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MEMORANDUM FROM E.W. GROVE

TO Dr. J.T. Fyles,
Associate Deputy Minister.

THE DEPARTMENT OF
MINES AND PETROLEUM RESOURCES
PARLIAMENT BUILDINGS, VICTORIA, BRITISH COLUMBIA V8V 1X4



DATE October 16/75
File - M-12

RE: ENGINEER MINE

A report on the current state of exploration at the Engineer mine, and a brief appraisal of the potential has been appended for your information.

E.W. GROVE,
Senior Geologist, Geological Division,
Mineral Resources Branch.

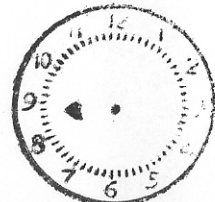
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Encl: Report

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DEPT. OF MINES
AND PETROLEUM RESOURCES

REPORT ON THE ENGINEER MINE - TAGISH LAKE, B.C.

Object

The Engineer mine is currently being reopened under an exploration permit. This presented a rare opportunity to examine the workings and ore potential prior to the possible presentation of a request for a production permit.

Mr. Dudas and I spent the day (October 1st, 1975) at the property examining the open workings, and discussing the geological problems with Mr. Bill Gilmour. The shaft had not been dewatered as expected because of electrical problems.

Location and Access

The old Engineer mine is located on the east side of Taku Arm about 22 miles west of Atlin. The property can be reached by boat from Atlin or from Carcross, Y.T., the nearest supply centre. The mine workings, buildings, and old mill are located on the shore overlooking the lake. A network of local access roads connect the camp to the various shafts, portals and trenches.

History

The mine has a sporadic history dating to 1899 when staked by employees of the White Pass and Yukon Railway.

Between 1908 and 1952 17,157 tons of ore were milled producing 18,058 oz. gold and 8,950 oz. silver. The mine has been developed on 8 levels from a 3 compartment shaft. The main workings on the Engineer and Double Decker veins extend from 5 level through to the surface, a distance of about vertical 250 feet.

Current work

The Engineer mine is currently being reopened and evaluated by Ken Daughtry and Associates of Kamloops for the present owners _____
This has mainly entailed clean-up of the 5 level access, dewatering, and ventilation. An attempt to dewater the shaft and 6 to 8 levels

workings has not been successful to date because of technical problems.

The main aim of the geological appraisal has been the mapping and sampling of the extension NE/SW trending stockwork type shear zones that cut across the area. The main 7E (Engineer) vein trends NW/SE and appears to have been cut by the wide quartz stockwork/replacement shear zones. To date samples of the shear zone stockworks indicate grades averaging 0.10 oz. gold across from 35 to 120 feet on 5 level. On the surface these shear zones form prominent quartz-rich ridges which have been offset (LH) up to 50 feet by strike-slip faults. The geologist has had little time to work on the details of the vein/shear/fault structures and is handicapped by a lack of up to date development and stope maps.

Geology

The detailed local and mine geology has not been attempted and only Christie's 1957 areal map is available at present.

The quartz veins and quartz filled shear zones have been localized in deformed thin bedded siltstones which form part of the Lower Jurassic Laberge Group. Lenses of pebble conglomerate intercalated within the siltstones contain relatively abundant fragments of *Buchia* and various unidentified ammonites. Fossil fragments were found in the 5 level adit about 300 feet from the portal.

The vein/shear/fault situation appears to be fairly simple and can be expressed as intersecting NW/SE and NE/SW sets. The gold bearing quartz veins appear to lie within fairly competent sediments forming low ridges whereas the weakly mineralized/alterd shear zones lie in low ground.

Veins

The main Engineer (7E) and Double Decker veins are composed

of very coarse grained (to 12") calcite, and milky to glassy quartz. The veins are generally exceptionally vuggy and comb texture is typical. Pyrite and lesser chalcopyrite are present throughout most of the veins in small amounts.

The average width of the main Engineer vein appears to have been about two feet and has a somewhat sinuous overall form. On the basis of my observations of the stope layout and drift development I would guess that the ore grade shoots had a steep ($60^\circ \pm$) southeasterly plunge. Little, if any, of those high grade shoots remain even as stope pillars for examination. However, on previous visits at the mine I was able to examine some of this material in hand specimen. Allemontite, native arsenic, and native antimony, and native gold. The gold occurs as thin scales, leaves and fine dendritic forms distributed within fine grained granular buff to reddish coloured quartz which is confined between coarse comb textured quartz. Apparently the high grade was found in small pockets up to 2 feet wide over lengths of a few feet. In these, the gold made up as much as 30-40% of the material. The possibility of such shoots still exists below 5. *level.*

Shear Zones

Much has been made of these zones mainly because of their size and apparent continuity. They represent stockwork quartz-carbonate veining and replacement along major cataclasite zones in which protomylonites, and thin banded mylonites are well preserved, particularly in the workings. Considerable development and testing continues to show only low (0.10 oz. or less) gold values. The potential of these shears is therefore limited.

Conclusion

The reopening of the Engineer mine is proceeding in a reasonable manner under the very capable direction of Mr. Gordon Bell, an experienced underground supervisor. The geological appraisal has been made very difficult by the almost total lack of available underground

development and stope layouts. Exploration below 5 level will be hampered by this problem.

The property has a potential for small high grade shoots below 5 level but exploration for these targets will require close geological control (structure is very important) and detailed diamond drilling.

Recommendations

The lack of available mine records is typical of the problems facing the developers of small old properties. A better method of obtaining these records, maintaining them, and making them available to the public appears to be the responsibility of the Department of Mines and Petroleum resources.

Addenda

Mr. Reg Brooks of Tagish Lake has apparently accumulated an assortment of mine plans and records from the Engineer mine. He contends the previous owners owed him money and is not interested in subsidizing the current operators. Mr. Brooks also has several excellent gold and allemontite samples from the mine which probably represent the few remaining in B.C.



E.W. GROVE,
Senior Geologist, Geological Division,
Mineral Resources Branch.

October 16th, 1975.