82F/6W
82F/SW-BC

003036

Granite Poorman

Summary

The property is controlled by the Livingstone Mining Co. of Seattle, Washington; Manager, H.R. Smith. It is accessible from Nelson, B.C. by 7 miles of good road. Camp is complete and adequate for 12 to 15 men. Power for mining machinery is taken from lines of City of Nelson. On the property there is a mill building and considerable mill equipment which has not been in use for sometime.

Geological conditions are simple; narrow quartz veins in diorite, mineralized by simple sulphides with which gold is associated. Scheelite is scattered through the veins with little concentration at any particular location but with sufficient persistency to be of interest and probable commercial value in a concentrate. While results of assaying provide only inconclusive evidence it appears that there may be some direct relationship between the presence of sulphides and that of scheelite. This does not mean, necessarily, that a similar direct relationship pertains between gold and the sulphides generally; microscopic examination indicates that galena is the particular sulphide most frequently associated with visible gold.

The property has had a good record as a producer of gold for over 40 years. The present operation consists of sniping small blocks with development at a minimum. In 1941, 1644 tons of crude ore were shipped to the smelter; this amount

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contained 1170 ounces of gold and 1541 ounces of silver.

It is not safe to make any close estimate of available tonnage of gold ore and still less so to apply figures for tonnage or grade of available tungsten ore. However, as a basic figure upon which to work it seems reasonable to assume 10,000 tons of gold ore at an average grade of 0.30 ounces per ton; tungsten content on this tonnage might be guessed at 0.10% Oxide of Tungsten on information derived from sampling by the writer. From the estimate of costs appended there should be a net of some $6500.00 from mining and milling this ore. This is insufficient to warrant the owner buying new equipment and reopening the mill.

Estimate of Outcome - on 25 ton daily basis.

Based on assumed tonnage of 10,000 tons at 0.30 ounces of gold per ton; 0.10% Oxide of Tungsten. Gold taken at $38.50 per ounce; Oxide of Tungsten at $20.00 per unit.

Gross heads	-	11.55 in gold 2.00 in oxide of tungsten 13.55	
Recovery		90% of 11.55	$10.40
		65% of 2.00	1.30
			$11.70
Mining		5.00 (to allow for selective mining of tungsten-gold ore)	
Milling (10:1)		3.00	

Brought Forward	8.00	$11.70
Trucking	.30	
Smelting	.90	
Taxation (5%)	.60	
Overhead Administration	.25	
	10.05	10.05
10%	1.00	0.65
	$11.05	

GRANITE POORMAN

This property is controlled by the Livingstone Mining Co., of Seattle, Washington, represented by H. R. Smith, Manager. It is located on Eagle Creek, west of Nelson and is accessible from that city by 7 miles of good road. The workings underlie Eagle Creek which flows northward into the Kootenay River.

Several veins have been developed extensively underground. These are quartz-filled fractures in diorite. Sulphide mineralization within the veins consists of pyrite, chalcopyrite, galena and sphalerite. Generally simple geological conditions prevail; the veins are all approximately parallel, striking slightly west of north, dipping flatly to the east. Vein widths seldom exceed 2 feet and very commonly the veins are represented only by stringers of not more than 3 or 4 inches in width. Continuity, however, is good and there has been little difficulty in following the veins for considerable distances along the strike and down the dip. Several large lamprophyre dykes intersect the veins, usually at flat angles, but it does not appear that there has been any severe faulting attendant upon these intrusions.

The property has been under intermittent development for the past 50 years. The greatest activity was prior

to 1910 and production records show a gross of well over a million dollars; ore has averaged about ½ oz. of gold per ton.

In recent years, the operation has been on a comparatively small scale and there has been little new development. At the present time Smith is engaged principally in obtaining ore from extensions of that mined in past years and has concentrated upon sections which give promise of providing ore of shipping grade. There is a mill building on the property which was operated for a short time but recently Smith abandoned its use and has reverted to shipping higher grade ore directly to the smelter. An electrically driven compressor provides air for at least 3 machines; power is taken from the City of Nelson line. Bunkhouse accomodation is poor but adequate for 15 men.

No surface workings were examined as the ground was covered with snow. It is doubtful, however, if any worthwhile information could be obtained from these due to their age.

