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Item 10

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Tonopah-Extension Mine

TO CONSIDER THE PROPOSED MINES INC.

Albert Silver  
Reno, Nevada

4-8-55



Mr. Homer Williams, General Manager  
Tonopah Extension Mines, Inc.,  
Tonopah, Nevada

TONOPAH MINE, NIP - INC.  
EXHIBIT "C"  
SCHEDULE "A"

January 18, 1935

Dear Sir:

The purpose of this report is to verify the value of the collateral offered as security for Loan, under Exhibit "C" of the application made by Tonopah Extension Mines, Inc., of Tonopah, Nevada, to the Reconstruction Finance Corporation.

This collateral comes under four heads: Probable Ore; Reduction Works; Equipment and Buildings, and Mining Claims. These will be taken up in order.

#### PROBABLE ORE.

In mines of the nature of those at Tonopah, the amount of ore which is definitely blocked out in measurable form at any one time is usually comparatively small. The mines at Tonopah have been producing for 30 years, and for most of that time there has not been any large ore reserve blocked out in advance. Hence in any block of ground where geological conditions are favorable and the presence of mineralized veins is known, the total amount of ore which will be produced is likely to be many times that which can be definitely measured at a given time. In a table which is attached to this report, and has been compiled from annual reports of the Tonopah Extension, mine production from 1912 to date is shown as 1,747,000 tons of ore. The largest tonnage ever claimed as "Ore Reserves" is 150,000 tons, in the report for the year ended March 31, 1913, and in most of these measurable tonnages are claimed. This is a point which must be born in mind in submitting figures on any "Ore Reserves" which may be partly blocked out or indicated.

The past large production of the mine came mostly from the Murray Vein, on which a large shoot of ore extended from above the 950 foot level to about the 1125 foot level. The year 1925 was the last year of large production from this shoot, and during the years 1926-1929 exploration of newer ore-bearing ground to the west of this shoot was under way. This exploration work opened a series of new veins. At the end of 1930, falling silver price and heavy expense of pumping mine water caused a complete shut-down except for leasing operations above water level.

- (a) The water has risen in the lowest mine workings to a point seventy-five feet below the 1200 foot level. For this reason workings to which reference is made in this report are inaccessible, and the information contained herein in regard to them is obtained from Company maps, assay reports and other records. All of these maps and records so consulted were those regularly kept by the operating officers of the Company for their own information and guidance in the conduct of operations.

The principal veins opened by this work are three in number. The Denver Vein, the most northerly, is in all probability the faulted westerly extension of the Murray Vein, south of the Denver Vein two more veins known as the Morton Vein and the Beruda Veins were discovered and developed. Each of the three veins had produced important quantities of ore. These veins were opened up on the 1540 foot level, and 1200 foot level, and most of the known ore between these levels was



stoped out, although higher metal prices may now make available much material that could not then be mined. A level known as the 1650 foot level was opened through winzes from the 1540, and the same veins and ore-shoots developed there. These shoots also, or as much of them as was payable ore at the time, were stoped out to the 1540 foot level.

While this work was prosecuted, crosscuts were being run on the 1880 foot level from the Victor Shaft to develop these veins on that level. One crosscut cut the Merton Vein, on which 250 feet of drifting did not show any ore. The Bermuda Vein was not cut, because the nature of a junction which occurs between the Bermuda and the Merton required the extension of the Merton east drift to find the Bermuda Vein. Another crosscut was driven to and past the position of the east end of the Denver Vein, as projected downward from its position on the 1540 foot level. Two quartz veins were cut by this crosscut, either one of which may be the Denver Vein. On the most northerly one 120 feet of drifting did not find any ore. At 120 feet this drift left the vein and continued about 200 feet farther to the west on a contact. On the southerly vein no drifting was done.

