

# **MONARCH MOUNTAIN - UNION MOUNTAIN PROPERTY : ATLIN GOLD CAMP**

## **EXECUTIVE SUMMARY**

The Monarch Mountain - Union Mountain Property ( MMUMP ) in the Atlin Gold Camp (AGC ) contains examples of Motherlode-Bonanza, lode- gold, quartz vein exploration targets in the northern Cache Creek ( Atlin ) Terrane . Mineralization is hosted in a tectonically dismembered ophiolitic assemblage of rocks dominated by listwanite- altered ultramafic and meta-igneous units. Both structure and contact relationships are important factors in confining the alteration and mineralized zones.

The D-1, D - 2, and D - 3 Mineral Claims ( 389658, 389660, and 389659, respectively ) comprise a 60 unit east-west- trending block of claims covering an area surrounding B.C. Minfile mineral occurrences 104N 042 and 104N 101 known as the Golden View and the Anna, respectively. The claims are solely owned by Mr. Lenard Diduck (Mineral Titles Map M104N052 and M104N053 ).

The claims are located in topographic map NTS 104N 012, in the ATLIN MINING DISTRICT near the historic town of Atlin located in Northwestern British Columbia approximately 182 kilometres by road south from Whitehorse, Yukon.

The western-most D -3 claim hosts the Anna prospect and is easily reached by traveling south of Atlin on the Warm Bay gravel road and then hiking eastwards on the Monarch Mountain lookout trail to the summit where the showing is approximately one kilometer west on the plateau. The D -3 claim covers Monarch Mountain summit (4723 feet ) and its flanking western slopes.

The central D -1 and eastern-most D -2 claims and the Golden View lode-gold prospect are best accessed by traveling east of Atlin on gravel road then traveling southeast along the Spruce Creek road to finally travel on the south side of Spruce Creek up the placer gold operation roads of the Little Spruce Creek and Eureka Creek drainages.

The Golden View showing is located on the western flank of Union Mountain in the D -2 claim which covers the upper reaches of Eureka Creek.

The D -1 claim straddles the valley located at the upper reaches of the Little Spruce Creek drainage.

Outcrop is sparse on the lower portions of the property while outcrop, talus and a thin colluvial veneer dominate at elevations above 1500 metres. The Eureka and Little Spruce Creek drainages ( D-1, D-2 ) empty north into Spruce Creek notably British Columbia's greatest producer of placer gold. Spruce Creek also produced BC's largest nugget weighing 2.6 kilograms or 85 ounces.

Unlike most AGC prospects , the Golden View was discovered in 1912 and the Anna was discovered in 1983.

In 1912 prospectors staked and patented two crown grants. An inclined winze was sunk on one where gold bearing quartz veins were discovered , the Golden View showings. The claims lay dormant until 1949 when they were rediscovered and further trenched in 1950.

In the report from the B.C. Minister of Mines 1950 , J.M. Black related that during his examination of the Golden View he sampled a 9 inch, narrow, main vein which assayed 0.52 ounces per ton ( opt ) gold ( Au ) and 0.76 opt silver ( Ag ). Other trench samples on different trending zones assayed 0.25 and 0.04 opt Au and 0.20 and 0.10 opt Ag, respectively . Another chip sample of 8 inches from a different trending quartz vein to the south of the main vein zone reported a gold assay of 0.14 opt with no Ag present. Black reported small flakes of native gold in the main zone quartz vein at the Golden View.

The property was abandoned until 1979 and 1980 when the crown grants were acquired and the LS and LP group of 60 adjoining claims were staked by local prospectors.

The Golden View showings were optioned to Rio Alto Exploration in 1980. They conducted geologic mapping and grid soil sampling, bulldozer trench development and mapping with rock chip sampling. No geophysical surveys nor drilling was conducted and the Golden View prospect lay dormant until Mr. Lenard Diduck acquired the lapsed claims by recently staking the D -1 and D -2 claim blocks.

The 1980 trench chip sampling in newly developed Golden View exposures yielded a best assay of 0.14 opt Au and 0.14 opt Ag. Trenching at the main vein zone again revealed visible gold in 1980 where the best values for Au were 0.27 and 0.75 opt with 0.58 and 0.50 opt Ag, respectively. Another vein system traceable discontinuously over a length of 130 metres of new trenching yielded best Au values of 0.09 and 0.57 opt. with a highest Ag assay of 0.69 ounces per ton.

