# GEOLOGICAL, GEOCHEMICAL 

## AND GEOPHYSICAL

ASSESSMENT REPORT ON THE " 025 " CLAIM GROUP<br>ATLIN MINING DIVISION<br>NTS $104 \mathrm{M} / 9 \mathrm{E}, 104 \mathrm{M} / 9 \mathrm{~W}$<br>LATITUDE 5934'30"<br>LONGITUDE $134^{\circ} 14^{\prime} 30^{\prime \prime}$

OWNER HR.DARRIN A. THOMPSON
hUTHOR OF REPORT MR.G.R.THOMPSON

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FIG. No. I.

- Property Location Map.





## Introduction:

From July 151994 to August 171994 geological, geochemical geophysical and physical surveys were conducted by two persons on the " 025 " claim group.

Located in the Atlin mining division of northwest British Columbia. The claim group stratles most of a 6 km . long fault of which is a splay fault off the long lived deep seated Llewellyn fault system. Here, the Llewellyn fault separates the Coast Crystalline complex to the west from the Intermontane tectonic province to the east. On this eastern flank of the Llewellyn fault lies the 025 claim group.

Claim geology is dominated by lower to middle Jurassic Laberge Group sediments, complicated by folds, faults and intrusives. Ten km . of control grid was established at 20 m stations.

The objective was to test continuity of Au.,Ag., and As. mineralization from the Bear zone and obtain possible drill targets, from geochemical, geophysical, and geological correlations. (see fig 3, 4)

Location + Access:

The 025 claim group is located in Northwest B.C. Canada, 35 km. west from the town of Atlin (NTS 104M/E). The property is accessible from Atlin, B.C. or Carcross, Yukon by Helicopter, Float plane or by boat. By boat from Atlin takes approx. 2 hrs., to the shores of Taku Arm of Tagish Lake where the western edge of the claims are bounded by the lake. A helicopter trip from Atlin takes about 15 minutes. (see fig.l and 2)

Claim information + Topography + Vegetation:
The 025 claim group totials 40 units from two 20 unit blocks, Mass and Quantity. Claims are owned by Mr. Darrin A. Thompson, of Dawson Creek, B.C. 100 \% and are in good standing until Aug. 20 1996.

The claims lie within the $f l a n k$ of the Tagish Highlands. From Tagish Lake at 650 meters (2151 ft.) undulating low to moderate relief rises to $840 \mathrm{~m} .(2700 \mathrm{ft}$.$) with limited outcrops,$ swampy lakes, intermittent creeks and mature forest cover. Stands of Spruce, Pine, Poplar, balsam and shrubs of willow and alder are throughout the property.

Physiography, Climate, and Glaciation:
Taku arm acts as one of the main drainage channels for the district. Two contrasting types of topography occur in the region; that of the Teslin Plateau (part of the larger physiographic region, the Yukon Plateau, and roughly comparable to the Intermontane geological province), and that of the Tagish Highlands (part of the Boundary Ranges Physiographic region, and given character from the Coast Plutonic Complex). The Teslin Plateau is an extensively dissected and eroded plateau. Topography consists of irregularly distributed, round hills with variable elevations (local area with flat-topped, uniform elevations). The valleys are wide , deep, steep-walled, and typically U-shaped. The Tagish Highlands are rugged, consisting mainly of knife-like ridges, needle summits, and abruptly incising valleys where considerable ice and snow are seen throughout the entire year. The rivers and creeks generally open in may, but on some lakes the ice remains until June. Warm summer weather is experienced for about 4 months with June and July receiving almost continuous daylight. The mean daily temperature in July is no less than 14 degrees Celsius. The month on July receives 10 to 13 days with measurable precipitation; mean annual precipitation is around 60 cm . In January the mean daily temperature is -15 degrees Celsius with 14 to 17 days with measurable precipitation. During the pleistocene epoch the Tagish Highlands became extensively glaciated, While the upperland part of the Teslin Plateau was effected to a lesser extent.

History + Previous Work:
Activity in the area dates back to 1898 when White Pass Engineers made their way to the placer gold camps of Atlin and Dawson City Yukon. Visible gold was discovered on the east shore of Tagish Lake which became the Engineer Mine. Operated from 19131952, milled 17,157 tons, recovered $18,058 \mathrm{oz} \mathrm{Au}$. and 8, 450 oz Ag . The Engineer is classified as mesothermal vein. The Engineer Mine is 6 km . south of the 025 property. Other showings in the area include; TP property, Happy Sullivan, Ben-my-chree, Rupert, and Big Horn.

