GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL REPORT

- ON THE -

GERLE GOLD PROPERTY OMINECA MINING DIVISION, BRITISH COLUMBIA

N.T.S. 94D/15E, 16W

- FOR -

GERLE GOLD LTD.,

PREPARED BY;

G. BELIK AND ASSOCIATES LTD., #206 - 310 Nicola St., Kamloops, B. C.

> GARY D. BELIK, M.Sc. November 24, 1981



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N.T.S. 94D/15E,16W

56°53N 126°27W

- for -

GERLE GOLD LTD. OWNER / OPEPATOR

Prepared by;

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SUMMARY

The Gerle Gold Property encompasses a northwest-trending pendant of highly deformed and metamorphosed sedimentary and volcanic rocks of Upper Paleozoic (?) age. This pendant is bounded on the east by the Early Cretaceous Jensen Peak Batholith and on the west by the Early Jurassic Fleet Peak Pluton.

The pendant contains several northwesterly-striking shear zones, up to 20 meters wide, which locally host gold and silver-bearing quartz pods, lenses and irregular veins. The main shear zone has been explored by a series of pits and shallow trenches over a strike length of 800 meters. In 1958 Centennial Mines Ltd. tested a small section of the zone with 12 shallow, X-ray holes. Based on the results of this work, Centennial estimated that the zone potentially could contain 100,000 tons at an average grade of about 0.2 oz. gold per ton. However, this interpretation was hampered by the relatively small number of holes drilled, the shallow depth to which the zone was explored and by very poor core recoveries within the gold bearing structure (generally less than 50%).

The work completed to date has shown that the auriferous zones are lenticular. This is in part due to the primary distribution of quartz veins within the shear-zone system but also due to post - ore shearing which has segmented many of the mineralized bodies into a series of en-echelon lenses. Some of these lenses are thickened along vertical to steep, northwesterly-plunging drag folds.

In spite of the lenticular nature of the mineralization the property is of considerable merit. Significant gold values, over fair widths, have been obtained in surface samples and diamond drill core. It appears likely, though, that in order to establish enough reserves for a viable mining operation a number of 'ore-lenses' would need to be defined. Based on the occurrence of gold mineralization over most of the exposed strike length of the zone and on the unexplored depth potential of the zone, the potential for developing sufficient ore reserves appears to be good. An additional potential for developing ore occurs along the untested strike extension of the zone in overburden-covered areas to the northwest and southeast.

In order to test the potential of the main shear zone a systematic diamond drill program, estimated to cost \$175,000.00, has been recommended. In addition a preliminary exploration program, which would include prospecting, soil geochemistry, ground VLF - E.M. and magnetics is recommended, at an estimated cost of \$8,000.00, in order to evaluate a large overburden-covered area along the projected strike extension of the main shear zone to the northwest.

INTRODUCTION

During August 16 to August 29, 1981, a combined geochemical, geophysical and geological program was carried out on the Gerle Gold 1 - 4, G.G. 1 to 3 and G.G. 7 mineral claims situated near McConnell Creek in the Omineca Mining Divison, British Columbia. Work was supervised by G. Belik and Associates Ltd., #206, 310 Nicola St., Kamloops, B. C.

Of main interest on the property is a strong northwesterlytrending shear zone which locally hosts significant gold and silver mineralization. From 1947 to 1958 this zone was explored by a series of pits and shallow trenches and by 12 shallow, X-ray diamond drill holes with inconclusive results.

2.

The objectives of the 1981 program were:

- 1. Geologically map the area encompassing the main showings.
- 2. Survey-in and resample, if possible, all of the old workings.
- Establish parameters which control the gold/silver mineralization.
- Test, by means of a limited survey, the effectiveness of VLF - E.M. and ground magnetics as prospecting or mapping techniques in this area.
- 5. Carry out a silt sampling program to locate additional target areas within the claim area.

LOCATION AND ACCESSIBILITY

The Gerle Gold Property is located southeast of Fredrikson Lake in the Omenica Mining Division (N.T.S. 94D/15E, 16W). The center of the claim group is situated about 240 km north-northwest of Smithers at geographic co-ordinates $56^{\circ}48'$ North Latitude and $126^{\circ}27'$ West Longitude. Access to the property is by helicopter or fixed-wing from Smithers.



CLAIMS

The property is comprised of 9 contiguous claims totalling 108 units and four 2-post claims as detailed below:

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Mining Divison	Claim	No. of Units	Record No.	Record Month
Omineca	Gerle Gold 1	2-post	94758	Oct.
"	Gerle Gold 2	2-post	94759	Oct.
"	Gerle Gold 3	2-post	94760	Oct.
	Gerle Gold 4	2-post	94761	Oct.
"	G.G. 1	12	3798	June
"	G.G. 2	12	3799	June
11	G.G. 3	12	3800	June
"	G.G. 4	12	3801	June
	G.G. 5	12	4007	July
11	G.G. 6	12	4008	July
	G.G. 7	12	4009	July
"	G.G. 8	12	4010	July
**	G.G. 9	12	4011	July

5.



The above mineral claims are held by Gerle Gold Ltd., 904 - 675 West Hastings St., Vancouver, B. C., through an option agreement with J. H. Gerlizki and J. Leontowich.

PHYSIOGRAPHY AND VEGETATION

The Gerle Gold Property extends southeast from the south end of Fredrikson Lake to the Ingenika River, a distance of about 16 km. Elevation of the property ranges from 1150 meters to 1800 meters. The surveyed area is characterized by rolling upland with gentle to moderate relief.

Vegetation along the lower reaches of the Fredrikson Lake Valley consists primarily of good stands of spruce and balsam which are locally interspersed with spruce bogs along the valley floor. Forest cover is lighter above 1500 meters a.s.l. and above 1650 meters a.s.l. alpine-type vegetation prevails. Most of the G.G. 8 and 9 claims are covered by an old burn.

HISTORY OF EXPLORATION

The main mineralized shear zone on the Gerle Gold Property was discovered in 1947 by J. H. Gerlizki (geologist) and J. Leontowich. (prospector). They staked 16 claims to cover the occurrence and over the next few years prospected the shear zone with a series of shallow pits and trenches, over a strike length of about 800 meters. In 1958 the property was optioned to Centennial Mines Ltd. Centennial resampled and extended most of the original pits and trenches and drilled 12 shallow, X-ray holes. Based on the results of this work Centennial estimated (C.W. Ball, 1948) that "...the zone has a potential of 100,000 tons estimated at 0.2 ounces gold per ton." Mr. Ball further concluded that "One cannot expect a continuous ore zone and undoubtedly there will be weak sections. A great part of the zone remains to be tested, but in order to carry out this work it would be necessary to sink a shaft and carry out lateral development underground. This would be costly. Bulk sampling of the mineralized zones is necessary in order to arrive at a proper appraisal of the value of the property."

From 1958 up until the 1981 program, which is the subject of this report, only minor exploration work has been carried out.

GRID PREPARATION

In order to carry out the geophysical and geological surveys, a grid was constructed consisting of a 4.7 km. base-line and approximately 9.3 km. of cross-lines. Grid lines were surveyed in with a Wild T1A Transit. Stations were placed every 50 meters and marked by erecting wooden pickets showing the line number and station location.

PROPERTY GEOLOGY

The Gerle Gold Property was examined by G. D. Belik during August 18 to August 28, 1981. An area measuring approximately 2500 meters by 500 meters was mapped at a scale of 1:2500 (Fig. 1006-3) utilizing a surveyed grid for control. This area, which encompasses all of the surface showings, covers the Gerle Gold 1-4 claims and parts of the G.G. 1, 2 and 7 claims. On Figure 1006-3 all of the old pits and trenches which were encountered have been numbered to conform with the numbers designated for these cuts by Centennial Mines in their "Report of Work Completed in 1958."

Briefly summarized, the property encompasses a northwesterlytrending pendant of highly deformed and metamorphosed sedimentary and volcanic rocks of Upper Paleozoic (?) age. According to G.S.C. Open File 342 (T. Richards et al, 1975) the pendant is bounded on the east by the Early Cretaceous Jensen Peak Batholith and on the west by the Late Jurassic Fleet Peak Pluton. The pendant contains several northwesterly-striking shear zones, up to 20 meters wide, which locally host gold and silverbearing quartz pods, lenses, stringers and irregular veins. The main shear zone occurs within the Gerle Gold 1 - 4 claims and is situated about 30 meters from and parallel to the eastern metavolcanic/intrusive contact. This zone occurs within a hornblende-rich variety of gneiss and is parallel to a prominent foliation developed within the gneiss.

