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Item 5

RECONSTRUCTION FINANCE CORPORATION
MINING SECTION
REPORT OF SUPERVISING ENGINEER

Docket No. ND-5496
Date of Examination, incl. August 18, 19, 1943
Date of Report August 26, 1943

NAME AND ADDRESS OF APPLICANT

A. A. MacLean, dba Angelus Basic Copper Co.
P. O. Box 341, Yerington, Nevada

Correspondent:
A. A. MacLean
4071 Charlene Drive
Los Angeles, California

CHARACTER OF PROJECT

The installation of equipment, and the development of a small copper mine, which was formerly worked by the Mason Valley Mines Co., and which has been idle upwards of twenty years. The mine is reported to have produced four or five thousand tons of copper-carbonate ore of an approximate gross value of $95,000. The mine is bare of buildings, and mining machinery, and under this project would need to be again equipped with hoist, air compressor, tools, buildings, etc.

LOCATION OF MINE

The property, consisting of four contiguous unpatented mining locations, known as the Northern Light, Northern Light No. 1, Northern Light No. 2, Northern Light No. 3, lies at an elevation of about 6300 feet on the west slope of the Wassuk Range, in the Northern Light Mining District, Mineral County, Nevada. It lies within the bounds of Sec. 18, T. 12 N., R. 28 E., M.D.B.&M. It is best reached from Yerington, Nevada, 25 miles to the northeast. From Yerington to the mine the first twenty miles is a fairly level valley road, but the remaining five miles rises 800 to 1,000 feet, and this part of the road is rough and rocky, with grades in places as much as 15 per cent. Mason, Nevada, two or three miles south of Yerington, is the railway shipping point; it is served by the Nevada Copper Belt Railroad, which joins the Southern Pacific Railroad - Tonopah Branch - at Wabuska, Nevada.

The District has favorable climatic conditions, and all year operations are possible.

APPLICANT

The Applicant is the owner of the Angelus Motors, Inc., a substantial and successful automobile agency in the southwest section of Los Angeles, California. He has had but little mine-operating experience, and is primarily a business man, active and aggressive. He is of the energetic type, one who can quickly adapt himself to a new enterprise, and should be able to manage a project of this sort. He personally intends to devote his time to the project.

LOAN REQUESTED

The loan requested is $30,000.00.

GENERAL FEATURES

The mine, now known as the Northern Light Group, is owned by Anton Lilja and Lucille Lilja of Yerington, Nevada, and they have made a sales agreement with the Applicant. A payment on the purchase price

in the sum of $5,000.00 was made by Mr. MacLean about July 1, 1943. The balance, $7,000.00, is to be paid at the rate of 10% of net smelter and Government premium returns from ore shipped from the property; the entire balance, however, to be paid on or before three years (See copy of agreement attached to application).

Most of the work done on the Northern Light Group was done prior to 1919, by the Mason Valley Mines Company, who at that time operated a smelter at Wabuska, Nevada.

The Applicant reported that some 5,500 tons of 6% copper ore of a gross value of $95,000.00 was produced by former operators. This tonnage and grade is probably a little high. The Mines Handbook, year 1922, reports that the mine in 1919 produced 2800 tons of 4.8% copper ore. The Mines Handbook figures are probably nearer the truth. It is the writer's opinion that the grade of ore shipped in the past was about 5% grade, and this grade is what can be expected when extraction of ore is resumed.

There are no producing mines in the immediate vicinity. Close to the town of Yerington, the International Smelting and Refining Company are proceeding with a large drilling and exploration program on a low grade copper deposit.

NORTHERN LIGHT VEIN AND ORE OCCURRENCE

The vein occurs in a compact limestone formation. It is a strong open fracture; one of those cavernous type of veins, with some open caves, containing much limonite, and crystal-lined cave walls. Vertical open cross fractures cut across the main vein at occasional intervals, creating wider vein conditions at such intersections. However, the vein as a whole, would probably average about 5 feet in width. The dip of the vein is about 70 degrees, and the walls are firm and stand well. The outstanding feature of the vein is its open water-course structure, and limonite filling, particularly in the open cavernous ground of the upper oxidized portion of the vein.

