4840 0127

(254) Zton 127

# 1914

# Combined Report

of

# The Montana-Tonopah Mines Company

and

# The Commonwealth Mining and Milling Company

# The Montana-Tonopah Mines Co.

REPORT FOR THE PERIOD COMMENCING SEPTEMBER 1, 1913, AND ENDING DECEMBER 31, 1914.

Tonopah, Nevada, February 11, 1915.

In compliance with the Articles of Incorporation, and pursuant to the notice mailed to each stockholder, the Twelfth Annual Stockholders' Meeting of the Company was held at Tonopah, Nevada, February 11, 1915.

There were present at the meeting 524,288 shares of the outstanding capital stock of the Company, represented in person and by proxy.

The following directors were elected for the ensuing year:

HENRY D. MOORE
HUGH H. BROWN
DUDLEY BALDWIN
E. B. WAPLES
J. M. WYNN
THOS. J. LYNCH
A. H. LAWRY
M. E. McCRATE
CHAS. E. KNOX

Tonopah, Nevada, January 1, 1915.

To the Stockholders of
The Montana-Tonopah Mines Company:

The reports of Superintendent Arthur H. Lawry, of The Montana-Tonopah Mines Company, and Superintendent Edgar A. Collins, of the Commonwealth Mining and Milling Company, and financial statements of M. E. McCrate, Secretary-Treasurer of the Montana Company, and F. L. Bryant, Secretary-Treasurer of the Commonwealth Company, are herewith submitted, and you are requested to carefully scrutinize same.

## MONTANA MINE

In spite of the necessity for the mining of smaller ore bodies and narrower veins during the past year, it is gratifying to note a reduction in the total cost of operation of 77c

per ton. This demonstrates a marked improvement in efficiency in all branches of the work, and the heads of all departments are entitled to great credit.

The cessation of milling operations on November 15th last was primarily due to the fact that the small tonnage left in the stopes was quite low grade, and the rapid decline in the price of silver owing to the European war, as stated in the announcement made to the stockholders at the time.

Development work has been carried on in the property aggressively ever since, but the results have not been encouraging. The southern portion of your estate has been exhaustively prospected from the surface to the 765-ft. level, at which point an intrusion of a later formation comes in. In fact, within the boundary lines of 30 acres of your property, 18.42 miles of work have been done, exclusive of stopes, during the 14 years life of your property. This work also includes extensive crosscuts to the north, a distance of 3000 ft. on the 765-ft. level, with some lateral work; a crosscut from the Umatilla shaft to the south, entirely through the property to the property-line of the Golden Crown, and a crosscut to the east from the Umatilla shaft on what is equivalent to the 1300-ft. level of the Montana property. So far the results have been negligible, as none of the ore-bearing formations of the district have been found in these crosscuts.

Owing to the known existence of the Tonopah rhyolite dacite in the southern section of your territory, it is considered useless to explore this region to a greater depth. Therefore, in looking to the future for profitable mining, it appears at the present time that if other ore bodies exist they will be found in the northern part of the property; hence the operation through the Umatilla shaft will be continued indefinitely.

Development work will be continued on the 390- and 665-foot levels, as there is still a limited territory within the boundary lines of the "Lucky Jim" claim unprospected. The expense will be limited to $6,000 per month, or less, but unless ore of a shipping grade is exposed development in the south territory will be discontinued about April first.*

The total production from the "Lucky Jim" and the "Jack Rabbit" claims, approximately 30 acres on the southern end of the property, since August 1902, when operations were begun, amounts to 387,828 tons, for which the sum of $5,086,773.63 was realized.

*All development work in the upper levels of the Montana-Tonopah property was discontinued April 10th.

## COMMONWEALTH MINE

The operating profit of $40,386.09 of the Commonwealth Mining and Milling Company for the past eight months, while not as much as was anticipated at the beginning of the year, should under the existing circumstances be considered almost, if not entirely, satisfactory.

The outbreak of the European war upset all calculations, not only in the mining world but in all business. The silver market was utterly destroyed and for a time it was impossible to dispose of silver at any price, and as stated in Mr. Collins' report milling operations were discontinued entirely for a part of August. Since that time a market has been found for the silver, but the average price, with the exception of a few days in early September, has been persistently below 49c. The few settlements made at the higher price, bringing our average for the period up to $0.5182 per ounce as shown by Mr. Collins' report, does not reflect the real difficulty under which we are operating, and have been for the past five months, with silver below 49c per ounce. The tonnage exposed in the property when purchased was valued at 58½c per ounce, and the lower price of approximately 10c per ounce now being received decreases the operating profit at least $5,000 per month.

The mechanical difficulties encountered in the fall of 1913 and early part of 1914 have been overcome, and the entire plant is now being operated at full capacity and at greatly reduced costs, particularly in milling, as shown by Mr. Collins' report. There are two difficulties, however, which have not been overcome. Owing to the greater amount of silicious ore encountered in the eastern portion of your property, from which the greatest tonnage has been drawn, the capacity of the regrinding department of the mill is not sufficient to enable us to crush the ore to that fineness required to yield an extraction higher than 80 per cent. We also find in portions of the mine an exceptional amount of manganese in the ore, which also tends to a lower extraction. Numerous mill tests have shown conclusively that we cannot expect a higher extraction than 80 per cent without the finer grinding, which will necessitate the addition of tube mills and agitators. At the same time development of the property at depth was necessary, and as there were not sufficient funds in the treasury to carry out both the development work and the additions to the mill it was decided by your board to sink the shaft, and open up the vein on the 800 level, in the hope that a higher grade of ore would be encountered, thus making up for the lower extraction and in the end yielding more

profit than would the lower grade ore with the increased extraction.

"D" shaft has been sunk a total depth of 96 ft. below the 7th level; a crosscut driven to the vein a distance of 130 ft., and the vein has now been drifted on both east and west. The value of the ore has been found as a rule to be about the same as that shown in the drifts above the 700. There is no geological change which would indicate the weakening of the vein, or a change in the character of the ore, and the fact that there are no changes of any kind justifies us in the belief that we may expect further satisfactory development at still greater depth, which is somewhat at variance with opinions expressed by geologists in the employ of the former owners of the property that the values were leached from the water level for a depth of 200 to 300 feet. The drift to the west is now being extended as rapidly as possible to reach "C" shaft (600 feet from "D" shaft), as the better values in the past have been found in the ore shoot at "C" shaft, in the 375 shoot at "B" shaft, 250 feet further west, and the Discovery shoot several hundred feet still further west. The values in the 850 stope at and near "D" shaft have always been low, although the vein in this vicinity is much wider than in the western part of the territory. No stoping has as yet been done below the 6th level. There is now exposed in the west drift on the 800, for a distance of 75 feet, a vein averaging in width 4.7 feet and $10.30 per ton. In the east drift an ore shoot 71 feet long and 5 feet in width, averaging $4.76, has also been exposed (an upraise through this body of ore indicates an improvement in value above the level) and stoping will soon begin on this level. It is hoped that a greater quantity of the higher grade ore will be found as the stope is opened up.

As soon as the west drift on the 800 level reaches "C" shaft it is intended that sinking will be resumed, not only in "C" shaft but in all probability in "D" shaft at the same time.

The Commonwealth vein has been opened for a distance of about 1800 feet on its strike, and the tonnage extracted from the four known ore shoots has all been mined above the water level, 410 feet on incline or 363 feet vertical depth. The favorable development we have made below the water level on the 800 encourages us in the belief that good values will be found in the downward continuation of at least three of the shoots.

