

Sept. 9, 1957.

United States Mining & Milling Corp.,  
Nevada,  
U.S.A.

MEMO RE MILLING COSTS

Gentlemen,

It is my understanding that it is the plan of your Company to treat the surface dump and tailings at the Nivloc Mine as well as surface ore from other sources. This will in all probability be followed by treatment of custom ores to keep the mill operating at capacity.

My examination of the mill at the property showed all equipment to be in excellent condition and it is my opinion that the mill could be in operation in a week to ten days. I understand that arrangements have already been made in regard to power and water and it is only a matter of turning over the machinery and making the necessary adjustments and slight repairs where necessary. A crew of four men should be sufficient for this work.

If the mill can be operated at a rate of 200 tons per day the following are the estimated operating costs:

Labor	\$1.00	per ton
Supplies	\$1.10	" "
Power	\$0.40	" "
Total	\$2.50	per ton

The hauling and loading of the Nivloc ore should not exceed \$1.00 per ton which makes a total operating cost of \$3.50 per ton. No overhead costs other than supervision have been included but on an operation such as this, it is possible to keep the overhead to a minimum.

It is the writer's understanding that the ore available at the Nivloc Mine averages \$6.00 to \$8.00 per ton which should yield a reasonable profit in such an

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United States Mining & Milling Corp.,

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operation. As the tonnage treated is increased the unit costs will decrease, thus increasing the margin of profit.

It is advisable to use low grade material in the mill for the first four or five days to fill the circuits, thus avoiding tying up any amount of silver in the circuit. Refining will probably take place twice a month so within one month from the commencement of operations there should be some bullion returns. Only a small amount of capital will be required to commence operations as there need only be sufficient to cover the payroll until the returns are available and to purchase a reasonable supply of mill reagents.

Yours very truly,

HJB/MC

H.J. Bergmann,  
Consulting Engineer.

REPORT

ON THE HOLDINGS OF

UNITED STATES MINING AND MILLING CORPORATION

SILVER PEAK AREA

NEVADA, U.S.A.

Montreal, Que.,  
Dec. 12, 1956.

by:  
H.J. Bergmann, P. Eng.

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REPORT  
ON THE HOLDINGS OF  
UNITED STATES MINING AND MILLING CORPORATION  
SILVER PEAK AREA  
NEVADA, U.S.A.

INTRODUCTION

The following report covers a description of the mine and mill owned by United States Mining and Milling Corporation recently examined by the writer on a visit to the Silver Peak mining area in the State of Nevada. The report also describes the Mohawk Mine in the same area on which negotiations have already been started to handle the ore from this mine at the Company's mill.

The report is based on the writer's examination of the properties and a study of all operational data and maps that were available. Several discussions were also held with individuals who were familiar with the previous operation of the mines and mill and the information thus obtained was correlated with other data and included in this report.

The examination was made on behalf of Mr. S. Levine and associates who have acquired the holdings of United States Mining and Milling Corporation and are presently setting forth a program to place the 250 ton mill into production at full capacity.

HISTORY

The State of Nevada has long been known as one of the largest producers of silver and a considerable production of both silver and gold have come from the vicinity of Tonopah and Silver Peak. It has been reported that over 40 million dollars in silver has been mined in the vicinity of Tonopah and the majority of this production was during the period from 1900 to 1943. Since that time the properties have been closed largely due to the curtailment of development during World War II. Efforts have been made during the past ten years to reopen some of the mines but due to the lack of milling facilities nearby the operations were not successful.

Interest has recently been revived in the area and now with a modern 250 ton mill in the area it seems likely that several mines will be opened and will be shipping ore to the mill. The most prominent of the mines in the area are the Nivloc Mine, owned by the United States Mining and Milling Corporation and the Mohawk Mine with which negotiations are already underway to bring the mine into production. Reliable sources have stated that once the mill is in operation numerous other properties will reopen and ship ore to the mill and it is quite conceivable that history will repeat itself in the area and it will again become a large producer of silver.

The Nivloc Silver Mine was operated from 1937 to 1943 under the name of Desert Silver Inc. and was

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Nevada's largest silver producer for several years with a total production of \$3,977,329.00. This mine was forced to close during the war due to wartime restrictions and the management chose to sell the mill and equipment rather than face an expensive shutdown of several years' duration.