The shear zones are characterized by buff-colored to light green, carbonate-rich schists. The schists generally are pyritic and contain up to 50% quartz as lenses, pods, veins and stringers. The quartz contains up to 10% pyrite and locally chalcopyrite and galena. Very fine-grained black tourmaline was also noted at a few localities.

Sampling from previous years and this year has shown that the gold and silver are intimately associated with quartz. Carbonate schist without quartz was sampled at several localities along the main shear zone and in all cases showed only trace amounts of gold.

Unit 1

The most widespread unit within the area mapped (designated Unit 1) consists of mafic gneiss and amphibolite. The unit forms a northwest-trending elongate body, approximately 500 meters wide, which has been traced over a strike length of about 4.0 km. Unit 1 is bounded on the east by the Jensen Peak Batholith and on the west by the Fleet Peak Pluton. The unit is in fault contact with granitic rocks near the south edge of the map - area and projects under overburden immediately north of the map - area.

Unit 1 has been segmented into three main blocks by east-west trending, left-lateral, strike-slip faults. The north block is characterized by hornblende-rich varieties of gneiss which contain small intercalated lenses of amphibolite. The hornblende gneiss is composed of hornblende, plagioclase and epidote with minor amounts of biotite and sericite. Hornblende is present in amounts between 50% and 80% and averages about 65%. A prominent foliation, defined by the alignment of hornblende and mica and locally by subtle compositional banding is evident.

The central and south blocks are also characterized by hornblende-rich varieties of gneiss, however, biotite and sericite are more abundant (up to 10%) and impart a micaceous sheen along cleavage surface. Minor amphibolite is also present as small pods and discontinuous lenses.

Unit 1 probably represents the metamorphosed equivalents of basic tuffs and flows and tuffaceous sediments. The unit is strongly deformed and has been recrystallized within an Upper Greenschist to Lower Amphibolite facies of regional metamorphism. The age of these rocks is uncertain. C. S. Lord (1948) assigned an Upper Triassic age to the unit, however, T. Richards et al (1975) correlate the unit with the Lay Range Assemblage; an Upper Paleozoic sequence of basic volcanics, calcareous phyllite, quartzite and limestone, which outcrop about 30 km southeast of the map area.

Unit 2

Unit 2 consists of medium to coarsely - crystalline granitic rocks of quartz diorite to granodiorite composition. The granitic rocks are relatively fresh and uniform in appearance. They average about 80% quartz, plagioclase and K-spar with about 15% hornblende and biotite and 5% muscovite.

The contacts between Unit 2 and Unit 1 along the eastern and western edges of Unit 1 are clearly of intrusive character. These contacts are relatively sharp and marked by zones of assimilation a few cms. to 1 meter wide.

As previously noted, granitic rocks immediately west of Unit 1 have been mapped as part of the Early Jurassic Fleet Peak Pluton and those east of Unit 1 as part of the Early Cretaceous Jensen Peak Batholith by T. Richards et al (1975). Within the area mapped there is no significant, discernable difference, either texturally or compositionally between these two plutons. However a distinction, based on the results of the ground magnetic survey, is apparent. Granitic rocks east of Unit 1 (ie. Jensen Peak Batholith) have a more uniform, considerably lower magnetic susceptibility (1000 - 1600 gammas) than granitic rocks west of Unit 1.

Unit 3

Several shear zones are evident within the area mapped. The main shear zone occurs within the Gerle Gold 1-4 claims and extends northwesterly, about 30 m from and parallel to the eastern gneiss/intrusive contact. This zone is 5 m to 20 m wide and has been traced by a series of outcrops and shallow pits from line 54W to line 62W a distance of 800 meters. The zone probably extends another 300 meters to the southwest where it is inferred to be cut - off by a east-west trending fault. The extent of the zone to the northwest is unknown. An area extending for several kilometers northwest from the furthest northwest exposure is totally concealed by overburden.

Within the main shear zone the gneiss has been converted into buff-colored to bright green carbonate schist and chloritic schist (designated as Unit 3). The contact between schist and unaltered gneiss generally is gradational and marked by narrow zones of moderately to weakly sheared gneiss and/or chloritic schist. Locally the shear zones contain inclusions and lenses of weakly sheared to unaltered gneiss.

The main shear zone strikes approximately N 33° W and generally is vertical with local steep easterly or westerly dips. In the vicinity of line 58N the zone is deflected a short distance westerly along a subsidiary east-west trending shear. A third, narrow shear, 2 meters to 4 meters wide slays off from the main shear in a northerly direction from this point of inflection.

Limonitic, translucent to milky-white quartz is a common component (up to 40%) of the main shear zone. Most of the quartz occurs as a series of en-echelon pods and lenses aligned parallel to the shear direction within the host unit. A few irregular veins and veinlets crosscutting the shear zone were also noted. Most quartz carried between 1% to 5% pyrite and locally up to 10% pyrite. Chalcopyrite commonly is present but generally in amounts less than 1%.

A second shear zone outcrops between line 58N and line 60N about 250 meters west of the main shear zone. This zone, which has been traced intermittently for 250 meters, is up to 5 meters wide. The zone contains up to 10% quartz. A series of narrow shear zones occur between line 48N and line 44N immediately west of the gneiss/intrusive contact and along the projected strike extension of the main shear zone to the southeast. These shears define a general zone of shearing about 75 meters wide. South of line 46N this zone is largely concealed by overburden, however, angular float of highly pyritic quartz and carbonate schist is abundant along the projected strike of the zone to about line 38N.

A narrow shear zone was mapped near the east end of line 24N and a small area containing abundant quartz float and angular carbonate schist float was noted about 100 meters south of the east end of line 22N.

MINERALIZATION

Within the Gerle Gold property the shear zones locally contain significant gold and silver. The main shear-zone occurs on the Gerle Gold 1 - 4 claims and has been explored from 1947 to 1958 by a series of pits and shallow trenches over a strike length of about 800 meters. In 1958 Centennial Mines Limited tested about a 130 meter length of the zone (between Pit #17 and Pit #24) with 12 short X-ray drill holes. Significant intercepts are as follows:

Hole #2 -(collared about 20 meters east of the shaft in
Pit #11)
42.0' - 47.0'; 5 feet assaying 0.20 oz. gold
per ton and 0.95 oz. silver per ton.

Hole #3A -(collared immediately east of Pit #10) 13.0' - 21.0'; 8.0 feet assaying 0.28 oz. gold per ton and 0.40 oz. silver per ton.

Hole #9 -(collared about 20 meters east of Pit #9) 82.0' - 83.7'; 1.7 feet assaying 0.72 oz. gold per ton and 0.10 oz. silver per ton. Hole #10 -(collared about 15 meters east of Pit #17) 67' - 72' (sludge assay); 5.0' grading 0.30 oz. gold per ton and 0.3 oz. silver per ton.

> 72' - 77' (sludge assay); 5.0' grading 0.16 oz. gold per ton and 0.2 oz. silver per ton.

Sample results obtained from the original pits and trenches by Centennial Mines have been plotted on Figure 1006-3. Significant assays are as follows:

Pit	#2:	9.0'	-0.04 oz.	gold/tor	ı					
		2.0'	-0.52 oz.	gold/ton	ı					
Pit	#9 :	17.1'	-0.026 oz	. gold/to	n					
Pit	#10:	23.9'	-0.20 oz.	gold/tor	ı					
Pit	#11 (Shaft	:): no	rth wall;	average	of	0,30	oz.	gold/ton	over	6'
		so	uth wall;	average	of	0.34	cz.	gold/ton	over	5.5'

Pit #13:	2.0'	-0.12 oz. gold/ton
Pit #14:	2.8'	-0.12 oz. gold/ton
Pit #17:	9.0'	-0.05 oz. gold/ton
Pit #20:	13'	-0.13 oz. gold/ton
Pit #22:	4.5'	-0.04 oz. gold/ton

14.

It was intended to resample most of the mineralized pits and trenches during the 1981 program. However, most are caved and covered by up to 1 meter of overburden. Due to a lack of time and proper equipment a cleanup of these trenches was not attempted. Composite samples of quartz and schist, however, were taken from bank material around several of the pits. The assay results for these samples are also listed in Figure 1006-3.

A section of Pit #2 was excavated utilizing a Atlas Copco drill and dynamite. A 46 cm-wide quartz lense, heavily impregnated with pyrite and chalcopyrite was exposed. This lense assayed 0.78 oz. gold per tonne and 0.62 oz. silver per tonne. A 76 cm-wide zone adjacent to the lense, which contained about 20% rusty quartz assayed 0.09 oz. gold per tonne and 0.12 oz. silver per tonne.