The development below the 7th, or water, level, has been necessarily slow and quite expensive, owing to the great amount of water which it has been necessary to handle. The

average flow of water in "B" shaft, which was sunk to a depth of 100 ft. below the 7th level, was 555 gallons per minute, approximately 800,000 gallons per day. As the water is held by the fissure very little was encountered in the sinking of "D" shaft, but when the vein was crosscut, naturally a much greater than the normal amount of water was encountered. It has therefore been necessary to pump approximately 1350 gallons per minute, and an excess quantity will have to be pumped until the water is lowered to the normal level of the 800 station. At the present writing there are at least 25 feet of water still above us. We anticipate that the normal flow of water will not exceed 800 gallons per minute, which can be very readily handled by our pumps which have a total capacity of 1650 gallons.

We are also of the opinion that the sinking cost will be greatly reduced on the next lift in the shaft, or shafts, and that much more rapid progress will be made than has been from the 700 to the 800.

It will be seen in the financial statement that none of the bonds outstanding against the Commonwealth Compay have been retired, nor have any of the funds advanced by the Montana-Tonopah Company been repaid.

It is hoped that during the coming year, even though there is little or no improvement in the price of silver, that the better grade of ore expected in the vicinity of "B" and "C" shafts will raise values to such an extent that our profits will be greatly increased, and that a goodly portion of the bonds will be retired.

Respectfully submitted,

CHAS. E. KNOX,

President and General Manager.

---

To the President, Board of Directors and Stockholders of
The Montana-Tonopah Mines Company.

Gentlemen:

I herewith present my report on operations at your property during the period commencing September 1st, 1913, and ending December 31st, 1914.

Both mine and mill were operated continuously, except for holidays, stoppage of power and general repairs, until November 15th, 1914, on which date all operations, except mine development, were suspended on account of the grade

of the ore and the price of silver, which declined from an average price of $0.5729 per ounce during the first six months of 1914 to an average price of $0.5027 per ounce during the period July 1st to October 31st, 1914.

On August 3rd, 1914, your Company and the Tonopah Midway Mining Company entered into an agreement which allows your Company to extract ore from and carry on general mining operations in the old workings of the eastern portion of the Midway Company's property, for a period of three years. Under the terms of this agreement, the Tonopah Midway Company will receive 50 per cent of the profit on all ore mined and milled, after deducting the amount of metal losses in treatment, up to 10 per cent, and $8.50 per ton for operating expenses.

As it appeared that there was a considerable tonnage of ore in these workings of the Midway mine of a grade sufficient to afford a small profit per ton to your Company on these conditions, and that certain portions of the territory covered by the lease offered possibilities of good results from further development, and as it appeared also that the amount of profitable ore at the time available in your property was not sufficient to allow of the mill being worked at full capacity for more than a few weeks, it was decided to commence active operations under the lease without delay.

As shown by the following table, 63,551.43 tons of ore, having a gross value of $8.793 per ton, were mined and milled at a total cost, exclusive of depreciation, of $7.784 per ton. Of this, the Midway lease produced 8,121.74 tons, of a gross value of $5.84 per ton. In addition, 203.12 tons of custom ore were treated in the mill, of which 20.75 tons, having a gross value of $25.82 per ton, were produced by a leaser to whom your Company had granted a lease on the various mine dumps. The amount of profit realized from this lease and the treatment of custom ore was $532.56.

In the preceding annual report it was stated that an agreement had been made with the Umatilla-Tonopah Mining Company, which would enable your Company to prospect its northwestern claims at a depth of 1300 feet. During the past 16 months 1890 feet of crosscutting and raising have been completed under a continuation of this arrangement, at a total cost of $14,130.88.

Exclusive of this work, and during the same period, a total of 11,793 feet of development work has been accomplished, of which 1228 feet were driven in the Midway lease.

From November 15th, 1914, to December 31st, 1914, after milling operations were discontinued, a total of 926 feet of

development has been completed, at a cost of $8,366.36, including watchman and general upkeep of the plant.

The following table shows the production, cost of operation and total profits:

## OPERATING STATEMENT

September 1, 1913, to November 15, 1914.

| | Tons. | Total Value. | Per Ton. |
|---|---|---|---|
| Mined and Milled | 63,551.43 | $570,242.71 | $8.793 |
| Custom Ore Milled | 203.12 | 2,946.96 | 14.508 |
| Total Ore Milled | 63,754.55 | $573,189.67 | $8.991 |
| Loss in Tailings | 63,411.29 | 38,269.51 | .603 |
| REALIZED FROM ORE | | $534,920.16 | $8.388 |

| DIRECT COSTS: | Total Amount. | Per Ton. | | |
|---|---|---|---|---|
| Mining | $151,096.52 | $2.377 | | |
| Development | 76,729.63 | 1.207 | | |
| Milling | 174,283.41 | 2.734 | | |
| General Expense | 27,357.34 | .429 | | |
| Maintenance | 11,812.69 | .185 | | |
| Marketing: | | | | |
| Bullion | $ 7,855.03 | | | |
| Concentrates | 13,619.70 | 21,474.73 | .337 | 462,754.32 | 7.269 |
| DIRECT REALIZATION | | | | $ 72,165.84 | $1.119 |
| Realized from Ore | | | | $534,920.16 | $8.388 |
| Realized from Miscellaneous Sources | | | | 10,538.41 | .165 |
| TOTAL REALIZATION | | | | $545,458.57 | $8.553 |
| Direct Costs | | $462,754.32 | | | |
| Indirect Costs | | 33,494.36 | | 496,248.68 | 7.784 |
| | | | | $ 49,209.89 | $0.769 |
| Settlements on Custom Ore | | | | 1,472.44 | .023 |
| NET REALIZATION | | | | $47,737.45 | $0.746 |

Referring to the last annual report it will be seen that the gross value of the ore mined and milled during the past 16 months shows a decrease of $3.91 per ton, and the total cost per ton, exclusive of depreciation, shows a reduction of $0.767 per ton.

## MINING

The following table, compared with that of the preceding report, shows a decrease in the cost of mining of $0.24 per ton. This is due mainly to the reduced cost of ore breaking, timbering and tramming and shoveling. The cost of hoisting and dumping shows a slight increase, attributable to the considerably greater tonnage of ore and waste hoisted from the 765-foot level.

## MINING COSTS

Details for the period September 1, 1913, to November 15, 1914. 63,551.43 Tons Mined.

| | Labor. | Supplies. | Power. | Total. | Average Cost Per Ton. |
|---|---|---|---|---|---|
| Ore Breaking | $ 22,788.00 | $10,601.17 | ..... | $ 33,389.17 | $0.526 |
| Tramming & Shoveling | 42,932.50 | 276.71 | ..... | 43,209.21 | .680 |
| Timbering | 13,318.47 | 11,177.85 | ..... | 24,496.32 | .386 |
| Hoisting & Dumping | 16,491.72 | 3,482.72 | 7,149.72 | 27,124.16 | .427 |
| Foreman & Bosses. | 4,037.15 | ..... | ..... | 4,037.15 | .063 |
| Assaying & Sampling | 2,051.19 | 176.86 | ..... | 2,228.05 | .035 |
| Tool Sharpening | 2,441.60 | 101.81 | ..... | 2,543.41 | .040 |
| Mine Machine | 436.39 | 206.23 | ..... | 642.62 | .010 |
| Surveying | 1,306.19 | 35.98 | ..... | 1,342.17 | .021 |
| General Expense | 6,910.80 | ..... | ..... | 6,910.80 | .108 |
| Compressed Air | ..... | ..... | 5,173.46 | 5,173.46 | .081 |
| Total | $112,714.01 | $26,059.33 | $12,323.18 | $151,096.52 | $2.377 |
| Average Per Ton | 1.773 | .41 | .194 | 2.377 | |