All of the work done on the 1880 foot level therefore has not yet found the downward continuation of these ore shoots. This work is however by no means conclusive, and the various drifts must be extended on the veins. Long experience in Tonopah has shown that in many places the most productive veins become small and barren, and that they can change to good widths of pay ore with great suddenness. At this time, however, the heavy pumping expense and the low price of silver, compelled abandonment of the development work on the 1880 foot level and confining of the work to the ore on the levels above.

Hence the important unmined ore which was exposed at the time the mine shut down consists of the sill-floors or bottom of the 1650 foot level. These sill floors are all shown and designated by number on the maps sent by the Company with their application. The assay values of samples obtained therefrom in the course of mining are also shown, in ounces of silver per ton of ore. A table is attached giving the number of each of these sill floors, length and average width of the ore, horizontal area of the ore, average assay value of the ore, and the product of area times average assay value. These figures, as before stated, are from Company maps and assay reports. The assay figures, as far as practicable, have been checked by going over the Company's daily assay reports. The average assay value as given for any sill is the arithmetical average of all the assays which the daily reports show as coming from that sill. The general average assay for the whole level is obtained by weighting the average for each sill according to the area of the sill. These figures result in a total sill floor area of 10,246 square feet, and an average assay value for this area, as computed from daily mine samples, of 14.05 ounces silver per ton. The ore of this mine runs so uniformly 100 ounces of silver to one ounce of gold that mine samples are not assayed for gold, the content being assumed as one per cent of the silver content. Hence we may assume that this ore will have an average assay of 0.14 ounces of gold per ton.

The next point to consider is what tonnage of ore may be figured on from the showing of these sills. Tonopah ore is of such a specific gravity that 12.5 cubic feet of average ore in place weighs one ton. For these sills each foot vertically that they extend below the 1650 foot level will contain 10,246 cubic feet, or 820 tons.



It is expected that further development to the Westward on the 1880 foot level will disclose the downward continuation of these ore deposits to this horizon and as work is advanced below the 1880 foot level the ore bearing areas, when developed, will disclose important merchantable ore deposits. The ore bearing formation pitch to the West and it has been disclosed that ore shoots encountered therein also have a Westerly pitch but these formations when prospected have disclosed ore bodies.

On the Murray Vein, the ore shoot was large and rich on the 1880 and 2000 foot levels, and was still important on the 2125 foot level. It therefore seems to me a reasonable assumption that these shoots under discussion will extend downward from the 1650 foot sills to the 2125 foot level, a vertical distance of 475 feet. This would make a tonnage of 389,500 tons, of an average assay of 14.05 ounces silver and 0.14 ounce gold per ton, to be classified as probable ore, since it is exposed on one side only.

It is also probable that exploration to the westward on all levels from 1200 to 2125 will develop other new shoots of ore. The company's geological maps show good veins in the faces of the west drifts on the Merton Vein on the 1200, 1540, and 1650 levels, and the Denver vein on the 1540 and 1650 levels, although the values in the veins at these points are low. The rocks encasing the veins are still the ore bearing rocks, in which or on whose contacts ore bodies have occurred. Also, the ore bearing rocks are exposed in workings from the Company's West Tonopah Shaft. These exposures are about 2000 feet southwest of the present west faces. It seems reasonable therefore to expect other ore shoots to occur west of the present known ones. An intensive development campaign must be kept up to explore this area, and the cost per ton for development will be high. This will be unavoidable in order to keep up a supply of ore for the mill.

The ore supply can therefore be briefly summed up as follows:

- (1) A block exposed on one side (bottom of 1650 level), and assumed to extend to 2125 foot level, and estimated to contain 389,500 tons of an average grade of 14.05 ounces silver and 0.14 ounce gold per ton.
- (2) A block of geologically favorable ground extending 1500 to 2000 feet, and possibly much farther, to the west of the present faces, into which the known veins are headed on their respective courses. This is a block which should produce a large amount of ore, but for which it is impossible at present to present any definite figures as to tonnage to be expected.

