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L1239362

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Larder Lake Mining Division Teck Township District of Temiskaming

NTS 42A/1 48°09´38"N 80°02´55"W

2.56860

Submission : Spring 2016

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Kirkland Lake Resident Geologist's District

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PROPERTY LOCATION

Located in north eastern Ontario in Temiskaming District, this property is located in the Larder Lake mining division bordering the north-west limits of the town of Kirkland Lake. This is in the Kirkland Lake Resident Geologist district and can be found on NTS 42 A\1 with the geographic center being at approximately 48°09′38"N 80°02′55"W. Services, ammenities and a local workforce are readily available in this mining friendly town.

ACCESS

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Turning north off of Highway 66 (Government Road) at Duncan Avenue and heading north on this street for 400 meters will cross over a set of railway tracks. Continuing north for about 350 more meters will take you to an old trail heading north east onto the claim. Following this trail for about 350 meters from the paved road will bring you to the claim.

CLAIM

Claims L1239362 is a one unit staked mining claim staked totaling approximately 9 hectares, recorded on Plan G-3917 of Teck Township.

GENERAL GEOLOGY

This area is in the Abitibi Greenstone Belt of the Superior Province, in a region dominated by Archaen mafic to felsic pillowed, massive and agglomeratic volcanics and granitic batholiths with attendant intrusions, with minor clastic interflow and fluvial sediments.

"All exposed bedrock in the Kirkland Lake - Larder Lake area is Precambrian. Archean volcanic, sedimentary, and intrusive rocks contain the mineralization of economic interest. Near Kenogami Lake in the west, and Kerr Addison in the east, relatively flat-lying Proterozoic sedimentary rocks cover the older folded formations. Pleistocene deposits of sand, gravel, and clay mantle about 90 % of the bedrock. Archean volcanic rocks with inter-bedded slate and chert are the oldest rocks (2.747 Ga to 2.705 Ga) and range from komatiite to mostly iron and magnesium-rich tholeiites at the stratigraphical base to calc-alkaline volcanic rocks at the stratigraphical top. These rocks contain long narrow bodies of diorite and gabbro as well as coarse-grained flows. Timiskaming-type interbedded sedimentary and volcanic rocks, also Archean in age (2.680 Ga), unconformably, overlie the older volcanic rocks. They form a long, relatively narrow east-trending belt intruded by syenite (2.673 Ga). Lamprophyre dikes are widespread and most of the "diabase" is of the "Matachewan" swarm of north-striking dikes (2.485 Ga). Overlying all the above rocks with great unconformity are Proterozoic undeformed Huronian sediments of the Cobalt group intruded by Nipissing Diabase (2.200 Ga). Jurassic age diamond-bearing kimberlite pipes are found east of Kirkland Lake and Matheson". *(ref Lovel 1967)

Larder - Cadillac Deformation Zone (LCDZ), a major east-west structural control on gold bearing alteration and mineralization, which in much of its length coincides with a folded and deformed sinuous belt of sedimentary rocks of conglomerate, sandstone and volcanic tuffs. The LCDZ is a carbonatized shear zone characterized in some places by the presence of quartz stockwork, and green mica. It is considered to be the western extension of the Malartic-Cadillac Deformation Zone, a more than 160 km long. The deformation zone is a south-dipping reverse fault, the south side of which seems to have moved upward and eastward relative to the north side.

Locally, the Larder Lake Deformation Zone has been traced at intervals from east of Kerr Addison mine to west of Kenogami Lake. It is exposed about 2 km south of the gold mines of Kirkland Lake. Kirkland Lake "main break" is a fault zone branching northeastward from the LCDZ in the vicinity of Kenogami Lake. It passes through all the gold mines at Kirkland Lake, and has been identified to a depth of more than 2 km. Relative to the north side, its south side moved up 460 m almost vertically. The fault zone varies from a single plane to multiple bifurcating planes.

The gold mines at Kirkland Lake occur in a single geological orebody 5 km long and more than 2.4 km deep. The longest stoping length of ore is at the 3,000-foot level (914 m), where 2000

General Geology of the Kirkland Lake Area

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meters length of ore were shared by Teck-Hughes, Lake Shore, and Wright-Hargreaves. All ore is in or near the Kirkland Lake "main break" and subsidiary faults.

In the Kirkland Lake area, gold exists in all types of rock, but 85 percent of the ore is in syenitic plugs and trachytic flows in the belt of Timiskaming-type sedimentary rocks. The center of the Kirkland Lake gold mines (at Teck-Hughes) is occupied by an irregular pipe-like felsic syenite body the dimensions of which is 300 m by 500 m at surface. These dimensions increase greatly with increasing depth and appears to "bulge" more to the south.