The following statements show the tonnage of ore and waste hoisted by months, with the distribution of the same credited to the different levels:

## STATEMENT OF HOISTING OPERATIONS

| Month: | .79 Ton Per Car. Tons Ore. | .75 Ton Per Car. Tons Waste. | Total Tons Hoisted. |
|---|---|---|---|
| September 1913 | 4,495.36 | 1,086.75 | 5,582.11 |
| October 1913 | 4,878.30 | 1,583.25 | 6,461.55 |
| November 1913 | 4,959.64 | 832.50 | 5,792.14 |
| December 1913 | 4,581.33 | 930.00 | 5,511.33 |
| January 1914 | 4,874.05 | 771.75 | 5,645.80 |
| February 1914 | 4,449.03 | 608.25 | 5,057.28 |
| March 1914 | 4,514.76 | 382.50 | 4,897.26 |
| April 1914 | 4,162.23 | 687.00 | 4,849.23 |
| May 1914 | 3,455.29 | 522.75 | 3,978.04 |
| June 1914 | 4,507.89 | 438.75 | 4,946.64 |
| July 1914 | 4,576.14 | 129.75 | 4,705.89 |
| August 1914 | 3,813.31 | 123.75 | 3,937.06 |
| September 1914 | 3,751.69 | 723.00 | 4,474.69 |
| October 1914 | 4,207.80 | 1,082.25 | 5,290.05 |
| November 1914 | 2,324.61 | 1,082.25 | 3,406.86 |
| December 1914 | 272.00 | 1,496.25 | 1,768.25 |
| | 63,823.43 | 12,480.75 | 76,304.18 |

## DISTRIBUTION OF ORE AND WASTE

From September 1, 1913, to December 31, 1914.

### MONTANA MINE

| | .79 Ton Per Car. Tons Ore. | .75 Ton Per Car. Tons Waste. | Total Tons Hoisted. |
|---|---|---|---|
| Intermediate Level (70') | 11.87 | ..... | 11.87 |
| First Level (396') | 2,381.48 | 991.50 | 3,372.98 |
| Second Level (462') | 10,668.45 | 516.75 | 11,185.20 |
| Third Level (515') | 2,310.27 | ..... | 2,310.27 |
| Fourth Level (615') | 19,475.27 | 4,221.00 | 23,696.27 |
| Fifth Level (765') | 20,854.85 | 4,711.50 | 25,565.85 |
| Total | 55,701.69 | 10,440.75 | 66,142.44 |

## MIDWAY MINE

From August 10, 1914, to December 31, 1914.

| | .8 Ton Per Car. Tons Ore. | .75 Ton Per Car. Tons Waste. | Total Tons Hoisted. |
|---|---|---|---|
| First Level (396') ..... | 418.73 | 1,740.00 | 2,158.73 |
| Second Level (462') ..... | 2,541.37 | 27.00 | 2,568.37 |
| Third Level (515') ..... | 1,467.97 | ..... | 1,467.97 |
| Fourth Level (615') ..... | 1,021.86 | 272.25 | 1,294.11 |
| Fifth Level (765') ..... | 2,671.81 | .75 | 2,672.56 |
| Total ..... | 8,121.74 | 2,040.00 | 10,161.74 |

The amount of waste hoisted during this period is 4347 tons less than that hoisted during the previous twelve months, due to the fact that wherever possible the waste was used as filling in the stopes.

The amount of ore produced from development was 4986 tons, as compared with 3965 tons for the fiscal year ending August 31st, 1914.

### DEVELOPMENT

The total amount of development work done during the past 16 months, in both the Montana and Midway mines, together with that done under the arrangement with the Umatilla Company, shows a total of 13,683 feet, as compared with 10,366 feet during the previous 12 months. This was accomplished at a total cost of $99,226.87, or $7.25 per foot.

In the Montana, the most important discoveries made were in the MacDonald vein on the 765-foot level, and in the ABK vein on the 565-foot level.

In the Midway lease no new veins or bodies of ore of any consequence were found.

In the Umatilla the long south crosscut has been driven from a point 214 feet from the shaft to the south boundary of the "Little Tonopah No. 1" claim, but no veins or encouraging indications were found, due to the later geological formations through which the crosscut passed.

The following is a statement showing the cost of development:

## DEVELOPMENT COSTS

Details for the period September 1, 1913 to November 15, 1914. 63,551.43 Tons Mined.

| | Labor. | Supplies. | Power. | Total. | Avg. Cost Per Ton. | Avg. Cost Per Foot. |
|---|---|---|---|---|---|---|
| Breaking | $19,004.80 | $12,369.84 | ..... | $31,374.64 | $0.493 | $2.888 |
| Tramming & Shoveling | 18,279.50 | 192.89 | ..... | 18,472.39 | .291 | 1.700 |
| Timbering | 3,151.83 | 684.80 | ..... | 3,836.63 | .061 | .353 |
| Hoisting & Dumping | 6,300.38 | 766.77 | 1,639.05 | 8,706.20 | .137 | .801 |
| Foreman & Bosses | 3,659.10 | ..... | ..... | 3,659.10 | .058 | .337 |
| Assaying & Sampling | 1,850.14 | 176.85 | ..... | 2,026.99 | .032 | .187 |
| Tool Sharpening | 2,049.30 | 106.40 | ..... | 2,155.70 | .034 | .198 |
| Mine Machines | 249.90 | 550.17 | ..... | 800.07 | .013 | .074 |
| Surveying | 1,100.19 | 24.99 | ..... | 1,125.18 | .017 | .103 |
| General Expense | 1,176.45 | ..... | ..... | 1,176.45 | .018 | .109 |
| Compressed Air | ..... | ..... | 3,396.28 | 3,396.28 | .053 | .313 |
| Total | $56,821.59 | $14,872.71 | $5,035.33 | $76,729.63 | $1.207 | $7.063 |
| Average per ton | .894 | .234 | .079 | ..... | 1.207 | ..... |
| Average per foot | 5.231 | 1.369 | .463 | ..... | ..... | 7.063 |

This statement covers all costs in connection with the development work done in the Montana and Midway mines, but does not include cost of work done from the Umatilla shaft. It will be noticed that this cost is $7.063 as compared with $7.25, the total cost per foot for all development including the Umatilla work.

The following is a statement showing the distribution of development work to the various levels:

## DISTRIBUTION OF DEVELOPMENT WORK

### MONTANA MINE

For the period September 1, 1913, to December 31, 1914.

| | Drifting and Crosscutting. (Feet) | Raising. (Feet) | Sinking. (Feet) | Total. (Feet) |
|---|---|---|---|---|
| Intermediate | 120 | ... | ... | 120 |
| 1st Level | 295 | 192 | 54 | 541 |
| Intermediate | 8 | .... | ... | 8 |
| 2nd Level | 837 | 151 | 63 | 1,051 |
| Intermediate | 194 | ... | ... | 194 |
| 3rd Level | 989 | 67 | 52 | 1,108 |
| Intermediate | 1,156 | 43 | ... | 1,199 |
| 4th Level | 1,486 | 121 | ... | 1,607 |
| Intermediate | 2,771 | 207 | 40 | 3,018 |
| 5th Level | 563 | 270 | 62 | 895 |
| Inter 6 | 749 | .... | 75 | 824 |
| | 9,168 | 1,051 | 346 | 10,565 |

### MIDWAY MINE

For the period August 10, 1914, to December 31, 1914.

