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Kalamalka 881411 82 L/3E

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REPORT

of the

GEOLOGICAL SURVEY

AND

DRILLING PROGRAM

on the

KALAMALKA MINE PROPERTY

(GUS 1-6, and CHANCE CLAIMS)

VERNON MINING DIVISION

BRITISH COLUMBIA

Latitude: 050⁰ 12' 20"N Longitude: 119° 05' 30"W

N.T.S. 82 L/3NE

OWNER:

OPERATOR:

AUTHORS:

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February 27, 1987.

SUBMITTED:

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SUMMARY

The Kalamalka mine was the largest producer of gold in the North Okanagan region² with a recorded total of 7,267 tons mined for 2,898oz. gold, and 3,474oz. silver, (0.4opt Au., 0.48opt Ag.).

Triple Star Resources Corp. have obtained the mineral rights to the mine and the immediate surroundings through the option of the GUS 1&2 and CHANCE claims.

The mine portal has been rehabilitated and the geology of the workings has been mapped. An exploratory underground drill programme was completed to look for further mineralized shoots parallel to the existing mined shoot, and the continuation of the old shoot to depth. This programme produced gold values to 0.924 opt in the shear zone adjacent to the vein and gold values to 0.376 opt in the vein

It appears as if the property was not drilled prior to production, and the only recorded drilling was one hole drilled in 1967⁹. The property was developed in 1934-35, but for some unknown reason had limited production until 1937. In this and the following two years 5,268 tons were mined. Work continued until 1944, but at a much slower pace because of the confiscation of the compressors for the war effort. No production and limited exploration is known after this date.

The mineralization encountered in the Kalamalka mine is typical of a mesothermal vein deposited within dilatant zones associated with regional and local faulting. There are at least two generations of quartz veins, the latter heavily mineralized with pyrite and pyrrhotite. The gold values increase within the central portion of the mine, characteristic of a central mineralizing path or "shoot". Further areas with gold values in excess of an ounce per ton are known at two other widely separated locations within the workings, and it is anticipated that exploration will determine the location of a series of other mineralized shoots of equivalent size to that mined in the past. In addition the present drilling has extended the main shoot below the 2900 level beyond where the previous operators had stopped because of "faulting".

The Kalamalka property has excellent potential for the development of high grade gold mineralization in a series of "shoots" geometrically related to the existing ore zone. This existing zone can be extended to depths over 500ft below the present workings if the mineralization conforms to known mesothermal type deposits, (e.g. the Bralorne Camp).

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A programme of surface and underground exploration totaling \$265,000 is budgeted within this report for the underground workings and surrounding area.

INTRODUCTION

Mr. David Konnert, President of Triple Star Resource Corp., requested the authors to review the history of the Kalamalka mine and to undertake a programme of rehabilitation and mapping of the old workings to determine the potential of discovering further mineable gold mineralization. This report summarizes two months of fieldwork including drilling within the old mine workings.

The Kalamalka mine was the largest producer of gold in the North Okanagan region² with a recorded total of 7,267 tons mined for 2,898oz. gold, (0.4opt), and 3,474oz. silver, (0.48opt). The mine produced over 70% of its recorded gold in the first 4 years of its development 1935-1940, was minimally worked during the war years, and closed in 1944. Exploration effort for more ore since that time has been minor.

The property was developed along the strike of a strong shear zone which crosses a diorite intrusive. Several stages of quartz veining are apparent. The first periods of quartz flooding prepared the diorite for brittle fracture, and retained the proto-ore zone opening during faulting. We are able to see, from within the main stope, the character of the "ore shoot" and the trend of the shear offsets. The lack of clay alteration in the hangingwall of the shoot and the abundance of pyrrhotite indicate the mesothermal character of the deposit, and hence the potential for a vertical extent of gold mineralization exceeding 500 feet.