Previous exploration work has been done on what is now the 025 property in the way of trenching. Many old trenches have been found on the property but no information as to whom conducted these programs or any results from them obtained. Work was probably conducted by the Engineer miners seeking additional reserves during it's operation.
T. R. Bultman conducted a Ph.D. thesis on the geology and Tectonic History of the Whitehorse Trough region (unpublished 1979). The British Columbia Department of Mines conducted a four year (1987-'90) regional geological and geochemical survey from the B.C., Yukon Border to the southern end of Atlin Lake. Sample \# 88m06-3 was taken from the main zone on the 025 claim group. This sample of Quartz flooded argillite breccia returned the following values; $5.35 \mathrm{~g} / \mathrm{t} \mathrm{Au} ., 19 \mathrm{ppm} \mathrm{Ag} ., 7000 \mathrm{ppm} \mathrm{As} ., 270 \mathrm{ppm} \mathrm{Sb}$ and 1500 ppm Pb.

In 1989 Golden Bee Minerals Inc. acquired the property from G.R.Thompson and conducted follow up exploration on the 88mm06-3 sample. Under the direction or Mr. David M. Strain P.Eng., Grid \& soils geological mapping and trenching were completed on the main zone. Au.,Ag.,As.,Sb.,mineralization occurs in fault controlled quartz flooded argillite breccia and stockworks. The main zone was extended to 350 m strike with an average width of 4 m . Values from the main zone ranged up to $8 \mathrm{~g} / \mathrm{t}$ Au., $40 \mathrm{oz} / \mathrm{t} \mathrm{Ag} .$, and $2 \% \mathrm{As}$. Several drill targets were identified.

In 1991 Golden Bee conducted grassroots exploration on the 025 property in an attempt to locate additional mineralization along the 025 fault. Prospecting, trenching, and rough geological mapping located the two new zones, The Bear zone and the Barney zone both were roughly mapped for 300 m in strike with varying widths up to 25 m . One of the trenches within the Bear zone cut normal to the 025 structure returned $3 \mathrm{~g} / \mathrm{t} \mathrm{Au}$. from chip samples over a true width of 6 m . Anomalous values ranged up to $1.2 \mathrm{~g} / \mathrm{t}$ Au. from the Barney zone.

Also in 1991 Noranda Exploration conducted a property exam of the 025 and obtained a $11.6 \mathrm{~g} / \mathrm{t}$ Au. value form the Bear zone.

## Regional Geology:

The study area lies within the Whitehorse Trough of the northwest trending intermontane tectonic province. The area is bounded by two major long lived deep seated faults. The west area in study is bounded by the sub-vertical Llewellyn Fault system that separates the Whitehorse Trough from the Coast crystalline complex (Nisling assemblage). The Nisling assembledge is a displaced continental margin package polydeformed to four phases of deformation (Mihalynuk 1988). Probable upper Proterozoic to Palaeozoic in age. Protoliths are varied, mainly pelitic but also volcanic protoliths and carbonates. The Whitehorse Trough is bounded to the east by the northeast dipping northwest trending Nahlin Fault and the Cache Creek group a oceanic assembledge comprised of basalts and massive carbonates, imbricated altered ultramafic slices, mainly mantel tectonites of the Atlin camp.

The study area lies within the Whitehorse Trough and in part the Whitehorse trough blanket the Nisling and Cache Creek terrane as an overlap. The oldest rocks in the whitehorse trough are $k$-spar magacrystic hornblende granodiorite, age constraints to 212 to 220 Ma years, accompanied by hornblende and pyroxene leucogabbro. Overlain by a thick blanket of polymictic boulder conglomerate, clasts of the 215 Ma $K$-spar megacrystic granodiorite in the conglomerate and pyroxene ferric breccia and basalt typical lithology of the Stuhini Group rocks. The Stuhini Group form some

3 km thick pile of pillow basalts, breccias, intercalated argillites and volcanic clastic, topping themforming a cap are the upper Triassic carbonates correlated with the Sinwa Formation which sits on the top of the Stuhini Group succession. Unconformably overlying those and in some places structurally overlying them in most places are the rocks of the Laberge Group, dominated by feldspathic-wacke, argillite and conglomerate of lower to middle Jurassic. The Laberge Group sediments began in the early depositional stages as evidenced by intraformational angular unconformities and associated conglomerates in strata of probable Pliensbachian age. Slump folds are common on the hand sample scale to hillside. Later axial-surface cleavages bear bo relation to these early-formed slump folds. Folds produced during this deformation have axial planer (or near planer) surfaces that consistently trend $n r^{+}$hwest and most commonly dip steeply both east and west. Axial cleavages are well developed in argillites, but are rare in massive wackes. Major folds are upright, gentle to close, and gently plunging. (Mihalynuk, Currie,Arksey,1988)

Many of the units within the Laberge Group sediments have limited facies-dependent distribution which results from their depositional environment- interpreted as one of coalescing subaqueous turbiditic fans.(Bultman, 1979).