The work completed by Rio Alto Exploration confirmed that the well developed listwanite alteration and quartz vein system is closely associated with faulting i.e. Golden View Fault and the contact relationship of ultramafic and metabasalt (ocean crust mafic volcanics).

Both Rio Alto and Black noted that the veins and mineralized zones have differing strikes and dips locally at the Golden View showings. In a regional context, the lode-gold Golden View showings are located in the north-south-trending, steeply dipping (?), Golden View Fault zone and the southern edge of the relatively flat Monarch Mountain Thrust structure. The claim area is defined by an abrupt aeromagnetic low (Golden View

Fault) with a steep shouldered adjacent aeromagnetic high ( Union Mountain capping metabasalt unit ). The Golden View Fault appears to be a high- angled, sheared and fractured zone which cross-cuts the thrust faulted klippe of oceanic crustal and upper mantle units of Union Mountain which were emplaced along the relatively flat lying Monarch Mountain Thrust. Elsewhere in the AGC, the Monarch Mountain Thrust is an important permeable conduit for hydrothermal alteration and auriferous mineralization of variable grade and deposit type.

Exposures in the trenches at Golden View show that hydrothermal alteration is dominated by listwanite including strongly developed mariposite ( Chromium-mica), carbonate-sericite, and quartz-pyrite.

Mineralization associated with silicification, quartz veins and veinlets includes native gold , chalcopyrite, pyrite, malachite and azurite. The high silver assay values and the high Ag / Au ratios documented at the Pictou prospect are not repeated at the Golden View showings where Ag/Au ratios are closer to 2 : 1 or lower.

Ar-Ar isotopic age dating methods have recently yielded a Middle Jurassic age for mariposite collected from mineralized zones in the AGC. No age date is available for the Golden View prospect. Other recent age dating appears to imply that mariposite alteration +/- gold mineralization may be related to the Middle Jurassic emplacement into the northern Cache Creek Terrane rocks ( AGC ) of the syn-orogenic Fourth of July batholith, intrusions and related dykes. A small stock of medium grained granite and related dykes are exposed approximately one kilometre west of the Golden View showings. Recent K-Ar dating on biotite from this granite yielded an age of 167 Ma which is consistent with other Fourth of July intrusion age dates and the Middle Jurassic ages of mariposite found in listwanite alteration zones associated with lode-gold veins in the AGC.

No other exploration nor research work has been conducted on the Golden View property since 1988. Recent GSC airborne total magnetic relief map data compilations depict north-south linear lows trending with the Golden View Fault zone and known magnetic destructive listwanite-alteration associated with the Golden View mineralized system. Abrupt magnetic highs to the east are unaltered Union Mountain metabasalts. Mr. Lenard Diduck staked the D -1 and D -2 claim blocks to further AGC exploration of the Golden View native gold-bearing lodes and anomalous prospects.

The Anna lode- gold vein was discovered in 1983 and is located on the former Anna #3 claim. It is now located in Mr. Diduck's D -3 mineral claim. The Anna quartz vein prospect represents the highest in elevation known outcropping lode-gold occurrence in the AGC.

At the new Anna discovery 37 surface chip samples of mineralized quartz vein material totaling 22lb. in weight were crushed , pulverized and split into three 15 gram samples which when fire assayed yielded an average gold grade of 0.05 opt (1.75 g/t Au and 19.58 g/t Ag ). Subsequent blasting and trenching of the mineralization revealed the presence of free native gold in the quartz vein. Freshly blasted material assayed as high as 0.57 opt gold in a 20 lb. bulk sample. The Anna prospect Ag/Au ratios are not well documented but may reach 10 : 1 .

In 1986, the Anna claims property was optioned to Canova Resources who later optioned it in 1987 to Homestake Mineral Development Company ( HMDC ). HMDC incorporated this Monarch Mountain prospect into its larger 1988 exploration program in the area known as the Heart of Gold property. During 1987 and 1988, they conducted aeromagnetic surveys, geological mapping surveys and geochemical soil and rock sampling in the area. No ground geophysical surveys nor drilling were done on the Anna lode-gold vein showing.

