

GEOLOGICAL EVALUATION
of a
GOLD QUARTZ--VEINED ACID STOCK
on the
BOND 1-4 CLAIMS, KELOWNA, B.C.

50°00'33"N; 119°33'30"W:NTS 82L/4E
BEAR CREEK, 14Km NNW of Kelowna
Vernon Mining Div., British Columbia

by
N.C. Lenard, P. Geol., P. Eng.
Consulting Geologist, Westbank, B.C.

Field Work Done: November 17,28, 1983.

Owner: N.C. Lenard. April 9th, 1984.

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

12,148

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Fig.1: Location Map

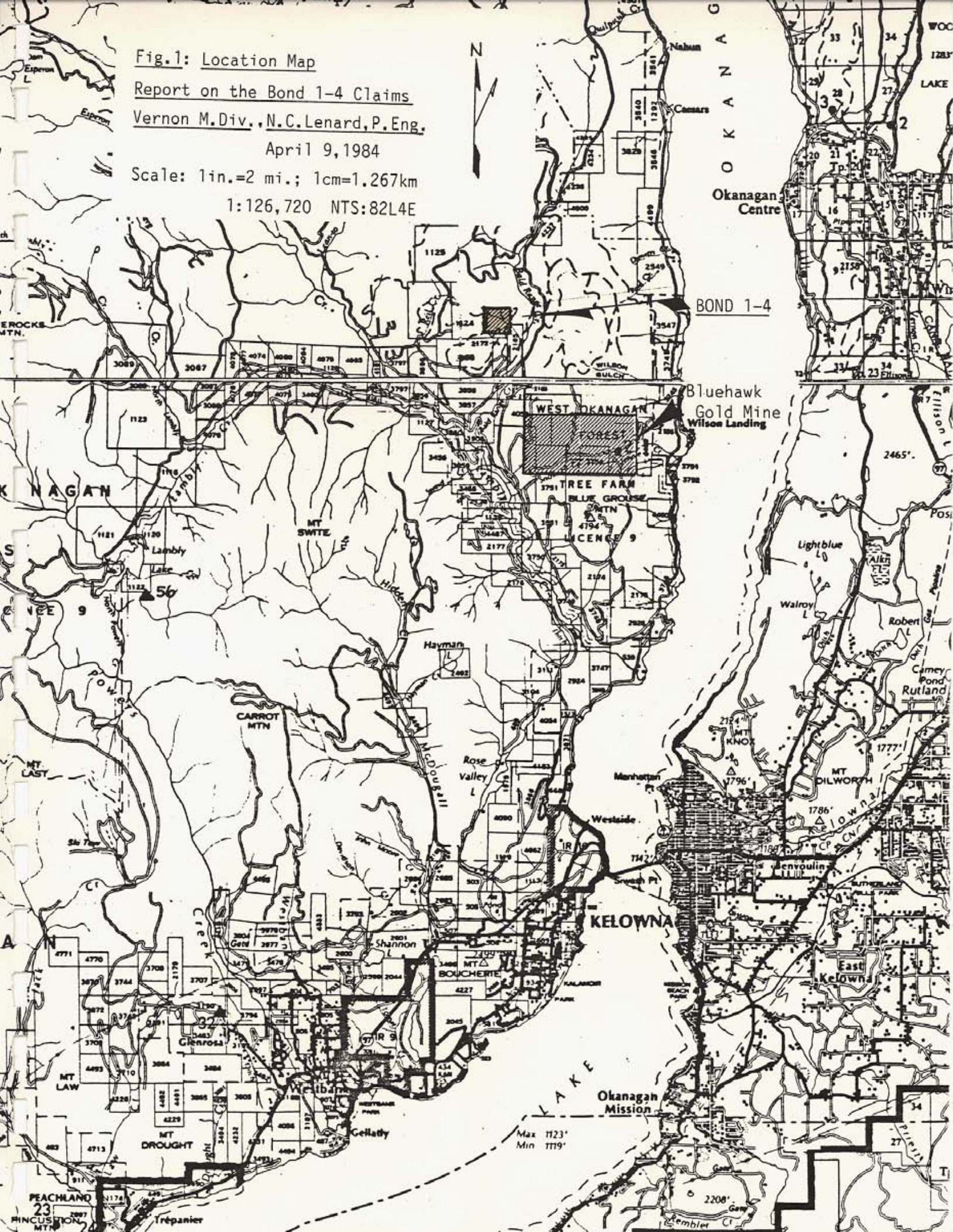
Report on the Bond 1-4 Claims

Vernon M. Div., N.C. Lenard, P. Eng.