The Whitehorse Trough in the study area has been shortened in a northeast-southwest direction laterally by some $45 \%$. Resulting in closed to open, symmetric to asymmetric folds with wave lengths ranging up to 10 km . Folding in the Laberge Group is particularly well developed. (see fig. 2 )
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Claim Geology:
The 025 claim group geology is dominated by lower to middle Jurassic Laberge Group sediments consisting of interbeded argillaceous siltstones, feldspathic wackes, siliciclastics and conglomerates. Underlain by Triassic Stuhini Group volcanics. The contact between The Laberge Group and the Stuhini Group does not appear to out crop on the claim group. The Stuhini Group rocks are probably at considerable depth. Both rock types are cut by intusives and associated quartz stockwork and breccia bodies. Two different intrusive bodies occur within the 025 property. A dioritic unit is associated with the Bear zone and a Granodioritic unit is associated with the Barney zone, both units are confined to the east side of the 025 fault. The main structure within the wopety is the vertical to sub-vertical (85 degrees west) N025E splay fault off the Llewellyn Fault. This splay fault is a very prominent feature (see fig 3) with it's many cross structures trending north to northwest has provided a conduit for the mineralizing fluids.
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## LITHOLOGY:

Argillites; are undivided or mixed, rhymically bedded: from successions 10 - 100 meters or more thick, irregularly and thinly bedded argillites; as recessive sets between wacke beds; dark brown to black; l - 30 meters may be silty weathering.

Greywackes; feldspar < lithic grains, very fine sand to granules; mafic minerals especially hornblende, < 5\% calcareous with bulbous concretions meters long; beds massive or graded, centimetres to 10 meters plus thick; grey to green and orange weathering; resistant.

Siliciclastics; > 100 meters thick, indurated siltstone to quartz-rich lithic wackes; centimetre scale through cross stratification well layered, rusty weathering.

Conglomerates; 10-200 meters thick; common as minor units with argillite and greywacke clasts can include volcanic (pyroxene and hornblende, feldspar porphyries, aphanitic mafic to felsic); sedimentary (light to dark grey, rarely fossiliferous, carbonate with lesser wackes and argillite); and intrusive (syenite through leucogranite) typically clast-supported with coarse wacke matrix, or 1 - $30 \%$ clasts floating in argillite matrix; intrusive boulders up to 1.2 meters most commonly < 15 cm . Matrix-supported and intraformation (5 - 25\% argillite or wacke clasts < 20 cm diameter) conglomerates are also common. (Mihalynuk, Currie,Arksey 1988).

Intrusive; associated with the Bear zone is a medium to fine grained hornblende diorite; chlorite rich,+-epidote, t-ironcarbonate, +- hematite, +-siderite, sulphides (pyrite and pyrrhotite) occur as fine disseminations 1-2\% or less. This unit is confined to the eastern flank of the 025 structure and exhibits foliation in close proximal to the fault and lesser in intensity away from the structure. Float samples of moderately foliated granodiorite altered to chlorite and epidote with minor disseminated sulphides (pyrite) were noted on line 5700 N 5050 E . This intrusive unit out crops intermitently and strikes for 500 to 700 m and has a width up to 30 meters.

Also confined to the east side of the 025 structure is an intrusive associated with the Barney zone (see appendix 4); strike > 200 meters; hornblende-biotite granodiorite; altered to chlorite and sericite, red-brown medium-grained probably high level intrusive porphyry. The rock is not magnetic. Plagioclase is unaltered except for sericite along fractures and twin planes. Interstitial to the plagioclase are mafic minerals amphibole and biotite, hornblende is partially replaced by biotite. Minor ground mass in this very crowded porphyritic rock is composed of 0.15 mm diameter subhedral quartz and $k$-feldspar.

During the 1988 British Columbia Departments of Mines regional program sample $\#$ T74-213-1h was taken from granodiorite on the east side of the 025 fault approximately in the center of the 6 km . 1 nng structure.; k -argon isotopic age dated returned $0.45 \% \mathrm{k}$ $(\mathrm{n}=2) 3.4140 \mathrm{Ar} \mathrm{b} 10-7 \mathrm{cc} / \mathrm{g}, 38.3 \% 40 \mathrm{Arc}-40 \mathrm{Ar}$ total age, error d Ma e 181 +- 5 and 185 +- 5. This unit's extent is unknown.