Our estimate of the tons mined, calculated from the dimensions of the main stope, is 12,250 tons. It is apparent that the pre-war operators had considered further development, (shown on early plans), and that the 1940's efforts were primarily scalping of the existing development, and not directed towards finding new ore shoots. The stated reasons for the closure of the mine were severe faulting and marginal grades³.

This type of mineral deposit should have several more minable "shoots" and ore grade mineralization should be found below the existing base of extraction (2900 level). The existing stope produced 54 tons of ore per vertical foot, using published figures, and 91 tons per vertical foot using our calculations. These values indicate the potential of mining 50-100 tons per day from the continuation of this shoot and similarly from adjacent shoots which are indicated from the current mapping.

The two month programme described in this report concentrated on making the underground workings safe and accessible, and to re-establishing the reported ore grades shown on the early assay plans (see figures 7 & 8). Limited surface prospecting was attempted because of snow cover, however this abated to some extent by late February, and some of the early pits and roadcuts were inspected. The underground drilling location was limited by the extent of debris in the old workings, the position of an old backfilled stope, and the nearby winze. The drilling was exploratory in nature, and limited in extent, however significant assays were obtained from the projected extensions of the ore zone.

Location and Access

The claims are situated approximately 4km south of Lavington and 15km south east of Vernon, B.C. and can be found on NTS map 82 L/3, (Oyama). The property is centered over the old Kalamalka mine adits at 050° 12' 20" N latitude, 119° 05' 30"W longitude, and occupy a ridge between Craster and Brewer creeks.

All-season access to the property can be gained via Learmouth road south of Lavington, thence by Dawes Road to the boundary of Mr. Bellevue's farm property. A small triangle of land attached to a private dwelling legally overlies the last 55ft of access to Mr. Bellevue's property. The old mine access road continues from the end of Dawes road through private farmland to the 2900 mine portal. This track provides excellent access to most parts of the claims between Craster and Brewer creeks. Alternative access can be developed from the south west across Crown Land in the Okanagan Provincial Forest.

Physiography and Vegetation

The GUS claims are situated on the southern flanks of a small ridge between Craster Creek and Brewer Creek and are characterized by moderately steep, relatively open slopes. The elevation of the No.2 portal is 2900ft, and the ridge above the mine 3000ft. This ridge gradually climbs to an elevation of 4000ft to the southwest where it meets a little used forest road which gives access to the Channel claims.

The CHANCE claim, which overlies the GUS claims, encompasses similar ground and the tributaries to Craster and Brewer Creeks, the property's main drainage. The eastern edge of the CHANCE claim is 1000 meters to the west of Bluenose mountain, and the Aberdeen Lake road.

Most of the more open ground is privately owned and used for ranching. To the south and west the land rises to a plateau of approximately 4500ft elevation which is managed as the Okanagan Provincial Forest, and is the scene of active logging operations.



The area is characterized by mature stands of conifer trees typical of the Interior Douglas fir biogeoclimatic zone. The more abundant species include Douglas fir, ponderosa and western white pine, and white spruce. Undergrowth is moderate and more prevalent on north facing slopes, while southern slopes tend to be drier and open. Logging companies are presently active south west of Brewer Creek and there is evidence of logging on the property some years (30?) ago. Precipitation here varies from 36-56 cm per annum, much of it falling as snow from November until March.

<u>Property</u>

The claim group consists of the following six contiguous 2 post claims, and one 20 unit modified grid mineral claim, staked by Mr. Eugene Dodd, but at present under contest by the stakers of the Bluenose 1-4 claims, in accordance with section 50 of the Mineral Act. The Kal claims overly these earlier claims.

| Claim | Units | Record No | Anniversary Date |
|---------|-------|-----------|--------------------|
| GUS 1-2 | 2 | 2146-47 | 29 September, 1987 |
| GUS 3-6 | 4 | n/a | 12 November, 1987 |
| CHANCE | 20 | n/a | 12 November, 1987 |
| KAL | 4 | n/a | n/a |
| KAL 1-4 | 4 | n/a | n/a |

The GUS 1-2 claims were staked on 28 August 1986, and the GUS 3-6 claims were staked November 7 1986. The CHANCE claim was staked on November 8, 1986. All were staked by Mr. Eugene Dodd.