A large composite sample (about 10 kg) of quartz from the shaft in Pit #11 assayed 0.592 oz. gold per tonne. This is close to the average value obtained by Centennial Mines for quartz from this location.

It is apparent from the sampling carried out to date that precious metal values within the shear zones are restricted to quartz vein material. Fine native gold has been locally observed in vuggy zones within quartz and within rusty fractures associated with tourmaline. Gold also appears to be intimately associated with pyrite and chalcopyrite. In Cut #2, abundant 'flour gold' can be readily panned from earthy, bright red hematite; a weathered product of sulphides in quartz from the zone.

SILT GEOCHEMISTRY

In total 34 silt samples were taken during the 1981 program. All samples were analysed for gold, silver and arsenic by Acme Analytical Laboratories Ltd., located at 852 E. Hastings St., Vancouver, B. C.

Samples were obtained from near the center of stream beds. As fine a material as possible was obtained and placed in waterproof kraft envelopes. The sample number was marked on the envelopes with indelible felt pens:

All samples were first dried and then seived to obtain a -80 mesh fraction. The determination procedure was as follows:

		Digestion:	Determination:
Silver	-	0.5 gm sample is digested in hot aqua regia.	-Atomic Absorption
Gold	-	10.0 gm sample is heated overnight to 600 ⁰ C and the digested hot with aqua reg	-Atomic Absorption en gia.
Arsenic	-	0.5 gm sample is digested in nitric/perchloric acids	-Colorimetric

Results of the silt analyses are shown in plan map 1006-4 at a scale of 1:10,000. Results are given in parts per million for silver and arsenic and parts per billion for gold.

Discussion of Results

Briefly summarized, the analytical results of the silt samples are as follows:

	Range	Estimated Background	Probably Anomalous	No. of Anomalous Samples
Gold	5-950 ppb	5 ppb	≻ 30 ppb	6
Silver	0.1-0.5 ppm	0.1 ppm	70.5 ppm	0
Arsenic	2-13 ppm	5 ppm	∕15 ppm	0

Gold values range from 5 ppb to 950 ppb. Highly anomalous gold values (275 ppb and 950 ppb) were obtained from 2 silt samples located about 800 meters north of the map-area, near the northwest corner of the G.G. 1 claim. The area is heavily drift-covered, however it does occur along the projected strike extension of the favourable mafic gneiss unit and it is possible that the overburden conceals one or more gold-bearing structures similar to those which occur within the area mapped.

Most creeks draining the immediate map - area show only background values for gold. A few anomalies occur near the south end of the grid but are scattered and of a low magnitude (max. 60 ppb).

None of the arsenic or silver values are considered anomalous.

V.L.F. ELECTROMAGNETIC SURVEY

In total, 7.0 line-kilometers of grid was surveyed by V.L.F. - E.M. The station interval was 25 meters.

The electromagnetic survey was carried out utilizing a Saber Model 27 VLF - E.M. receiver manufactured by Saber Electronic Instruments Ltd., 4245 East Hastings Street, Vancouver, B. C. This instrument measures the relative strength and dip of electromagnetic fields transmitted by radio stations in the 15 - 25 KH₂ range. These 'primary fields' are horizontal but can be disrupted by the presence of electrical conductors and by local topographic relief. Disruptions caused by conductors are actually caused by 'secondary fields' which are induced by the primary field. The tilt of the secondary field can be obtained by measuring the angle of null (minimum signal) in a vertical plane, normal to the wave front of the primary field.

The relative strength and magnitude of the secondary field caused by a conductor can be affected by many factors which include:

1. Conductivity of the conductor.

2. Width of the conductor.

3. Length of the conductor.

- 4. Depth of the conductor.
- 5. Orientation of the conductor relative to the transmitter station.

6. Frequency of the transmitter.

18.

For tabular or elongate bodies maximum coupling and hence the strongest secondary electromagnetic field is obtained when the conductor is aligned normal to the primary wave (ie. conductor points to the transmitting station). There is virtually no coupling when conductors are aligned parallel to the primary field.

Local topographic relief can also cause a tilting of the primary field and lead to anomalous responses along ridge crests or along a sharp break-in-slope. In theory topographic anomalies can be eliminated by a lack of a corresponding increase in field strength values which generally are associated with bedrock conductors. However, this is not always the case and care must be taken when interpreting V.L.F. anomalies within areas of moderate to steep topographic relief.

Presentation of Results

The Dip angles and relative field strength values obtained during the survey are listed in Appendix II. Drawing 1006-5 is a contour map of the filtered dip angles and shows probable (solid), probable (long dash) and possible (short dash) conductor axes.

The filtering technique utilized was developed by D. C. Fraser (Geophysics, V.34, No.6, P. 958-967; 1969). Briefly summarized, this technique converts anomalous cross-overs and inflections into positive values by a simple mathematical treatment of the dip angle data. This technique overcomes the difficulty, in many cases, of interpreting profiles and enables the data to be plotted in plan form with conductor areas defined by contours.

Discussion of Results

A well-defined anomaly, with high field strength values, extends from line 52N to 62N subparallel to the base line. This anomaly clearly correlates with the surface trace of the mean shear zone. South of line 52N this anomaly appears to deflect easterly and terminates at about line 46N. This easterly extension correlates with a fault (Fig. 1006-3) which is inferred to cut-off the main shear zone at about line 52N.

A probable bedrock conductor occurs between line 56N and line 60N approximately 150 meters west of the base line. The strongest cross-over occurs on line 58N within an area concealed by overburden.

A possible bedrock conductor extends from line 32N to line 46N, in close proximity to the base line.

PROTON MAGNETIC SURVEY

A magnetic survey was carried out over most of the grid area utilizing a GeoMetric's 'Unimag', portable, proton magnetometer (Model G-830). The Unimag measures the total intensity of the earth's magnetic field over a range of 20,000 to 100,000 gammas with an accuracy of \pm 10 gammas. General information and operating procedure for the Unimag is given in Appendix V.

Procedure

For the magnetic survey, readings were taken at 25 meter intervals along lines 32N to 62N inclusive and along the base line between lines 32N and 62N. In total, 10.4 line - kms of grid were surveyed.

Prior to beginning the survey the magnetometer was tuned to the local magnetic field (60,000 gammas). During the course of the survey, base station readings were established along the base line at each cross line surveyed in order to correct for diurnal variation.

Presentation of Results

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The results of the magnetic survey are presented in drawing 1006-6 at a scale of 1:2,500. Isomagnetic contours are drawn at an interval of 200 gammas.

Discussion of Results

Magnetic relief within the surveyed area varies from a low of 58,080 gammas to a high of 61,030 gammas. In general there is a good correlation between the observed magnetic pattern and the underlying bedrock geology. Salient features of the observed magnetic pattern are:

- A large magnetic high occurs along the west end of the grid between line 30N and line 38N. This area is underlain by granitic rocks of the Fleet Peak Pluton.
- Within the area surveyed granitic rocks of the Jensen Creek Batholith are characterized by relatively uniform values of between 58,600 and 58,800 gammas with local highs of up to 58,150 gammas.
- 3. The gneiss of Unit 1 has a relatively uniform background of between 58,200 and 58,400 gammas with local highs which correlate with amphibolite or amphibole-rich varieties of gneiss.
- 4. A strong, narrow magnetic high is evident between lines 46N and 40N immediately east of the base line. This anomaly occurs within the gneiss unit at or within 20 meters of the inferred granite/gneiss contact. The magnetic body is tabular and 30 - 35 meters wide with a vertical to steep easterly dip. The source of the anomaly is uncertain; the immediate area of the anomaly is overburden covered.

CONCLUSIONS AND RECOMMENDATIONS

The work performed on the Gerle Gold property is inconclusive. The property is however, of merit and systematic diamond drilling is warranted to test the main gold-bearing shear zone at depth. An additional potential for developing 'ore' occurs along the untested strike extension of the zone in an overburden-covered area to the northwest.

The results of the 1981 geophysical program have shown that ground magnetics is a useful mapping tool in this area and that VLF-E.M. is effective in locating the mineralized shear zones. These techniques, as well as prospecting and soil geochemistry should be useful in evaluating and defining targets within overburden covered areas.