There was developed ore left in the mine but after the war it was difficult to commence operations due to the lack of milling facilities. In 1946 approximately 1,000 tons of ore were mined and shipped to the smelter and this ore is reported to have averaged \$18.00 to \$22.00.

In April of 1956 a group acquired an option to purchase the Nivloc Mine and also entered into a sales contract to purchase the Bruhi mill located at Silver Peak which is a new modernly equipped 250 ton mill for the treatment of silver-gold ores. The group subsequently assigned all their rights to the United States Mining and Milling Corporation which company is now controlled by S. Levine and associates. No work has been carried out at the mine or mill since these transactions but plans are now underway to bring the mine and mill into production and if necessary the capacity of the mill will be increased.

The Mohawk Silver Mine has been developed by the Bruhi Mining Company and a total of 20,640 tons have been

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milled with an average grade of 23.4 ounces. During the past few months three carloads of ore were mined and shipped to the smelter and this ore averaged over 50 ounces in silver. Trucking charges to the smelter are prohibitive and negotiations are now underway to bring this mine into full production and treat the ore at the nearby mill of United States Mining and Milling Corporation.

### NIVLOC MINE

#### LOCATION

The Nivloc Mine is located on the east side of the Silver Peak Range approximately seven miles from the town of Silver Peak. It consists of 31 claims which occupy portions of Sections 33 and 34, T 2S, R 38E and Sections 3 and 4, T 3S, R 38E.

The mine is situated approximately eight miles by road from the town of Silver Peak, Esmeralda County, Nevada. A well graded gravel road is maintained by the State of Nevada between the mine and Silver Peak and a hard surface highway connects Silver Peak to Coalvale Junction on highway U.S. 94, a distance of seven miles.

#### DEVELOPMENT

Access to the mine is by means of a two compartment vertical shaft to a depth of 600 feet. On the 600' level a 500 foot cross-cut connects with an inclined winze driven in the orebody to the 900 foot level. Another winze has



been sunk to the 1100 foot level, the deepest penetration in the mine but very little development has been done on this level.

There has been approximately 24,000 feet of lateral development and raising done to the 900 foot level. All levels are extremely dry which is a decided asset in any mining operation and no pumping is required in the mine.

Mining has taken place on five levels and the ore remaining developed is located on the 600, 700 and 800 foot levels and ore development is required on the 900 and 1100 foot levels. There is every indication that the lower levels can develop substantial tonnages of ore.

#### GEOLOGY

The production from the mine has come from a rock complex consisting of Palaeozoic sediments and intrusive rocks, principally alaskite. This complex underlies the volcanic rocks at a depth of approximately 300 feet. The same rock complex forms the host rock of the mines and prospects of the Silver Peak district which has produced over 15 million dollars in silver.

The ore at the Nivloc Mine occurs within a strong fissure or shear zone striking N50E and dipping 50 to 60 degrees to the northwest. It has been explored for 3,650 feet along strike and to a vertical depth of 1,100 feet. The zone is exposed on surface and has been traced for some distance. It appears to be a strong structure with well

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defined walls and exploration along strike should have good chances of duplicating the ore zones already developed. Existing maps show the width of the zone to be 50 to 80 feet in the central portion of the mine which area has been most extensively developed. On surface this width is maintained beyond the area developed underground.

#### MINERALIZATION

The values encountered are largely in silver accompanied by minor amounts of gold. Galena is the only metallic mineral reported and this only in narrow scattered lenses. It is not possible to identify any silver minerals due to the extensive leaching and brecciation.

The silver and gold values are found in a breccia of quartz and calcite accompanied by some manganese bearing carbonate and varying amounts of oxides of iron and manganese.

Examination of the assay plans would indicate that values occur throughout the zone with local concentrations of better grade material within the zone. The mining carried out has been confined to this better grade material which occurs in lenses and which often overlap along strike and dip resulting in greater mining widths.