Some investigation was made to see how mine sampling can be expected to check actual returns from milling ore. During the calendar year of 1930, the 98,486 tons mine averaged 15.3 ounces silver per ton. Of this ore, 91,170 tons, or 92.5 per cent, came from stopes above the 1650 sill, average assay for which has been shown to be 14.05 ounces. From this it seems to the figure arrived at from the mine assays can be safely counted on to be realized in the actual milling. Reference to the attached production table shows that all the ore mined from 1912 to date averaged 15.2 ounces per ton.

A table is attached showing costs per ton for past operations as future costs will no doubt be closely comparable. Figures for some of these years are abnormally high, as in 1921-22 on account of labor strikes and 1926-27 because of reduced scale operations. Costs in the last year of operation, 1930, are abnormally low, because of less than normal pumping and development expense. Future costs can not now be



estimated in detail with great accuracy, because many of the factors entering are not known. I believe, in view of the cost of past operations, that \$9.50 per ton is a fair figure to cover the cost of mining, milling, and marketing.

On the basis of these figures, the net profit from the probable ore would be as follows:

<u>Estimated Tons</u>	<u>Assay ounces per ton</u>	<u>Gross Value per ton</u>	<u>Recovered Value at 93% Extraction</u>
339,500	Ag 14.05 Au 0.14	Ag @ .64 $\frac{1}{2}$ cents Au @ 35.00 13.96	\$12.98
<u>Cost per ton</u>		<u>Profit per ton</u>	<u>Total profit</u>
\$9.50		\$3.48	\$1,355,460.

#### REDUCTION WORKS.

The company's 60 stamp mill and 500 ton cyanide plant was inspected. It appears in good condition except for reasonable repair and reconditioning. The original cost of this plant was \$452,628.16 of which \$320,588.33 has been written off as depreciation. This leaves present book value \$132,039.83.

#### EQUIPMENT AND BUILDINGS

The major items under this head have been inspected also, and are in general in good condition except one of the Bethlehem Diesel Engines, which is dismantled. Original cost of all machinery equipment, and buildings, exclusive of Reduction Works, is shown on the Company books as \$1,529,302.63. This has been written down to \$706,552.45, of which approximately \$522,000 is the present book value of the Diesel Plant. It is difficult to place a valuation on any of this equipment, other than to take the book value. Obviously its value as a going plant is far in excess of its value if sold off as used equipment.

#### MINING CLAIMS

The company's Mining Claims were checked from the maps and other records, and the number of claims and acreage verified. Undeveloped mining claims are hard to evaluate, especially where the ore bearing formations do not outcrop. There seems to be no way to appraise these claims except to take the book value, which represents the judgment of successful operators at the time the various parcels of ground were acquired. This book value is \$544,649.83, representing 106 patented claims, acreage 1480.56, and 43 claims held by location, acreage 764; total acreage 2244.56.

The assets offered as Collateral are, therefore:

Net profit from Probable Ore	
to 2125 foot Level -----	\$1,355,460.00
Reduction Works (Company's Book Value) -----	132,039.83
Machinery and	---
Buildings ( " " " )	706,552.45
Mining claims ( " " " )	544,649.83
	<u>\$2,738,702.11</u>

Respectfully Submitted,

January 18, 1935.

/s/ John L. Dwyer  
Mining Engineer.



TABLE SHOWING SILL AREAS  
AND ASSAYS ON 1650 FOOT  
LEVEL AND ESTIMATES OF  
PROBABLE TONNAGE BETWEEN  
1650 and 2125 LEVELS

<u>PLACE</u>	<u>LENGTH IN FEET</u>	<u>WIDTH</u>	<u>AREA IN SQ. FT.</u>	<u>ASSAY-OZS.</u>	<u>AREA X OZS.</u>
1622 Sill	175	7.0'	1224	24.4	29,866
1622 W. Sill	165	4.9'	815	8.2	6,683
1622 Sill	150	6.1'	918	10.4	9,547
1632 Sill	160	5.5'	880	17.0	14,960
1660 W. Sill	75	20.0'	1500	13.5	20,250
1650 W. Sill	100	18.3'	1827	18.3	33,434
1650 Sill	135	5.6'	750	7.2	5,400
1652 Sill	100	7.85'	785	7.2	5,652
1651 Sill	100	5.35'	535	10.9	5,831
1655 Sill	115	8.8'	1012	12.2	12,346
			10,246	14.05	143,969

$10,246 \div 12.5 = 820$  Tons per vertical Foot

$820 \times 475 = 389,500$  Tons  $\times 14.05$  5,472,475 Ozs. Silver.