| | Drifting and Crosscutting. (Feet) | Raising. (Feet) | Total. (Feet) |
|---|---|---|---|
| Intermediate | 352 | 67 | 419 |
| 1st Level | 100 | .. | 100 |
| Intermediate | 221 | .. | 221 |
| 2nd Level | 9 | .. | 9 |
| Intermediate | 69 | .. | 69 |
| 4th Level | 244 | .. | 244 |
| 5th Level | 118 | .. | 118 |
| Inter 6 | 48 | .. | 48 |
| | 1,161 | 67 | 1,228 |

The average cost per foot for this work, exclusive of compressed air, hoisting and general charges, as compared with the preceding 12 months, is as follows:

| | | Period Sept. 1, 1913, to Dec. 31, 1914. | Fiscal Year 1912-1913. |
|---|---|---|---|
| Drifting | 3,951 ft. | $4.73 per ft. | $5.29 per ft. |
| Crosscutting | 6,378 ft. | 4.75 per ft. | 4.42 per ft. |
| Raising | 1,118 ft. | 4.57 per ft. | 4.26 per ft. |
| Sinking | 346 ft. | 8.26 per ft. | 16.29 per ft. |
| | 11,793 ft. | Avg. $4.83 per ft. | Avg. $4.86 per ft. |

The increase in cost of crosscutting is due to the fact that considerably more of this work was done on intermediate levels than during the previous 12 months.

The higher cost for raising is due to the greater amount of timbering required.

## DESCRIPTION OF DEVELOPMENT WORK

On the 1st intermediate level (333 feet) in the Montana all the work done was confined to the development of the "MacDonald" and "Shaft" veins. No discoveries of importance resulted from this work, and only a small amount of fair grade ore was found in the "MacDonald" vein below the level.

In the Midway lease on this same level the work consisted of following the continuation of the "MacDonald" vein and the exploration of its walls.

Although some very encouraging indications were found on this level in both properties, no important development was made.

On the 1st level (396 feet) Montana, a considerable amount of exploratory work was carried on in the foot wall of the "MacDonald" vein in a search for the upward continuation of the "South" vein, but the results of this work indicate that it does not reach this level.

In the preceding report it was mentioned that to the southeast of the shaft a vein had been found which appeared at the time to be a continuation of the "Shaft" vein. The work that has since been done, however, has proved it to be of little value, and the indications are that it is an isolated section of the Mizpah Fault vein, which in your property has generally been found to be very much broken and low grade.

Further development of the "MacDonald" vein has been carried on to the west, but nothing of value was found.

Work in the Midway on this level consisted of crosscutting into the foot wall of the "Triangle" vein.

On the 2nd level (462 feet) Montana, work on the "Martha" vein to the west resulted in the discovery of a small body of good ore. In the "MacDonald," "Triangle" and "South" veins several small bodies of good ore were found.

From the "Martha" vein crosscutting into the hanging wall was extended into the Midway property, for the purpose of exploring the ground between the "Martha and "Triangle" veins.

On the 3rd level (515 feet) Montana, the work done consisted mainly of opening up extensions of the different veins and their branches, and crosscutting into their walls, but with the exception of the discovery of a few small bodies of ore no results of any consequence were obtained.

On the 2nd main level of the Midway mine, 20 feet above the 515-foot level of the Montana, nothing was done but stoping on the "MacDonald" vein, and a branch of the "Martha" vein.

On the 565-foot intermediate level, Montana, a foot wall branch of the ABK vein, north of the "MacDonald" vein, was found, from which a considerable tonnage of good ore has been mined. Although this ore was cut off by a fault a short distance above the level, it was found to continue down to the 700-foot intermediate level. A considerable amount of work was done on the 515-foot level in an effort to find the upward continuation of the vein above the fault, but without result.

A small amount of ore was also found in both the "MacDonald" and "Martha" veins.

In the Midway, on a corresponding level, all operations, with the exception of a small amount of crosscutting, were confined to stoping small bodies of low-grade ore from the "MacDonald" veins.

On the 4th level (615 feet) Montana, a considerable amount of work was done in opening up the foot wall branch of the ABK vein, and in crosscutting into its wall. Also extensive prospecting of both foot and hanging walls of the "MacDonald" veins at different points was carried on without any important results.

In addition to the ore found in the ABK vein, several small bodies of good ore were found in the "MacDonald" and "Martha" veins above the level.

From the stope on the "South" vein, mentioned in the previous report, a considerable amount of good ore was extracted, carrying a higher proportion of gold than usual. This stope was carried up to within a few feet of the 565-foot intermediate level, where it was cut off by a fault.

From the western end of the "Martha" vein a crosscut south was driven into the Midway ground, to search for the downward continuation of the different branches of the "Martha" vein opened up on the upper levels of the mine.

From the result of this crosscut it is evident that these veins do not continue to this level.

Other work in the Midway mine on this level consisted of stoping on the "MacDonald" vein, from which only a small tonnage of low-grade ore was produced.

On the 665-foot and 700-foot intermediate levels, Montana, a large amount of development work has been done on the "MacDonald" and "ABK" veins, and in prospecting for branches and extensions of these veins.

The downward continuation of the foot wall branch of the "ABK" vein mentioned above was found on both these levels, but does not appear to go below the 700-foot level, as all efforts to prove the continuity of the ore below this level resulted in finding only a small and broken vein of low-grade quartz.

On the 665-foot level, to the west, a faulted section of the "MacDonald" vein has been found near the western boundary of the property, from which a small tonnage of good ore is being extracted. A crosscut is now being run on the 700-foot intermediate level, to pick up the downward continuation of the ore.

Development of the "MacDonald" vein on the 700-foot level has resulted in proving the upward continuation of the ore found on the 765-foot level, and a large tonnage of ore, containing a higher proportion of gold than usual, has been extracted from this portion of the vein up to the 4th level.

On the 530-foot level, Midway, exploration of the territory to the southwest of the shaft was carried on, without any encouraging results.

From the Midway vein, south of the shaft, some low-grade ore was mined, both above and below the level.

On the 5th level (765 feet) Montana, only a small amount of development was done, owing to the fact that the geological formations so far found on this level, with the exception of a block of trachyte to the east and a small amount of West End rhyolite, consist of the later intrusive rocks in which no ore has yet been found.

From the west drift on the "Macdonald" vein a stope was started on low-grade ore, but as the work progressed a general improvement in the grade and width of the ore was found, and resulted in the opening up of a large body of ore, which continued up to the 615-foot level. During the past 16 months a large tonnage of ore has been extracted from this stope, and it has been the main source of ore supply for the last 12 months.

This portion of the vein was also explored below the level by means of a winze, and was found to continue to a depth

of 40 feet below the level, where it was cut off by one of the later formations, viz.: the Montana breccia. Although sinking was continued to a depth of 90 feet, and crosscuts were run at this depth in the hope that the vein might be found below the breccia, the results of this work were very disappointing.

In the last report it was stated that a vertical winze had been sunk in the northeast corner of the "Lucky Jim" claim, in which some small stringers, carrying high values, had been found. During the past 16 months a considerable amount of work has been done in following up these stringers, and in general exploratory work, but nothing of value was found.

As previously stated in this report, 1890 feet of crosscutting and raising have been completed on the 1200-foot level of the Umatilla mine, under an arrangement which has enabled your Company to explore the "Little Tonopah No. 1" claim at a depth of 1300 feet below the collar of the main Montana shaft. Of this amount 1627 feet have been driven in the "Little Tonopah No. 1" claim, and 263 feet in the "Jim Crow No. 2" claim of the Umatilla property. The whole of this work was done in the later geological formations, and no veins or indications of veins were found.