The following program is recommended:

Recommended Program

Phase I

Ground VLF and Mag, soil geochemistry and prospecting are proposed in order to evaluate a large overburden covered area northwest of the main shear zone. In order to complete this work the base line should be extended another 4 kms and cross-lines placed every 200 meters across the projected strike extension of the mafic gneiss unit.

Phase II

In order to adequately test the main shear zone 1000 meters of diamond drilling is proposed. Core size should be at least NQ in order to assure good core recoveries. It is not practical to lay out all of the drill hole locations in advance. As drilling proceeds, new information will undoubtedly be obtained which will influence the direction of the program. As a general guide the following holes are proposed:

Location			Dept	<u>h</u>	<u>D</u>	Direction			
52N+00	-	0+50W	40 m	neters	-	45 ⁰	S.W.		
52N+00	-	0+30W	40	11	-	11	11		
54+30N	-	Base Line	50	11	-	11	**		
54+70N	-	0+10E	55	11	-	11	"		
55+60N	-	0+30E	60	11	-	"	11		
55+60N	-	0+70E	110	11	-		11		
56+00N		0+40E	60	11	-	11	"		
56+00N	-	0+80E	110	*1	-	"	"		
56+40N	_	0+40E	55	**	-				
56+40N	_	0+80E	110	11	-	**	11		
56+80N	_	0+40E	55	11	_	"	**		
57+10N	-	0+60E	85		-	11	"		
60+00N	-	0+30E	45	н	-	11	"		
60+50N	-	0+30E	40	**	-	11	11		
61+20N	-	0+30E	45	51	_	11	"		
61+60N	_	0+30E	40	11	-		**		

.

24.

Estimated Cost of Recommended Program

Phase I

-24 line-km of grid, V.L.F. mag, soil geochemistry and prospecting; all inclusive \$8,000.00

Phase II

-1000 meters diamond drilling; @ \$175.00/m. all inclusive

175,000.00

TOTAL PHASE I & II

\$183,000.00

Respectfully Submitted:

G. Belik & Associates Ltd.,

G. D. Belik, B.Sc. Geologist

Kamloops, B. C. November 24, 1981

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Annual Minister of Mines Report 1947	p A109 - A110
Ball, C. W., 1958	 Report of Work Completed in 1958 (Gerle Gold Claims); unpublished.
Lord, C. S., 1948	 McConnell Creek Map-Area, Cassiar District, B.C.; Geol. Surv. Canada, Memoir 251.
Payne, J. G., 1975	- Summary Report on the Gerle Gold Property; unpublished.
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26.

APPENDIX I

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ASSAY CERTIFICATES

ACME ANALYTICAL LABORATORIES LTD.

Assaying & Trace Analysis

852 E. Hastings St., Vancouver, B.C. V6A 1R6 Telephone:253 - 3158



To: Mr. G. Belik G. Belik & Associates Ltd., #206 - 310 Nicola St., Kamloops, B.C. V2L 2P5 ASSAY CERTIFICATE

File No. __81-1246

Type of Samples _____ROCK_____

Disposition_____

1	No.	Sample	Au oz/ton	Ag oz/ton					No.
	1	81 B 6-10	.001	1.06					1
	2	10 A	. 001	.01					2
	3	11	. 001	. 34	 				3
	4	16	. 001	.01					4
	5	17	.001	. 02					5
	6	18	. 001	.01	 				6
	7	18A	. 001	.01	 				7
	8	20	. 001	.04					8
	9	21	.003	.23					9
	10	22	.004	.63					10
	11	30	1.610	1.70	 				11
	12	31	. 780	. 62					12
	13	32	. 090	.12					13
	14	33	.319	1.57	 				14
	15	34	.007	.38					15
	16	34 A	.006	. 01					16
	17	40	.001	. 01					17
	18	41	.024	. 01					18
	19	81 B 6-42	.001	. 01					19
	20								20
	All	reports are the confid	iential property of	of clients,		DATE SAMPLES	RECEIVED Se	pt. 1, 198	1
						ASSAYER	MAILED	<u> </u>	
			r			с	EAN TOYE, B CHIEF CHEMIST ERTIFIED B.C. ASSA	.SC.	

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To: Mr. G. Belik G. Belik & Associates Ltd.,

LCOL (1/21/21/2/ACME ANALYTICAL LABORATORIES LTD. Assaying & Trace Analysis

852 E. Hastings St., Vancouver, B.C. V6A 1R6 Telephone: 253 - 3158

File No. -_

81-1246

ASSAY CERTIFICATE

Type of Samples _____Rock

Disposition_____

No.	Sample	Au oz/ton	Ag oz/ton	Pt oz/ton				No.
1	81 B 6-43	.064	.05		 			1
2	44	.012	. 01		 			2
3	45	.001	.01		 			3
4	46	. 592	.22	,001	 			4
5	47	.001	.01		 			5
6	48	.001	.01		 			6
7	81 B 6-49	. 278	.05	.001	 			7
8					 			8
9					 			9
10					 			10
11				\$	 			11
12					 			12
13					 			13
14					 			14
15					 			15
16								16
17					 			17
18					 			18
19					 			19
20							4	20
A	ll reports are the con	fidential property	of clients.		DATE SAMPLI DATE REPOR ASSAYER ===	ES RECEIVED_S TS MAILED_S DEAN TOYE, CHIEF CHEMI CERTIFIED B.C. AN	ept. 1, 19 ept. 11, 19 Deff B.Sc. ST SEAVER	81

ACME ANALYTICAL LABORATORIES LTD.

Assaying & Trace Analysis

852 E. Hastings St., Vancouver, B. C. V6A 1R6 phone:253 - 3158

File No. 81-0894

Type of Samples _<u>Silts</u>____

GEOCHEMICAL ASSAY CERTIFICATE

SAMPLE No.	Ag	As	Au								
81 DA 1	1	3	. 005						-		1
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12			.005		·····						15
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							CERTIF	120 B.C. A	JATER		



To:G. Belik & Associates Ltd., 206 - 310 Nicola Street, Kamloops, B.C. V2C 2PS

ACME ANALYTICAL LABORATORIES LID.



852 E. Hastings St., Vancouver, B. C. V6A 1R6 phone:253 - 3158



To: G. Belik & Associates 206 - 310 Nicola St., Kamloops, B.C. V2C 2P5

File No. 81-1247

GEOCHEMICAL ASSAY CERTIFICATE

Disposition _____

SAMPLE No.	Ag	As	Au	
81-DGS- 1			.060	
22		2	.005	2
3	P1		.005	-40 mesh 3
4	.1	3	.005	4
5	.1	3	.005	5
6	.1	3	.005	6
7	.1	_2	.005	7
8		2	.005	8
9	.1	_2	.005	9
10	P .1		.005	-40 mesh 10
11		2	.005	
12	•1	3	.005	12
13		2	.005	
14	1	3	.005	14
15		4	.005	15
16			.005	16
17			.005	17
18		3	.015	18
19	r .1	22	.005	-40 mesh 19
20		4	.005	
21	1		-•005	
22	<u>P1</u>	4	.275	-40 mesh 22
23		7	•950	
24			005	
25		6	.005	
26	.]	4	.005	
81-DGS-27			005	
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				DEAN TOYE, B.Sc.
				CHIEF CHEMIST CERTIFIED B.C. ASSAYER

APPENDIX II

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V.L.F.-E.M. DATA

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GERLE GOLD VLF-E.M.

