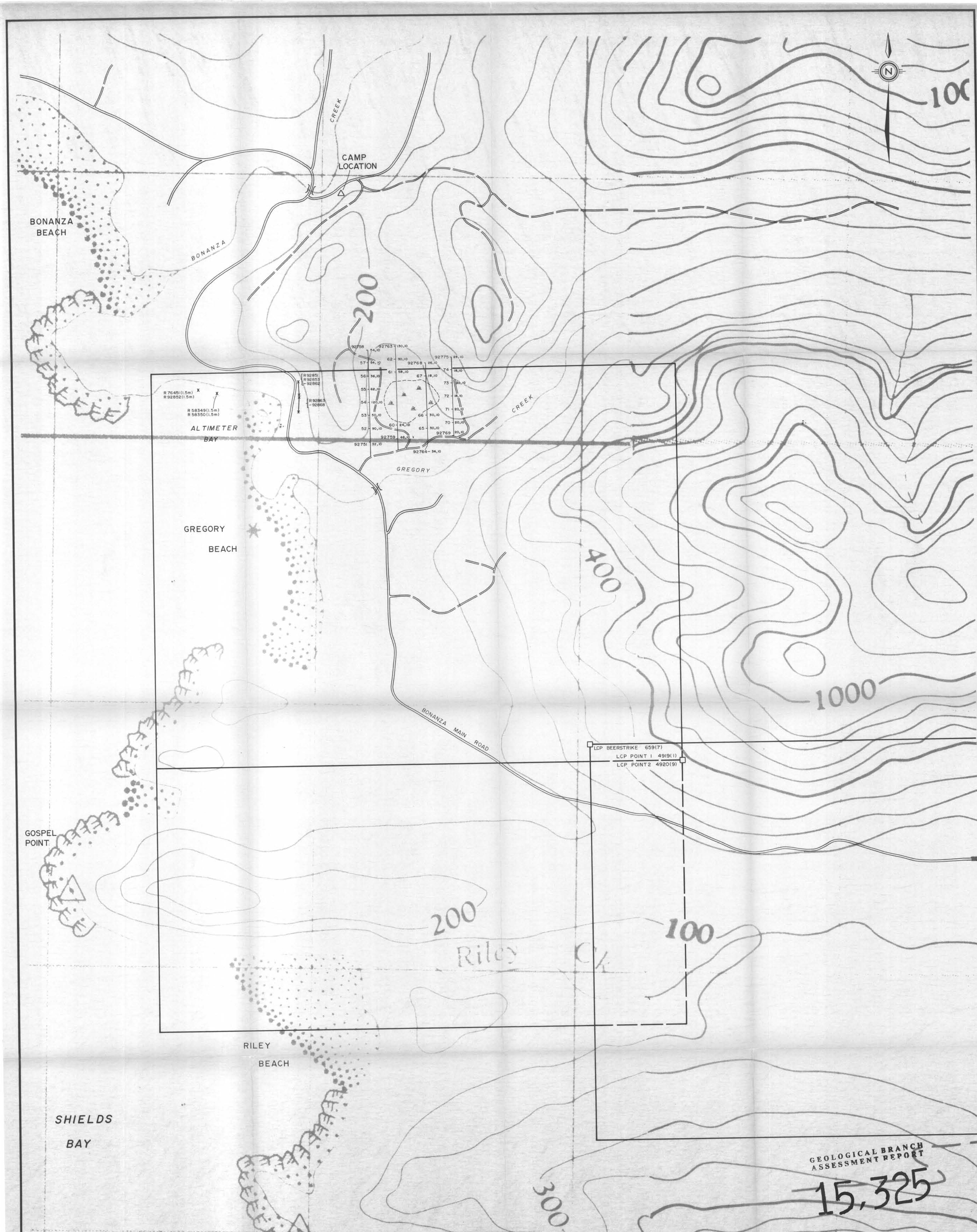
SCALE
1:5,000

Metres 100 50 0 100 200 300 400 500 Metres

△ 8692809/6/10 — Sample Number / As (ppm) / Au (ppb)

Topographic Contours : 100 Feet

REVISED	
	Golden Dyke Project
	SHIELD - PHANTOM ZONE
	SOIL AND SILT GEOCHEMISTRY
PROJ. No. 155/156	SURVEY BY: J.R., S.C. DATE: DEC./1986
N.T.S. 103F/8	DRAWN BY: J.S. SCALE: 1:5,000
DWG. No. 86-12	**NORANDA EXPLORATION** OFFICE: VANCOUVER



GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

POINT ZONE ROCK SAMPLES

SAMPLE NUMBER	WIDTH (m)	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ag PPM	As PPM	Au PPB
R92851	2.0	226	2	78	1	<0.2	600	110
R92852	1.5	29	<2	26	3	<0.2	1000	15
R92853	2.0	48	3	72	2	<0.2	350	85
R92854	2.0	206	<2	42	2	<0.2	35	<5
R92855	2.0	155	2	62	2	<0.2	27	<5
R92856	2.0	77	12	24	2	<0.2	120	<5
R92857	2.0	204	5	50	3	<0.2	220	<5
R92858	2.0	120	4	26	2	<0.2	280	25
R92859	2.0	229	9	52	2	<0.2	300	5
R92860	2.0	515	22	54	1	0.3	410	10
R92861	2.0	29	12	27	2	<0.2	450	10
R92862	2.0	25	25	8	2	<0.2	700	80
R92863	2.0	8	25	32	2	<0.2	300	85
R92864	2.0	116	78	150	3	<0.2	290	10
R92865	2.0	34	8	64	9	<0.2	800	<5
R92866	2.0	32	20	56	5	<0.2	250	15
R92867	2.0	29	15	40	3	<0.2	250	10
R92868	2.0	28	12	40	2	<0.2	280	5
R58349	1.5	n.a.	n.a.	n.a.	n.a.	<0.2	420	80
R58350	1.5	n.a.	n.a.	n.a.	n.a.	0.2	334	30
R76451	1.5	n.a.	n.a.	n.a.	n.a.	0.2	234	5

n.a. Not analysed

LEGEND

Main Logging Road

Secondary Logging Road

Topographic Contours : 100 Feet

SOIL SAMPLES

Sample No	Values
	As in ppm, Au in ppb
92758	54,10

SCALE
1 : 5,000

Metres 100 50 0 100 200 300 400 500 Metres

REVISED	GOLDEN DYKE J.V.
	POINT ZONE
	SOIL & ROCK GEOCHEMISTRY
PROJ. No. 155/156	SURVEY BY: DATE: Dec./86
N.T.S. 103F/7,8	DRAWN BY: J. Serwin SCALE: 1:5000
DWG. No. 86-13	NORANDA EXPLORATION
	OFFICE VANCOUVER

GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,325

SCALE 1:5000

Metres 100 0 100 200 300 400 500 Metres

△ 8692776/8/10 — Soil Sample Location / As (ppm) / Au (ppb)

Topographic Contour: 10 Metres Interval

REVISED	Golden Dyke Project
	NEEDLES ZONE
	SOIL GEOCHEMISTRY
PROJ. No. 155/156	SURVEY BY: S.C. DATE: DEC./1986
N.T.S. 103F/8	DRAWN BY: J.S. SCALE: 1:5000
DWG. No. 86-14	NORANDA EXPLORATION OFFICE: VANCOUVER

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

Instrument : UNIMAG
Field :
Datum : 5550 0 nT
Contour Interval :
Conductor Axis :

50m 25m 0m 50m 100m

GOLDEN DYKE

MAGNETOMETER SURVEY

PROJECT: GOLDEN DYKE / UMEX PROJECT # : 155/156
BASELINE AZIMUTH : 117 Deg.

SCALE = 1: 2500 DATE : 8/25/86
SURVEY BY : JR NTS : 103 F/8
FILE: M155GOL

86·15 **NORANDA EXPLORATION**


L.C.P. ANT
3S×3W 384(6)
SHIELDS IP
511(2)
IP HEMLOCK 1
509(2)
FP
IP HEMLOCK 2
510(2)
L.C.P. SOL 1
1W×2S 439(9)
L.C.P. SOL 2
1E×2S 440(9)
FP
L.C.P. STIB
3E×3S 385(6)
RUMPLESTILTSKIN
2W×3S 1185(3)
BASELINE
10300N
10200N
10100N
10000N
9900N
9800N
9700N
9600N
9500N
11200W
11100W
11000W
10900W
10800W
10700W
10600W
10500W
10400W
10300W
10200W
10100W
10000W
9900W
9800W
9700W
9600W
9500W
9400W
9300W
9200W
9100W
9000W
8900W
N
Instrument : UNIMAG
Field : TOTAL
Datum : 55500.0 nT
Contour Interval : 50 nT
(2 passes through a 9 pt. Hanning Filter.)
(4 passes through a 3 pt. Hanning Filter.)
Conductor Axis :
50m 25m 0m 50m 100m
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,325
GOLDEN DYKE
MAGNETOMETER SURVEY
(FILTERED CONTOUR PRESENTATION)
PROJECT: GOLDEN DYKE / UMEX PROJECT # : 155/156
BASELINE AZIMUTH : 117 Deg.
SCALE = 1: 2500
DATE : 8/25/86
SURVEY BY : JR
NTS : 103F/8
FILE: M155GOL
86·16
NORANDA EXPLORATION