April 9, 1984

Scale: 1 in. = 2 mi.; 1 cm = 1.267 km

1:126,720 NTS:82L4E



GEOLOGY OF BOND 1-4 CLAIMS

Vernon M.D., British Columbia

INTRODUCTION:

This report deals with the precious metal potential of a small quartz-diorite stock hosting narrow, gold-bearing quartz veins. It was found and staked last fall by the owner via ground prospecting, and has no previous work record. The property is on the west slope of Bald Range Creek, which flows southerly into Bear (Lambly) Creek. It is about 14 Km northwest of Kelowna, and about 4 Km northwest of the old Bluehawk gold mine on Bluegrouse Mountain.

Evaluation is based on data gathered in the field by the writer by belt chain and compass tied to logging roads and topographic features, done on November 17th and November 28, 1983.

PURPOSE:

Aim of this work was to preliminary-map the geologic setting; the morphology, size and nature of the intrusive stock; and to evaluate the precious metal potential, and scope and attitude of two contiguous, rusty quartz veins having strongly altered wall rocks. Although the showing is close to a much travelled bush road, no sign of prior prospecting of the veins was evident. This may be explained by the separate assays of vein quartz done by the writer of heavily leached outcrop samples that gave uneconomic gold-silver values, only 10% of those yielded by grab samples of fresh, drill-blasted pyritic quartz from the same pits on both veins.

LOCATION & ACCESS:

The claims are about 5 Km west of Okanagan Lake at an elevation of 3,500 ft.(1,070m), or 2,390 ft.(729m) above lake level. Access is by 2 or 4 wheel drive via logging roads north of Bear Lake road, which is reached from Highway 97 at the Westside turnoff, about one mile west of Kelowna bridge. Fair to good logging roads surround the claims.

PROPERTY:

The property consists of Bond 1 - Bond 4, two-post claims staked in November 1983 to expand the prior Bond 1 and Bond 2 claims, held by the writer, to more effectively cover the intrusive stock. The Bond 1 and 2 claims were staked in August, 1983.

<u>Claim</u>	<u>Units</u>	<u>Record No.</u>	<u>Tag No.</u>	<u>Record Date</u>	<u>Owner</u>
Bond 1	1	1637	526597M	Nov.25,1983	N.C. Lenard
Bond 2	1	1638	526598M	Nov.25,1983	N.C. Lenard
Bond 3	1	1639	526599M	Nov.25,1983	N.C. Lenard
Bond 4	1	1640	526600M	Nov.25,1983	N.C. Lenard

WORK HISTORY:

The writer is not aware of any previous exploration work performed on the ground covered by the Bond 1-4 claims, nor is there any physical evidence of a survey grid or surface excavations.

The most recent previous staking covering this ground are the Dandy 11-16, 2-post claims held by Argentia Mines Ltd., which lapsed in 1975. Recorded prospect trenches could not be found, nor claim lines or posts. Thus, it is inferred that the claims were incorrectly plotted on the claims map and do not cover the Bond claims area.

GENERAL GEOLOGY:

The property is on the western border of the Shuswap metamorphic terraine, a broad region of old sedimentary belts and granitic plutons. Gold quartz prospects occur near Vernon to the north, and sparsely southward along the west side of Okanagan Lake to the old Bluehawk mine. The latter is across Bald Range Valley from Bluegrouse Mountain, 4 Km southeast, paralleling the edge of a granodiorite batholith, about 0.5 mi.(0.8 Km) north of these claims and of the Bluehawk gold-silver deposit. The Bluehawk's only recorded production was 5 tons in 1935, grading 1.0 oz. gold and 3.5 oz. silver per ton.

Gold quartz mineralization commonly occurs as sparse amounts of base metal sulfides and free gold, locally with bismuth tellurides, the precious metals occurring in pyritized, sheared and brecciated ore shoots of the veins, which are locally disrupted by faulting during or after mineralization events.