At the new South Mine complex, most of the new discoveries are sulphide zones rather than the quartz-vein hosted gold found historically, and comprise silicified pyritic tuff or porphyry with visible gold and tellurides. A distinct buff colored albitic? alteration is evident in many zones. These zones lay much flatter than the Main Break system and are interpreted to be a "cross over" type faulting passing between the Main break series of faults and a as of yet unknown southernly fault system, possibly directly related to the LCDZ which does also occur to the south.

It is important to note that even in a mining camp such as Kirkland Lake that has been the subject to a tremendous amount of exploration work, that as recently as the mid 1990's and 2005, new gold bearing structures are being found.

Post-ore strike-faults and transverse faults offset some of the ore bodies. The largest post-ore fault, the Lake Shore transverse fault, extends from surface to the deepest workings. It dips steeply southeast, and its east side moved down 100 m and north 200 m relative to its west side. The fault has been mapped north from the Main Break through the claim area and on to the Goodfish Lake area where it appears to roll into or be truncated by a more easterly trending fault system. Gold occurs in this area proximal to north east trending shears and the Lakeshore fault splays. At the Kirana Mine which lies in porphyritic volcanic rocks about 3 miles north of L1239362, gold ore was developed in pyritic silicious zones associated with the sheared contacts of the volcanic rock with the felsic porphyries. The Lake Shore fault represents a 'significant' sinistral (east-Side down displacement) cross-fault that may have multiple associated strain splays, stepover veins or proximal structural traps and that may have acted as a conduit for mineralized hydrothermal fluids.Not typical of Kirkland Lake style gold environments is that these mineralized break systems extend into the volcanic rocks and are oriented at 40° to 60° to the historically worked trends.

CLAIM GEOLOGY/PREVIOUS WORK

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The geology of Teck Township is discussed at length in the 1928 report by E. W. Todd and I would refer the interested reader to this publication. The geology of Teck Township has been covered extensively by various authors and many thesis papers and mine reports have been published over the last 100 years Much information on this township is in the Resident Geologists office in Kirkland Lake. The Kirkland Lake camp has also attracted the labour of countless other prospectors and explorers whose work was never documented but the many slumped and part filled pits and trenches scattered throughout the area attest to their efforts.

Gold deposition in the vicinity of the property is structurally controlled within fault and shear zones. The Kirkland Lake Main Break is located 4000 feet south of the claim group. The claim straddles the faulted Temiskaming - Blake River contact which runs west-south-west to east-north-east at about 65°. The contact passes midway between the #3 post and #4 post area, running diagonally across to the #1 post area, bisecting the claim. To the north west are Blake River (*formerly thought to be Kinojevis*) volcanic rock and mafic (gabbroic) intrusives in contact with Temiskaming aged sediments to the south east. Medium grained greywacke outcrops in many places forming an eastnortheast striking band in contact with metavolcanics to the north. This "unconformity" has been explored on strike of the claim by various operators over the history of the camp. Several shafts and drill holes have encountered gold values, but far more extensive work would be required to properly evaluate this structure.

Work in 1987 by Newfields Minerals indicates that the Newfield Break, which coinsides with the volcanic-sediment contact, trends 075° across the claim. The gold bearing "BAZ" lies at the intersection of the Newfields Break and the Lakeshore Fault system. The Newfields Break crosses the southern part of claim L1239362. Gold is found in the "BAZ" (brown altered zone) within the



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Figure - 4

150 foot wide Newfields Break structure. Hole 17 drilled towards the southeast corner of L1239362 intersected 0.44 oz/ton over 5.1 feet near the property boundary.

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In 1981 Patrick Harrington, Bill St Jean and D Williams drilled three holes on the claim then staked as L548481, designated as T-1-81, T-2-81 and T-3-81. Hole 1 and hole 2 were drilled at the same location on the trail at the east end of the claim. Hole 1 was drilled to a depth of 201 feet at a dip of -55° faced north and encountered variably sericitized polymictic conglomerate with quartz and carbonate stringers were noted. Hole 2 was drilled to a depth of 302 feet at -55° faced south and encountered polymictic conglomerate but no sericitic alteration. Two small porphyry fingers are noted. Hole 3 was drilled from the trail at the west end of the claim180 feet north of the #3 claim post, to a depth of 341 feet at a dip of -55° heading north. The rock was logged as weakly carbonitized tholiitic basalts with no significant mineralization. *ref:AFRI 42A01NE0191*

