

STATE MINING ENGINEER'S OFFICE,

ZEEHAN, April 30th, 1921.

The Acting Secretary for Mines,
Hobart.

Dear Sir,

In pursuance of our instructions, we hereby submit our Report on the No. 6 Argent Mine, Zeehan.

The No. 6 Argent Mine.

Geological:- The area of the No. 6 Argent Mine embraces the contact of the productive slates and the later and unproductive sandstone. There is evidence of great faulting, and the lowering of the sandstone has preserved this younger rock from the excessive denudation which has since taken place over the Zeehan field. The slates in the vicinity of the plane of the movement are soft and the lode formations very open. These conditions favour a heavy water flowage and a deposition of ores. The top portion of the lodes show the effect of leaching, more especially in the South portion of the mine, where, above the 120 feet level, the lodes are filled with leached residual pug and are practically valueless under present conditions. The redeposition of the leached sulphides accounts for the very fine ore-shoots that have been exposed at the 160 feet or deepest mine level. The indications for the extension of this enrichment for 100 or 200 feet in depth are very good, and it is quite reasonable to expect the mine to produce large quantities of high grade ore when worked from deeper levels. It may be anticipated that the other lodes, as well as Nos. 3 and 4 will show improvements when tested below the 120 feet level.

History of the Mine:- The mine was first exploited by tributers, and the lodes they worked still bear their names. The value of the ore extracted by the tributers in that portion of the mine to which it will be advisable to restrict future operations, was, so far as can be ascertained, in the neighbourhood of £6,000.

The Mt. Zeehan (Tas.) Company won another £6,000 worth and the No. 6 Argent Syndicate have obtained ore to the value of approximately £25,000, which brings the total net value of the ore raised to about £37,000.

After the tributers had given up, owing to being unable to cope with the water, the Mt. Zeehan (Tas.) Company sank the present main shaft of 10 ft. by 4 ft. to 127 feet, opening out at 122 feet (known as the 120 feet level). After cutting the principal lodes, and doing some driving and stoping, an accident to the pumping machinery caused the flooding of the mine. The Company then ceased operations.

The No. 6 Argent Syndicate was formed with the chief objective of working out the stopes left by the Mt. Zeehan Tas. Co. up to the tributers old stopes. The first pumping plant erected by the Syndicate was too weak to control the heavy water, so after several months expensive trials and numerous breakages it was pulled out and replaced by the present powerful plant. This unfortunate happening has handicapped the Syndicate right through, their small capital was exhausted and they have never since been able to command sufficient funds to develop and work the mine in a systematic and economical manner.

The work done by the Syndicate, apart from that done by sub-tributers, has been mostly on the No. 3 or Astles' lode. At the 120 feet this level has been extended 60 feet North, and there is now showing 20 inches wide of gossan bulking 25 ounces of silver and 4 per cent lead. Although of no value now, should local smelting be resumed this ore should be of importance. For position see Mark A. on sketch map. The ground above the stopes of the Mt. Zeehan Tas. Company up to the old stopes of the tributors and 40 feet to the North yielded a considerable tonnage of ore. But the prospects, in view of the quantity of water making in the mine and the condition of the metals market, were not good enough to warrant the sinking of the main shaft. So a main winze was sunk to 43 feet and a level (the 160 feet) was opened out at 40 feet. This winze was kept unwatered by a 12 inch draw lift which was worked by a wire rope from the pump in the main shaft. The haulage was done by a man-operated winch, a slow and laborious process. In 19 feet of driving from the winze Astles' or No. 3 lode was cut. It was of fair value, and as the best indications were to the South driving was continued in that direction. The lode opened exceptionally well, being up to 6 feet wide with bands of galena to 2 feet wide. On the occasions of two visits we saw some very fine ore being broken from this lode. At 20 feet from the crosscut a rise was put through at 65 feet. This second rise disclosed that the South part of the 120 feet level had crossed over and had been driven on the hanging wall or No. 4 lode. It was necessary to cuddy 6 feet into the footwall at the 120 ft. level to connect with the rise. The 160 ft. level was driven 120 feet South from the crosscut, good ore being obtained for practically the whole distance. The face at present is not payable but looks promising, and further driving should locate other ore-shoots. We consider that this untried portion of the mine has excellent possibilities.

When stoping from the 160 ft. level it became necessary to obtain filling, so a crosscut, B. on the plan, was driven from the stope, at about 20 feet above the level, to obtain the filling and also to test the No. 4 lode. At 19 feet the lode was cut, and, we were informed, was a fine formation carrying 18 inches wide of galena and 18 inches of second class galena. An assay of the galena gave 59 ounces of silver and 60 per cent lead. As the lode could not be worked from this crosscut it was closed up by the stoping and another crosscut, C on the plan, was driven from the 160 feet level. This cut the lode at 29 feet and at the time of our visit, the day before pumping ceased, was 6 feet into the formation. Bands of clean galena aggregating 18 inches in width, were showing, there were also fair quantities of seconds and milling ore. As the cross-cut was not through the lode a drill hole was put in which, we were told, passed through 12 inches of mixed galena of average quality. There was a good deal of mullock thrown back in the crosscut, and when the hole was fired the drive became filled with a mixture of galena, mullock, and slurry, through the thrown back mullock acting as a dam. This could not be cleaned up in time by the limited hauling appliances before the underground working ceased. An assay of the galena from the crosscut went 115 ounces of silver and 69 per cent lead.

At the 160 feet level going North from the crosscut, the lode (No. 3) has been driven on for 40 feet, and we saw a well-defined formation some 4 feet

wide, mostly carbonate of iron with bunches of galena. Under normal conditions it would be payable, and taking the 120 feet level as a guide better ore will be met with as the drive is extended. A sample of the galena assayed at 104 ounces of silver and 78 per cent lead.

Not only does the 160 feet level show a great advance in the size and galena contents of the lodes when compared with the same lodes at the 120 feet level, but the silver ratio has increased considerably. When driving South on the No. 3 lode at the 160 feet level the parcels of ore won averaged over 100 ounces of silver with 67 per cent of lead.

Past Working: The past working of the mine has been very expensive, caused mainly by the insufficient capital which was furnished for the undertaking, and this was further accentuated by the sustained efforts to unwater the mine with the first plant that was erected. Should the mine re-open an entirely new system of working will be essential, so there is no necessity to traverse the costly expedients of the period that has gone. With the expensive and difficult method of mining, in conjunction with the fall in the prices of metals, a stoppage was inevitable.

Future Working: The most important and responsible deduction that we feel that we are called upon to make deals with the re-opening of the mine.

The main shaft will need to be enlarged and sunk 120 or 140 feet, and a different set of pumps installed. The pumping engine is strong enough and the boiler power may be sufficient; but a new head-frame and alterations to plant will be required. The work of sinking the shaft, driving the crosscut, and putting the mine in thorough working order, means considerable expenditure, and it would be well for any Company which undertakes this development to have available capital to the amount of £10,000.

In a former report on this subject, we stated that, owing to the heavy water, the opening of the mine to a lower level was not justified unless cheap power were obtainable. Since then there have been the remarkable improvements in the No. 3 and No. 4 lodes at the 160 feet level. And as this improvement may extend to the other lodes at the same horizon it is possible for the mine to be very productive at a greater depth.

After earnest consideration we subscribe to the opinion that it is a sound mining speculation to sink the main shaft and open the mine to a deeper level, although necessity compels the use of steam power.

We are, Sir,

Yours faithfully,

(Signed) H. A. VAUDEAU
Inspector of Mines

(Signed) J. H. LEVINGS
Govt. Mining Engineer