LOCAL GEOLOGY:

The subject quartz diorite intrusive, inferred to be a stock, about 650 ft. (200m) in diameter, contrasts with the more linear, gabbroic diorite stock that hosts auriferous quartz veins at the Bluehawk mine site.

Country rocks intruded by the Bond claims stock are Permian Cache Creek metasediments and local andesites. Here, a wide belt of marblized limestone borders the north-east side of the property; and metasediments and volcanics, the remaining area. These beds appear to be in fault contact with a granodiorite batholith 0.5 miles (0.8 Km) north, below a cliff of marblized limestone.

Outcrops of the stock are spotty, and are absent on its flanks. Glacial drift effectively masks much of the property. Dry gullies that cross part of the claims appear to hold little stream sediment suitable for geochemical evaluations, but soil profiles are sufficiently developed for soil geochemical surveys.

ECONOMIC GEOLOGY:

(a) Producing Model

A geologic model or analog for this setting could be the Lamaque gold mine, at Val d'Or Quebec. The Lamaque zoned stock of diorite and quartz diorite, with an albite granodiorite core, measures 800 x 380 feet (244m x 116m). It is a satellite of the Bourlamaque batholith. The stock is highly faulted with a great number of quartz veins, ranging from less than a foot thick up to 20 feet (6.1m) in width, occupying fault planes. There, as in the subject stock, wall rocks are albitized, and pyrite is common. The Lamaque stock is mined to the 1,600 foot level. Fracturing within that zoned stock was locally intensive enough to create large masses of ore: one such mass in this small intrusive contained 1 million tons of medium grade gold ore. To 1944, Lamaque produced 3,090,461 tons of gold ore grading 0.325 oz/ton.

Common albite and quartz-albitite veins in this area and albitized wall rocks at both the Bluehawk deposit and the subject prospect, point to the adjoining batholith as the source.

(b) Showings and Assays

Quartz float led to two rusty veins with intersecting trends that outcrop at the top edge of the south slope of the stock.

Although the quartz is fully leached, freshly blasted specimens contain residual and fresh, fine-grained pyrite nests. Gold assays of fresh samples are ten times that of the weathered ones; similar significant differences occurred in silver values.

VEIN DETAILS AND FIRE ASSAYS

<u>Sample</u>	<u>Type</u>	<u>Host</u>	<u>State</u>	<u>Thick</u>		<u>Strike</u>	<u>Dip°</u>	<u>Mineral'n</u>	<u>Assay oz/t</u>		<u>% Leached Gold</u>
				<u>ft.</u>	<u>m.</u>				<u>(°Az)</u>	<u>Au.</u>	
No. 1	Grab	Quartz	<u>fresh</u>	1.8	0.5	275	30	Pyrite	<u>0.116</u>	0.08	
No. 1	Grab	Quartz	leached					Limonite	0.011	0.05	94.8
No. 2	Grab	Quartz	<u>fresh</u>	0.67	0.2	240	42½	Pyrite	<u>0.352</u>	0.19	
No. 2	Grab	Quartz	leached					Limonite	0.037	0.01	95.1

A thin, widespread blanket of soil and drift over the stock prevents direct projection of the vein exposures, but first impressions are of pronounced vein wallrock alteration following strong faulting that may have created extensive ore-bearing structures in the competent, brittle, quartz diorite mass. These early assays support this premise.

Initial targets for follow-up exploration are:

- (i) the projected intersection of the two known veins, and,
- (ii) the site of faulted quartz diorite 241 feet west of Vein 1 near projection of its strike; silicified andesite breccia 134 ft. further.

SUMMARY & CONCLUSIONS:

A. Economic Geology

Fine-grained pyrite occurs in both of the narrow quartz veins in sparse fresh samples and the economic grades of gold present may be carried by the pyrite, or be in a microscopic free form.

Very low gold values present in the heavily weathered quartz outcrops may account for earlier lack of interest in them by prospectors. Leaching of the gold values by humic cyanides is the surmised agent, and it points up the shattered, permeable nature of the vein structures, - a plus for late-stage gold mineralization.

Encouraging aspects of this auriferous stock are the portent for multiple veins, good depth potential due to competency of the brittle quartz-diorite host rock, and evident late-shock effects in the quartz veins, forming good access for gold-bearing fluids.