In April and May of 1982 Patrick Harrington drill two holes designated as Holes T-4 -82 and T-5 -82 on claim L548481 (historic staking of L1239362)). The holes are mapped as in the same location as T-3-81on the road at the far west end of the claim. Core was logged by Gary Grabowski, Resident Geologist with the MNDM. T-4-82 was drilled to the south ar -55 to a depth of 312 feet. The hole collared in wacke then continued in a sericite altered conglomerate with green carbonate clasts to the end of the hole. 16 "barren" quartz veins are noted. Hole T-5-82 was drilled facing north at -55 to a depth of 228 feet. The hole collared in pervasively carbonate altered fine to medium grained basalts with many small quartz carb veinlets. The latter half of the hole had many noted pillow selvedges. No assays were included for either hole. ref : AFRI 42A01NE0187

In July of 1983 Wilroy Mines, Macassa Division drilled four more holes T-6-83 to T-9-83 on the west of the claim under the direction of Bill St Jean. All the holes encountered variably sericitized, bleached and carbonatized temiskaming conglomerates and wackes with muck guartz and carbonate as veins, stringers and wisps. Fine pyrite and odd chalcopyrite occur in all holes in varying amounts. Hole T-6-83 was drilled at magnetic north at -55 to a depth of 343.0 feet. The rock encountered was variably altered and sheared sediments for the length of the hole. Several dikes are noted, either dioritic or svenitic. Graphitic shearing is noted from 301 to 310 feet down hole. Numerous quartz carbonate veining are noted. Fifteen core samples were assayed and gave about .01 to .02 oz/t for all of them. Hole T-7-83 was drilled at magnetic north at -55 to a depth of 326.5 feet. The rock encountered was variably altered and sheared wacke and pebble conglomerate for the length of the hole with quartz carbonate veining. Several dikes are noted, either dioritic or syenitic. Intense graphitic shearing is noted at about 201 to 209 feet down hole. Fourteen core samples were assayed and showed trace to .01 oz/t. Hole T-8-83 was drilled at magnetic north at -55 to a depth of 192.4 feet Strong graphitic shearing was noted at 129 to 133 feet. The hole continues in altered "dike rock" or basalt cut by many quartz and carbonate stringers to the end of the hole. Sludges fron 50 feet to 170 feet averaged about .01 oz/t throughout, and the eight core samples averaged about the same. Hole T-9-83 was drilled at magnetic north at -75 to a depth of 231.3 feet. The rock encountered was all variably altered wackes and conglomerates. No Note of graphitic shearing in this hole. No samples were submitted. ref: 42A01NE0181

In 1985 to 1990 Newfields Minerals conducted much diamond drilling on the area south of L1239362 on the property historically known as the Kirkland Basin or Basin Property. The claim area covered by L1239362 was under option as then staked claim L548481. Numerous deep holes in excess of 5000 feet and deep wedge cut holes were put down to test for break features known to exist from previous underground work. Work was concentrated on four parallel 075° striking structures: 04 Break, Narrows Break, 29 Break and Newfields Break. The Narrows Break, located one mile to the south was shown to contain reserves of 375,000 tons of 0.25 oz/ton of gold. The 29 Break is just to the south of the claim and shows .19opt across a 5 foot mining width to the full length of a 500 foot exploration drift on the 3075 foot level. The Newfields Break crosses the southern part of claim L1239362 and roughly coincides with the unconformable volcanicsediment contact. Gold was found in the "BAZ" (brown altered zone) within the 150 foot wide Newsfields Break. Hole 17 drilled towards the southeast corner of L1239362 intersected 0.44 oz/ton over 5.1 feet near the property boundary. The BAZ is an altered and sheared area of diffuse gold mineralization which lies at the contact between the underlying mafic metavolcanics and overlying metasediments along the intersection between the easterly trending Newfields Break and the northeast striking Lakeshore Fault system.



Of the seven Newfields drill holes that cross under L1239362, it appears that only one hole, Hole 21, was collared on the claim area. Hole N-86-24 was collared to the north of the claim and passed through at moderate depth. Hole N-23 was also collared north east of the #1 post ares and passed onto the claim at great depth as the hole was collared steeply. Wedge holes 17-D, 17-E and 17-F passed into the claim at great depth in the region of the #2 post area, which coincides with the targeted brown altered zone. Hole N-85-10 was collared about 100 feet south of the claim and passed under the west 1/3 of the claim at great depth. Most of these drill holes have been submitted for assessment work and logged in fair detail with submitted assays, particularly the sections in the BAZ. *ref: AFRI 42A01NE0502* see also AFRI 42A01NE0156, AFRI 42A01NE0139 for Newfields submitted files.