The average grade of ore mined from 1937 to 1943 was 12.8 ounces silver and 0.05 ounces gold. Since 1946 there has been mined approximately 1,000 tons of ore that averaged \$18.00 to \$22.00 per ton. A considerable portion

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of the ore in place is expected to have a grade comparable to this with selective mining. A very significant feature is a definite increase in the gold values on the lower levels and it has been reported that there are sections on the 700 foot level containing very good values in gold. This could have the effect of increasing the grade of ore found below the existing developed levels.

#### ORE RESERVES

An accurate estimate of ore reserves is quite difficult due to the inaccessibility of most of the workings and also the fact that only a portion of the assay maps were available at the time of the writer's examination.

A report by Mr. Hughes in 1946 shows a figure of positive ore of 35,000 tons with an average grade of 12.2 ounces of silver and 0.069 ounces of gold per ton which has a dollar equivalent at present prices of \$13.45. Selective mining of this ore could probably increase the grade to \$20.00 per ton. Mr. Hughes made no effort to calculate tonnages of probable ore but he did state that there are an additional 28 places in the mine where ore was cut during the latter part of the operation but on which no development was done because of labor shortage. These places will without doubt add very important tonnage to the ore reserves.

Another estimate made amounted to 680,857 tons of ore grading \$7.72 at present prices, which includes

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both positive and partially developed ore. This estimate took into consideration much greater widths and included all assays both waste and ore alike tending to give a conservative grade. This grade could be increased appreciably by taking narrower higher grade portions of the orebodies.

The writer has attempted to revise this estimate to include only the higher grade portions in order to arrive at a grade that would be economical under present operating conditions. Unfortunately, some assay plans were not available but from the data at hand there was estimated 110,000 tons containing 11.8 ounces silver and 0.056 ounces gold. This has a dollar value of \$12.55 at present day prices. The above tonnage is calculated to the 900 foot level but does not include any tonnage that might be obtained from zones enclosing stopes. Highly selective mining of the above tonnage could no doubt increase the grade somewhat or conversely if a lower grade is taken the tonnage could be substantially increased.

#### ADDITIONAL ORE POSSIBILITIES

The above ore estimates have only included ore already developed by drifting and the major portion of this tonnage is at the end of the various drifts. It has been stated that there are 28 places in the mine where ore was cut during the latter part of the operation but which were not developed due to lack of labor. Examination of

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the assay plans bears this out and there is a substantial length of probable ore to be developed on both the 800 and 900 foot levels.

There has been no development done below the 900 foot level and there is every indication of the ore persisting to at least a reasonable depth below this horizon with a possible increase in gold values.

Little or no exploration has been carried out on surface along the strike of the ore zone and there are good chances that exploration by diamond drilling both here and underground could add to the ore reserves.

#### MILLING

The mill owned by the United States Mining and Milling Corporation is a modern fully equipped 250 ton cyanide plant housed in a large modern building together with two small warehouses, one scale house and a complete assay laboratory. The mill was completed in July, 1955, and is considered to be one of the most modern plants on the west coast and contains all of the most recent equipment.

The mill was designed to treat all the ore types of the area and contains a sulphur dioxide process which is necessary for some of the refractory ores prior to cyanidation. The mill is equipped to reduce the crude ore to the bullion product ready for shipment to the mint.

An additional feature of the mill is that it is designed so that the capacity could be increased at a

minimum cost. It is estimated that the mill capacity could be doubled with an expenditure of approximately \$100,000.00

The mill at present is in readiness to start operating without any additional expenditure with the exception of the necessary reagents.

### MOHAWK MINE

#### LOCATION

The Mohawk Mine is situated approximately 26 miles from the town of Silver Peak by road and on the opposite side of the Silver Peak Range to the Nivloc Mine. The road is downgrade all the way from the mine to the mill which would allow large trucks to be used in hauling the ore.

#### DEVELOPMENT

The mine has been opened up to a depth of 500 feet by means of an inclined shaft but most of the development work has been confined to the 200' and 300' levels. These levels are both accessible by means of an adit and at the time of the writer's visit the shaft was not in operation.

The shaft is inclined at 52 degrees to the north and levels have been cut at 100, 200, 300, 400 and 500 feet. Drifting has been carried out to the north and south on the 200 and 300 foot levels and it is on these

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levels that all the mining has taken place. Only a small amount of drifting has been done on the 500 foot level.