The enrichment is the result of downward solutions. The north end of the vein at the 200 foot level is somewhat tighter, and here some magnetite and chalcopyrite in small amounts was noted; this may be the source of primary mineralization from which carbonates were derived.

There are four types of copper ores:

1. In the limonite are found seams of chalcanthite, tenorite and melanterite. It is low grade; a test sample (#65) assayed 3.8% Cu.

2. Replacement of limestone with malachite (a little azurite). Best ore.

3. Malachite mixed with dense iron pyrite - the transition portion of the vein between the limonite of the upper ores, and the lower level sulphide zone. This is good ore - sample #64 assayed 8.5% Cu. The latter a select sample.

4. Lower level sulphides, a white iron pyrite, low in value. Test sample #68 of this type only assayed 0.8% Cu.

The malachite ore is the best, and the combined malachite and pyrite ore the next best. The shipping ore will be mainly these two types, and they occur in a 150 foot zone in the vein, most extensively between the 100 foot level, and 250 foot level. There is an area of vein about 200 feet long, 150 feet high, and 5 feet wide, from which the best ore can be mined. All evidence points to rather weak source of enrichment, and the formation of malachite is not especially extensive. Even as a carbonate deposit, it is just fair.

The underlying pyrite is of the compact solid white pyrite variety,

and the writer has slight hope of developing profitable sulphide ore with deeper development of the mine.

ORE TONNAGE POSSIBILITIES

There is a workable area of vein 200 feet x 150 feet x 5 feet, or total minable area of 12,500 tons.

Total minable area	12,500 Tons
Deduct - reported already mined	5,000 Tons
	7,500 Tons
Deduct-low grade limonite and lean spots estimated at 1/3	2,500 Tons
Total possible ore of 5% grade	5,000 Tons

It is the writer's opinion that 5,000 tons of 5% ore is a fair estimate of the potential ore. Some selective mining will be necessary.

The Applicant has stressed in his application that large tonnages of 5% ore will be developed in the sulphide zone, but it is believed that only the ores containing malachite will carry values of consequence.

ANALYSIS OF COSTS AND PROFITS

This mine would need to be operated on a small scale basis - a 10 men to 15 men crew. Such a crew, under conditions prevailing at this mine, would do well to ship 20 tons to 30 tons per day of 5% ore.

The operating costs would be about as follows:

Daily Operating Costs

Labor 10 men @ $8.00	$ 80.00
Supplies and material	53.33
Daily Expense	$133.33

Daily Operating Revenue

Pay for copper per ton	$7.60
Treatment " "	2.25
Net Value " "	5.35
R.R.Fght. " "	4.08
Net " "	1.27
"A" premium on Copper per ton	4.85
Net per ton F.O.B. Yerington per ton	$6.12

From above net per ton must be deducted truck haul to Yerington at $1.50 per ton, leaving a net ($6.12 less $1.50) of $4.62 per ton.

On a 20 ton daily output, the revenue would be 20 x $4.62, or $92.40, daily revenue compared to a daily operating expense of $133.33.

On a 30 ton daily output the daily revenue would be 30 x 4.52, or $135.60. This last is about the best daily output possible by a 10 man crew. It is therefore apparent that with only an "A" premium bonus, that this mine cannot mine 5% ore at a profit. However, it could do so with the addition of the "B" premium bonus. Also there is a slight possibility that with extreme care in selecting the shipping ore, that the grade might be brought up to 6%.

MINE WORKINGS

The main shaft of the mine extends to a depth of about 350 feet, with levels at the 100 foot, 200 foot, 250 foot, and 325 foot levels.

Only the first three were accessible; the 325 foot contains carbon dioxide gas. The main shaft is only a one compartment shaft (4½x5) with a skidway, and a poor ladder running between the skidway. There being no hoist, the inspection of the mine was difficult. On the same vein 700 feet north of the main shaft, is a second shaft sunk to a depth of about 200 feet, and 1,000 feet to the south, is a third shaft of about the same depth. Both these old shafts are inaccessible. (See map attached to application).

