UR1891-1969/236-239

Six large massive sulphide bodies in the Mt. Bischoff open cuts were sampled and considered as possible producers of sulphide sulphur. Actually three of these are more or less continuous and are part of the one massive sulphide bed which appears to be a pyrite and pyrrhotite replacement of a former ultrabasic rock. The three more or less connected bodies are the Pig Flat Orebody, the Gossan Face and the Griesen Orebody.

The Pig Flat Face:

The Pig Flat is a large semi-circular quarry at one of the lower levels of the Bischoff open cut. The face is divided by the White Face Dyke which is approximately in the centre. To the east of the dyke the pyrite is massive with a siliceous skeleton. The outcrop is weathered and possibly originally contained marcasite. Two samples showed

Tin	-	trace	trace
Sulphur	-	46.5%	50 %

On the western side of the dyke the sulphides are fresh massive pyrite and pyrrhotite replacing dolomite. Three chip samples of the hard rock were taken:-

Tin	-	trace	0.43 (V)	trace
Sulphur	-	29.3%	20.6	45.4%

There is insufficient total reserves to the west of the dyke to extract the sulphides commercially. The sulphur content is comparatively lower since there is a high content of pyrrhotite. Nor is there an easy method of winning the ore since there is not a large tonnage in the face and continuation below the level of the bench would have to be sought.

The deposit to the east of the dyke has a higher sulphur content and could possibly be extracted in conjunction with the White Face Deposit of which it is an outlying part.

The Gossan Face:

This body is a western continuation of the Pig Flat replacement sulphides. At a slightly higher level in the open cut it consists of pyrite and pyrrhotite replacing dolomite, but the whole Gossan Face is very weathered in comparison to the more recently worked Pig Flat. Three samples showed:-

Tin	-	Nil	Nil	Nil
Sulphur	-	33.5%	15.5%	43.1%

The sulphur content is lower and the body is not suitable for commercial pyrite production.

The Greisen Orebody

This is a further westward extension of the Pig Flat and Gossan replacement masses. Large tonnages have already been extracted from this end of the sulphide body since it contains up to 2% of tin. The ore has been extracted from "glory holes" of which there are five. The rock is shot from the sides of these conical shaped quarries and

trucked out from "chinamen" underground. The samples showed:-

Tin	- Trace	Nil	Nil	1.11 (v)
Sulphur	- 38.7%	30.3%	24.3%	15.9%

Again the sulphur content is low and since practically no more sulphide rock can be mined without the collapse of about 50 feet of country rock standing in the face above the sulphides it would be uneconomic to attempt sulphur production from this section.

The Hart Hit or Slaughter Yard Face

On the northern side of the Western Dyke this body of sulphides is still pyrite and pyrrhotite replacement of dolomite. The hard massive rock contains numerous fluorite crystals and is a cigar shaped body pitching east. Only comparatively small tonnages would be available for sulphur extraction although the base of the sulphide mass has an appreciable tin content.

Samples show:-

Tin	- Nil	0.71 (v)	1.2 (v)
Sulphur	- 33.3%	24.9%	23.9%

The Pound or Brown Face Workings

The sulphide body here was a very large boat shaped body pitching east. There is still a detached block of pyrite and pyrrhotite standing high in the western side of the large open cut, but it is cut by a horizontal band of dyke rock and apophyses which would make it impractical for extraction for use in the manufacture of sulphuric acid. A further disadvantage is its situation deep in the pound open cut and the difficulty of moving large tonnages through the pound ore passes. Excavations have separated the eastern part of the mass from the harder western block. The eastern masses are composed of very active sulphides, denser pyrite and marcasite. They ignite each summer and in consequence are deeply crusted with iron oxide. This gossanous capping extends well into the body and makes sampling impossible. Because of the extensive workings for tin along the footwall of the sulphide mass it would be difficult to extract large quantities.

The whole mass is resting on timbering which to judge from the sink holes and cracking at the surface is decaying and falling.

Because of the unsuitability of the Pound Sulphide bodies for sulphur production no samples were taken.

The White Face Sulphide Body

The surface of this pyritic body is oxidised and the whole mass is covered with a black reduced pug of FeO and siliceous material. Nevertheless analyses show it to be rich in sulphur except in the odd patches where the material has burnt.