### GEOLOGY

A limited time was spent examining the surface and the description of the geology is confined to the mine workings.

The ore occurs as highly oxidized material in a shear zone striking N 18 E and dipping 55 degrees to the east. The hanging wall of the ore is siderite and in places there are horizons of siderite within the ore zone. The ore zone contains a good percentage of iron and manganese oxides and is readily recognized by the black and red oxidized material. The silver minerals are intimately associated with the manganese oxide which makes the ore quite refractory.

There are two main orebodies designated north and south and situated on either side of the shaft. Between these two orebodies the same structure persists but both the width and grade decreases. The width of the ore zone varies from 6 or 7 feet to 30 feet.

The values are almost entirely in silver with the gold values negligible. The grade of ore is quite high with values ranging from a few ounces to over 50 ounces. The writer cut several samples underground and

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obtained the following values:

12.30 ounces over 4 feet

59.60 " " 8 "

22.08 " " 5 "

56.40 " from small ore dump

80.20 " specimen sample.

The gold values were either trace or 0.01 ounces.

It is obvious from these samples that a good grade of ore can be expected from this mine.

#### ORE RESERVES

The writer is not able to make an accurate estimate of ore reserves as the maps available did not show the areas already staped and the assay maps were not complete.

A total of 20,640 tons were milled at the Bruhi mill with an average grade of 23.4 ounces silver. From observations underground and reports from individuals familiar with that operation this grade would appear to be low as all development material went to the mill whether it was waste or ore. This would tend to dilute the grade of ore considerably. An earlier estimate of a large block of ore above the 200 level from which most of the 20,640 tons was mined showed a grade of 43 ounces and it seems likely that more selective mining could approach this grade. The present owners recently shipped 150 tons from the 300 foot level that averaged 50 ounces in silver.



From the data available the writer has estimated a total reserve of 48,000 tons averaging 36 ounces silver down to the 300 foot level. At least half of this is proven while the remainder has been developed in drifting but lacks raises to prove continuity on the dip. No estimates can be made below the 300 foot level due to lack of development but it is safe to assume at least some continuity of the ore zone below this level.

#### REHABILITATION OF THE MINES

The Nivloc and Mohawk mines could be brought into production to provide a combined tonnage sufficient to keep the mill operating at capacity of 250 tons per day with the addition of very little extra equipment.

The present hoisting capacity of the Nivloc Mine is 100 tons per day which could be increased by additional expenditures. A certain amount of rehabilitation is required underground to prepare the mine for production and it is estimated that the mine could be in operation on a small scale within three months.

The Mohawk mine is in excellent shape and only requires the addition of a small amount of equipment and production could start almost immediately from the 200 and 300 foot levels. The dryness of both mines is a decided asset in a rehabilitation program.

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The mill is in readiness and as soon as rehabilitation of the mines is complete the mill can be brought into production at capacity using ore from the Nivloc and Mohawk Mines.

#### SUMMARY

The State of Nevada in the past has been one of the largest producers of silver and there are still many undeveloped potential producers in the area.

Lack of milling facilities in the Silver Peak area has hampered development of potential producing mines but with the acquisition by the United States Mining and Milling Corporation of a modern 250 ton cyanide mill at Silver Peak there is every indication that the area may again become a major producer of silver.

The United States Mining and Milling Corporation which is controlled by S. Levine and associates also own the Nivloc Mine, a former large producer of silver that was forced to close during the last war due to wartime restrictions. This mine has estimated proven and probable ore reserves of 110,000 tons with an average grade of 11.8 ounces silver and 0.056 ounces gold which grade can probably be increased by careful selective mining. The mine can be brought into production at the rate of 100 tons per day following certain rehabilitation work and this tonnage can be increased by additional expenditures to increase the hoisting capacity.

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Negotiations are also underway to bring the Mohawk Mine into production at a minimum rate of 150 tons per day so that the mill can be operated at capacity using ore from the Nivloc and Mohawk mines. The Mohawk Mine is a high grade silver mine with estimated reserves of 48,000 tons averaging 36 ounces silver to the 300 foot level. The mine is in excellent shape and can be brought into production with the addition of a small amount of equipment.

