

GARDNER-MACKINAW MINE.

These two properties were operated for eleven months of the year 1920, closing down on November 30th. They operated on double shift, as there was not sufficient working places available in ore to put these mines on single shift. About the time they closed, however, sufficient territory had been opened, and if they had continued in operation it was planned to put them on single shift the first of January, 1921.

The product by months from these mines for the year was as follows:

January,	12,572	
February,	11,523	
March,	13,769	
April,	12,443	
May,	12,020	
June,	12,335	
July,	12,119	
August,	13,679	
September,	10,757	
October,	9,502	
November,	<u>9,669</u>	
TOTAL,		130,388 tons.

The product by grades for the two mines was as follows:

Gardner Ore,	25,189	
" High Sulphur.....	<u>32,209</u>	
TOTAL,.....		57,398 tons.
Mackinaw Ore,.....	41,177	
" High Sulphur,.....	<u>31,813</u>	
TOTAL		<u>72,990</u> "
TOTAL ORE,.....		130,388 "
Rock.....		<u>8,687</u> "
TOTAL ORE AND ROCK,		139,075 "

The product for the 11 months of 1920 shows an increase of 61,062 tons over that for the year 1919. A product of 12,000 tons or more was obtained up to the month of August. The product then dropped to 9,502 tons in October, a slight gain being made in November over the October product. The reason for the decreased product in the latter months of operation was due to all the ore having been mined on the Mackinaw property, and all reserve ore drawn from the

completed stopes, while on the Gardner nearly all the contracts were engaged in putting up raises preparatory to opening stopes. At the time the mine closed down, stoping was in progress over the entire ore body between the 2nd and 1st levels, while the ore body on the 1st was rapidly being prepared for stoping. It is estimated, at the time the mine closed down, that there was 20,000 tons of broken ore in the stopes between the 2nd and 1st levels.

There has been no change in mining methods during the past year. The work of the year showed up a horse of rock which has been traced from above the 1st level to the 4th level. This rock runs diagonally across the ore practically on the boundary line between the two properties. It has decreased the expected tonnage in this territory, as it is sixty feet in width, extending from the 1st level down to the 4th.

Very little ore running low in Sulphur was mined in 1920; in fact, practically all the ore produced at the Mackinaw Mine ran high in Sulphur. The ore between the 3rd and 2nd levels on the Gardner also ran high in Sulphur. The ore obtained on the Gardner above the 2nd level, however, has run lower and a greater part of the product obtained above the 2nd level is grading "Gardner Ore". As stated in previous years, the Sulphur is not uniform through the ore, and it is therefore impossible to determine what the Sulphur will run in any stope until the stope has been finished, by which time the average of the ore drawn out to make room for mining gives the accurate Sulphur content for the ore in this particular stope.

The cost per ton for breaking ore during the year 1920 has averaged higher than was expected from the system of mining followed. In explanation of this higher cost, however, it may be said that it has largely been due to the development work which has been under-way at all times throughout the year. As this development work has been largely in ore, the breaking cost of any month has had to include the cost of the ore obtained from the development work. When it is stated that the entire ore body on Gardner property above the 2nd level, as also on the 1st level, has been opened by drifts and raises, preparatory to stoping operations, it can readily be seen that a large amount of the ore hoisted from the Gardner property has come from development work. It should be borne

in mind that on the completion of stoping on the Gardner, there should be in excess of 50,000 tons of broken ore in the stopes, which will be available at practically the cost of loading from stopes and hoisting.

In reporting last years work, it seems advisable to call attention to the fact that all the ore on the Gardner mine will be exhausted in about eighteen months of operation of this property. The pillars left between the stopes should not be mined until after mining is completed on the Mackinaw. Practically all available ore was mined at the Mackinaw in August, 1920; in order to obtain additional ore from this property it is necessary to sink and develop levels at greater depth. Before attempting this new development work, however, it was considered advisable to put down some drill holes below the 4th level in order to gain some information as to the Sulphur content of the ore at greater depth. Two holes were completed in this territory and results showed much lower Sulphur than had been expected. The second hole drilled, averaging the core and sludge analyses, showed less than .300 Sulphur.

The above gives a brief outline of conditions existing at the property at the time it closed down, in respect to future operations.

The majority of the married men employed at the Gardner-Mackinaw Mine were transferred to the Francis and Gwinn Mines, and a number of the single men were paid off and left the district. At the end of the year all the location houses were occupied. During the time the mine is idle there will only be three men employed, viz: the captain, to act as watchman on day shift, a night watchman and one pumpman. The idle expense at this property, is, therefore, very low.

Although these properties are operated as one mine, owing to the fact that they cover separate leases, each mine is reported separately.

MACKINAW MINE

The product for the year 1920 was as follows:

Mackinaw Ore,	41,177 tons
" High Sulphur,	<u>31,813 "</u>
TOTAL,	72,990 tons.