			Tilt - and	Field	Sland	Topography
Line	Station	NUTT	riffered	strengen	<u>310pe</u>	Topography
32N	1+50W	-1		52		Trough
	1+25	+2		55		
	1+00	+4	-8	56		
	0+75	· +5	+3	58		
	0+50	-2	+13	66		
	0+25	-2	+8	58		Swamp
	B.L.	-3	-1	55		
	0+25E	O	-3	55		
	0+50	-2	-1	52		
	0+75	+4	-3	55		
	1+00	+2	0	58		
	1+25	0	+6	57		
	1+50	0	-1	55		Trough
	1+75	+3	-5	58		
	2+00E	+2		58		
34N	2+00W	-2		52		Trough
	1+75.	0	0	57		Swamp
	1+5C	-2	-2	56		11
	1+25	0	-3	55		**
	1+00	0	-2	56		Trough
	0+75	+1	+3	56		11
	0+50	+1	+5	58		**
	0+25	-3	+4	57		**
	B.L.	-4	-4	55		11
	0+25E	-2	-3	55		11
	0+50	-1	-1	54		11
	0+75	-2	-5	53		79
	1+00	0	-2	54		*1
	1+25	+2	-3	53		**
	1+50	+2	-7	52	12 ⁰	11
	1+75	+3		55	15 ⁰	Side Hill
	2+00E	+8		55	12 ⁰	11 11

. GERLE GOLD VLF-E.M. (CONT)

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Line	Station	Null	Filtered	Field Strength	Slope	Topography
				berengen	<u></u>	repography
36N	2+00W	+2		51		
	1+75	+5.		55		
	1+50	+5	-2	58		
	1+25	+4	+2	57		
	1+00	+4	-1	61		
	0+75	+6	+1	64		
	0+50	+1	+9	66		
	0+25	0	+ 7	64		
	B.L.	0	+1	61		
	0+25E	0	0	60	5 ⁰	
	0+50	0	-2	62		
	0+75	+2	-5	60		
	1+00	+3	-5	57	10 ⁰	
	1+25	- +4	-3	63	10 ⁰	
	1+50	+4		54	10 ⁰	
	1+75	0		46		
	2+00	0		44		
38N	3+00Ŵ	+2		42		
	2+75	+2		43		Side Hill
	2+50	+5	7	44		**
	2+25	+6	-5	45		**
	2+00	+6	-1	45	10 ⁰	11
	1+75	+6	+1	47	5°	**
	1+50	+5	+3	49	10 ⁰	**
	1+25	+4	+3	49	5 ⁰	
	1+00	+4	+4	50	50	**
	0+75	+1	+12	55	5 ⁰	11
	0+50	-5	+15	55		11
	0+25	-5	+10	53	10 ⁰	11
	B.L.	-9	+9	50	5 ⁰	**
	0+25E	-10	+6	47	10 ⁰	**

Line	Station	<u>Null</u>	Filtered	Field Strength	Slope	Topography
38N (cont)	0+50	-10	+ 1	46	10 ⁰	Side Hill
	0+75	-10	0	44	15 ⁰	**
	1+00	-10	0	42	12 ⁰	*1
	1+25	-10	-2	42		Trough
	1+50	-8	-4	42		**
	1+75	-8	0	40		**
	2+00	-10		38		"
54N	3+00W	0		63	15 ⁰	Side Hill
	2+75	+1		62	120	.,
	2+50	+2	5	60		11
	2+25	+4	-6	59		11
	2+00	+5	7	59	10 ⁰	**
	1+75	+8	7	59	10 ⁰	11
	1+50	+8	-2	67	50	**
	1+25	+7	-3	67		**
	1+00	+6	-2	67	10 ⁰	
	0+75	+7	+1	68		Top of Hill
	0+50	+5	+12	78	6 ⁰	**
	0+25	+4	+25	81	10 ⁰	**
	B.L.	-9	+20	76	18 ⁰	Side Hill
	0+25E	-12	+11	71	12 ⁰	
	0+50E	-12	+2	65	10 ⁰	17
	0+75E	-11	0	64	10 ⁰	11
	1+00E	-13	+2	61	80	11
	1+25	-12	-2	57	7 ⁰	Trough
	1+50	-10	7	55	5 ⁰	11
	1+75	-8	-8	56		••
	2+00E	-6		57		11

Line	Station	<u>Nu11</u>	Filtered	Field Strength	Slope	Topography
52N	3W	+9		65		Side Hill
2	2+75	+7		67		"
	2+50	+4	+6	70		*1
	2+25	+4	+7	70	10 ⁰	**
	2+00	0	+5	67	10 ⁰	11
	1+75	+3	-4	62	20 ⁰	**
	1+50	+ 5	-8	63	20 ⁰	11
	1+25	+6	0	66	10 ⁰	**
	1+00	+2	+8	71		Trough
	0+75	+1	+9	75		11
	0+50	2	+14	77		
	0+25	-9	+18	74		**
	B.L.	-10	+7	70		Swamp
	0+25E	-8	0	67		
	0+50	-10	0	65		11
	0+75	-8	-1	64		
	1+00	-10	+2	64		11
	1+25	-10	+2	62	50	Trough
	1+50	-10	0	58	10 ⁰	11
	1+75	-10	-2	57	10 ⁰	••
	2+00E	-8		59		"
48N	1+00W	-1		57	20 ⁰	Side Hill
	0+75	+2		58	20 ⁰	**
	0+50	+2	-7	60	20 ⁰	**
	0+25	+4	-5	62	35°	11
	B.L.	+ 5	-5 ·	63	350	••
	0+25E	+6	-3	70	35 ⁰	11
	0+50	+6	+5	70	350	
	0+75	0	+16	75		Trough
	1+00	-4	+16	75	25 ⁰	Side Hill
	1+25	-6	+10	70	20 ⁰	*1

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F

Line	Station	Null	Filtered	Field Strength	Slope	Topography
			<u> </u>	<u>32</u>		<u>**Z</u> _
48N (cont)	1+50	-8	+7	66		Top of Hill
	1+75	-9	+ 5	65	12 ⁰	Side Hill
	2+00	-10		65	120	**
50N	3+00W	+3		73	14 ⁰	Side Hill
	2+75	0		71	120	11
	2+50	-3	+9	70		Top of Hill
	2+25	-3	+3	65	15 ⁰	11
	2+00	-3	-1	64	17 ⁰	**
	1+75	-2	+2	65	17 ⁰	*1
	1+50	-6	+4	60	17 ⁰	• •
	1+25	-3	-5	60	28 ⁰	11
	1+00	0	-12	58	30 ⁰	**
	0+75	+3	-6	57	30 ⁰	11
	0+50	+6	-15	61	17 ⁰	**
	0+25	+12	-7	66		Trough
	B.L.	+4	+18	76		**
	0+25E	-4	+24	77		**
	0+50E	-4	+9	74		**
	0+75E	- 5	+4	72	6 ⁰	**
	1+00E	-7	+6	67	6 ⁰	**
	1+25E	-8	+4	68		**
	1+50E	-8	+3	66		11
	1+75E	-10	+3	64	10 ⁰	11
	2+00E	-9		61	8 ⁰	**
60N	3+00W	+10		55		
	2+75	+8		58		
	2+50	+6	+6	59		
	2+25	+6	+3	59		
	2+00	+5	+1	60		
	1+75	+6	+1	60		

Line	Station	Null	Filtered	Field Strength	Slope	Topography
60N (cont)	1 + 50	+4	+3	61		
oon (conc)	1,25	· -	13	63		
	1+25	+4	+2	65		
	1+00	++	+2	60		
	0+75	· +Z	+)	60		
	0+351	+1	+ 5	00		·
	0+25W	0	+ 5	67	. 0	
	B.L.	-2	+7	76	4	
	0+25E	-6	+12	70	0	
	0+50	-8	+9	67	50	
	0+75	-9	+3	63	60	
	1+00	-8	-2	58	90	
	1+25	_7	-3	58	8 ⁰	
	1+50	-7	-3	57	8 ⁰	
	1+75	-5	-3	57		•
	2+00E	-6		57		
62N	3+00W	+4		43		
	2+75	+4		47		
	2+50	+5	+2	47		
	2+25	+6	+3	50		
	2+00	+6	+4	50		
	1+75	+8	+4	48		
	1+50	+8	+2	51		
	1+25	+8	+2	52		
	1+00	+6	+4	57		
	0+75	+5	+7	60		
	0+50	+2	+5	58		
	0+25	+4	0	60		
	B.L.	+3	0	63		
	0+25E	+3	+4	60		
	0+50	+0	+4	55		Swamn
	0+75	τ0 τ0	_3	56		owallip
	UTIJ	+2	-5	50		

GERLE GOLD VLF-E.M. (cont)

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Line	Station	Null	Filtered	Field Strength	Slope	Topography
62N (cont)	1+00	+4	-8	57		Swamp
	1+25	+6	-3	57		ii ii
	1+50	+3	+4	61		**
	1+75	+3	+5	60		
	2+00	+1	, ,	61		
40N	1+00W	-2		50	18 ⁰	Side Hill
	0+75	-3		52		11
	0+50	-8	+12	55	25 ⁰	••
	0+25	-9	+13	57	23 ⁰	••
	B.L.	-15	+12	51	28 ⁰	**
	0+25E	-14	+4	48	32 ⁰	**
	0+50E	-14	0	57	30 ⁰	
	0+75E	-15	+1	45	30 ⁰	11
	1+00E	-14	-4	41	25 ⁰	11
	1+25E	-11	-9	40		Trough
	1+50E	-9	-9	39		21
	1+75E	-7	- 5	41		**
	2+00E	-8		41		11
42N	1+00W	-6		60	28 ⁰	Side Hill
	0+75	-4		56	20 ⁰	**
	0+50	-11	+12	55	25 ⁰	11
	0+25	-11	+10	53	23 ⁰	11
	B.L.	-14	+5	52	23 ⁰	11
	0+25E	-13	+2	46	20 ⁰	11
	0+50E	-14	-1	46	20 ⁰	
	0+75	-12	5	44	10 ⁰	
	1+00	-10	-4	42		Trough
	1+25	-12	0	41		11
	1+50	-10	-6	39		11
	1+75	-6	-10	37	10 ⁰	11
	2+00E	-6		42		**