The exposed Anna quartz vein is about 0.5m wide and strikes 130 degrees with a near vertical dip. It is hosted in a northeast -trending, steeply- dipping Anna fault zone which

displays well developed halos of listwanite- style alteration. Mariposite is abundant in the core of the system while talc-carbonate is developed into the serpentinite wall rock.

A 10 meter wide porphyritic felsic dyke paralleling the Anna fault and vein is also exposed in nearby trenching. This dyke maybe related to Fourth of July intrusive activity like that seen at the Golden View showing but it has not been age dated. K- Ar age dating of Anna vein mariposite yielded a Middle Jurassic age of 169 Ma. This age is consistent with other AGC hydrothermally altered, listwanite-mariposite, lode-gold vein determined ages and with the syn -orogenic age of Fourth of July intrusion and dyke emplacement into the northern Cache Creek Terrane of the AGC.

Mineralization associated with native gold in the Anna vein includes pyrite, galena, gersdorffite, bismuthinite, tetradymite, sphalerite, chalcopyrite, pyrrhotite, and millerite. These minerals suggest that the Anna vein system could have a strong tellurium and bismuth geochemical halo signature. In the AGC, tellurides are also present at the Lakeview and Yellowjacket lode- gold mineralization and are also often reported in the classic, Motherlode District , CA. lode- gold quartz vein deposits.

Geological Survey of Canada microprobe analyses of gold particles extracted from the same large hand sample of freshly blasted Anna quartz vein yielded variable gold fineness results. Native gold hosted by quartz ranged in fineness from 835 - 855 with a reported average of 844. Gold hosted in hydrothermal iron- manganese dolomite gangue is actually electrum with a fineness composition of 625.

These data suggest at least two different hydrothermal events were responsible for gold deposition in the Anna vein system. The hosting permeable Anna fault zone was active to several hydrothermal alteration and mineralizing episodes. This interpretation is further confirmed by the fact that quartz fills erratically developed fractures within the pervasively, mariposite -carbonate altered , high angled, Anna fault zone. The fact that this topographically high Anna hydrothermal system was episodically actively

mineralized with native gold and electrum makes exploration at depth highly prospective.

The Anna prospect is hosted in mantle derived harzburgite which forms an isolated klippe that underlies Monarch Mountain. Unlike other AGC lode gold mineralization including the Golden View, the Anna showing is solely hosted in the serpentinite-harzburgite and not related to the tectonized basal portion of the Monarch Mountain Thrust and its contact relationship with adjacent metabasalts and/or pelagic sedimentary rocks. Monarch Mountain does display a host of complex fault structures some of which maybe second order splays of the basal Monarch Mountain Thrust.

North and east of Monarch Mountain in the overburden-covered, lower slopes distinctive aeromagnetic lows are accurately displayed in the GSC airborne data map compilations. These features offer excellent exploration targets as they probably define hydrothermal alteration ( magnetite destruction by listwanite hydrothermal alteration) . Similar features have proven to be closely associated with the basal trace of the Monarch Mountain Thrust zone and its associated quartz vein, lode- gold potential as defined by other listwanite- altered, AGC, mineral occurrences.

The HMDC airborne Heart of Gold property magnetic survey shows that along the southern boundary of the D -3 claim a very sharp, east- west, linear trend appears to denote the structural contact between high magnetic relief serpentinites of Monarch Mountain located upslope north and Cache Creek sedimentary rock units to the south. This contact zone maybe the focus of hydrothermal alteration and mineralization, especially, where secondary linear magnetic relief low trends hosted in the Monarch Mountain serpentinite body intersect it.

Along the N-S boundary of claims D -3 and D -1, two such parallel northeast - southwest trends of low relief total magnetics transect ultramafics in the former Anna #4 and #6 claims. These parallel magnetic linear lows are located just to the east of the new outcrop discovery ( Anna vein ) located in the former Anna #3 claim.

Also in the west-central portion of the D-3 claim, a strong east-west trending, HMDC airborne total field magnetic low linear feature is coincident with a prominent VLF-EM low anomaly. These geophysical anomalous features may represent structurally controlled alteration and mineralization in HMDC's relatively unexplored former Millionaire claim.