Structure; The N025E fault is a strike-slip fault evident by slicken-slides visible in many areas along the structure; given the regional structural history and age dates from volcanic activity on the property suggests that the 025 fault is a long lived fault at least late Jurassic of considerable depth. Cross faulting within the 025 fault is complex with many cross faults trending from north to northwest, with few trending northeast. (see air photo enclosed). Sediments local to the 025 structure are intensely fracture and foliated. The width of the 025 fault varies from 5-100 meters, and is also complicated by paralleling structures; Recessive, and covered mostly by organic, marshy areas, limited rock is exposed within the center of the fault except in the main zone where the creek has incised the rock to a small canyon exposing Au bearing fault breccia. Smaller eastnortheast -trending structures also deform the stratigraphy, that may postdate the northwest-trending structures, but is not known. The Laberge sediments are well folded, from hand sample size to hillside, with general axial trends northwest.

Mineralization; Au.,Ag.,As., mineralization is associated with fine disseminated sulphides up to 10\% (arsenopyrite,pyrite,hematite), micro-veinlets, and fracture coatings, hosted by quartz flooded breccia and stockwork. Mineralization is confined for the most part to structures; mainly within and near of the $N 025 \mathrm{E}$ fault, mineralization is found within 60 m of either side of the fault.

Alteration; within mineralized areas; phyllitic, propylitic, silicic, hematitic, and carbonatic.

The bear zone is oxidized and weathered, rock samples were easily obtained given the intense degree of fracturing plus weathering. However soils were not well developed in many areas where rocks cropout and bog cover. Many similarities are found between the Engineer mine area geology and the 025 property, like style of mineralization alteration etc., high levels of As. and the associated intrusives , stockworks cut by breccia's, open space fiilings. Mineralization at the Engineer is classified as Mesothermal vein.

Exploration Work:
From July 151994 to August 17 1994. The author and one assistant conducted grassroots exploration on the 025 claim group, locally in the Bear zone and area. The focus was an attempt to identify drill targets by geochemical, geophysical surveys, and geological mapping. Camp was set near shore of Tagish Lake in the southwest area of the 025 claim group for easy mobebility. The property was accessed by truck to Atlin, B.C. from Kamloops and then by boat via; Atlin lake, Atlin River, Graham Inlet to Taku Arm of Tagish Lake. Most perishables supplies were obtained from Whitehorse, Yukon. Geological mapping was done at $1: 10,000$ scale. Ten km. of control grid was established with the base-line started at 5000 E 500 N , located at the northeast corner of the first lake approximately 900 m up strike along the 025 fault from the Tagish lake shore-line (southwest corner of property). The Base line was oriented at $N-025-E$ was hand cut, blazed, flagged (orange) and picketed, with stations every 20 meters. The base-line extends to 5000 E 6500 N ( 1500 m. ) near the long-lake (see appendix 4). Cross lines were at 50 m and 100 m spacings with stations at 10 m and 20 m respectively. Prospecting outside the grid investigated a large gossan (hornfels Laberge seds.) related to an intrusive associated with the Barney zone, to the east of the northern end of the 025 property.
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Geochemical survey; soil, rock chip and grab samples were confined to within 200 m of either side of the base-line. A total of 111 soil samples were taken from $B$ horizon and submitted to Chemex Laboratory in Vancouver, B.C.. A total of ten rock samples, five of which were 1 meter chip samples from hand trenching, five of which were grab samples. All samples were analyzed for 30 elements plus gold. Self-potential geophysics was conducted for approx. six km. of the grid sampling at 20 m intervals. Several base stations of 3 cu sulphate pots set to zero was used with a portable pot for sampling stations. Base station was relocated every few lines. Due to un-cut grid lines and cumbersome wire reeling, difficulty in setting up the base station was also a factor causing the S.P. survey to take up most of the time for the project. Some of the access trails to the work area were hand cut, and hand trenching exposed new found mineralization.

## Geochemical Results:

See appendix ${ }^{\text {\# }}$ for sample preparation, assay procedures and certificates.

111 soil samples and 10 rock samples were taken from within the grid area less two soil and one rock sample that were taken off the property. Samples were obtained from the $B$ horizon. The limits of the soil survey was confined to 200 m each side of the base line and the 025 fault, selected fill in lines at 50m intervals and 10 m stations were limited to 100 m from the base line. The two soils that were taken off the property were \# AAOOl and AA002 both were taken from an area east of the Barney zone within a large gossanous area as recon sampling.

Sample \# GT9403 (931567 chemex \#) rock grab, of the same area was taken from outcrop of hornfels seds with minor slicken-slides, quartz veinlets, 19 fine disseminated pyrite, +-1 imonite. Returned only 108 ppm Vanadium and 109 ppm copper. Soil sample AA002 returned only 222 ppm Zn . other values insignificant.

The soil sample results are plotted on the enclosed map (see appendix 3) for As. and Au. as contours. Anomalous Au. is defined as values $>30$ ppb. and anomalous As defined as values $>200$ ppm.. Other values were too inconsistent to plot. Regional threshold values were define as values $>19$ ppb for Au., and values $>117$ ppm for As. Were consider anomalous (Mihalynuk 1988).