In order to more thoroughly prospect the northern claims of your property, it is the intention at this time to make further arrangements with the Umatilla Company, under which we would be permitted to drive an east crosscut into our "Afterall" claim from the present north crosscut of the Umatilla workings on the 1200-foot level.

## MILLING

The results of milling operations, as compared with those of the previous 12 months, show a decided general improvement, and, in fact, are more satisfactory than at any time in the history of the Company.

The mill was in continuous operation, except for minor shut downs, until November 17th, when all milling operations were suspended in accordance with the resolution adopted by the board of directors of your Company on November 13th, 1914.

During this period 63,754.55 tons of ore were treated, containing .137 ozs. gold and 10.965 ozs. silver per ton, equivalent to a value of $8.99 per ton. The average daily tonnage was 150.4 tons, and the number of days continuous operation was 423.9.

The average price of silver received on all shipments of bullion and concentrate was $0.5594 per ounce, estimating a

value of $0.50 per ounce for 26,546.02 ounces of silver which are still in storage and unsettled for.

As compared with the previous 12 months, this price of silver shows a decrease of $0.0521 per ounce.

The following table shows the production of bullion and concentrate, together with the extraction obtained:

| RECOVERY AND LOSSES: | Ozs. Gold. | Ozs. Silver. | Total Value. |
|---|---|---|---|
| 343.26 Tons Concentrate ..... | 2736.8627 | 124,355.11 | $127,072.18 |
| 576,475.7 Ounces Bullion ..... | 5661.9250 | 520,436.75 | 407,847.98 |
| Total Value Recovered ..... | 8398.7877 | 644,791.86 | $534,920.16 |
| 63,411.29 Tons Tailings ..... | 375.0468 | 54,280.08 | 38,269.51 |
| Gross Value of Ore Milled..... | 8773.8345 | 699,071.94 | $573,189.67 |
| Gross Value of Custom Ore.... | 40.1549 | 3,844.97 | 2,946.96 |
| Gross Value of Ore Mined..... | 8733.6796 | 695,226.97 | $570,242.71 |
| EXTRACTION: | Per Cent Gold. | Per Cent Silver. | Total Per Cent. |
| By Concentration ..... | 31.2 | 17.8 | 22.2 |
| By Cyanidation ..... | 64.5 | 74.4 | 71.1 |
| Total Extraction ..... | 95.7 | 92.2 | 93.3 |

These figures compared with those of the preceding report shown an increase in the total extraction of 2.1 per cent. It will be noted also that while there was a decrease in the percentage of recovery by concentration, there was a decided increase in the recovery by cyanidation. This is due to the lower grade of the ore.

## MILLING COSTS

63,754.55 Tons Milled in the Period September 1, 1913, to November 15, 1914.

| Account | Labor Cost | Per Ton | Supplies Cost | Per Ton | Power Cost | Per Ton | Total Cost | Per Ton |
|---|---|---|---|---|---|---|---|---|
| Crushing and Conveying | $ 4,995.06 | .079 | 1,343.67 | .021 | 1,231.98 | .019 | 7,570.71 | .119 |
| Stamping | 4,527.10 | .074 | 3,559.00 | .054 | 9,420.94 | .147 | 17,507.04 | .275 |
| Elevating and Separating | 2,338.79 | .036 | 740.72 | .011 | 1,884.21 | .031 | 4,963.72 | .073 |
| Tube Milling | 2,472.96 | .039 | 6,605.01 | .103 | 8,768.72 | .138 | 17,846.69 | .280 |
| Concentrating | 2,729.54 | .043 | 383.94 | .006 | 471.05 | .007 | 3,584.53 | .056 |
| Settling | 1,695.81 | .026 | 4,147.06 | .065 | ..... | ... | 5,842.87 | .091 |
| Agitating | 8,192.34 | .129 | 34,359.72 | .539 | 6,630.89 | .104 | 49,182.95 | .772 |
| Filtering and Discharging | 5,572.64 | .087 | 3,367.95 | .053 | 5,145.29 | .081 | 14,085.88 | .221 |
| Precipitating | 2,540.20 | .039 | 4,815.28 | .076 | 1,811.71 | .029 | 9,167.19 | .144 |
| Refining | 1,764.51 | .028 | 2,744.57 | .043 | ..... | ... | 4,509.08 | .071 |
| Water Pumping | 1,657.72 | .026 | 191.84 | .003 | 869.65 | .013 | 2,719.21 | .042 |
| Steam Heating | 3,807.17 | .060 | 11,675.01 | .183 | ..... | ... | 15,482.18 | .243 |
| Mechanical Department | 1,675.00 | .027 | 180.77 | .002 | ..... | ... | 1,855.77 | .029 |
| Water | ..... | ... | 15,614.57 | .245 | ..... | ... | 15,614.57 | .245 |
| Assaying | 967.68 | .016 | 183.34 | .002 | ..... | ... | 1,151.02 | .018 |
| Superintendence | 3,200.00 | .050 | ..... | ... | ..... | ... | 3,200.00 | .050 |
| Total | $48,136.52 | .759 | $89,912.45 | $1.406 | $36,234.44 | .569 | $174,283.41 | $2.734 |

The total cost of milling shows a decrease of $0.387 per ton, due mainly to the cost of supplies. The cost of labor also is slightly less, while the cost for power is a little higher.

The reduction in the cost of supplies is mainly due to the much smaller consumption of cyanide, which was 2.08 lbs. per ton of ore milled, as against 3.22 lbs. per ton for the preceding 12 months. This is attributed to the increased efficiency in the cyanide plant and to the lower grade of the ore treated.

The cost of marketing bullion and concentrate for this period shows a reduction of $0.124 per ton of ore milled, owing to the fact that a much smaller proportion of the mill product recovered was in the form of concentrate than previously.

During the year an improvement in the method of filtering the slime from the mill was made by the adoption of the Osgood Filter, which was designed and perfected by Mr. Chas. G. Osgood, our

mill superintendent. The filter has been in continuous service since the end of May, 1914, when it was installed at small expense and without interfering with the operation of the mill to any great extent.

During the five months that the filter was in operation it handled the entire tonnage of slime from the mill very satisfactorily, and consequently results in this department have shown a greater efficiency and economy than previously.

I wish to express appreciation of the loyal support and services rendered by those in charge of the various departments, to whom much credit is due for the improved results of operations obtained during this period.

Respectfully submitted,

ARTHUR H. LAWRY,

General Superintendent.

# The Commonwealth Mining and Milling Company

(Incorporated Under the Laws of Arizona)

---

AUTHORIZED CAPITAL STOCK 2,000,000 SHARES
ALL ISSUED

---

**DIRECTORS**

A. Y. SMITH — W. H. CLARK
F. L. BRYANT — E. A. COLLINS
CHAS. E. KNOX

---

**OFFICERS**

CHAS. E. KNOX.....President and General Manager
A. Y. SMITH.....Vice-President
F. L. BRYANT.....Secretary-Treasurer
EDGAR A. COLLINS, General Superintendent

---

The President, Board of Directors and Stockholders of
The Commonwealth Mining and Milling Company.

Gentlemen:

I herewith submit my report of operations at your property for the eight months from May 1st to December 31st, 1914.

Our fiscal year formerly ended on April 30th, but as all State and Federal tax statements require returns for the calendar year, it was deemed advisable to change the ending of the fiscal year to conform to the calendar year. The period in question was one of active and continuous operation at

your property with the exception of some 12 days in August. During this period the silver market was thoroughly demoralized and, as a result, it was impossible to dispose of our bullion in the usual way. Not having a cash reserve, we were forced to shut down the mine and mill temporarily and operations were confined to special development work.