The writer examined the property with the sole intention of gaining information regarding the occurrence of scheelite and the relationship between this mineral and the gold content within the veins. On account of this the procedure differed slightly from that followed in the ordinary estimation of values in metallic minerals. The first step

was to determine the mode of occurrence of the scheelite. This was done by examining thoroughly with an ultra-violet lamp all locations where any important amount of vein remained unmined. It soon became apparent that the distribution of scheelite was wide spread but that large concentrations of the mineral at any one location were rare. In fact, nowhere did the writer see any grouping of scheelite mineralization which would permit selective mining and cobbing of crude ore for shipment. In general, it occurs as individual grains scattered through the veins. These grains vary in size from a pin point to $\frac{1}{4}$ of an inch square and it is common to find them, in line, along sheeted fracturing parallel to the walls of the vein. There are many cases in which isolations of the mineral are larger than this but there is no frequency of these larger units and no determinable reason for their occurrence. As detailed below there are two localities underground where there is greater than usual total concentration of scheelite; in one of these the units of the mineralization are generally larger than average but these two cases appear to provide the exception rather than the rule.

By these indications as to the nature of the scheelite mineralization the writer eliminated examination of blocks of vein material left in place in the older upper workings of the mine. These older workings were mined at the time of greatest activity on the property when the mill was in operation and pillars left were presumably low in gold values.

Generally it appears unlikely that scheelite mineralization will permit mining for tungsten content alone; further, where there is only a very small amount of gold present it is doubtful if even combined values will produce an economic grade. On the basis of this reasoning close attention was given only to the lower sections of the mine in which major blocks of vein remained in place. All of these were inspected carefully with the lamp and sampling was conducted at the locations of the best concentrations of scheelite mineralization. In these sections where the scheelite concentrations were better than average it is hoped that combined values in tungsten and gold will provide economic mill feed. Thus, the samples are to be accepted as representative of the best maintained showings of scheelite seen in the sections of the mine from which it is possible to obtain any reasonable tonnages of tungsten-gold ore.

Underground development at the property has been concentrated at two locations. At one of these the work has been done on the Granite and Greenhorn veins; at the other, on the Hardscrabble and Poorman veins. In addition, other smaller veins have been exposed but little developed. The Granite and Greenhorn workings are on the east side of Eagle Creek, at an elevation considerably above those on the Hardscrabble and Poorman. Entry to the workings on these first two veins is by a main adit which branches, southward to the Greenhorn vein and south-eastward to the Granite vein. The Granite is the most easterly of

all the veins developed and thus lies in the hanging wall of all the others. The Greenhorn lies next below it, dipping similarly, at approximately 35 degrees to the east, and striking slightly west of north.

In the Granite workings the vein material which remains in place is generally very narrow or very low grade as a result of extensive exploration and mining both along the strike and down the dip. One very small showing of scheelite was seen on the main level, No. 2, at the southward extremity of the working. Two more small groups of scheelite specks were noted at an intermediate level, at an elevation 65 feet below that of No. 2 level. The No. 3 level, 107 feet below the intermediate, was inaccessible from that level. The very small exposures of vein available for examination and the small amount of scheelite noted in these exposures did not indicate any possible tungsten production of interest from this section of the mine.

In the Greenhorn workings stoping has been carried through to the surface and little developed vein remains.

Entry to the Hardscrabble and Poorman workings is on the No. 4 level, at an elevation of 3178 feet. This adit crosscuts the Hardscrabble vein near the portal and then extends as a crosscut for 440 feet to the southeast to intersect the Poorman vein. This block of ground is in the footwall of the Granite and Greenhorn veins. Both veins strike slightly west of north, dip at approximately 30 degrees to the east; the Hardscrabble lies below the Poorman and is thus the footwall

vein of the entire series developed.

