12th April 1968

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DOLLY VARDEN MINES LTD
SUMMARY REPORT

INTRODUCTION

As the result of further study, particularly of the plans of the Torbrit Mine, I have prepared this new account to replace my summary report dated 23rd December 1967.

ABSTRACT

An ore reserve of 1,260,000 tons averaging 8.2 oz Ag plus important amounts of lead, zinc and cadmium has been calculated of which 32% is considered proven, 37% probable and 31% possible.   These figures include an allowance of about 10% for dilution.

This reserve will justify an operation of at least 600 tons per day which, for 330 days of milling, amounts to 200,000 tons per year.   It is likely, however, that the rate of milling would be 660 tons per day for a six day week and that mining would be 800 tons per day for a five day week.

It is estimated that a net smelter return of $20.00 per ton will be obtained of which $10.00 per ton would be working profit.   These figures assume that the silver will be sold for $2.00 per ounce.

About 2½ million dollars will be required for capital expenditures to place the mine in production plus about $300,000 for working capital.

There are several areas where there are excellent chances of developing further substantial amounts of ore.

ORE RESERVES

WOLF

Here a considerable amount of lower grade material can now be regarded as commercial. The re-calculated reserve is as follows :

VEIN	PROVED		PROBABLE		POSSIBLE		TOTALS	
	Tons	oz Ag	Tons	oz Ag	Tons	oz Ag	Tons	oz Ag
No 1	40,000	15.0	25,000	12.0	35,000	8.0	100,000	11.0
No 2	140,000	7.2	116,000	8.8	116,000	8.8	372,000	8.2
No 3	-	-	50,000	6.5	50,000	6.5.	100,000	6.5
TOTALS	180,000	8.9	191,000	8.6	201,000	8.1	572,000	7.9
Dilut.	20,000	1.5	19,000	1.5	19,000	1.5	58,000	1.5
TOTALS	200,000	8.15	210,000	8.0	220,000	7.5	630,000	7.9

The stopes would be from 20 to 60 feet wide and in excellent ground in most cases.

No systematic assaying was done for lead and zinc but at least 0.5% Pb and 2.0% Zn would be a reasonable estimate from the appearance of the ore.

NORTH STAR

Many of the drill hole intersections in the main ore-body here were assayed for Pb and Zn, both originally by the Torbrit Mining Co and by Newmont Exploration so that the content of these metals can be evaluated. Newmont also assayed for cadmium in a number of cases from which I have estimated a ratio between the zinc and cadmium.

There are 30 drill hole intersections in this ore-body over a vertical range of 300 feet and a length of 260 feet. Since the holes are regularly spaced and the values fairly consistent the ore is placed in the proven category. For the

first 40 feet vertically, however, the silver grade is considerably lower than for the rest, partly because of a zone of dykes.   This portion is therefore shown separately in the next tabulation :

	Tons	oz Ag	Pb%	Zn%	Cd%
40' to 300' above 1000' level	150,000	9.0	0.8	3.0	0.075
0' to 40' " " "	45,000	3.7	0.8	2.7	0.065
Total	195,000	7.8	0.8	2.9	0.070

A factor of 8% for dilution has been used in the above figures.

The stoping widths would be from 28 to 50 feet horizontally for an average dip of 45°.

Partial exploration with diamond drilling and raises has proved at least 11,000 tons averaging 9.4 oz Ag per ton in a faulted segment of the ore zone immediately to the north.   After dilution this becomes 12,000 tons at 8.6 oz Ag.

A second faulted segment to the north is estimated to contain another 25,000 tons of probable ore averaging 6.8 oz Ag per ton or 28,000 tons at 6.0 oz Ag per ton after dilution.

The limited assaying suggests that the lead and zinc contents are 0.2% and 1.0% respectively for both segments.

The calculated ore for both these faulted blocks is above the level only. It is expected that the ore will continue below the level.

TORBRIT

A recent investigation of the maps and sections of the old Torbrit mine revealed various areas where the grade that was too low with silver at 90¢ per ounce can now be considered profitable.   Four blocks of ore have been selected so far as being reasonably assured and accessible.   Others were noted which will probably require check drilling.   The calculated blocks are as follows :

	PROBABLE		POSSIBLE	
	Tons	oz Ag	Tons	oz Ag
Block 1 1000 to 1100 level Coord. 7845E-8020E, 7050N-7330N	160,000	7.0		
Block 2 800 - 900 level Coord. 7845E-7945E, 7150N-7340N	33,000	8.0		
Block 3 Dyke Zone 800-1000 level			150,000	8.0
Block 4 Far NW 700-800 level 7670N-7760N			24,000	8.0
Totals	193,000	7.2	174,000	8.0

DOLLY VARDEN

Because of the lack of more details the old reserve is used here, namely :

50,000 tons of probable ore averaging 20.0 oz per ton.

TOTAL RESERVE

The various ore blocks in the four deposits are summarized as follows :

DEPOSIT	PROVED		PROBABLE		POSSIBLE		TOTALS	
	Tons	oz Ag	Tons	oz Ag	Tons	oz Ag	Tons	oz Ag
Wolf	200,000	8.15	210,000	8.0	220,000	7.5	630,000	7.9
North Star	207,000	7.8	28,000	6.0			235,000	7.6
Torbrit			193,000	7.2	174,000	8.0	367,000	7.6
Dolly Varden			50,000	20.0			50,000	20.0
Totals	407,000	8.0	481,000	8.8	394,000	7.7	1,282,000	8.2

EVALUATION

The value of the ore is calculated on the basis of the following prices :

Ag $2.00 per oz,   Pb 14¢ per lb,   Zn 13¢ per lb and Cd $2.85 per lb.