From the 111 soils 85 are considered anomalous for As., 12 for Au., 7 for Sb., and 6 for Ag..

The best result form this program was obtained from rock and soil sample \# L 5225N 5000 E returned $17.6 \mathrm{~g} / \mathrm{t} \mathrm{Au},>10,000 \mathrm{ppm}$ As, $22 \mathrm{ppm} \mathrm{Ag}, 325 \mathrm{ppm} \mathrm{Cu}$, and 174 ppm Sb . This sample was taken from rich red/brown soil with breccia fragments.

Quartz flooded argillite breccia float was discovered 14 m at 50 degrees from station L5000N 4940E. Hand trenching was done to expose the shallow outcrop. Trend of trench was normal to N 025 E . The following \#OT-TR samples were taken from this trench as 1 m chip samples approximately 0.5 m in depth from west to east.

Sample \#OT-TR-01 (931563 chemex\#) contained fe carbonate altered sediments, +- hematite, well foliated, +- breccia fragments, and quartz stockwork veinlets. Returned values of $30 \mathrm{ppb} \mathrm{Au}, 178$ ppm As.

Sample \#OT-TR-02 (931566 chemex\#) contained well-foliated seds with abundant quartz argillite breccia, Fe carbonate and hematitic alteration returned values of $695 \mathrm{ppb} \mathrm{Au}, 1.2 \mathrm{ppm} \mathrm{Ag}, 2620 \mathrm{ppm}$ As.

Sample \#OT-TR-03 (931571 chemex\#) contained Quartz flooded breccia and stockwork, hematite alteration, and returned values of $410 \mathrm{ppb} \mathrm{Au}, 1935 \mathrm{ppm} \mathrm{As}, 0.4 \mathrm{ppm} \mathrm{Ag}$.

Sample \# OT-TR-04 ( 931565 chemex \#) contained quartz veinlets cutting well foliated seds, returned, $140 \mathrm{ppb} \mathrm{Au}, 562 \mathrm{ppm}$ As.

Sample \# GT9401 ( 931569 chemex \#) was a grab sample taken from float material near the above trench, of quartz flooded argillite breccia, and slicken-slides, returned $485 \mathrm{ppb} \mathrm{Au}, 1540 \mathrm{ppm}$ As, and 0.6 ppm Ag .

Sample \# GT9402 (931562 chemex\#) was a grab sample taken from out-crop at $L 5500 \mathrm{~N} 5045 \mathrm{E}$ of medium grained hornblende diorite, Chlorite +-limonite, +- albite, and $F e$ carbonate on fractured faces, returned only 109 ppm V .

Sample \# GT9404 (931564 chemex\#) was taken from out-crop as grab sample from L 5900 N 4870 E contáned Fe carbonate altered seds +- quartz veinlets, and $<1 \%$ diss. Pyrite, returned values insignificant.

Sample \# GT9405 (931579 chemex\#) was a grab sample taken from an old trench 10 m at N 025 E from station L 5650 N 5020 E. Sample contained Quartz flooded argillite breccia and stockworks, fine disseminated sulphides in argillite and fracture filling sulphides. This sample returned values of $3040 \mathrm{ppb} \mathrm{Au},>10,000 \mathrm{ppm}$ As, 2150 ppm Sb , and 2.4 ppm Ag .

Sample \# GT9406 (931568 chemex\#) was a grab sample from outcrop of med-grained diorite with chlorite and epidote alteration, 1 \% disseminated sulphides, near station $L 5225 N 5000$ E returned only 124 ppm Zn .

GEOCHEMICAL SUMMARY;

The As and Au values are considered the most useful in identifying targets. Given that $A s$ is a good path-finder element for gold systems, The As values are correlated with S.P. geophysics below. The geochem values contoured (Enclosed Bear Zone map) for As and $A u$ show an intimate relationship between $A u$ and As deposition. It is evident that a 700 m strike and $80 \mathrm{~m}+$ - width anomaly has been identified in the Bear Zone.

Geochem anomaly at L 5000 N from 4900 E to 5060 E corresponds to weak to moderately anomalous S.P. peaks at 4940 E and 5040 E .

Geochem anomaly at L 5100 N from 4950 E to 5040 E corresponds to weak to moderately anomalous S.P. peaks at 4960 E and 5000 E .

Geochem anomaly at L 5200 N from 4950 E to 5020 E corresponds to weak to moderately anomalous S.P. peak around 5020 E.

Geochem anomaly at L ? 290 N from 4920 E to 5020 E corresponds to a strong S.P. anomalies at 4920 E and 4960 E .

