1929/20-22

LAFFER MINE - WELDBOROUGH

Consolidated Lease No. 10378 M - 113 ac., and Leases 10447 M - 5 ac., 10379 M - 5 ac., 10380 M - 7 ac., and 10381 M - 8 ac.

REPORT ON METHOD OF SAMPLING LODE FORMATION

The writer made a brief visit to the Mine on 29th ultimo and made an inspection of the method of sampling the lode formations exposed on the property.

A small machine consisting of a jaw crusher and rolls, belt driven from a 2 ft. diameter Pelton wheel, has been installed to facilitate the work of breaking down samples of tin bearing quartz greisen composing the ore body.

The method at present adopted consists of cutting fairly large bulk samples from across the ore body, weighing and crushing the whole of it as fine as it is possible to do with the machine referred to.

A small stream of water is added to the material as it is being crushed, it is conveyed to a sluice box close by and the crushed ore is then "boxed" to separate the tin oxide from the gangue rock.

The tin oxide recovered is dried and weighed and from that the quantity of tin contained in the crude ore is estimated.

It is realized by the Mine Manager (Mr. A.V. Walker) that the limitations of the small crushing machine regarding the fineness to which the ore is crushed does not allow for a reasonably high recovery to be made of the total tin content in the stone. Further treatment of the sand or tailing by crushing to liberate the finer particles of tin oxide and subsequent concentration is necessary.

The work carried out, however, is sufficient to demonstrate that the stone carries a good distribution of tin oxide, which is readily recovered as a high grade product by the simple process of concentration in a sluice box, which, at best, is a rather crude method in comparison with modern mechanical appliances generally adopted for the purpose.

To arrive at a reasonably close estimate of tin in the exposed portions of the ore body by ordinary methods of sampling, it is not necessary to crush to a fine state the whole of the sample taken from any particular point on the lode.

The quantity of stone taken would depend upon the width of the ore body. Samples should be taken from a channel cut evenly across the ore body in a direction

as closely as is possible, at right angles to the strike and dip. Care is necessary when cutting a sample from the solid rock that each section of it is proportionately represented, otherwise a rich or alternatively a poor section might be misrepresented in the bulk sample rendering it worthless for purposes of estimating the tin content.

The quantity representing a sample taken over a given width would, to some extent, depend upon the nature of the rock. With fairly hard stone, such as that composing the greisen body occurring at the Laffer Mine, owing to its jointed structure, a fairly large sample would need to be taken, not less than 1 cwt. over each sectional width of 10 ft.

A sketch plan of the ore body should be made and on it the position of each sample taken clearly marked by a distinguishing number, giving the width and any other particulars. The ore body consisting of quartz greisen occurs in a banded and jointed form. The respective bands, which vary in thickness from an inch or two up to a foot or more, are almost perpendicular; in places they are separated by parallel bands of granite of similar form. The granite will probably be found to be valueless as milling ore.

The question then arises, when taking samples, what proportion of granite should be included. In deciding upon a matter of this kind the rejection of any portion or all of the granite will be a matter for those responsible for taking the samples to decide.

The granite bands referred to in the exposed portions of the ore body are in a weathered condition, and in carrying out mining operations, owing to the jointed structure of the greisen bands, most of the granite which is in a softened condition could, without difficulty, be separated from the tin bearing greisen bands and rejected. Consideration of this fact should govern the proportion to be included with samples taken for the purpose of estimating the tin content of the ore.

The total width of any bands of granite not included in a sample must be deducted from the width over which it is taken, that is to say, the aggregate width of the greisen bands only must represent the total width over which any particular sample is taken.

It is recommended that samples are taken at intervals of not more than one chain apart at points along the ore body; such samples to be broken down to pass through 1½" diameter ring on a prepared sampling floor of about 6 ft. x 6 ft. covered with heavy steel flat sheets. Each sample to be quartered in the usual way and roughly crushed as the quantity is reduced.

When the sample has been cut down to about 20 lbs. in weight, it should be further crushed by passing it through the small combination machine of jaw and roll crusher without wetting, and further reduced by quartering to about 2 lbs. in weight. From the latter about ¼ lb. should be taken and submitted for assay, clearly marked with a distinguishing number; the remaining portion of the sample to be bagged, marked and put aside for future reference if required.

All sampling work should be carried out with the ore in sufficiently dry state to allow it to mix thoroughly.

If the work of sampling the ore body is carried out on the lines indicated, sufficient information respecting the average tin content of it will be gained and will serve as a guide for further investigation, as to total quanity of stone available and any further sampling work that may be considered necessary.

Signed

(J.B. Scott)
STATE MINING ENGINEER.

Mines Department,
HOBART.

7th September, 1929.