The intrusive is similar in size and setting to that of the rich Lamaque mine, and forms a viable exploration target for multi-vein gold reserves. Other similar stocks could exist in this locale.

Preliminary prospecting shows potential for a 241-foot extension of Vein 1. And, a projected intersection of Veins 1 and 2 could be explored for gold enrichment.

Access is excellent; lands are generally crown except the south 20% of the claims, which are surveyed private land. Moderate

slopes allow drifting rather than expensive sinking mining methods. Closest water source is Bald Range Creek, about $\frac{1}{2}$ mile (0.8 Km) downslope.

B. Structural Geology:

In the limited exposures of the subject quartz diorite intrusive, strong faulting is associated with the quartz veins along and across their trend. It may have accompanied mineralization or have followed. Late shock of the veins is inferred from good fracture permeability.

Competency of the brittle quartz diorite stock favors persistence of internal faulting and development of wide stockworks of quartz veins. Some evidence of stockworking occurs at the No.2 vein. Comparison with the Lamaque gold stock, with a like setting and wallrock alteration, suggests the possibility of good depth persistence, and much faulting hosting many quartz veins at the subject intrusive.

Topography suggests that the intrusive may tail to the north on strike with the contact between lavas and marbleized limestone. An inferred fault from an airphoto lineament crosses this northerly ridge; it could be an important structural element for gold deposition if the intrusive evolved from that area, and if the fault exists.

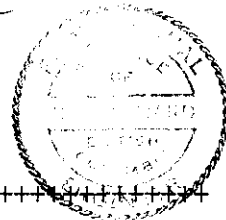
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RECOMMENDATIONS:

Geologic, geochemical and geophysical surveys are warranted for these claims to outline the intrusive body and presence of quartz veins on its edges or internally. Proposed exploration is as follows:

1. Establish a survey grid with the site of No.1 claim post as the base line.
2. Sample soil in all horizons as a preliminary orientation to detailed sampling at 15m spacing on 30m-spaced lines. Assay for mercury, arsenic, antimony, gold and silver.
3. Geologically map the claims noting evidence of rock alteration, differentiation, gossans, and quartz and albite float or veinlets, to determine favored sites of mineralization.
4. Do VLF-EM and magnetic surveys on the grid noting responses on the known vein structures and any altered, crushed areas of the stock.
5. Prospect the draws carefully for quartz float and signs of shearing, gossans, or alteration.
6. Strip-extend the No.1 vein and an altered area in the draw 114m, 375 ft. west on its projection. Strip derived anomalies after detailed soil sampling where warranted.
7. Plan further staged exploration, given positive results from the initial work.

H. C. Leonard



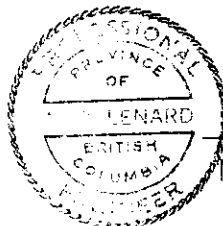
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-CERTIFICATION-

I, Neall Curtis Lenard, of the settlement of Westbank in the Province of British Columbia do hereby certify:

1. that I am a consulting geologist with an office mailing address of Box 863, Westbank, British Columbia, VOH 2A0,
2. that I graduated from the University of British Columbia with a Bachelor of Arts Degree in 1949 (Honours Geology),
3. that I have practised my profession continuously for thirty-four years,
4. that I am the sole owner of the subject Bond 1-4 mineral claims.
5. that the statements made in this report are based on personal examination of the claims on November 17 & 28, 1983, and, on a study of published and unpublished reports on the property area,
6. that I am a member of the Associations of Professional Engineers of British Columbia and Alberta,
7. that no legal survey has been conducted over the subject mining properties and, therefore, in accordance with the mining laws of the appropriate jurisdiction in which such properties are situate, the existence of and the area of such properties could be in doubt; and,
8. that I attended an extension short course on Exploration Geochemistry at the University of Calgary in 1970; and, a short course in Mining sponsored by the Northwest Mining Association at Spokane, Washington in April, 1981.

DATED AT: The Settlement of Westbank, in the Province of British Columbia, this ninth day of April, 1984.



Ex. Date Dec. 31/1984

Neall C. Lenard

Neall Curtis Lenard, P. Eng., P. Geol.