302+00N
301+00N
300+00N
299+00N
298+00N
297+00N
SLOPE CHAINED I.P. GRID
102+00N
101+00N
100+00N
99+00N
98+00N
SLOPE CORRECTED GRID
97+00N
700
600
500
400
300
200
100
0 nT
MAG.
P.F.E.
ρa
LEGEND
MAG
INSTRUMENT: .... UNIMAG
FIELD MEASUREMENT: .. TOTAL
DATUM: .... 56,000 nT
PROFILE SCALE: .... 1cm = 100 nT
I.P.
ARRAY: .... Dipole-Dipole
FREQUENCY: .... 4.0/0.25 Hz
a: 25m
CONTOUR INTERVAL:
P.F.E.: ... 3.0,5.0,7.5
ρa : 100,300,500,1000, 1500,2500
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,325
Metres 25 0 25 50 Metres
REVISED
GOLDEN DYKE
I.P. and MAG. SURVEY
Line 92+00W
PROJ.No. 155
N.T.S.
DWG. No. 86-17
SURVEY BY: K.L., T.L.
DATE: 31.08.86
DRAWN BY: J.Serwin
SCALE: 1:1250
NORANDA EXPLORATION
OFFICE: VANCOUVER

LEGEND

MAG

INSTRUMENT: .... UNIMAC
FIELD MEASUREMENT: .. TOTAL
DATUM: .... 56,000 nT
PROFILE SCALE: .... 1cm = 100 nT

I.P.

ARRAY: .... Dipole-Dipole
FREQUENCY: .... 4.0/0.25 Hz
a: .... 25 m
CONTOUR INTERVAL:
P.F.E.: ... 3.0, 5.0, 7.5
ρa : ... 100, 300, 500, 1000, 1500, 2500

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

Metres 25 0 25 50 Metres

REVISED	GOLDEN DYKE
	I.P. and MAG. SURVEY
	Line 95+00W
PROJ. No. 155	SURVEY BY: K.L. T.L., DATE: 29.08.86
N.T.S.	DRAWN BY: J.Serwin SCALE: 1:1250
DWG. No. 86·18	NORANDA EXPLORATION OFFICE: VANCOUVER

LEGEND

MAG
INSTRUMENT: .... UNIMAC
FIELD MEASUREMENT: .. TOTAL
DATUM: .... 56,000 nT
PROFILE SCALE: .... 1cm = 100 nT

I.P.
ARRAY: .... Dipole-Dipole
FREQUENCY: .... 4.0/0.25 Hz
a: .... 25 m
CONTOUR INTERVAL:
P.F.E.: ... 3.0, 5.0, 7.5
ρa : ... 100, 300, 500, 1000, 1500, 2500

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

Metres 25 0 25 50 Metres

REVISED	GOLDEN DYKE
	I.P. and MAG. SURVEY
	Line 105+00W
PROJ. No. 155	SURVEY BY: K.L., T.L., DATE: AUG. 86
N.T.S.	DRAWN BY: J. Serwin SCALE: 1:1250
DWG. No. 86-20	NORANDA EXPLORATION OFFICE: VANCOUVER

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,325

LEGEND

MAG

INSTRUMENT: .... UNIMAC
FIELD MEASUREMENT: .. TOTAL
DATUM: .... 56,000 nT
PROFILE SCALE: .... 1cm = 100 nT

I.P.

ARRAY: .... Dipole-Dipole
FREQUENCY: .... 4.0/0.25 Hz
a: .... 25 m
CONTOUR INTERVAL:
P.F.E.: ... 3.0, 5.0, 7.5
ρa : ... 100, 300, 500, 1000, 1500, 2500

Metres 25 0 25 50 Metres

REVISED	GOLDEN DYKE
	I.P. and MAG. SURVEY
	Line 100+00 W
PROJ. No. 155	SURVEY BY: K.L., T.L., DATE: 29.08.86
N.T.S.	DRAWN BY: J. Serwin SCALE: 1:1250
DWG. No. 86-19	NORANDA EXPLORATION OFFICE: VANCOUVER