In size it is approximately 300 feet long and 150 feet wide. Prouse reports that an adit driven 75 feet lower intersects the sulphides which means that they persist at least to this depth and possibly lower say a further 50 - 60 feet.

The tonnage in this block then would be:-

$$\frac{75 \times 300 \times 150 \times 62.5 \times 4.8}{2240} = 452{,}000 \text{ tons above}$$

trucked out from "chinamen" underground. The samples showed:-

Tin	- Trace	Nil	Nil	1.11 (v)
Sulphur	- 38.7%	30.3%	24.3%	15.9%

Again the sulphur content is low and since practically no more sulphide rock can be mined without the collapse of about 50 feet of country rock standing in the face above the sulphides it would be uneconomic to attempt sulphur production from this section.

The Hart Hit or Slaughter Yard Face

On the northern side of the Western Dyke this body of sulphides is still pyrite and pyrrhotite replacement of dolomite. The hard massive rock contains numerous fluorite crystals and is a cigar shaped body pitching east. Only comparatively small tonnages would be available for sulphur extraction although the base of the sulphide mass has an appreciable tin content.

Samples show:-

Tin	- Nil	0.71 (v)	1.2 (v)
Sulphur	- 33.3%	24.9%	23.9%

The Pound or Brown Face Workings

The sulphide body here was a very large boat shaped body pitching east. There is still a detached block of pyrite and pyrrhotite standing high in the western side of the large open cut, but it is cut by a horizontal band of dyke rock and apophyses which would make it impractical for extraction for use in the manufacture of sulphuric acid. A further disadvantage is its situation deep in the pound open cut and the difficulty of moving large tonnages through the pound ore passes. Excavations have separated the eastern part of the mass from the harder western block. The eastern masses are composed of very active sulphides, denser pyrite and marcasite. They ignite each summer and in consequence are deeply crusted with iron oxide. This gossanous capping extends well into the body and makes sampling impossible. Because of the extensive workings for tin along the footwall of the sulphide mass it would be difficult to extract large quantities.

The whole mass is resting on timbering which to judge from the sink holes and cracking at the surface is decaying and falling.

Because of the unsuitability of the Pound Sulphide bodies for sulphur production no samples were taken.

The White Face Sulphide Body

The surface of this pyritic body is oxidised and the whole mass is covered with a black reduced pug of FeO and siliceous material. Nevertheless analyses show it to be rich in sulphur except in the odd patches where the material has burnt.

In size it is approximately 300 feet long and 150 feet wide. Prouse reports that an adit driven 75 feet lower intersects the sulphides which means that they persist at least to this depth and possibly lower say a further 50 - 60 feet.

The tonnage in this block then would be:-

$$\frac{75 \times 300 \times 150 \times 62.5 \times 4.8}{2240} = 452{,}000 \text{ tons above}$$

the adit. It is roughly estimated that about ⅓ of it would be mineable giving reserves sufficient for about 5 years work if the rate of extraction is 70,000 tons per year.

Perhaps the reserves could be increased by putting in an adit at a lower level but no sampling of the sulphide has been done at depth where the grade may be poorer.

Before developing this sulphide body it would be necessary to ascertain its depth. Then the best method of extraction would be to drive an adit northwards at the lower level from the Happy Valley Open Cut intersecting the sulphides to give the maximum footage of backs. A rise to the surface could then be fed by blowing material down from the lip.

It is probable that the White Face Sulphide mass contains marcasite. If the content is appreciable serious difficulties with spontaneous combustion during shipping will be encountered. Sampling at the surface will not determine the marcasite content although its presence is indicated by the occurrence of elemental sulphur which is a product of the oxidation of marcasite. The sampling shows comparatively higher sulphur values:-

Tin	-	Trace (V)	Trace (V)	Nil.	Nil.	Nil.
Sulphur	-	48.5%	36.5%	50.8%	40.3%	19.3%

Of all the sulphide masses in the Mt. Bischoff open cut the White Face deposit is the only one which could perhaps be worked for sulphide sulphur. The reserves are not great and the marcasite content may be troublesome, but the grade appears to be better than some of the other pyritic material already on sale in Australia.

GEOLOGIST

Department of Mines,
HOBART

14th November, 1951