" TABLE SHOWING COSTS PER TON "

YEAR ENDED MAR. 31, 1931	TONS MINED & MILLED	FEET DEVEL- OPMENT DONE	MINING COST	MILLING COST	MARKET- ING COST	TOTAL COST PER TON
1912	50,900	10,156	\$ 4.725	\$ 3.247	\$ 0.227	\$ 8.199
1913	54,616	11,172	5.331	3.290	0.293	8.854
1914	58,022	16,092	5.784	3.979	0.190	8.953
1915	71,882	12,651	5.191	3.753	0.450	9.394
1916	91,981	12,967	4.614	4.473	0.501	9.593
1917	109,402	12,017	4.900	3.623	0.296	8.819
1918	110,187	10,977	5.260	3.210	0.171	8.641
1919	114,921	10,322	4.804	3.447	0.237	8.484
1920	70,611	5,941	5.512	3.964	0.225	9.711
1921	89,022	9,114	6.440	4.091	0.270	10.801
1922	84,463	10,024	6.071	3.842	0.207	10.120
1923	134,801	8,884	5.568	3.530	0.221	9.319
1924	144,917	12,469	5.737	3.457	0.252	9.446
1925	171,046	13,997	5.890	3.337	0.288	9.515
1926	73,247	13,401	9.214	4.293	0.212	13.719
					2.443*	
1927	51,587	8,574	11.764	3.583	0.164	18.054
1928	66,024					
1929	42,401					
Apr. 1, 1929 to Dec. 1, 1929	49,194					
Calendar Year 1930 * Special,	98,486		5.071	2.549	0.222	7.842

" TABLE SHOWING PRODUCTION AND GRADE OF ORE "

YEAR ENDED MAR. 31	TONS MINED & MILLED	OUNCES AG CONTAINED	OUNCES GOLD CONTAINED	SILVER OZ PER TON	GOLD OZ PER TON
1912	50,900	848,408	9,011.8	16.67	0.177
1913	54,616	957,675	9,758.6	17.53	0.179
1914	58,022	862,636	9,065.9	14.86	0.156
1915	71,882	2,022,220	19,040.4	28.13	0.264
1916	91,981	2,293,466	22,130.4	24.93	0.240
1917	109,402	2,068,650	19,622.4	18.91	0.179
1918	110,187	1,296,999	12,484.9	11.77	0.117
1919	114,921	1,473,007	13,957.2	12.82	0.121
1920	70,611	858,411	8,180.3	12.16	0.116
1921	89,022	1,150,963	11,324.4	12.93	0.127
1922	84,463	889,778	8,845.2	10.53	0.105
1923	134,801	1,709,498	17,459.3	12.68	0.129
1924	144,917	2,227,419	23,211.2	15.37	0.160
1925	171,046	2,927,721	31,524.6	17.12	0.184
1926	78,347	901,627	9,037.5	11.51	0.115
1927	51,567	541,589	5,133.6	10.50	0.100
1928	66,024	825,723	7,534.1	12.51	0.114
1929	42,401	559,371	5414 .6	13.19	0.128
Apr. 1, 1929 to Dec. 31, "	49,194	539,127	5,369.7	10.96	0.109
Calendar Year 1930	98,486	1,507,378	14,770.2	15.30	0.150
Month of Jan. 1931	4,500	99,450	1,078.9	22.10	0.240
	1,747,312	26,561.138	263,961.2	15.30	0.151