				Field		
Line	Station	Null	Filtered	Strength	Slope	Topography
44N	1+00₩	_9		59	25 ⁰	Sido Hill
	0+75	_7		50	25 25 ⁰	
	0+50	-8	1 4	60	25 25 ⁰	••
	0+25	_12	14	50	23 23 ⁰	••
	B.L.	-11	+0 +6	57	20 23 ⁰	11
	0+25F	_15	+6	55	25 25 ⁰	
	0+50	-14	+0 _1	51	25 25 ⁰	11
	0+75		-1	52	200	11
	1+00	-14	+ 1	52 //Q	15 ⁰	11
·	1+05	-14	-1	50	15	Traceh
	1+20	-10	-0	50		irougn
	1+75	-7	-10	51	100	
	2+00	-7	-4	52	10	
	2+00	-0	. 3	50		
	2+20	-0	+5	55	100	
	2+30	-0	-1	50 .	10	
	2+73	-5	-/	50	10	
	3+00E	4		48	12	
46N	1+00W	-4		60	32 ⁰	Side Hill
	0+75	-4		63	30 ⁰	
	0+50	-4	0	60	250	
	0+25	-4	+2	64	20 ⁰	
	B.L.	-6	+5	65	17 ⁰	
	0+25E	-7	+8	65	12 ⁰	
	0+50	-11	+8	62		Trough
	0+75	-10	+3	59		11
	1+00	-11	-2	55		11
	1+25	-8	-5	54		**
	1+50	-8	-5	53		
	1+75	-6	-6	55		11
	2+00E	-4		53		11

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Line	Station	NH 11	Filtered	Field Strength	Slope	Topography
		Mull	<u>IIIIIII</u>	berengen	brope	Topography
58N	3+00W	+7		61		Side Hill
	2+75	+6		59		11
	2+50	+6	-1	60		**
	2+25	+8	-6	58		**
	2+00	+10	-2	61		"
	1+75	+6	+9	71	5 ⁰	**
	1+50	+3	+12	72		**
	1+25	+1	+7	69		**
	1+00	+1	+3	70	8 ⁰	••
	0+75	0	+4	72	10 ⁰	11
	0+50	-2	+7	70	10 ⁰	
	0+25	-4	+6	73	10 ⁰	**
	B.L.	-4	+5	75	10 ⁰	• •
	O+25E	-7	+9	77 -	14 ⁰	**
	0+50	-10	+9	68	6 ⁰	**
	0+75	-10	+3	65		,,
	1+00	-10	-1	60		11
د	1+25	· _9	_4	58	5 ⁰	••
	1+50	-7	-6	57	5 ⁰	••
	1+75	-6	-4	56	4 ⁰	
	2+00	-6		57	5 ⁰	"
56N	3+00W	+4		62	10 ⁰	Side Hill
	2+75	+3		59	8 ⁰	**
	2+50	+4	+1	58		**
	2+25	+2	-1	59		**
	2+00	+6	-6	60		**
	1+75	+6	-4	64	5 ⁰	*1
	1+50	+6	+4	64	10 ⁰	**
	1+25	+2	+7	66	18 ⁰	**
	1+00	+3	+4	65	10 ⁰	Ledge
	0+75	+1	+2	66		Top Ledge

				Field		
Line	Station	<u>Null</u>	Filtered	Strength	Slope	Topography
<i>i</i>		-	_		0	
56N (cont)	0+50	+2	0	69	13	Ledge
	0+25	+2	+3	71	20 ⁰	11
	B.L.	-2	+16	81	20 ⁰	**
	0+25E	-10	+22	75	20 ⁰	11
	0+50E	-12	+12	67	20 ⁰	Side Hill
	0+75E	-12	0	61	5 ⁰	
	1+00E	-10	-5	60	5 ⁰	11
	1+25E	-9	-6	58		11
	1+50E	-7	-5	55		"
	1+75E	-7	-4	55	10 ⁰	11
	2+00E	-5		55	8 ⁰	**

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APPENDIX III

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SABRE MODEL 27 VLF-E.M. RECEIVER

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SABRE DLECTRONIC Instruments L/fd.

4245 EAST HASTINGS STREET

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BURNABY, B.C. V5C 2J5

TELEPHONE: 201-1017

SABRE MODEL 27 VLF-EM RECEIVER

The model 27 EM unit was designed originally for a large Canadian mining company to overcome the deficiencies inherent in existing units.

The instrument is so stable and selective that completely reliable measurements can be made on distant stations without interference from nearby powerful transmitters. Stability and selectivity are especially important when making field-strength measurements, which are now being emphasized as a means of locating conductors.

This EM receiver is very compact, requires no earphones or loudspeakers and is housed in a heavy scotch saddle leather case. All of these features add up to make an ideal one-man EM unit of unexcelled electrical performance and mechanical ruggedness. SPECIFICATIONS -

Source of Primary Field - VLF radio stations (12 to 24 KHz.) <u>Number of Stations</u> - 4, selected by switch; Cutler, Main on 17.8 KHz. and Seattle, Washington on 18.6 KBz. are standard, leaving 2 other stations that can be selected by the user. Types of Measurement

-]. Dip angle in degrees, read on a meter-type inclinometer with a range of $\pm 60^{\circ}$ and an accuracy of $\pm \frac{1}{2}^{\circ}$.
- 2. Field strength, read on a meter and a precision digital dial with an accuracy exceeding 1%.
- 3. Out of phase component, read on the field strength meter as a residual reading when measuring the dip angle.

VLF-EM OPERATING INSTRUCTIONS

The equipment is operated in the usual way as follows:

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- 1. With the instrument held horizontal in front of you, turn around until a null appears on the field strength meter. You should now be facing the station.
- 2. With the receiver still facing the station, lift it to the vertical position and rotate it slightly in the vertical plane to your right or left until the best null appears on the field strength meter. Record the angle on the inclinometer at which the null appears. This is the DIP ANGLE (Positive or negative).
- 3. Return the instrument to the horizontal plane and turn around until the field strength meter is at its maximum reading. Set this maximum reading at 100 on the meter and record the reading on the gain control dial. This is the Field Strength Reading.
- 4. Repeat steps 1, 2 and 3 at each station.
- 5. To test the batteries turn the power switch on and push the test button. The field strength meter should read above the red mark. Battery life is approximately 200 hours and if the instrument is turned off between readings, the batteries should last for an entire season.

NOTE: An alternative way of measuring field strength is as follows:

Proceed as in step 3, setting the meter to 100. Now push the field strength button (marked FS) and the meter will read 50. (If it doesn't, adjust the gain control slightly). Leave the Gain Control setting where it is and take comparative Field Strength readings at each station by pressing the Field Strength button and recording the meter reading, which will vary from its Base Station Reading as you pass over conductive zones. SABRE MODEL 27 VLF-EM RECEIVER - (Continued)

Dimensions and Weight

Approx. $9\frac{1}{2}$ " x $2\frac{1}{2}$ " x $8\frac{1}{2}$ "; Weighs 5 lbs.

Batteries

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8 alkaline penlite cells. The instrument will run continuously on 1 set of batteries for over 200 hours; So that in normal on-off use, the batteries will last all season. The battery condition under load is shown by pushing a button and reading voltage on the field strength meter.

SELECTION OF STATIONS:

The stations are selected by the switch on the control panel, with the following abbreviations being used;

С	Ξ	Cutler, Maine.	Frequency	Ξ	17.8	Khz.
S	=	Seattle, Wash.	Frequency	Ξ	18.6	Khz.
A	=	Annapolis, Md.	Frequency	2	21.4	Khz.
H	=	Hawaii.	Frequency	=	23.4	Khz.

The two most useful stations are Cutler and Seattle and these will be used almost exclusively. Note that Seattle is off the air for several hours on Thursdays for maintenance (between 10 A.M. and 2 P.M. usually). Cutler is off the air for the same length of time every Friday.