The following statements give details of production and cost during the eight months in question, and will be referred to in order:

## RECEIPTS AND EXPENDITURES

May 1st to December 31st, 1914

| | | | | Tons. | Gross Val. | Per Ton. | Previous Period |
|---|---|---|---|---|---|---|---|
| RECEIPTS: | | | | | | | |
| Tons Ore Milled | | | | 70,650 | $365,109.50 | $5.167 | $5.571 |
| Loss in Tailings | | | | | 72,642.91 | 1.028 | 1.420 |
| Realized from Ore | | | | | $292,466.59 | $4.139 | $4.151 |
| Miscellaneous Earnings | | | | | 6,807.43 | .096 | .096 |
| Total Receipts | | | | | $299,274.02 | $4.235 | $4.242 |
| EXPENDITURES: | | | | | | | |
| Direct Costs: | | Total | Per Ton. | Previous Period | | | |
| Mining | | $ 67,433.45 | $ .954 | $ .944 | | | |
| Development | | 16,621.17 | .235 | .303 | | | |
| Milling | | 132,726.06 | 1.879 | 2.168 | | | |
| Maintenance | | 6,369.80 | .090 | .104 | | | |
| General Expense | | 10,716.37 | .152 | .080 | | | |
| Marketing | | 6,164.54 | .087 | .174 | | | |
| Total Direct | | $240,031.39 | $3.397 | $3.774 | | | |
| Indirect Costs: | | | | | | | |
| Fire Ins. & Watchman | | $ 3,778.44 | $ .054 | $ .063 | | | |
| Insurance Liability. | | 4,681.48 | .066 | .068 | | | |
| Taxes | | 375.20 | .005 | .003 | | | |
| Water | | 252.50 | .003 | .008 | | | |
| Legal Expense | | 510.71 | .007 | .008 | | | |
| Safety & Fire | | 54.97 | .001 | .006 | | | |
| Miscellaneous | | | | .012 | | | |
| Mill Testing (Experimental) | | 171.38 | .002 | .020 | | | |
| Mine Water Pump'g | | 9,031.86 | .128 | | | | |
| Total Indirect | | $ 18,856.54 | $ .266 | $ .207 | | | |
| Direct | | $240,031.39 | $3.397 | | $258,887.93 | $3.663 | $3.981 |
| Indirect | | 18,856.54 | .266 | | | | |
| Profit on Operations | | | | | $ 40,386.09 | $ .572 | $ .261 |
| CAPITAL EXPENDITURE: | | | | | | | |
| Property (Shaft Sinking, Station Cutting & Assessm't Work) | | $ 14,671.48 | $ .208 | | | | |
| Construction: | | | | | | | |
| Surface Plant | | 1,775.49) | | | | | |
| U. G. Plant | | 10,245.42) | .170 | | $ 26,692.39 | $ .378 | |
| INTEREST—(Including Bond Interest) | | | | | 18,735.57 | .265 | |
| | | | | | $ 45,427.96 | $ .643 | |
| Total Expenditures | | | | | $304,315.89 | $4.306 | |
| Deficit | | | | | $ 5,041.87 | $ .071 | |

This shows that a total of 70,650 tons of ore was mined and milled at a profit of $40,386.09. The gross value of the ore was a little lower than for the preceding period, but the loss in tailing was also less, and the amount realized per ton was practically the same.

The decrease in the grade of ore sent to the mill was due to the lower price received for the silver contents. The average price received during the period was 51.82 cents per oz., as compared with an average price of 58.01 cents during the previous six months. Had we received the same price for our silver, the profits would have been increased to the extent of $24,000, or more than 50 per cent.

The total expenses show a considerable reduction in spite of the fact that there was an expense for mine pumping during the last four months which did not appear before. At the present time this pumping expense amounts to $2800 per month, equivalent to a charge of approximately 28c per ton.

The principal reduction in the direct costs was in the milling department. This was partly due to a lower consumption of cyanide, but also to a general improvement in conditions, which made it possible to treat a larger tonnage. The indirect costs per ton all show a considerable reduction, due to the increased tonnage which was milled.

Capital expenditure amounted to $26,692.00, while interest on bonds and notes amounted to a further $18,735.00. Together they rather more than wiped out the operating profit.

## HOISTING OPERATIONS

May to December, 1914, Inclusive

| | Tons Ore. | Tons Waste | Total. |
|---|---|---|---|
| May | 8,976 | 825 | 9,801 |
| June | 9,025 | 714 | 9,739 |
| July | 9,509 | 1,220 | 10,729 |
| August | 6,159 | 1,225 | 7,384 |
| September | 8,933 | 713 | 9,646 |
| October | 9,212 | 428 | 9,640 |
| November | 9,458 | 536 | 9,994 |
| December | 9,504 | 882 | 10,386 |
| Total | 70,776 | 6,543 | 77,319 |

Neglecting the month of August, this shows an average tonnage of 302 tons ore and 25 tons waste per day. The remainder of the waste broken from development work was disposed of underground. This ore was produced as follows:

Stopes, 67,854 tons; development, 2,400 tons; mill dump, 522 tons.

## DEVELOPMENT RECORD

May to December, 1914, Inclusive

| MONTH: | Feet Drifted | Feet Xcut | Feet Raises | Feet Winzes | Feet Shaft | Total Feet | Drift or Xc. in Ore | Station Cutting Cu. Ft. |
|---|---|---|---|---|---|---|---|---|
| May | 136 | 48 | 115 | .. | 36 | 335 | 8′ | ..... |
| June | 113 | 10 | 90 | .. | 36 | 249 | 39′ | ..... |
| July | 140 | 62 | 171 | .. | .. | 373 | 40′ | 9,357 |
| August | ... | 142 | 89 | .. | .. | 231 | .. | 8,640 |
| September | 115 | 195 | 87 | .. | .. | 397 | 17′ | ..... |
| October | 172 | 118 | 138 | 16 | .. | 444 | 99′ | ..... |
| November | 234 | 104 | 131 | .. | .. | 469 | 76′ | ..... |
| December | ... | 224 | 203 | .. | 24 | 451 | 3′ | ..... |
| Total | 910 | 303 | 1,024 | 16 | 36 | 2,949 | 282′ | 17,997 |

| | Cost Per Foot | Previous Period |
|---|---|---|
| Drifting | $ 5.36 | $ 4.87 |
| Crosscutting | 5.79 | 4.58 |
| Raising | 3.27 | 3.09 |
| Winze Sinking | 9.17 | ... |
| Shaft Sinking | 82.75 | 42.98 |
| Station Cutting | .32 cu. ft | |

## COST OF SINKING SHAFT FROM 410 TO 499 FEET

| | Labor | Supplies | Total | Per Ft. | Previous Period |
|---|---|---|---|---|---|
| Breaking | $2,348.28 | $ 689.91 | $3,038.19 | $31.65 | $12.64 |
| Mucking | 1,521.79 | ..... | 1,521.79 | 15.85 | 2.44 |
| Timbering | 1,163.85 | 672.86 | 1,836.71 | 19.13 | 27.00 |
| Miscellaneous | 387.93 | 447.88 | 835.81 | 8.71 | .40 |
| Compressed Air | ..... | 711.49 | 711.49 | 7.41 | .... |
| Total | | | $7,943.99 | $82.75 | $42.98 |

A total of 2,949 feet of work was done, of which 282 feet was driven or crosscut in ore. The total includes sinking the main shaft a distance of 96 feet. The cost of this work, as compared with the previous period, shows an increase in cost per foot for drifting and crosscutting, due to the extra expense of working on the 8th or bottom level against a heavy flow of water. The additional expense, due to working under these adverse conditions, is well illustrated in the case of the shaft sinking, which cost almost twice as much as it did above water level.