HMDC's drilling to the north on the former Porsche claim delineated contact and altered structure but the best assay was only 640 ppb or 0.64 grams gold with a coincident Bi, Ag, Sb geochemical anomaly. More importantly, this mineralized zone was hosted in Cache Creek cherts which were cut by numerous carbonate altered intermediate dykes which were significantly enriched in gold to the 300 ppb level. This style of mineralization should not be overlooked in exploration on the D claim block.

The historic known lode-gold mineralization and the mid-1980's recognition and exploration for listwanite-hosted, Motherlode-Bonanza or "pocket" gold-type quartz veins in the Atlin Gold Camp has been only partially successful (i.e. the newly discovered native gold-bearing quartz vein at the Anna prospect).

The Yellowjacket Property lode-gold resource on Pine Creek now owned by Mr. Lenard Diduck is reported after HMDC's exploration drilling to contain over 150,000 ounces of gold (4,664,474 grams). The BC Ministry of Mines (2000) reported a resource of 453,500 tonnes grading 10.26 grams per tonne gold for the Yellowjacket deposit. However, the known lode-gold prospects in the AGC do not account for the great disparity between the still active placer gold production (estimated at well over 1 million ounces) and the distinct lack of lode-gold, hard-rock mining in the camp. Clearly new ideas and exploration is warranted in the AGC. The MONARCH MOUNTAIN-UNION MOUNTAIN PROPERTY offers two outcropping, native gold-bearing, quartz vein systems and numerous, strongly-developed, geophysical anomalies of merit.

At the Anna prospect the native gold-bearing quartz vein and mariposite -listwanite alteration are strongly developed in intensely altered ultramafic rocks exposed at the summit of Monarch Mountain. The occurrence is well above the suspected trace of the flat Monarch Mountain Thrust.

In the Motherlode District of California and elsewhere in the AGC, wider and more continuous higher grade to Bonanza-grade, lode-gold quartz veins are generally best developed as tabular-fissure type veins in more competent, oceanic, igneous crustal rocks such as metabasalts and andesites. The Golden View native gold showings are a good example of this type of veining where along strike the quartz vein (s) disperses into quartz veinlet swarms or stockworks. This style of mineralization and strongly developed listwanite alteration is in close proximity to the Monarch Mountain Thrust and the near vertical faulting ( Golden View Fault ).

On the MMUMP, the Monarch Mountain Thrust Fault is the dominant structural feature crossing all three of the D -1 to D -3 mineral claims. Carbonate alteration was introduced along this basal fault and up through steeply dipping faults in the overlying ultramafic klippe thrust sheet. Presumably, hydrothermal silica and accompanying gold mineralization were also deposited at certain locals other than the known examples of the Golden View and the Anna. It is recommended that future exploration specifically focus first on these two different settings for native gold deposition in the AGC. Footwall basaltic rocks lying below the blind flat- lying contact and thrust zone and the overlying listwanitized ultramafics are more prospective for confined quartz vein and fissure development. Dyke emplacement in this setting may also be important.

Modern deep penetrating soil geochemical techniques using the elemental suite of Au, Ag, As, Sb, Bi, and in particular Te (tellurium ) may assist in tracking both the basal fault and steeper structures hosting blind auriferous zones adjacent to or confined to these structures on the MMUMP.

Detailed ground magnetometer and ground penetrating radar could be used to delineate blind targets or to better characterize the potential of any geochemical anomalies.

It is recommended that geochemical and geophysical orientation surveys be conducted at the native gold-bearing, exposed, quartz vein showings. The resultant data could be used to design and implement an expanded grid if results were positive. The two known but poorly explored mineral occurrences are already perspective drill targets.

Ground penetrating radar has been shown to map overburden characteristics and the bedrock contact, lithologies in the underlying bedrock and often fracture development and faults within the bedrock. These data allied with anomalous magnetic data such as abrupt low to high magnetic relief responses could provide an excellent sub-surface blind exploration map and provide the drill target definition required for future drilling .

The MONARCH MOUNTAIN-UNION MOUNTAIN PROPERTY has easy exploration access provided along drill trails and roads created during HMDC's drilling during 1987-88, and

along the currently active placer operation roads and the cat trails created during Rio Alto's trenching in 1980. Permitting for exploration work should not present any problems.

The MMUMP claims which Mr. Lenard Diduck has assembled merit modern, detailed exploration during any systematic evaluation of the Atlin Gold Camp's potential to reveal its Motherlode-Bonanza, lode-gold, quartz vein deposits.