After intersecting the Poorman vein the No. 4 adit extends as a drift for a short distance to the northward and for over 1000 feet to the southward. The greater part of this length to the southward has provided stoping ground above the level and, except at the southward extremity of the working, there is little unmined vein above it. No. 3, 2 and 1 levels lie above this horizon as drifts on the vein and stoping ground of any apparent value above these levels has been removed. The ground below 4 level has been developed by a shaft sunk on the vein. From this the 5th level has been driven as a drift at an elevation approximately 100 feet below 4 level. At the bottom of the shaft, at an elevation of 2974 feet, 200 feet below 4 level, 6 level extends westward as a crosscut to intersect the Hardscrabble vein at the same horizon. From 5 level stoping has been conducted upwards to 4 level for a distance of nearly 700 feet southward from the shaft. On 6 level no vein exposures worth mining were encountered. It may thus be seen that a considerable area from 5 level to the surface and southward from the shaft has been mined intensively. Opportunity for the extraction of additional ore lies above 4 level at the southward end of that level and in extension of 5 level southward with possible consequent development of ore upward to 4 level. In addition there are small unmined blocks and sections in the backs of some stopes which may be worth recovery. At the present time Smith is extending an old stope, known as the "300 stope", upward above the southward end of

3 level. This was apparently abandoned by the original operators but the recent work shows that it is still capable of producing ore of shipping grade. Smith is also working a stope above 3 level on a branch vein which splits off the main Poorman vein at a flat angle from the footwall side of that vein. This is known as the "Flat stope". In addition, there is possible ore for development in another flat-lying footwall stringer off the main vein which has been exposed by a short branch working off 4 level, at about 350 feet short of the southward end of that level. There is very little development on this showing at the present time and no estimation of its value is possible. It is interesting to note, however, that a general sample of vein material broken from this location assayed 0.50% Oxide of Tungsten, 0.30 oz. Gold per ton.

Thus on the Granite vein there is little tonnage which is developed and available for immediate production. There may be (1) 1000 tons of gold ore of shipping grade in theneighborhood of Smith's "flat stope". (2) an unknown tonnage of gold ore of shipping grade from the 300 stope. (3) an unknown tonnage between 5 and 4 levels if 5 level were extended to the south (although it is reasonable to assume that the operators abandoned the level in the opinion that its extension was not advisable). (4) an unknown but possible tonnage of unknown grade by stoping on the small exposure of footwall stringers exposed in 4 level at 350 feet short of the

southward end of that level.

Samples taken and appended herewith give the average gold and tungsten grades for the ore being drawn from the 300 stope and from the Flat Stope. Samples 72 to 75 inclusive and 235 to 237 inclusive represent the best concentrations of scheelite exposed in the vein in the final 250-foot length of the south end of 4 level. These were taken intermittently, wherever the scheelite content was sufficient to suggest that perhaps selective mining at those locations might provide gold-tungsten mill-feed. The samples represent no specific tonnage and such ore could be obtained only by extension of 5 level and raising or by underhand stoping from the 4 level drift.

The Hardscrabble vein is intersected by the cross-cut to the Poorman vein at about 50 feet from the portal. From here a drift has been driven some 900 feet southward; this is the No. 4 level of the Hardscrabble workings. At approximately 740 feet from the crosscut an incline shaft was sunk on the vein which dips at approximately 30 degrees to the east. This shaft extends downward from an elevation of 3180 feet at 4 level to 2982 feet at 6 level; 5 level has been driven as a drift at an elevation of 3113 feet. At the present time, the shaft is in use between 4 and 5 levels but is blocked between 5 and 6; access to 6 from 5 level is by a circuitous downward route partly through stoped ground. At the bottom of the shaft on 6 level, the 6 level crosscut from the Poorman

workings makes connection with the Hardscrabble workings.

Above 5 level most of the vein developed by the drifts has been stoped. Along 4 level, within pillars and small blocks remaining, several specks of scheelite were noted as well as four small concentrations which were limited to 12 to 15 inches in length and 2 to 3 inches in width. In these small concentrations the scheelite showings were by no means solid but were comprised of a considerable number of individual grains within the areas defined.

On 5 level very little scheelite was seen to the north of the shaft, although there was a considerable concentration within one 3" x 8" patch which is exposed on the eastward side of the drift. On the north end-wall of the stoped ground between 5 level and 4 level a very slight amount of scheelite was noted. This occurred as scattered grains and in total comprised a negligible amount.