Geochem anomaly at L 5400 N from 4950 E to 5020 E corresponds to a strong S.P. anomaly at 4960 E.

Geochem anomaly at L 5500 N from 4960 E to 5020 E corresponds to a strong S.P. anomaly at 5020-5040 E and a weak S.P. anomaly at 4980 E.

Geochem anomaly at L 5700 N from 5000 E to 5080 E corresponds to a weak S.P. anomaly at 5020 E.

Geophysical Results;
A self-potential (S.P.) geophysical survey was conducted over approximately 6 km . of the grid. This survey was very slow moving, difficulties were encountered in rolling wire in and out through uncut lines and digging holes and zeroing the base station. A mixture of saturated copper sulphate was used in porous clay pots as electrolyte with copper electrodes and solution held in by rubber stoppers. A 40 mega-ohm digitle meter was used, readings taken in Mv. 500 m of 18 gauge multi-strand copper wire was used. The base station consisted of 3 pots in a triangle where zero potential was established between them and joined together by copper wire with zinc clips. Then one end of the wire was connected to the base station and the wire rolled out to the stations established. Base stations were re-established every few lines, and pots were changed everyday. Samples were taken every 20 m . Data was compiled and profile plots were made using cricket graph 3.
(see appendix \# 2)
Geophysical data was obtained from L 5000 N to L 6000 N. for about 6 km .

Mv readings from -10 to -20 were considered weakly anomalous, values from - 21 to - 40 Mv were considered moderately anomalous and values from - 41 to -83 Mv (Highest value) were considered strongly anomalous.

Strong anomalies are identified on line $5000 \mathrm{~N}, \mathrm{~L} 5100 \mathrm{~N}$, and 5200 N in around $4800 \mathrm{E},-44,-51,-49$ respectively identifying a probable structure trending $N / E$.

A strong anomaly on line 5300 N between 4900 E to $5000 \mathrm{E}-44$ to -47 Mv is supported by geochem (see geochem section).

A strong anomaly is identified on line 5400 N at 5240 E .42 Mv.

A strong anomaly is identified on L 5500 N at 5040 E - 69 Mv and is supported by anomalous geochem values.

On line 5600 N a strong anomaly occurs at $5080 \mathrm{E},-83 \mathrm{Mv}$ but due to a lake this line was discontinued. These two strong anomalies tied together strike at $N / E$ could be considered as a potential structure.

A strong anomaly is identified on L 5900 N 4960 E , however has no other correlations, but should not be ruled out.

## Discussion of Results:

The results obtained show some correlation between geochemical values and geophysical values. The S.P. values are weak in comparison to major sulphide bodies of known origin from case history. However, we know that the mineralization is not massive, rather disseminated or as veinlets within stockwork and breccia, thus should not be in the order of -300 Mv like one would expect from a near surface massive sulphide body. The greatest negative charge of -83 Mv from the $S . P$. survey is an indication of what can be expected from this type of survey in this area. But the cause of this high is not known. Since we have known geochem values, like the strong anomaly at line 5200 N and 5300 N (the high of $17.6 \mathrm{~g} / \mathrm{t}$ $\mathrm{Au},>10,000 \mathrm{As}$ ), we see that the geophysics show a moderate to strong anomaly in the range of -40 to -50 Mv . Where we see weak to moderate As ( 200 ppm to $<10,000 \mathrm{ppm}$ ) anomalies we can correlate this to the weak to moderate S.P. from -20 to -40 Mv . range.

## Conclusion :

The mineralization strike of the Bear zone has been extended to 700 m from the estimated 300 m from previous works. This is obtained from the As values contoured (see Bear Zone map).

The As anomaly is concentrated within 60 m of either side of the "025" fault or base line 5000 E , with the highs ( $>10,000 \mathrm{ppm}$ ) are found within the fault itself. This geochem anomaly is supported by moderate to strong S.P. values in the range of $\mathbf{- 4 0}$ to -50 Mv for approximately 350 m and weak to moderate values for 350 m . Drill targets have been identified based on these results (see recommendations). The $A u$ values are also confined to within or near the "025" fault. The geological history of the area lends itself to the plausibility of the "025" being a conduit for Au,Ag,As mineralization as early as 220 ma years before present. The high levels of As, open vugs, associated intrusives, suggest that the Bear zone may be a transitional deposit between epithermal to mesothermal vein system. The possibility may exist for hydrothermal deposition at great depths, consideration given to the fact that the Laberge sediments are underlain by the favourable Stuhini volcanics, and the magnetude of the "025" fault hosting a Au bearing pluming system. (see fig 2).