-EXPENDITURES-

PERSONNEL:

N.C.Lenard, P. Geol., 2 days @ \$400. \$800.00

TRANSPORTATION:

Auto: 2 days @ \$25.00 50.00

DRILLING, BLASTING, CLEANUP:

411.49

REPORT PREPARATION:

N.C.Lenard, P. Geol.: 1 day @ \$400. 400.00

Drafting - 4 hrs. @ \$15.00 60.00

Typing, Reprod'n, binding 65.00

TOTAL DISBURSEMENTS:

\$1,786.49

I certify that the above statement is an accurate representation of expenditures made for the geological survey of the Bond 1-4 claims conducted on November 17 and 28, 1983.



N.C. Lenard, P.Geol.,P.Eng.

General Testing Laboratories
A Division of SGS Supervision Services Inc.

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TO:
MR. N.C. LENARD
Box 863
Westbank, B.C.
VOH 2A0

CERTIFICATE OF ASSAY

No.: 8310-1252 DATE: Oct. 24/83

We hereby certify that the following are the results of assays on:

MARKED	GOLD	SILVER	XXX	XXX	XXX	XXX	XXX	XXX
	oz/st	oz/st						
1. DDL 1 claim (grab) Trench #2 Arsenopyrite	0.035	0.10						
2. DDL 1 claim Trench #3 grab silicified sed.	0.006	0.05						
3. DDL 1 claim Trench #9 grab arsenopyrite	0.022	0.10						
4. DDL 1 claim Trench #15 grab arsenopyrite	0.168	0.20						
<i>Bond</i> Balf 1 vein 1 grab	0.116	0.08						
Bond 1 vein 2 grab	0.352	0.19						

NOTE: REJECTS RETAINED ONE MONTH. PULPS RETAINED THREE MONTHS. ON REQUEST PULPS AND REJECTS WILL BE STORE FOR A MAXIMUM OF ONE YEAR.

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L. Wong

PROVINCIAL ASSAYER

Analytical and Consulting Chemists, Bulk Cargo Specialists, Surveyors, Inspectors, Samplers, Weighers

MEMBER: American Society For Testing Materials • The American Oil Chemists Society • Canadian Testing Association
REFEREE AND OR OFFICIAL CHEMISTS FOR: National Institute of Oilseed Products • The American Oil Chemists' Society
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TO:
MR. N.C. LENARD
Box 863
Westbank, B.C.
VOH 2A0

CERTIFICATE OF ASSAY

No.: 8308-1657 DATE: Aug. 25/83

We hereby certify that the following are the results of assays on: Ore

MARKED	GOLD	SILVER	XXX	XXX	XXX	XXX	XXX	XXX
	oz/st	oz/st						
Vein #1 sample	0.011	0.05						
Vein #2 sample	0.037	0.10						

NOTE: REJECTS RETAINED ONE MONTH. PULPS RETAINED THREE MONTHS. ON REQUEST PULPS AND REJECTS WILL BE STORE FOR A MAXIMUM OF ONE YEAR.

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MEMBER: American Society For Testing Materials • The American Oil Chemists Society • Canadian Testing Association
REFEREE AND OR OFFICIAL CHEMISTS FOR: National Institute of Oilseed Products • The American Oil Chemists' Society
OFFICIAL WEIGHMASTERS FOR: Vancouver Board Of Trade

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Gold halos fine prospecting tool -11-

By Guy Perrault and Pierre Trudel, IREM/MERI, Ecole Polytechnique, and Paul Bedard,

Compagnie minière Lamaque

All rocks contain gold though not all rocks are gold ore. The barren rocks of Archean greenstone belts so widespread in the Precambrian Shield of Canada contain gold: the rhyolites contain roughly 0.8 ppb (parts per billion) gold, the basalts 1.2 to 1.7 ppb gold, the granites 0.6 ppb gold.

At these concentrations, gold analyses are tricky. Great care must be exercised in the preparation of samples to avoid contamination. For instance, it would not be a good idea to grind such low gold concentration rocks with the same instruments and in the same environment as that used to grind ore specimens. Ore specimens frequently contain 0.1 oz. gold per ton; that is equivalent to 3.4 ppm or 3,400 ppb gold. The very dust in the atmosphere of the crushing or grinding room in an assay office may be enough to contaminate samples.