If Equipment fails to operate:

- (a) Check that station is transmitting (see above). If one station appears to be dead, check another one to see if it is operating normally.
- (b) Check batteries. If they read low or the reading begins to drop after the test button is held down for a few seconds, replace them. Note also that there are 8 batteries in the instrument and they cannot be individually checked by the test button. If the batteries have been in the unit for a long time it is possible that one is dead or very weak but that the total voltage indicated by the test button is near normal. It is cheap insurance to instal new batteries before starting a big survey.
- (c) If unit still fails to operate check that battery connectors are tight, then check wiring of battery connectors for breaks or damage.

DETAILED OPERATING INSTRUCTIONS SABRE VLF-EM RECEIVER

INTRODUCTION:

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The VLF-EM method utilizes electromagnet field transmitted from radio stations in the 15-25 K Hz range. The signals are propagated with the magnetic component of the field being horizontal in undisturbed areas.

Conductivity contrasts in the earth create secondary fields, producing a vertical component and changes in the field strength or amplitude. These conductive areas may be located, and to a degree, evaluated by measuring the various parameters of this electromagnetic field.

The Sabre VLF-EM receiver is tuned to receive any 4 transmitter stations: usually C-Cutler Maine, S-Seattle, H-Hawaii and P-Panama.

The station used in the survey should be selected so that the direction of the signal is roughly perpendicular to the direction of the grid lines which, in turn, should be laid out perpendicular to the regional strike.

MEASUREMENTS:

The Sabre VLF-EM receiver can be used to measure the following characteristics of the VLF field.

(a) Tilt angle of resultant field;

(b) Field strength of (a) horizontal component of field(b) vertical component of field

Field Procedure

The following procedure should be followed to measure the dip angle of null and the field strength of the horizontal component of the VLF field.

Initial Field Strength Adjustment

Adjust the gain control to provide a sultable relative field strength measurement, as follows:-

(a) hold receiver in horizontal position (meter faces horizontal) and rotate in a horizontal plane until a null is indicated on the F.S. meter; rotate 90° in this horizontal plane (F.S. meter reads maximum)

(b) adjust fain control so that the F.S. meter reads 100

(c) record gain control setting (000 to 999). Close guard over gain control and do not readjust unless a major field strength occurs.

The above procedure should be carried out at the beginning of each day's survey and checked during the day.

Dip Angle Measurement Procedure

1. Hold receiver in horizontal position and rotate in the horizontal plane until a null is observed. This aligns receiver in the field and the operator should be facing southerly or easterly depending on transmitter location.

2. Bring receiver up to the vertical position (meter faces vertical) and rotate the receiver in the vertical plane perpendicular to the transmitter direction until a null or minimum reading is observed on the field strength meter.

3. Hold the receiver in this field strength null position and read the inclinometer in degrees. Record this dip angle of null along with sign (+ or -).

Horizontal Field Strength Measurement Procedure

1. Return receiver to the horizontal position.

2. Reestablish null bearing in horizontal plane.

3. Rotate receiver 90° in the horizontal plane.

4. Depress damp push button switch and observe field strength meter reading for sufficient time to obtain F.S. an average F.S. meter reading. (depressed damp switch slows needle action and reduces meter reading by half. The reading will normally range around 50).

5. Record F.S. reading.

APPENDIX IV

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UNIMAG PORTABLE PROTON MAGNETOMETER

UniMag Portable Proton Magnetometer

1.0 GENERAL INFORMATION

1.1 INTRODUCTION

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The UniMag[™] Portable Proton Magnetometer, Model G-836, is a complete system designed for general field applications requiring simple operation and stable measurements of the total intensity of the earth's magnetic field. UniMag provides 10 gamma resolution over a range from 20,000 to 100,000 gammas. Since the instrument measures total field intensity, the accuracy of each measurement is independent of sensor leveling. Furthermore, each measurement is based upon an atomic constant* and is independent of temperature, humidity, and battery conditions. The unified simplicity of UniMag allows rapid, accurate measurements to be obtained from a single, compact field instrument without the need for external batteries, cables or a sensor and staff. UniMag is a precision instrument and reasonable care should be exercised to avoid damage from unnecessary field abuse.

I-M-P-O-R-T-A-N-T

Read Chapter 3.0 Before Using UniMag on a Survey

1.2 MAGNETIC ENVIRONMENT

During survey operation, it is important that the earth's magnetic field is not biased or disturbed by allowing unwanted magnetic objects to come close to the sensor. Such objects include jewelry, keys, watches, belt buckles, pocket knives, mechanical pencils, zippers, some hats, notebooks, other survey equipment, etc. In normal use, UniMag is suspended from the adjustable shoulder strap, and held in front of the operator. This places the sensor approximately 2 ft. (61 cm) away from the operator, and typically 3 ft. (91 cm) above the ground. Under such conditions, 10 gamma surveys can be quickly and accurately performed.

Prior to survey use, however, objects that are suspected to be magnetic may be checked in the following manner:

- 1. Go to a magnetically clean area away from buildings, roads, automobiles, AC power-lines, etc.
- 2. Place the suspected object far away from UniMag, and take several readings by depressing the black pushbutton releasing and waiting for a digital readout to appear.
- 3. Observe the displayed readings. Each reading should repeat to within 10 gammas, i.e., the least significant digit (extreme right-hand number) should NOT change by more than one count.
- * Proton Gyromagnetic Ratio: $(2.67513 \pm 0.00002) \times 10^4$ Radians/Gauss second.

UniMag Portable Proton Magnetometer

- 4. Now place the suspected object at the distance from the sensor expected during actual survey operation. Take several more readings and note the measurements.
- 5. If the measurements made in Step 4 above differ by more than ± 1 count (extreme right-hand number) from those measurements made in Step 3, then the object is magnetic.

IF THE ARTICLE IS HIGHLY MAGNETIC, OR IF UniMag IS OPERATED INSIDE OR NEAR A BUILDING OR VEHICLE, THE SIGNAL WILL BE LOST, GIVING COMPLETELY ERRATIC READINGS AND LOSS OF ± 1 COUNT REPEATABILITY.

UniMag should not be operated in areas that are known sources of radio frequency energy, power line noise (transformers), or operated in buildings. UniMag will NOT operate properly if it is placed directly on the ground.

1.3 SPECIFICATIONS

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Resolution:

Tuning Range:

Tuning Mechanism:

Sampling Rate:

Output:

Power Requirements: Power Source:

AC Battery Charger:

Temperature Range:

Accuracy (Total Field):

20,000 to 100,000 gammas (world-wide) Multi-position switch with twenty-four overlapping steps.

10 gamma throughout tuning range

Manual pushbutton, new reading every 4 seconds.

4 digit, illuminated display directly in gammas.

12V DC, 500 ma average

Two internally mounted and rechargeable 6 volt, 1 amp/hr non-spill gelled electrolyte batteries. Charge state or replacement signified by flashing readout display.

Input: 115/220V, 50/60 Hz AC Output: 14V DC

-40° to +60°C Note: Battery capacity decreases with low temperature operation.

10 gamma through -20° to $+60^{\circ}C$ temperature range

-2 -

Operating Manual UniMag Portable Proton Magnetometer

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Sensor:Noise cancelling, high signal.
Internally mounted in console.Console Size: $22\frac{1}{2}$ " l. $\times 3\frac{1}{4}$ " w. $\times 5$ " h. (58 \times 8.3 \times 12.7 cm)Console Weight:7 lbs. (3.2 kg) Includes batteries,
sensor and shoulder harness.

1.4 INVENTORY INSPECTION

When received from the manufacturer, the UniMag[™] Proton Magnetometer should include the following items:

1.	UniMag Console including sensor	1 ea
2.	AC battery charger	1 ea
3.	Adjustable shoulder strap	1 ea
4.	Battery Pack	2 ea
5.	Operator's manual	1 ea
6.	Applications Manual	1 ea
7.	Attache Case	1 ea
8,	Teflon pipe tape	1 strip

Operating Manual UniMag Portable Proton Magnetometer

2.0 FIELD OPERATION

2.1 INTRODUCTION

UniMag is completely self-contained, and is ready for field survey operation. A few simple procedures should be observed to obtain optimum results, and it is recommended that the operator follow each step as outlined in this chapter to initially become familiar with the operation of the instrument. Refer to Figure 2-1 for identification of UniMag's controls and indicators.