The Bluenose 1-4 claims were staked over the GUS 1-2 claims on 7 September 1986 by Mr. Nelson Pentecost, and on 11 November 1986, Mr. Nelson Shewchuck restaked these same claims in his name, also retaining the name Bluenose 1-4. Mr. Shewchuck later completed staking the Bluenose claim, a 20 unit claim extending west from Craster creek, on 29 November 1986.

In February 1987 a further four two-post claims, and one modified grid claim, the KAL claims, were staked over the mine by Mr. Richard Simpson, Mr. Dodd's partner.

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A land title search showed that the Kalamalka mine, and the GUS1-2 claims are on private land owned by Mr. W. Bakker of Edmonton, and that the present access road passes through six other private land lots. These owners have been notified of our exploration intentions, and have agreed on conditions of access, or have provided free access for specified durations.

<u>History</u>

The property was first worked in 1896 following the finding of a large reddish quartz vein near the brow of the ridge dividing the two major creeks. The prospecting produced low gold values on surface, so work was planned to drive a crosscut adit lower on the hillside to intersect the vein to look for better values. The writer is not sure when this crosscut was completed as the records show no further activity until 1928 when 21ft of tunnel was driven. By 1933 the (2975 level) crosscut had been completed along with some drifting on the vein, and another short crosscut and shaft had been completed.⁴

In 1934 390ft of tunneling was reported on the affidavits of work, this was followed by 617ft of tunnel (the 2975 and 2900 level drifting?) by April 1935. The first shipment of ore is reported in 1935 as 30ton grading 1.0 ounces per ton (opt) gold.⁵

Production in 1936 was only 38 tons, then in 1937 more development is recorded, and production peaked at 2816tons (@ 0.42 opt gold). The following two years had mining tonnages of 1277tons and 1175 tons respectively. At this time the mine was under the ownership of Kalamalka gold mines Ltd.

The ownership changed to a lease to Messrs Stan and Cecil Penney of Vernon in 1940 and mined tons dropped to 511. The following years production reflected the scalping operations of the Penney's operations with tonnages of 917, 433, 38, and 32 tons recorded. It was reported that in 1941 mining was by hand steeling only, this was confirmed by a discussion the author had with Mr. Aubrey Penny (a brother), who reported that the mine compressors were confiscated during the war.

The mine closed in 1944. Then in 1952 Mr. Aubrey Penney staked the property. He retained the ownership by occasional rehabilitation work, until it was optioned to Coin Canyon Mines around 1966. Coin Canyon drilled one surface hole that was reported in the 1966 and 1967 affidavits of work, and in the B.C.D.M. report. There is no record of the drill information in this hole, however Mr. A. Penney provided photographs of the site, sufficient for the drill collar to be located. The dip of the hole was estimated from the photographs, and the vein intercepts were from Mr. Penney's recollection, (Figure 5).

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There are various records of optioning company's buying surface land titles to the ground in the 1970s. The present owners of the surface rights, Mr. Bakker and Mr. Nyland, had the mineral claims until they expired in August 1986, and were subsequently staked by Mr. Eugene Dodd.

Other hardrock exploration in the area is reported to have occurred on the northeast side of Harris Creek, approximately 3.5 miles southeast of its confluence with Bessette Creek. Here, several small quartz veins occurring in both sedimentary and plutonic rocks were explored in a series of shallow open cuts. The width of these veins was reported to vary up to two feet, although most were less than six inches. One sample of rusty quartz assayed 1.02 oz/ton gold and 0.1 oz/ton silver, while other samples returned values ranging from trace to 0.41 oz/ton gold.

The location of this mineralization probably occurred as a result of the activity generated when placer gold was discovered in Harris creek. Several leases still exist today and evidence of placer testing along the creek bank is common. The total amount of gold extracted from Harris Creek is, however, unknown.