## Recommendations:


#### Abstract

Recommendations based on the geological, geochemical, and geophysical information obtained from this project and from previous works. The first drill location set up at L 5200 N 4900 E striking normal to the NO25E trend with a dip angle of 45 degrees, this should cut the main fault zone at 141 m to a depth of l00m from surface. A second collar may be done also normal to the N 025 E trend at a dip angle of 60 degrees, drilling at this angle should cut the zone 200 m from collar and 173 m from surface. The second drill site location $L 5300$ N 4900 E with same strike and dip as the first hole. With a possible second collar at 60 degrees aswell. The third drill site should be located at L 5400 N 4900 E with the same strike and dip as the others. Based on this information and budgets etc., additional drill sites would be located on L $5100 \mathrm{~N}, \mathrm{~L} 5000 \mathrm{~N}, \mathrm{~L} 5500$, at 4900 E with similar specifications if mineralization is continuous.

Also trenching at line 5225 N 5000 E cut normal to the NO25E fault. For 30 m in length, 10 m west of line 5000 e and 20 m east of L5000E. Follow up work on the two geophysical anomalies would include trenching and sampling.


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## References:

"Geology and Tectonic History of the Whitehorse Trough West of Atlin, B.C." T.R.Bultman, May 1979, (unpublished).
B.C.D.M. Open file 1989-13 "Geology of the Fantail Lake west and Warm creek east Map area", M.G.Mihalynuk, Feb. 1989.
"Geological and geochemical assessment report on the GBI claim group", G.R.Thompson , Nov. 1990.

NTS 104M/9, 1:50,000 scale.
Air photo \# B.C. 5677 050, B.C. 5677 511, B.C. 5677067,
B.C. $5677086, ~ B . C .5677177, ~ B . C .5667178, ~ B . C .5677179$.

## Statement of Qualifications:

I Gary R. Thompson of 237 - Juniper Ave. Kamloops, B.C. Canada, certify that:

I am currently enroled in second year academic sciences at U.C.C. in Kamloops, with a geology major, $\quad$ plan to obtain a masters in science in applied mineral exploration from U.B.C.

I have successfully completed the Advanced prospectors training program sponsored by the B.C. Ministry of Energy Mines and Petroleum Resources, 1989.

I have successfully completed the Petrology training program sponsored by the B.C.D.M. in kamloops, 1990.

I was co-operator of Grassroots Ent.Ltd. performing exploration services to mining companies throughout B.C. and parts of the Yukon. From 1987 to 1991. Also work in mineral exploration since 1983.


Gary R. Thompson
Field Supervisor/prospector, Gary Thompson ..... $\$ 5,780.00$
Field Technition/Assistant, Amica Antonelli ..... $\$ 3,400.00$
Sample prep and assay cost ..... \$3,200.00
Transportation ,truck,boat, and mobe-demobe ..... $\$ 5.090 .00$
Food and Accommodation. ..... \$3,200.00
Field supplies and equipment, pickets,S.P.equip.etc... $\$ 1,675.00$
Air cargo, shipping ..... 180.00
Report preparation ..... 320.00
Communication .....  205.00

APPENDIX 1

## Sample Prep

## Screening Procedure

## Chemex Code: 201

Geochemical samples (soils,silts) are dried at 60 deg C and then sieved through an 80 mesh stainless steel screen. The plus 80 mesh fraction is saved in a seperate container.

## Ring Grinding

Chemex Code: 205 (geochemical samples)
A crushed sample split is ground using a ring mill pulverizer with a chrome steel ring set. The Chemex specification for this procedure is that greater than $90 \%$ of the ground material passes a 150 mesh screen. Grinding with chrome steel will impart trace amounts of iron and chromium to a sample.

## Crushing

Chemex Code: 294 (6-10 lb. sample weight)
The entire sample is passed through TM Rhino crusher to yield a crushed product where greater than $60 \%$ of the sample passes a -10 mesh screen. A split in the range of $200-350 \mathrm{~g}$ (weight depends on parameters requested) is then taken using a stainless steel Jones riffle splitter.

## 32-Element Geochemistry Package (32-ICP) Inductively-Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES)

A prepared sample ( 1.0 g ) is digested with concentrated nitric and aqua regia acids at medium heat for two hours. The acid solution is diluted to 25 ml with demineralized water, mixed and analyzed using a Jarrell Ash 1100 plasma spectrometer after calibration with proper standards. The analytical results are corrected for spectral inter-element interferences.