Both mines have potential undeveloped ore and it is felt that an intensive exploration program could add substantially to the known ore reserves. There are also indications that several other properties would re-open once the mill is in operation and would be ready to ship ore to the mill. Under these circumstances it is quite conceivable that it would be necessary to increase the mill capacity which can be readily done at a very reasonable expenditure.

Respectfully submitted,

H.J. Bergmann, P. Eng.

Montreal, Que.,  
Dec. 12, 1956.

A P P E N D I XDEVELOPMENT PROGRAM AND ESTIMATED COSTSFORUNITED STATES MINING AND MILLING CORPORATIONINTRODUCTION

The following is an appendix to the writer's report on the holdings of United States Mining and Milling Corporation. It includes a proposed program for bringing the mill into production at capacity using ore from both the Nivloc and Mohawk Mines.

Estimated expenditures for this work are also included together with estimated operating costs and other operating data. The proposed program is laid out to bring the mill to capacity production with the least possible expenditure and then a further program would place stress on development of ore to increase the ore position of the mines.

NIVLOC MINEREHABILITATION OF MINE WORKINGS

It is estimated that it would take three to five months before the mine would be ready to ship ore to the mill. This period could probably be shortened but it would be advisable to stockpile some ore prior to the commencement of milling.

Certain rehabilitation work is necessary and some additional underground equipment and buildings would be required to prepare the mine for production. The present hoisting arrangement is capable of handling up to 100 tons per day but this can be increased without too great an expenditure.

It would not be economical to operate the mill at a reduced tonnage and the plan is to supplement the mill feed with ore from the Mohawk Mine which is discussed later in this report. This would allow for an early start at production while additional tonnages of ore are being developed and further rehabilitation is being carried out underground.

The work necessary to enable the Nivloc Mine to operate at a maximum tonnage of 100 tons per day is as follows:

1. There is a slight cave-in at the 800 level station of the winze which requires timbering and cleaning before the winze can be used.
2. There is a cave from an old stope on the 800 E drift and it is estimated that approximately 300 feet of drifting is required in the footwall before being able to advance the drift face. This work need not hold up mining on the 600 and 700 foot levels.
3. Cleaning of the 800 W drift to allow for stope preparation of a small block of ore at the end of the drift.

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4. Cleaning of the 700 E drift to allow for stope preparation of the ore in this drift.

5. Work should be started to reopen the 600 E drift as the assay plans show ore left in this drift.

6. Repairing of the winze pockets and installation of air gates on the 700 and 800 foot levels.

7. A road should be prepared to the ore bin to allow for trucking to the mill at Silver Peak.

8. Building of a change house and bunkhouse.

The above work can be started immediately using the present equipment and a crew of approximately 20 men. Additional equipment that would be needed immediately would be a mucking machine, rails, pipe, 6 mine cars and drill steel. Any ore cleaned up in the mine could be dumped in the bin and as soon as any of the drifts have been readied mining can be started immediately on a small scale and stock-piled at the mill. The work should be done bearing in mind the importance of commencing milling operations at or near capacity at the earliest possible date and with a minimum of expenditure.

The above program should be carried out in conjunction with a similar program to prepare the Mohawk Mine for production so that the combined tonnage would enable the mill to commence operation at a daily rate of 250 tons. Once this objective has been reached further rehabilitation and development work should be carried out

to increase the tonnage available at the Mivloc Mine and to improve efficiency. Such a program would entail expenditures for additional equipment and development as follows:

1. Raising of the "A" winze to surface, a distance of approximately 300 feet and installation of new hoist.
2. Diamond drilling on surface and underground.
3. Development of the 800 E drift and the 900' level to outline additional ore.
4. A building to house work shops.

Equipment

- 1 - Diesel electric hoisting plant large enough for a minimum depth of 1100 feet.
- 6 - Jackleg rock drills.
- 1 - Battery locomotive.
- 1 - Mucking machine
- 10 - Mine cars

Mine lamp equipment.

Track, pipe and timber supplies.

There would also be certain miscellaneous equipment and tools.