Summary of Work

The 1987 program carried out on the GUS claims consisted of the following exploration assessment work:

| TYPE OF WORK | CLAIMS INCLUDED |
|---|-----------------|
| Geological mapping at a scale of 1:250 of the mine workings | GUS 1-2 |
| Lithogeochemistry - 59 samples | GUS 1-2 |
| Mine rehab. portal and 300ft crosscut | GUS 1-2 |
| Underground drilling 439ft | GUS 1-2 |

GEOLOGICAL SURVEY

REGIONAL GEOLOGY (Gilmour 1979)¹

The Kalamalka property is located near the western margin of the metamorphic Shushwap Terrane. The regional geology is transitional between the Omineca crystalline belt, of which the Shushwap Terrane is part, and the Intermontane Belt of eugeosynclinal volcanic, sedimentary and intrusive rocks. The rocks in the area range in age from Lower Paleozoic (possibly Precambrian) to Miocene/Pliocene.

The oldest rocks in the area belong to the "Monashee" metamorphic rocks of Proterozoic? to Paleozoic age. This unit generally comprises layered gneiss with lesser amounts of pegmatite, marble, greenstone and gabbro. Less metamorphosed volcanic rocks of Carboniferous-Permian and Upper Triassic ages also occur in the area.

These rocks have been intruded by Jurassic to Eocene plutons. The "Nelson" plutonic rocks are biotite-hornblende diorites, granodiorites and granites with a strong to moderate foliation. The Late Jurassic "Valhalla" plutonic rocks are generally porphyritic quartz monzonite to granite and the Eocene Coryell plutonic rocks, mainly syenites, monzonite and granite, both contain high background uranium values.

In late Cretaceous to early Eocene times a profound erosional period levelled the entire region. Intense continental volcanic and tectonic (graben formation) activity with extensive deposition of volcanic and sedimentary rocks commenced in the Eocene.

A more mature topography existed in the Miocene with the formation of fluvial quartz pebble conglomerates and sandstone. In late Miocene to Pliocene times olivine plateau basalt flows covered much of the area. Later uplift has resulted in the erosion of most of the Tertiary rocks.



PROPERTY GEOLOGY

There are no detailed geological maps available for the mine area. Within the mine, and on the surface, the author has mapped a medium grained hornblende diorite, which shows intense deformation along a major NE-SW trending shear zone. This shear zone is occupied by quartz veins and lenses discontinuously along its length. Apparent shear offsets are noted in a conjugate array local to the main shear, but their character becomes more subtle at distances over 50ft from the main shear.

The mine workings intersected a contact with fine grained, very chloritized, grey-green metasediment, which in places is brecciated and silicified. Veinlets and dykes of diorite intrude the sediments at their margin, but no quartz vein style mineralization has been shown within the metasediments. The brecciated and silicified zones are however probably related to the veining within the diorite, and ore grade mineralization could extend into these zones.

MINERALIZATION

The shear zone hosts the main gold mineralization in pyrite and pyrrhotite rich quartz pods and veins, and in the chlorite-quartz matrix. The drill programme showed that the narrow veinlets within the wall rock which showed bleaching were also auriferous, and the sampling programme indicated areas within the mine with significantly elevated gold/silver ratios. Further work is required to confirm a relationship between elevated precious metal ratios and ore shoot development.

In 1934 the mines annual report stated... "The main shear zone, about 22 feet wide, on which most of the work has been done, consists of nearly vertical bands of quartz from 2 to 10 inches wide, generally free on the walls, with alternating bands of argillaceous and altered diorite between accompanied by graphite, pyrite, and manganese oxide. Free gold can be panned from some of this material."... A 1935 metallurgical report on a sample of this material is included in Appendix 3.