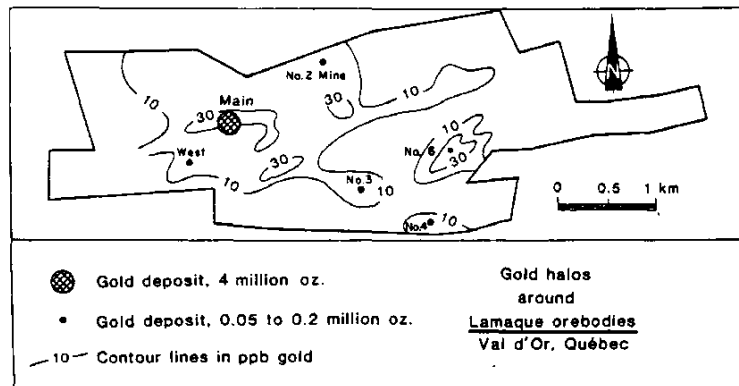
The analytical techniques used to determine gold in such low concentrations have now

well tested; many of them are quite reliable. One of the most commonly used techniques is that of neutron activation. In this technique, small specimens of rock powders (1 or 2 g) are inserted near the heart of a nuclear reactor and immersed in a field of neutrons: the neutrons impacting on the sample render many of its atoms radioactive. All elements are subject to this radioactivation in the nuclear reactor although the technique is not applied with equal ease to the analysis for all elements.

Sensitive technique

Gold is generally found in nature in the form of its stable isotope, ^{197}Au ; when irradiated with neutrons, it transforms into its radioactive isotope ^{198}Au ; with a half-life of 64.70 hours. Spectrometric intensity measurements can be made after some suitable "cooling" period (decay time, 7 to 10 days) and gold concentrations are calculated from intensities. The technique is very sensitive (down to 0.05 ppb gold) and reasonably precise (frequently around 20% of contained gold). Sample preparation varies from lab

Similarly, very low gold con-



centrations are generally measured by a radiochemical method: concentration of radioactive gold onto a resin followed by spectrometric measurements.

Gold analyses in the ppb range has been applied to the host-rocks on the Lamaque gold property in the Val d'Or area. Results are shown in the accompanying figure. The orebodies already mined or currently being mined are outlined on this map. Essentially, the principal ore area in that centred on the main plug; the ore is composed veins or

stockworks of quartz stringers in faults with little displacement cutting the intrusive plugs (granite and diorite). This area has yielded approximately 75% of the gold produced at Lamaque, that is 4 million oz. Other ore areas are the west plug orebody (0.23 million-oz. gold), the No. 2 mine area (0.18 million oz. gold), the No. 3 pluton orebody (0.06 million oz.) and the No. 4 pluton orebody (0.05 million oz.)

Gold halos envelop each of these ore areas. The critical gold value seems to be 10 ppb. All ore areas are enveloped by the 10 ppb contour line. The halo around the main ore area is large; it is approximately 2 km diameter and likely extends to envelop the orebodies at the adjacent Sigma mine to the north. The smaller orebodies are enveloped by smaller halos or irregularities in the main halo; these smaller halos are approximately 0.5 km diameter (see No. 3 and No. 4 ore areas on map). One medium size halo (No. 6 area on map) was unexplored until recently but is currently being drilled.

Cost effective

Mapping of gold in low concentrations in mining camps can be a very cost-effective method of prospecting. Samples collected on a grid of one kilometre along strike and approximately 0.5 km across strike should allow the detection of gold halos in potential ore-bearing areas. More detailed sampling 100 m x 200 m may be necessary once an anomalous value has been found. The critical values to watch in the Val d'Or area are the 10-ppb gold contour line. While gold halos do not constitute exact drilling targets, they can help focus additional work (geophysical, trenching, stripping, etc.)

In the application of this technique in Canada, some caution should be exercised. Our work has indicated the manner of its use in the Val d'Or area. Gold distribution patterns may be different in other areas (Hemlo, Noranda or other). Nevertheless, it does promise to be useful in these other areas.

THE NORTHERN MINER May 19, 1983 B5

Fig. 3a

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

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Fig.2 PROPERTY MAP & GEOLOGY

To Accompany Report

GEOLOGY OF BOND I-4 CLAIMS, Vernon M.D., B.C.

N.C. Lenard, P.Eng.

April 9, 1984

- LEGEND -

V Permian volcanics
L " limestone

--- Quartz vein
--- Fault

--- Claim bdy., approx.