In 1994 Glen Mullan performed work on a larger group called the Cohiba Option of which included the area of L1239362 then staked as L1187007. Grid cutting and a magnetometer survey were performed over the whole property, as well as mapping and sampling of all historical workings. Trace gold was obtained in assay fore sample 10240 taken from a pit in altered veined sedimentary rock at #1 post location of claim, which is the location of the #1 post of L1239362. Geophysical interpretation of the VLF noted that "Conductor N located near the intersection of two potential fault zones near the metavolcanic-metasedimentary contact could be associated with the upper zone of the BAZ." *ref :AFRI 42A01NE0012*

In 2002 Barry McComb and Jason Pleoger performed mapping and cleaning of old pits and trenches on the claim then staked as L1227229, as part of work on a larger land holding. Altered sediments, alteration and quartz stringers are noted. Athough many samples were noted, no assays were submitted with the assessment report. *ref:AFRI 42A01NE2045*

In 2003, Pat Culhane performed power washing at location coincident with pit 5ab from the 2002 work. A quartz vein striking 45° to 80° east is noted. Quartz stringers, pyrite, chalcopyrite and a porphyritic rock are noted. Although 5 samples were noted, no assays accompany the report. *ref:AFRI* 42A01NE2052

In March of 2006, Vault minerals contracted David Laronde and thomas Von Cardinal to perform a groung magnetometer and very low frequency surveys on a larger holding which included the claim area of claim current L1239362. The grid area from about 7600E to 8000E south of baseline 4000N on the "central block" holding would coincide with the present claim. The surveys were generally non anomoulous in this area. The magnetometer survery appears to outline or trace the volcanic-sediment contact with contrasting magnetics of the lithologies. ref:AFRI 2000001534

In late summer of 2007 Vault minerals performed stripping, channel sampling and diamond drilling on their optioned holdings covering the general area. The area identified as "trench 1" is at the #1 post of L1239362. They observed that "Timiskaming conglomerate with confined, narrow ductile shears trending 050° to 060° and 040° azimuth. The Timiskaming-Blake River unconformity was not noted to be exposed or uncovered at the location.No significant assays were obtained. ref:ARFI 20000003455-rpt accompanied by AFRI 2000003455-maps

PRESENT WORK / RESULTS

During the summer of 2015, the claim was given a preliminary look over to tie in various geologic features and to map historic claim and work areas, with a view to picking target areas for further follow up. Many old claim posts were mapped and these will greatly assist the georeferencing of histotric assessment work which is mostly all tied to claim post locations as reference. The area exposed are Blake River fine grained mafic volcanic rocks of a dark to medium grey-green colour, in contact with Temiskaming aged sediments. In the area of the #1 post, tight shearing with sericite-carbonate alteration and quartz carbonate veins is exposed in outcrop. Random oriented quartz-carbonate veinlets and stringers and wisps occurs throughout the area. Travelling to the west along the hydro transmission line the ground rises quickly at 30° to 40° going up rock exposures of a medium green-grey rock mapped as a gabbro. Little mineral was noted in this rock. Along the south boundary of the claim from the #2 post to the #3 post, several old stripped or small trenched areas were noted. These were mostly filled. All rock exposed was wacke or polymictic pebble conglometate with a medium to dark green wacke matrix. At the west end of the claim at the area just north east of the #3 post, a couple of narrow E-N-E striking quartz

veins were noted. More cleaning is planned in this area, and along strike if results indcate more work. Several other diggings were noted but may be cultural rather that exploration workings.

CONCLUSION

Gold mineralization at the Kirkland Lake camp occurs in epigenetic structurally controlled deposits localized along "breaks", in veins as quartz-filled fractures and breccias. Gold mineralization is located along the breaks and subordinate splays as fracture fill quartz veins several inches to 5 ft thick. Veins may be single, sheeted or stacked morphology. Gold is usually accompanied by 1% to 3% pyrite. Wallrock alteration is commonly hematization or bleaching with carbonitization, silicification and locally sericitization (Kirkland Lake Gold Inc, 2003).

The area of exposure displays these features. The numerous historic drill holes show a shear hosted sericite-carbonate alteration system along the volcanic-sediment contact. Although assay results have been low, the drilling pattern has left a very large area of the unconformity untested on this claim. No deep sensing ground based induced polarization type survey has ever been done on the claim area or any of the surrounding claims. The newer technology may be of great assistance in generating priority targets. Further manual work such as stripping, trenching washing and sampling? is planned on the claim.

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