This material described in the early reports has since been mined, however the mapping in 2900 drift south of the raise showed similar material, although with a maximum gold value of 0.19 opt (sample 9258). The recent exploratory drillholes were to determine if the ore shoot continued below or around this zone

The drilling was successful as it picked up extensions of the high grade mineralization below the drift in drill hole K-87-2, - with 0.924 opt gold in the chloritized shear zone between 16' 9" and 21' 10", (5' 1"), and values to 0.254 opt gold in the adjacent quartz vein, hole K-87-3.

These drill values are similar to the values obtained from sampling in the drift at the 2900 level, where the author obtained 0.376 opt gold over 80" (sample 9255) from the quartz vein adjacent to the drill station, and to the values reported on the 1934 and 1937 assay plans, (see figures 7 & 8).

The following table details the more significant assay results, a full descriptive listing is in appendix 2.

| SAMPLE | WIDTH | Au.opt | Ag.opt | <u>REMARKS</u> |
|--------|------------|--------|--------|----------------------|
| 9285 | 5'1" | 0.924 | 5.98 | K-87-2, 16'9"-21'10" |
| 9293 | 2'6" | 0.107 | 0.80 | K-87-3, 13'6"-16'0" |
| 9299 | 2'8 | 0.085 | 0.69 | K-87-3, 50'0"-54'6" |
| 8610 | 2'0" | 0.316 | - | K-87-6, 33'0"-35'0" |
| 9251 | 8" | 0.136 | 0.09 | Vein at winze. |
| 9253 | 10" | 0.260 | 0.13 | Vein in cross shear |
| 9255 | 80" | 0.376 | - | Main vein at 2900 |
| 9258 | grab | 0.190 | • 2 1 | Debris at 9255 |
| 9268 | 12" | 0.140 | - | Main shear |
| 9274 | 32" | 0.100 | - | End of 2900 level |
| 8614 | grab | 0.170 | - | 2975 stope SW end |

In addition to the samples collected as above, Mr. Penney has retained two excellent samples obtained from the workings of the Nol open cut, which show spectacular free gold, and these have been offered to the author for further examinations.

The author is particularly interested in excavating the No.1 open pit, and to drilling the extensions of the mineralized zone shown there. The extremely high gold values reported for vein samples in this area and the geometry of the vein indicate the existence of a major ore shoot.

Similar high gold (1.6 opt) was obtained from a sample taken at the intersection of the 2975 crosscut and drift (see 1934 sampling, #19), and at this location the author noted a secondary quartz vein in an oblique shear. This shear trends toward the quartz float noted on surface to the southwest, and may represent a further shoot. Surface excavation will assist in this determination.







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1.0 The Kalamalka Mine produced more material from the mine stopes than was accounted for by the official records, (7267 tons compared with our 12,250 tons). The records show that processing equipment was set up at the mine in the late 1930's, and this equipment was probably used to process the material within the shear zone. The massive quartz appears to have been the only product sent to the smelter, as returns indicate that this had a silica content of 80%.

2.0 The mine was closed because of "low grades and faulting". This is realistic in light of the economic conditions in 1944, and the the moderate amount of development required to extend the mining operation deeper on the main shoot. The detailed vein geometry is shown in figure 6, and this shows the "fault-offset" of the vein. The author considers that this is not a true vein offset, but rather a vein fill in offset dilatant zones. Similar "off-sets" were mapped along the length of the main shear zone, and because of their relationship to high gold values, or to high gold-silver ratios in the assays, the author considers there to be a number of other ore bearing shoots in the vicinity of the workings.

3.0 Drill holes were targeted below the 2900 level drift to intercept the shear zone and the quartz vein down the anticipated plunge of the "shoot". The drilling intercepted very high gold grades in the silicified shear zone, indicating the shoot does continue to depth. Two holes which would have passed through the quartz vein shown on the southeast side of the 2900 drift encountered a backfilled stope. The drill information was used to determine the dip of the vein below the 2900 level, but the vein grade could not be determined. This vein assayed 0.376opt across 80 inches at the 2900 level. Further holes were not possible in this area because of unstable ground conditions and rubble.