To the south of the shaft on 5 level the vein has been mined out to 4 level for most of the developed length. In addition, on the lower side there has been under-hand stoping and backfilling for most of the length of the drift and thus there is little opportunity to examine the vein. Smith has extended the drift a short distance to the southward and is stoping above this newly developed length. At the time of examination the south end-wall of this stope was exposed for a slope length of approximately 40 feet above the level; the length in the back of the stope was approximately

100 feet. On the south end-wall there was a 20-foot length in which grains and small blebs of scheelite occurred over widths up to 1½ inches. This streak of scheelite mineralization lay near the hanging wall of the vein but upon sampling across the vein a fairly large patch was also exposed on the footwall side. This patch was about 3" x 4" x 3". This concentration and that on the hanging wall comprised the best maintained showing of scheelite seen on the property. Probably as much was seen at other locations, notably in the drift work on 4 level on the footwall vein (Sample 238) but here there was definite control and resulting outline for the scheelite occurrence.

Two samples taken from the end-wall of this 5 level stope across the full width of the vein, returned an average of 0.17% Oxide of Tungsten and 1.06 oz. of Gold per ton, across 22". A select sample of scheelite mineralization at this locality assayed 8.2% Oxide of Tungsten, 0.72 oz. Gold per ton.

A few grains of the mineralization were noted in the back of the stope but no amount was seen which warranted sampling.

It should be mentioned that this work of Smith's at the south end of 5 level is very close to, if not already across, the Venango property line. No arrangement has been made with the Venango owners and the condition may prove troublesome.

Between 5 level and 6 level a sub-level has been driven as a drift from the shaft; no scheelite was seen in the working. On the end-wall of a small stope above the south end of the sublevel the writer saw one small patch of scheelite which measured an inch by one-half inch.

Stoping at the southward end of 6 level has been carried upward halfway to 5 level; a raise extends from the back of the stope to 5 level. In this raise a patch of scheelite, 3" x 3", was seen at approximately 45 feet below 5 level. Below this, in the raise and through the stoped ground, a few small scattered specks of the mineral were seen. On 6 level the vein is weak, broken up and inclined to stringer out. Two small patches approximately ½" square and one pin point of scheelite comprised the only scheelite showings on this level.

On the basis of the work done by the writer any estimate of possible tonnage available from the Hardscrabble workings can be little more than a guess. There is undoubtedly some ore -,gold - ore,- to be mined above 5 level at its southward end. There is also some probably between 6 and 5 levels, northward and southward from the shaft. The owner estimates a total of 24,000 tons of ore available from the Hardscrabble workings, but he applies a vein width of 2 feet and is probably optimistic regarding extensions. From the vein exposures the writer believes that 5000 tons is a nearer figure for the acceptable minimum available from this area - disregarding small pillars and tag-ends. The tungsten content from such a tonnage

is unknown but the samples of muck from the Flat Stope and the 300 stope provide a fair basis for estimation of general average. The remainder of the samples from both the Poorman and Hardscrabble indicate the grades in gold and tungsten which might be expected by selective mining of the sections where mineralization by scheelite is most pronounced.

In the crosscut from the foot of the Hardscrabble shaft to the Poorman 6 level there is an exposure of the Hardup vein but no scheelite is visible. This vein has been exposed by crosscuts at only two locations in the underground workings and no development has been done upon it. This exposure in the 6 level crosscut and the other, in the 4 level crosscut from the Hardscrabble to the Poorman workings, both show the Hardup vein to have widths of only 3 to 4 inches. Presumably, these exposures have not been considered sufficiently encouraging to warrant drifting, but this does not seem entirely reasonable as the other veins on the property from which there has been considerable production have widths as small as this at many locations.

Sampling.

Poorman

No. 72: At 25 feet from south end of 4 level drift;- East wall; across 6" vein; fair pyrite; visible scheelite. Vein stoped above west wall. 0.47 oz Gold per ton; 0.09 % Oxide of Tungsten.

No. 74: At 40 feet from south end of 4 level drift; East wall; across 8" vein; scheelite occurs irregularly within a 2" band of pyrite and chalcopyrite near the centre of the vein. 1.72 oz. Gold per ton; 1.09 % Oxide of Tungsten.

No. 73: At 58 feet from south end of 4 level drift; East wall; across 8" vein; fair pyrite and a streak of scattered scheelite within the pyrite; one segregation of scheelite 2" x ¼" beside but not included in sample. 0.61 oz. Gold per ton; 0.22 % Oxide of Tungsten.