2.2 CONSOLE OPERATION

PRELIMINARY CONSIDERATIONS: BEFORE USING UniMag, CHECK FOR:

1. Presence of sensor fluid:

The sensor is located in the forward, cylindrical portion of the instrument as shown in Detail "A" of Figure 2-1. <u>Shake the instrument GENTLY and</u> listen for a "sloshing" sound. If fluid is not present, or cannot be heard, it is necessary to fill the sensor PRIOR to operation:

- a) Hold the UniMag console vertically with the sensor pointed up. Remove the slotted Fill Plug from the convex end of the sensor as shown in Detail "A" of Figure 2-1.
- b) Fill the sensor with STRAINED* kerosene or unleaded gasoline completely. Then REMOVE approximately 2 tablespoons of fluid.

*<u>Note:</u> The fluid MUST be strained several times through paper filters, i.e., <u>paper towels</u>, <u>coffee filters</u>, <u>etc</u>. NEVER use kerosene or gasoline directly from a pump or storage can as it may be contaminated with metal particles.

- c) <u>Lightly wrap the Fill Plug with Teflon tape</u> and replace in the sensor. <u>Do NOT use excessive pressure to tighten the Fill Plug</u> - a "snug" fit is sufficient.
- 2. Battery pack is fully charged:

To check the battery voltage, simply press the black pushbutton and observe the readout - if it "flashes" on/off during the display period, the battery pack is NOT fully charged. Refer to Chapter 3.0 for instructions of recharging the battery PRIOR to survey operation. ONLY THREE SIMPLE STEPS ARE NECESSARY TO CORRECTLY TUNE AND OPERATE UniMag:

- 1. Lift the UniMag console out of the padded attache case, and adjust the shoulder strap for a comfortable fit. Typically, the magnetometer is used on the operator's right or left side, with the shoulder strap suspended across the operator's chest from the OPPOSITE shoulder.
- 2. Adjust the TUNING-KILOGAMMAS knob to a position that correlates with the earth's known magnetic field. The earth's field, in any general location, can be estimated by using the world intensity map on Page II at the beginning of this manual.
- 3. <u>Press the black pushbutton</u>, and release; wait 2 seconds, and observe the 2 second illuminated display of the earth's total field directly in gammas.
 - NOTE: <u>A true and repeatably correct reading can be made with the</u> <u>TUNING-KILOGAMMAS knob set in 3 or 4 tuning positions</u> on either side of the "estimated" local magnetic field i. e., the tuning is quite broad and non-critical in most cases. Unless high field changes on the order of 4 or 5 thousand gammas occur during operation, it will not be necessary to retune the console.

2.3 . SENSOR ORIENTATION

* not applie ble in North America

In low magnetic latitudes (where the field dips less than 40° , or below 40,000 gammas) such as near the magnetic equator where the field is horizontal, it may be necessary to rotate the black cylindrical sensor 90° as described below.

The small dot or line on the sensor is provided to allow proper orientation of the internal sensor axis, which must be placed perpendicular to the earth's field to produce optimum signal. The following procedure is recommended for easy rotation of the black sensor (Refer to Figure 2-1 for parts identification):

1. Remove the two slotted-head <u>Sensor Screws</u> completely.

- 2. Gently rotate the sensor 90° in either direction until the sensor holes are properly re-aligned to the corresponding holes in the UniMag console - secure with the two Sensor Screws. The orientation dot or line on the sensor should now be facing the SIDE of the UniMag console.
 - NOTE: The sensor should be rotated ONLY in survey areas where the local field intensity is less than 40,000 gammas.

2.4 SURVEY OPERATION

During survey operation and after UniMag has been tuned to the local field intensity (see Section 2.2), the operator need only depress the black pushbutton and note the reading in a log or field notebook. If a reading is in question, i.e., a sudden shift of several hundred gammas, several readings should be taken with the console held as still as possible.

UniMag SHOULD EXHIBIT ONE COUNT STABILITY, WHICH CAN BE VERIFIED BY REPEATING A MEASUREMENT WITH THE CONSOLE HELD IN THE SAME LOCATION. If one count stability is not possible, then an unwanted ferromagnetic article is present (buried pipe, etc.) or an extremely high magnetic gradient has been encountered.

2.5 DATA DISPLAY

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UniMag provides an illuminated 4-digit display of the earth's magnetic field directly in gammas. Since the resolution of UniMag is 10 gammas, only the four most significant digits are displayed in the readout window. For example, given an earth's field intensity of 51,240 gammas, UniMag will display "5-1-2-4" with the least significant digit ("0") being omitted. It should be remembered, however, that the readout (5-1-2-4) actually represents a ten gamma measurement of the earth's field ranging from 51,235 gammas to 51,245 gammas.

2.6 READOUT TEST

Occasionally, it is advisable to check the numeric readout display to guard against an erroneous reading due to a non-illuminating segment of the display. Simply depress and HOLD DOWN the black pushbutton until four number 8's appear (8888) - check each number. If any segments are missing, notify GeoMetrics and return the magnetometer immediately.

-7 -

2.7 INSTRUMENT STORAGE

When not in use, all of the components except the battery packs should be stored in the attache case to prevent damage, loss, or possible contact with magnetic particles that could be embedded in the sensor. If extended storage (1 week or longer) is anticipated, the battery pack MUST be stored in a refrifgerator (see Chapter 3.0) to prevent permanent damage to the internal charge plates of the battery. After any storage time, always re-charge the battery pack.

NOTE: Gelled electrolyte batteries provide an excellent power/weight ratio, but do require special handling considerations. TO PREVENT DAMAGE FROM EXCESSIVE BATTERY DISCHARGE, READ CHAPTER 3.0 COMPLETELY BEFORE USING THE UniMag MAGNETOMETER ON A SURVEY.

1.2

APPENDIX V

STATEMENT OF EXPENDITURES

STATEMENT OF EXPENDITURES

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A. LABOUR:

	G. Belik, M. Sc., (G. Belik and Associates) 15 days (Aug 16 - Aug 30) @ \$225.00/day	\$3,375.00	
	M. Dawson, Assistant (Kerr-Dawson & Assoc.) 14 days (Aug 16 - Aug 29) @ \$145.00/day	2,030.00	
	C. Clayton, Assistant (Amex Expl. Services Ltd.) 14 days (Aug 16 - Aug 29) @ \$159.25/day	2,402.00	\$7,807.00
В	SUPPORT AIRCRAFT:		
	-helicopter transportation	\$3,536.50	
	-Fixed - wing aircraft	1,058.34	4,594.84
с	TRUCK RENTAL:		
	-14 days @ \$30.00/day	\$420.00	
	-1175 miles @ 0.30/mi.	352.50	772.50
D	FOOD AND ACCOMMODATION:		743.59
E	SUPPLIES:		
	-chain saw oil & gas	\$9.92	
	-spruce laths, spay paint, rope, batteries, flagging, sample bags	134.49	
	-naptha	24.38	168.79
F	GEOCHEMICAL ANALYSIS:		497.05
G	EQUIPMENT RENTAL:		
	-Proton Magnetometer -VLF - E.M. Unit -Wild TIA Transit	\$280.00 140.00 172.50	592.50
H H	FREIGHT:		
	-Ship rock Samples		14.51
I.	REPORT PREPARATION:		1,400.00
	TOTAL HEREIN		\$16,590.78

APPENDIX VI

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3.3

STATEMENT OF QUALIFICATIONS: G.D. BELIK

GARY D. BELIK, M.Sc.

Consulting Geologist Mineral Exploration

#6 NICOLA PLACE, 310 NICOLA STREET • KAMLOOPS, B.C. V2C 2P5 • PHONE (604) 374-4247

CERTIFICATE

I, GARY D. BELIK, OF THE CITY OF KAMLOOPS, BRITISH COLUMBIA, DO HEREBY CERTIFY THAT:

- (1). I am a member of the Canadian Institute of Mining and Metallurgy, and a fellow of the Geological Association of Canada.
- (2). I am employed by G. Belik and Associates Ltd., with my office at
 #206 310 Nicola Street, Kamloops, B. C.
- (3). I am a graduate of the University of British Columbia with aB. Sc. in Honors Geology and a M. Sc. in Geology.
- (4). I have practised continuously as a geologist since May, 1970.
- (5). This report is based on an exhaustive study of all available data, published and unpublished reports, and my examination of the property from August 17 to August 28, 1981.
- (6). Permission is hereby granted to Gerle Gold Ltd. to use this report for financing purposes, and to satisfy requirements of the Securities Commission, the Stock Exchange, and the B. C. Ministry of Mines.

Gary D. Belik

GEOLOGIST

KAMLOOPS, B. C. November 24, 1981

> G. BELIK AND ASSOCIATES LTD. Consulting Geologist