The principal development points were as follows:

604 drift—Footwall streak on 6th level between B and C shafts proved additional ore for a length of 71 feet, averaging $4.76 over a width of 5 feet.

800 drift—Main drift west of D shaft on 8th level, proved ore for a length of 75 feet, averaging $10.30 for a width of 4.7 feet.

801 drift—Main drift east of D shaft on 8th level proved low-grade ore for a length of 80 feet, averaging $3.70 for a width of 3.2 feet. While this was not payable on the level, the block immediately above will be payable.

Drifting is still in progress on the 8th level, but owing to the heavy flow of water encountered (1350 gals. per minute)

the advance is slower than it would otherwise be. The pumps are operating at almost maximum capacity and we cannot open up ground faster without being drowned out. The general water level is being slowly lowered, and it is reasonable to assume that the flow will begin to decrease before very long.

## MINING OPERATIONS

All ore was hoisted through the main or D shaft. A small quantity of waste was hoisted through the C shaft which is kept in good condition.

The main shaft was sunk from the 7th level (410 ft. on incline) a distance of 96 feet. Water was encountered within 10 feet but the total flow did not exceed 100 gallons per minute until the shaft reached a depth of 80 feet. At this point a water fissure was encountered which taxed the capacity of our sinking pumps and, after vainly attempting to drain this flow, it was decided to cut a station and start the 8th level at this point. A station and large pump chamber was cut, and crosscutting commenced on September 19th. The vein was reached on October 1st and drifting commenced a few days later. The bottom of the shaft is now 517 feet deep on the incline or 453 feet vertically below the collar.

## MINING COSTS

May 1st to December 31st, Inc., 1914

70,650 Tons

| | Labor | Supplies | Electric Power | Steam Power | Total | Cost Per Ton | Previous Period |
|---|---|---|---|---|---|---|---|
| Ore Breaking | $16,550.61 | $10,393.50 | ..... | $2,478.41 | $29,422.52 | $.416 | $.413 |
| Tr. & Shoveling | 15,339.10 | ..... | ..... | ..... | 15,339.10 | .217 | .189 |
| Timbering .... | 5,122.20 | 2,037.94 | ..... | ..... | 7,160.14 | .101 | .143 |
| Hoisting & Dump. | 5,045.44 | 73.76 | $1,256.74 | ..... | 6,375.94 | .090 | .004 |
| Foreman & Bosses | 2,320.81 | ..... | ..... | ..... | 2,320.81 | .033 | .036 |
| Assaying & Samp. | 2,451.62 | 635.67 | ..... | ..... | 3,087.29 | .044 | .052 |
| Tool Sharpening | 1,149.39 | 407.83 | ..... | ..... | 1,557.22 | .022 | .024 |
| Mine Machines.. | 272.95 | 679.00 | ..... | ..... | 951.95 | .014 | .009 |
| Surveying ..... | 458.22 | 21.12 | ..... | ..... | 479.34 | .007 | .010 |
| General Expense | 705.28 | 33.86 | ..... | ..... | 739.14 | .010 | .005 |
| Total ..... | $49,415.62 | $14,282.68 | $1,256.74 | $2,478.41 | $67,433.45 | $.954 | $.945 |

## DEVELOPMENT

| | Labor | Supplies | Electric Power | Steam Power | Total | Cost Per Ton |
|---|---|---|---|---|---|---|
| Ore Breaking ..... | $ 6,341.17 | $3,555.49 | ..... | $703.30 | $10,599.96 | $ .149 |
| Tr. & Shoveling ..... | 2,646.50 | ..... | ..... | ..... | 2,646.50 | .038 |
| Timbering ..... | 214.50 | 51.96 | ..... | ..... | 266.46 | .004 |
| Hoisting & Dump. .. | 600.31 | 10.28 | $168.22 | 239.47 | 1,018.28 | .015 |
| Foreman & Bosses .. | 598.62 | ..... | ..... | ..... | 598.62 | .008 |
| Assaying & Samp. ... | 62.64 | ..... | ..... | ..... | 62.64 | .001 |
| Tool Sharpening .... | 348.74 | 121.89 | ..... | ..... | 470.63 | .007 |
| Mine Machines ..... | 100.32 | 276.78 | ..... | ..... | 377.10 | .005 |
| Surveying ..... | 559.88 | 21.10 | ..... | ..... | 580.98 | .008 |
| General Expense .... | ..... | ..... | ..... | ..... | ..... | ... |
| Total ..... | $11,472.68 | $4,037.50 | $168.22 | $942.77 | $16,621.17 | $ .235 |

The mining cost per ton is approximately the same as for the preceding six months, in spite of the fact that several of our largest stopes are exhausted. This must be considered a very satisfactory result, which reflects great credit on the foreman and shift bosses.

By careful work it has been found possible to rob a considerable portion of the pillars left above the 6th level in the vicinity of 603-613 stopes, which has given us a considerable tonnage which would therwise have been lost. Systematic prospecting around the old stopes in the vicinity of B shaft disclosed a considerable tonnage of good ore which was left in the stope walls and filling. This ore runs unusually well in gold and has materially helped to keep up the grade of ore sent to the mill. The expense for breaking this material is small, but the tramming and timbering costs are heavy and, as a result, the ore won usually costs fully as much as if broken in the regular stopes.

## ORE RESERVES

As in past years, no attempt has been made to accurately measure up the ore reserves remaining in the mine. Many of the blocks are bounded on one or more sides by old caved stopes, and the additional expense for blocking out with raises, etc., would not be justified. The ore reserves have been divided into three classes, as follows:

Class A—Available ore (practically assured and exposed on three or four sides). This includes ore already broken in the stopes, amounting to 18,000 tons.

Class B—Probable ore (reasonably probable and exposed on two sides).

Class C—Possible ore (very possible, but exposed on one side only).

The total of reserves figured on above basis is 96,167 tons, with an estimated average assay value of $4.95. As compared with the last report, ending April 30th, 1914, this shows a very considerable reduction, due to the following reasons:

1st. Very little new ore has been developed during the past eight months. Not more than 10 per cent of the total development footage was payable and the greater part of this simply rendered available for stoping blocks which had already been counted as ore.

2d. Several large blocks formerly considered as ore proved to be unpayable and have therefore been eliminated.

The outlook for the future is encouraging. There are several points where important bodies of ore may be found, and a large amount of development work is now being done. Among the more important points may be mentioned: North

vein on 3d level, in virgin ground; Smith vein on 3d and 5th levels east of C shaft; Main vein on 7th level west of B shaft; Main vein on the 8th or bottom level from the main (D) shaft. Of these, the last is, of course, the most important, but either one or all of the others may yield good bodies of ore.

## POWER PLANT

The cost of electrical power generated has averaged $0.018 per K.W. hour, or $9.80 per H.P. month. The average cost for the last three months is under $9.00 per H.P. month. This is still higher than it should be, but cannot be lowered very materially with our old type boilers. The service has, however, been excellent, and the total delays for repairs have been insignificant. During the last few months the plant has been overloaded, but this has now been overcome by installing a new armature on the D.C. exciter and speeding up the latter.