No. 75: At 118" from south end of 4 level drift; East wall; across 5" vein west mineralized by pyrite and chalcopyrite. Not much visible scheelite. 0.66 oz. Gold per ton; 0.12 % Oxide of Tungsten.

No. 235: At 45' North of the north end of the most southerly underhand stoping on 4 level drift - or approximately 209 feet from the South end of 4 level drift. East wall; across 14" of almost barren quartz vein containing a small amount of scheelite associated with pyrite and chalcopyrite in a narrow seam parallel to the walls and near the centre of the vein. Trace of. Gold per ton; 0.24 % Oxide of Tungsten.

No. 236: At 9 feet north of sample 235; East wall; across 4" vein well mineralized by pyrite and chalcopyrite. A slight amount of scheelite is present but is not particularly closely associated with the sulphide mineralization. 1.39 oz. Gold per ton; 0.08 % Oxide of Tungsten.

No. 237: At 22' north of Sample 236 - East wall; across 15" vein containing very little sulphides or scheelite; no particular relation between the sulphides and scheelite. 0.50 oz. Gold per ton; Trace of Oxide of Tungsten.

No. 238: Grab sample of muck from upward slashing of foot wall vein at approximately 350 feet north of south end of 4 level drift. Sample probably not very accurate as muck was large, as were the individual segregations of scheelite. In the back quartz stringers in diorite, over widths up to two feet, represent the vein. The scheelite occurs within the stringers in patches up to 3 inches square. 0.30 oz. Gold per ton; 0.50 % Oxide of Tungsten.

No. 239: Chute sample from the 300 stope. In the stope there are scattered specks of scheelite throughout the vein which was exposed in the back for a length of 100 feet. Vein width averages 15 inches. 0.11 oz. Gold per ton. 0.06 % Oxide of Tungsten.

No. 240: General sample of muck broken from the Flat Stope for shipment as gold ore. In the muck and in places in the stope there is widespread, erratic mineralization by scheelite generally associated with the sulphides. Vein width averages

12-15 inches. 0.65 oz. Gold per ton; 0.11 % Oxide of Tungsten.

Hardscrabble:

No. 241: From the south end-wall of the stope above the south end of Hardscrabble 5 level, at 20 feet above the drift back. Sample across 26" quartz vein includes 1/8 inch seam of scheelite and 3 inch band of pyrite and chalcopyrite mineralization on hanging-wall side of vein. 0.11 oz Gold per ton; 0.17 % Oxide of Tungsten.

No. 242: At 6 feet west of sample 241, i.e. farther up the south end-wall. Sample across 17" including same two seams of scheelite and sulphide mineralization as in No. 241, here maintaining the same widths, but here the scheelite lies within the sulphide. In addition, near the footwall side of the vein the sample channel exposed a 1" x 3" patch of scheelite part of which was included in sample. 2.52 oz. Gold per ton; 0.18 % Oxide of Tungsten.

No. 243: Select sample of scheelite mineralization from the south end of the Hardscrabble 5 level stope (see Samples 241-242). This is the grade which could be achieved by hand sorting but represents only a very small proportion of the total amount of scheelite which occurs in either the Hardscrabble or Poorman veins. 0.72 oz. Gold per ton; 8.2 % Oxide of Tungsten.

Granite Poorman

Conclusion

The property offers possibilities for production of tungsten.

While further development may expose concentrations of scheelite which will permit mining and marketing of the mineral in crude form, the present showings indicate that general recovery would necessitate concentration of the ore. This would require that milling practice be adjusted to permit the recovery of both gold and tungsten concentrates. At the present time the showings of ore do not offer sufficient apparent total margin of profit to induce the owner - or any private concern - to expend the necessary capital for re-organization of the mill building and equipment. It thus seems unlikely that any production of tungsten will be forthcoming from the property under the present or similar conditions of ownership.

As an alternative to possible further neglect of the possibilities of tungsten production from this source, it seems reasonable to consider some measure of governmental stimulation which would not involve either confiscation or operation of the property. Suggested details of such stimulation are given in the final summary of this report, involving not only the Granite Poorman but other similar and nearby properties.