SAMPLING

The writer took a few samples for checking purposes, mainly to determine the type of ores which contain the best values. Exposures of ore were best on the 200 foot level and the 250 foot level. There were a number of short stopes where one could see ore in the backs, but without ladders it was impossible to closely inspect, or to sample them.

Nineteen samples from the 250 foot level - No. 8 to 26, listed by the Applicant, averaged exactly 5% copper, and this, together with the 4.8% average of the 2800 tons of ore shipped by the Mason Valley Mines Company, would indicate that a 5% grade of ore is about what can be expected from future mining.

Some samples taken by the writer, and by Mr. Butner, engineer for the Bureau of Mines, assayed somewhat better. These samples were taken at places known to have good ore, and are higher in value than can be expected of the general run of ore in the mine. However, they do show that there is some possibility of increasing the grade of shipping ore by using extreme care in selective mining.

No. 9	Taken by C. W. Butner, Bureau of Mines 4½ ft.	11.11% Cu
No.10	" " " " " " " "	8.52% Cu
No.11	" " " " " " " "	7.39% Cu
No.64	Robertson - 6 ft.	8.5 % Cu tr. Au
No.69	" - Selected malachite pyrite ore	12.3 % Cu .04 Au
No.67	" - 5 ft. sulphides	2.9 % Cu tr. Au

The lack of ladders underground made it impossible to sample the mine properly, but the information gathered from the various sources gives a fair picture of what grade of ore may reasonably be expected.

APPLICANT'S PROPOSED WORK

The specific purpose for which Applicant proposes to expend the proceeds of a loan is as follows:

Guaranteed reconditioned used compressor of 310 Cu. ft. capacity, about	$ 2500.00
Drilling equipment	1000.00
Mine tools	500.00
Guaranteed reconditioned hoist, about	1000.00
Blacksmith and other tools	500.00
Pick-up truck	1250.00
New gallows frame and ore bin	500.00
Cost of installing gallows frame	200.00
Cost of installing hoist and compressor	250.00
Freight and transportation	1000.00
Assay office and equipment	1550.00
Hoist and compressor house	250.00
Three small houses, 16 ft. x 32 ft.	1500.00
Cook house and equipment	1250.00
Insurance	400.00
Reconditioning present 325-foot shaft, about	1000.00
Shaft equipment	1500.00
Cleaning out and repairing chutes and raises, about	1000.00
On the 325-foot level, drifting 250 feet south on the vein	2000.00
Start sinking shaft another 100 feet to the 425-foot level	3000.00

Cut station at the 425-foot level	250.00
Drift 250 feet south on the vein at the 425-foot level	2000.00
Install chutes at a cost of about	1000.00
Working capital	4600.00
	$30000.00

The above program is somewhat extravagant, and a number of the items can be reduced, or eliminated. The shaft sinking, in particular, can be dispensed with.

A sum not to exceed $15,000.00 should suffice to equip this mine for production.

COMMENT

Copper ore of a 5% grade is marginal under conditions at this mine, and there is little gold or silver to add to the values. This property cannot operate at a profit unless the Applicant receives both an "A" and "B" copper premium. With the larger premium, there is an apparent profit of $4.00 to $5.00 per ton on each ton of ore shipped.

The Applicant has had approved an access road appropriation in the amount of $8,000.00, but the writer does not know if it is contingent on this loan being granted, or not.

Should a loan be granted, it is suggested that the mine be re-examined as soon as a hoist is installed, the bad air cleared from lower level, and some of the inaccessible places cleaned out. This to check such portions of the mine that could not be inspected on this first examination.

RECOMMENDATION

If this property must operate with only an "A" copper premium quota, then it is recommended that a loan be declined. However, if it is deemed in the interest of the National copper production to grant this mine both the "A" and "B" premium quota, then in that case, a loan up to $15,000.00 is recommended.

Respectfully submitted,

Jasper T. Robertson

JASPER T. ROBERTSON
Supervising Engineer