| Chemex <br> Codes | Element | Detection <br> Limit | Upper <br> Limit |
| :--- | :--- | :--- | :--- |
| 229 | Digestion |  |  |
| 2119 | *Aluminum | $0.01 \%$ | $15 \%$ |
| 2118 | Silver | 0.2 ppm | $0.02 \%$ |
| 2120 | Arsenic | 2 ppm | $1 \%$ |
| 2121 | *Barium | 10 ppm | $1 \%$ |
| 2122 | * Beryllium | 0.5 ppm | $0.01 \%$ |
| 2123 | Bismuth | 2 ppm | $1 \%$ |
| 2124 | *Calcium | $0.01 \%$ | $15 \%$ |
| 2125 | Cadmium | 0.5 ppm | $0.05 \%$ |
| 2126 | Cobalt | 1 ppm | $1 \%$ |
| 2127 | *Chromium | 1 ppm | $1 \%$ |
| 2128 | Copper | 1 ppm | $1 \%$ |
| 2150 | Iron | $0.01 \%$ | $15 \%$ |
| 2130 | *Gallium | 10 ppm | $1 \%$ |
| 2132 | *Potassium | $0.01 \%$ | $10 \%$ |
| 2151 | *Lanthanum | 10 ppm | $1 \%$ |
| 2134 | *Magnesium | $0.01 \%$ | $15 \%$ |
| 2135 | Manganese | 5 ppm | $1 \%$ |
| 2136 | Molybdenum | 1 ppm | $1 \%$ |
| 2137 | *Sodium | $0.01 \%$ | $10 \%$ |
| 2138 | Nickel | 1 ppm | $1 \%$ |
| 2139 | Phosphorus | 10 ppm | $1 \%$ |
| 2140 | Lead | 2 ppm | $1 \%$ |
| 2141 | Antimony | 2 ppm | $1 \%$ |
| 2142 | *Scandium | 1 ppm | $1 \%$ |
| 2143 | *Strontium | 1 ppm | $1 \%$ |
| 2144 | *Titanium | $0.01 \%$ | $10 \%$ |
| 2145 | *Thallium | 10 ppm | $1 \%$ |
| 2146 | Uranium | 10 ppm | $1 \%$ |
| 2147 | Vanadium | 1 ppm | $1 \%$ |
| 2148 | *Tungsten | 10 ppm | $1 \%$ |
| 2149 | Zinc | 2 ppm | $1 \%$ |
| 2131 | Mercury | 1 ppm | $1 \%$ |

[^0]
## Gold

Fire Assay Collection

Atomic Absorption Spectroscopy (FA-AA)
Chemex Code: 100
A 10 g sample is fused with a neutral lead oxide flux inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead.
These beads are digested for 30 mins in 0.5 ml concentrated nitric acid, then 1.5 ml of concentrated hydrochloric acid are added and the mixture is digested for 1 hr . The samples are cooled, diluted to a final volume of 5 ml , homogenized and analyzed by atomic absorption spectroscopy.

Detection limit: 5 ppb
Upper Limit: $10,000 \mathrm{ppb}$

Fire Assay - Gravimetric Finish
Chemex Code(s): 396 (oz/T), 397 (g/tonne)
Gold analyses are done by standard fire assay techniques. A prepared sample (1/2 assay ton ( 14.583 grams)) is fused in litharge, carbonate and silicious fluxes. The lead button containing the precious metals is cupelled in a muffle furnace. The Ag and Au bead is parted in dilute nitric acid, annealed and weighed as Au.

Detection Limit: $0.003 \mathrm{oz} / \mathrm{T}$
$0.1 \mathrm{~g} /$ tonne

Upper Limit: 20 oz/T
$500 \mathrm{~g} /$ tonne

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221
237 JUNIPER AVE.
KAMLOOPS, BC
V2B 1H8
INVOICE NUMBER
I 9424851

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| Account: | MBM |
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(MBM ) - THOMPSON, GARY R.
Project:
PO. \# :
samples submitted to our lab in vancouver, BC.
This report was printed on 16-sEP-94.

| SAMPLE PREPARATION |  |  |
| :---: | :---: | :---: |
| $\begin{aligned} & \text { CHEMEX } \\ & \text { CODE } \end{aligned}$ | NUMBER SAMPLES | DESCRIPTION |
| 201 229 | 111 111 | Dry, sieve to -80 mesh ICP - AQ Digestion charge |

The 32 element ICP package is suitable for trace motals in soil and rock samples. lements for which the nitric-aqua regia digestion is possibly incomplete are: Al, $\mathrm{Ba}, \mathrm{Be}, \mathrm{Ca}, \mathrm{Cr}, \mathrm{Ga}, \mathrm{K}, \mathrm{La}, \mathrm{Mg}, \mathrm{Na}, \mathrm{Sr}, \mathrm{Ti}$, T1, W.


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APPENDIX 2


L5000 NS.P Profile


Exstings (20m stations)



L 5400 N s.p. proflie



Easting: (20II stations)

L. 5700 N s.p. profile


Fuctinge (20.metaricne)


$L 6000 \mathrm{~N}$ S.P. Profile


Eastings (20I)




[^0]:    * Elements for which the digestion is possibly incomplete.