## MILL

With the exception of the shutdown in August, already referred to, the mill ran without losing a single day, and crushed an average of 302 tons per 24 hours. The following statement shows the performance:

### MILL PERFORMANCE

| | | | |
|---|---|---|---|
| Av. No. Stamps Dropping ... | 28.8 | Total Running Time ..... | 96.2% |
| Av. No. Hardinge Mills Running ..... | 2.78 | Total Running Time ..... | 92.7% |
| Av. No. Tube Mills Running. | 2.56 | Total Running Time ..... | 85.3% |
| Total Tons Stamped ..... | 70,560 | Stamp Duty Per 24 Hours | 10.46 Tons |

A new chain drive has recently been installed on No. 1 tube mill, which is running very smoothly. This will greatly improve the running time on the tube mills.

I am pleased to state that the whole mill is in excellent condition.

## MILLING

| | Labor | Supplies | Elec. Power | Steam P. | Total | Per Ton | Previous Period |
|---|---|---|---|---|---|---|---|
| Crushing and Conveying | $ 2,267.55 | $ 1,644.32 | $ 1,688.26 | ..... | $ 5,600.13 | $ .079 | $ .139 |
| Elevating and Separating | 871.95 | 12.64 | 405.54 | $2,936.00 | 4,226.13 | .060 | .033 |
| Sampling | 939.44 | 116.26 | 405.54 | ..... | 1,461.24 | .021 | .053 |
| Stamping | 3,823.35 | 3,538.80 | 8,940.78 | ..... | 16,302.93 | .231 | .219 |
| Regrinding (Hardinge) | 2,834.80 | 7,313.12 | 11,789.00 | ..... | 21,936.92 | .311 | .254 |
| Regrinding (Tubes) | 2,957.55 | 5,177.58 | 15,801.97 | ..... | 23,937.10 | .339 | .322 |
| Settling | 1,703.00 | 6,002.48 | 650.75 | ..... | 8,356.23 | .118 | .114 |
| Agitating | 1,755.95 | 16,235.00 | ..... | 2,935.97 | 20,926.92 | .296 | .444 |
| Filtering and Discharge | 3,083.85 | 1,332.07 | 3,574.42 | ..... | 7,990.34 | .113 | 1.17 |
| Precipitation | 1,733.50 | 5,320.37 | 1,136.46 | ..... | 8,190.33 | .116 | .098 |
| Refining | 1,030.90 | 1,649.21 | ..... | 357.76 | 3,037.87 | .043 | .052 |
| Solution Pumping | 718.40 | 280.13 | 2,603.01 | ..... | 3,601.54 | .051 | .067 |
| Mechanical Department | 2,035.84 | 1,278.48 | 160.33 | ..... | 3,474.65 | .049 | .052 |
| Water | ..... | ..... | 844.88 | ..... | 844.88 | .012 | .017 |
| Assaying | 622.98 | 295.37 | ..... | ..... | 918.35 | .013 | .015 |
| Superintendence | 1,920.50 | ..... | ..... | ..... | 1,920.50 | .027 | .030 |
| Total | $28,299.56 | $50,195.83 | $48,000.94 | $6,229.73 | $132,726.06 | $1.879 | $2.026 |

## RECOVERY AND EXTRACTION

| | Bullion | Gold Ozs. | Silver Ozs. | Total Value |
|---|---|---|---|---|
| RECOVERY: | | | | |
| Loss in Residues (70,650 tons tailings, value Au. .0049, Ag. 1.79) | | 4,317.901 | 392,276.20 | $292,466.59 |
| | | 345.580 | 126,472.70 | 72,642.91 |
| Gross Value Ore Milled | | 4,663.481 | 518,748.90 | $365,109.50 |
| EXTRACTION: | | | | |
| | | Gold 92.6% | Silver 75.6% | Total 80.1% |
| (Previous 6 Months) | | Gold 84.5% | Silver 69.8% | Total 74.1% |

This shows a considerable improvement over the preceding six months. It does not seem possible to increase the present extraction materially without very much finer grinding and longer agitation, neither of which are justified with the present grade of ore. However, experimental work is being carried on continuously and some improvement may result.

The following data regarding consumption of chemicals and supplies will doubtless be of interest:

Cyanide 0.99lb per ton milled.

Zinc dust 0.75lb per ton ore milled (per oz. bullion precipitated 0.125lb).

Lime 12lb per tons ore milled.

Pebbles (tube mills) 3.01lb per ton ore milled; 4.19lb per ton sand reground.

## GENERAL

The principal items of capital expenditure for the year were those of sinking the main shaft and underground pumping plant. The latter was installed on the 8th level and consists of a four-stage turbine centrifugal pump and two triplex plunger pumps, with a combined capacity of 1600 gals. per minute. At the present time the total flow of water, as shown by Weir measurements, is 1350 gals. per minute.

In order to take care of a sudden increase in the flow of water, or a temporary stoppage of the pumps due to a shut down at the power plant, a steel bulkhead door was provided in the main crosscut a short distance from the shaft, which can be closed within a few minutes in case of necessity. This bulkhead has been a great success and it has saved the pumps from being drowned on several occasions.

I take this opportunity of again acknowledging the loyal support and assistance of the entire staff, and in particular that of Messrs. F. L. Bryant, secretary-treasurer; F. A. Voorhees, mill superintendent; E. Hinrichs, master mechanic, and Chas. Phillips, mine foreman.

Yours faithfully,

EDGAR A. COLLINS,

General Superintendent.

To the President, Board of Directors and Stockholders of
The Commonwealth Mining and Milling Company.

Gentlemen:

I herewith submit statement of receipts and disbursements of your Company's funds for the period from May 1st to December 31st, 1914, to coincide with the calendar year:

## RECEIPTS

| | |
|---|---|
| Balance in Banks May 1st, 1914 | $ 2,838.33 |
| Supplies on Hand May 1st, 1914 | 20,162.52 |
| General Expense (Miscl. small receipts) | 59.18 |
| Rents | 951.60 |
| Tailings | 3,700.59 |
| Advances by Montana-Tonopah Mines Co. | 26,290.50 |
| Lighting | 58.50 |
| Ore Receipts | 285,816.70 |
| Water | 2,038.15 |
| Suspense | 6,341.16 |
| Bills Collectible | 983.87 |

## DISBURSEMENTS

| | | |
|---|---|---|
| Development | | $ 16,621.17 |
| Mining | | 67,433.45 |
| Milling | | 132,726.06 |
| Marketing | | 6,164.54 |
| General Expense: | | |
| Salaries | $ 7,000.00 | |
| Office | 986.15 | |
| Storehouse | 1,000.00 | |
| Telephone & Telegraph | 269.23 | |
| Miscellaneous | 1,460.99 | 10,716.37 |
| Maintenance: | | |
| Dwellings | $ 451.64 | |
| Surface Plant | 2,796.64 | |
| U. G. Plant | 1,980.92 | |
| Tailings Dam | 1,140.60 | 6,369.80 |
| Insurance Fire | | 3,773.44 |
| Insurance Employers' Liability | | 4,681.48 |
| Taxes | | 375.20 |
| Legal | | 510.71 |
| Water Domestic | | 252.50 |
| Safety and Fire | | 54.97 |
| Interest (including Bond Interest) | | 20,124.45 |
| Construction: | | |
| Surface Plant | $ 1,775.49 | |
| U. G. Plant | 10,245.42 | 12,020.91 |
| Mill Testing (experimental work) | | 171.38 |
| Shaft Sinking | | 7,943.99 |
| Shaft Sump | | 65.51 |
| Shaft Station Cutting | | 6,492.58 |
| Mine Water Pumping | | 9,031.86 |
| Assessment Work | | 169.40 |
| Suspense | | 5,970.06 |
| Bills Collectible | | 12,333.77 |
| Supplies on Hand Dec. 31st, 1914 | | 17,389.97 |
| Balance in Banks Dec. 31st, 1914 | | 7,842.53 |
| | $349,241.10 | $349,241.10 |