4.0 Discussions with Mr. Aubrey Penney, the owner of the property from 1952-1967, assisted in locating the collar of the drill hole completed in 1967, and determining its orientation. In a report by Mr. L. B. Halferdahl, Ph.D., P.Eng.⁸, hearsay reports of this drilling indicate a vein intercept at about 450 feet, but assays of less than 0.5 opt. The author has concluded that this hole intercepted the main shear below the junction of the 2975 crosscut and drift, at a depth of at least 218 feet below the 2900 mining level. This is consistent with a vein dip of 85 degrees to the northwest. According to Mr. Penney the hole showed between 12 and 20 feet of quartz.

5.0 In the course of the inspection of the claim posts, the author noted float of red quartz within outcrops of diorite. This area is over 400 meters southwest of the main workings, and on strike with the main shear zone. This float is a significant indicator for further mineralization similar to that mined in the past. Silicified sediments in a road cut north of this area is also another indicator of potential vein mineralization.

6.0 The gold mineralization within the mine is consistent with a several stages of mesothermal vein formation, filling tension gashes within a diorite intrusive. The solution path for the gold mineralization in the central part of the mine plunges south east from the drill station on the 2900 level, and was intercepted in drill holes K-87-2, K-87-3, and K-87-6. This style of mineralization is known to extend to depths of over 500 ft, eg. at the Bralorne Camp.

7.0 Further drill programmes will define the dimensions of the ore shoot, and determine the existence of geometrically related ore shoots.

RECOMMENDATIONS

Construct a drill station off the 2900 level access to enable underground 1.0 drilling to continue to trace the mineralized zone to depth. This drill station and access can also be used to develop a by-pass of the 2900 level drift stoping, and to allow drilling from the south west extremity of the 2900 level drift.

2.0 Re-excavate the old trenches above the mine workings to determine the orientation of possible sub-parallel ore shoots. Continue these excavations to the north east and south west, at least to the extent of the quartz float noted near the Gus 3 final claim post.

3.0 Establish a surveyed mine grid, and in areas of minimal outcrop soil sample on a staggered grid pattern with 50 meter spacing. Soil sample for gold, including plus 80 mesh gold. Resample all anomalous areas on a 25 meter staggered spacing, and excavate remaining anomalies.

4.0 Establish an orientation IP geophysical survey over the known mineralization, for possible future exploration use of "Resistivity Profiles" to target diamond drilling.

5.0 Surface drill all quartz filled shear zones discovered during exploration. Surface drill the high grade veining in the vicinity of the No.1 open cut.

The following is a budget for the project to carry out the programmes described in this report.

Phase I

| Geophysical Survey | \$5,000 |
|-------------------------|----------------|
| Geochemical Survey | \$10,000 |
| Assays | \$6,000 |
| Trenching | \$15,000 |
| Underground development | \$35,000 |
| Drilling | \$40,000 |
| Room and Board | \$4,500 |
| Travel | \$2,500 |
| Salaries | \$15,000 |
| Support and Supervision | \$12,000 |
| Sub Total | \$145,000 |
| Contingencies | <u>\$5,000</u> |
| Total Phase I | \$150,000 |

The following is the expected Phase II budget which will be carried out if the results of the first phase as detailed above results in the definition of significant mineralization on the property.

| Geophysical /Geochemical Survey | \$ 10,000 |
|---------------------------------|------------------|
| Geology | \$10,000 |
| Assays | \$10,000 |
| Trenching | \$15,000 |
| Room and Board | \$5,000 |
| Travel | \$2,500 |
| Salaries | \$15,000 |
| Support and Supervision | \$4,000 |
| Drilling | \$30,000 |
| Mill testing | \$8,000 |
| Total | \$109,500 |
| Contingencies | \$5,500 |
| Total Phase II | \$115,000 |
| UCLCCC. | |

Total Phase I & II

\$265,000

F. MARSHALL SMIT

F. Marshall Smith, P.Eng. February 27, 1987.