COST ESTIMATES FOR PRE-PRODUCTION EXPENSES

The cost estimates have been divided into two parts to correspond to the rehabilitation and development program described earlier.

The first portion includes the minimum rehabilitation to start production on a small scale and includes:

800' level station.	\$2,000.00
Drifting 800' level around stope.	8,500.00
Rehabilitation of drifts including rail, pipe, etc.	8,000.00
Repairing winze pockets.	1,000.00
Building road to bin and miscellaneous surface work.	1,000.00
Stope preparation	3,000.00
Underground Equipment	10,000.00
Miscellaneous supplies	2,000.00
Buildings	10,000.00
Contingencies	<u>4,500.00</u>
	<u><u>\$50,000.00</u></u>

It is likely that the mine will be producing a limited tonnage before the total sum of \$50,000.00 has been expended but this amount will be necessary for a continued operation.

The second part of the program is designed to place the mine in a position to handle a larger tonnage and includes the following:

Raising the "A" winze to the surface	\$12,000.00
Diamond drilling	15,000.00
Drifting (Exploratory)	<u>20,000.00</u>
Carried forward.....	\$47,000.00



Brought forward.....	\$47,000.00
Stope preparation	5,000.00
Buildings	8,000.00
Hoisting Plant	20,000.00
Underground equipment	18,000.00
Lamp Equipment	2,000.00
Miscellaneous supplies & equipment	5,000.00
Contingencies	<u>10,000.00</u>
	<u>\$115,000.00</u>

ESTIMATED OPERATING COSTS

The following is a tabulated list of the estimated total operating costs at the Nivl9c which includes milling but does not include depreciation and write-offs:

	<u>Cost per ton</u>
Extraction	5.00
Development	1.25
Milling & crushing	2.25
Trucking	0.75
General Expense	<u>1.50</u>
TOTAL OPERATING COSTS	\$10.75

It is quite possible as development proceeds that these costs can be brought down somewhat but they serve as a basis for the operation.

## MOHAWK MINE

### REHABILITATION OF THE MINE

Very little is required in the way of rehabilitation at the Mohawk Mine as it has only recently been closed. The underground workings are in remarkably good shape and all that is required is a small amount of equipment. There are on the property fully equipped bunkhouses and cookery sufficient to handle 30 men.

The equipment necessary to start operations include a mucking machine, hoisting plant for the shaft, mine cars, compressor, jackleg drills and miscellaneous equipment. Some of this can be obtained on a rental basis and it seems likely that with an expenditure of \$30,000.00 the mine could be producing 100 tons per day within one months' time.

### ESTIMATED OPERATING COSTS

The following tabulation shows the estimated operating costs at the Mohawk Mine and it will be seen that they are substantially higher than the Nivloc costs.

This is largely due to a more expensive mining method used (square set stoping) and a higher milling cost due to the sulphur dioxide treatment required for the refractory Mohawk ore.

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Extraction	\$8.00
Development	1.25
Milling & Crushing	6.00
Trucking	2.00
General	<u>1.50</u>
	\$18.75

It is very likely that these costs can be reduced as it may be possible to change to a lower cost mining method but this can only be found out after operations are underway. Likewise there should be good chances of reducing the milling costs as research will be carried out to improve both costs and recovery.

#### MILLING

As mentioned previously the mill does not need any preparation as it could be turning over in a few days.

The Nivloc ore would go through the cyanide circuit and a recovery of 90% can be expected in this process. However, the refractory ore from the Mohawk Mine has to be treated with a sulphur dioxide leaching process prior to cyanidation and from past performance recovery is only 85%.

When the mill is operating a crew of 15 men should be sufficient to operate the mill on a 24 hour basis.

CONCLUSIONS

It is apparent that the Nivloc ore is marginal and that only a small margin of profit can be expected from this ore. However, if it is combined with the higher grade ore from Mohawk and the mill operated at capacity, the venture should be quite profitable.

Once milling has commenced there is every likelihood that other properties will start producing and as the mill capacity increases, the unit costs decrease giving a greater margin of profit. There would thus appear to be excellent chances of this project proving to be a very profitable and enduring one.

H. J. Bergmann, P. Eng.