The percentage of the content of the various metals in the ore that would be paid for by the smelter are assumed to be :

Ag 90%,   Pb 80%,   Zn 60%,   Cd 60%

For the Wolf and North Star ores together the average mining grade is taken as :

Ag 8.0 oz per ton,   Pb 0.6%,   Zn 2.0%,   Cd 0.01%.

Using the above figures the net returns for the metals would be :

Ag $14.40,   Pb $1.30,   Zn $3.20,   Cd $1.30

giving a total of $20.20 per ton.

Each increase in the price of silver of 10¢ per oz will add $0.70 to the value per ton of the ore.

MINING

Since about 800,000 tons of the reserves is situated above adit levels it will not be necessary to sink a shaft at the Wolf mine or to dewater the lower workings of the Torbrit mine before going into production.

It is expected that due to labour costs and union demands it will be practical to operate the mine for only 5 days per week and the mill for 6 days per week with a 2 day closure on alternate weekends.   So, effectively, the mine would operate 250 days and the mill 300 days per year.   Thus for a yearly production of 200,000 tons the mine would produce 800 tons per day and the mill would treat 660 tons per day.

For the first three years the ore would come from the Wolf and North Star so that during 1968 and 1969 these two areas would be prepared for stoping.

Because of the size of the ore-bodies they can be mined cheaply by retreating, open stopes using longhole blasting and by handling the ore with rubber-tired equipment such as the transloader, scooptram etc.

Once the mine is in production development would be started below the adit level at the Wolf either via the conventional shaft method or more likely by an incline at -16% using rubber tired equipment.

Probably in the second year of production the ore above the 1000 level in the Torbrit mine would be readied for stoping and some drilling done to outline further ore.   In the following year the lower workings at the Torbrit mine would be dewatered for ore development and exploration.

C O S T S

At the rate of 200,000 tons per year the following operating costs per ton of ore milled should be possible :

	$
Stoping	3.00
Development	1.00
Haulage underground	0.40
Trucking ore	0.50
Milling	2.50
Freight on concentrates	0.60
Camp maintenance	1.00
Administration etc	1.00
Total	$ 10.00

L O C A T I O N   O F   M I L L

The choice of a mill site appears to be limited to either the old site of the Torbrit mill or adjacent to a flat area about half way between the Torbrit mine and the Wolf workings.

The old site has the advantage that the maximum amount of ore will move downhill and only that which is found below the 1000 ft level would need hoisting.   As before the mill tailing would be discharged into the Kitsault River.   If this is no longer permitted then the tailing would be flumed several miles to a suitable disposal area.

The second choice is about one mile south of the Wolf workings where there is a swamp area suitable for tailing disposal.   It would necessitate raising all ore from the North Star and Torbrit mine up the old Torbrit shaft and trucking it for about one mile.   This may be the best site for the present distribution of the ore reserves but a major ore development in the Dolly Varden vein could shift the balance.   A closer investigation will be necessary on the ground.

OTHER ORE POSSIBILITIES

The presently known areas of potential ore are as follows :

1.   Wolf No 2 vein - North end from 1000 to 700 elevation.

     Wolf No 3 vein -South end from 1100 to 900 elevation.

2.   North Star below 1000 level

3.   Dolly Varden Vein - Extensions of known ore and new sections to east and west.

4.   Torbrit mine - Involves further study of old records, pumping out workings and drilling.

FINANCES

The figures on the next page show that 2½ million dollars would be required to place the mine in production at the rate of 200,000 tons per year.   In addition a working capital of say $300,000 would be required for the first few months of operation.

The previous figures in the sections on the evaluation of the ore and on operating costs indicate that a working profit of $10.00 per ton is attainable.

This is equivalent to two million dollars per year before taxation, write-offs etc so that the past capital investment plus the new capital required could both be paid back in about two years.   In the following four years the same rate of working profit should be realized.   In the meantime further exploration and development should have found more ore that would keep the mine operating for several more years.

PRODUCTION SCHEDULE

The following is a suggested schedule for putting the property into production with the approximate cost of each item :

1968

		$
1.	Renovate present housing	25,000
2.	Repair hydroelectric installations	100,000
3.	Improve road between Torbrit and Wolf	50,000
4.	Buy essential vehicles	50,000
5.	Further mill test work	10,000
6.	Design mill	50,000
7.	Buy underground equipment as required	100,000
8.	Prepare North Star for mining	100,000
9.	Wolf No 2 vein – Raise for ore pass 1200 to 1350	9,000
10	Wolf No 2 vein – Drift on 1350 level	12,000
11	Prepare new mill site	10,000
12	Begin housing project at Alice Arm	250,000
13	Major overhaul of road from Alice Arm by government	

1969

14	At Wolf raise from 1200 to 1450 into No 1 vein	15,000
15	At Wolf prepare No 1 vein for stoping	10,000
16	At Wolf prepare No 2 vein for stoping	50,000
17	Buy further vehicles as required	50,000
18	Erect mill (salvaging some equipment from old mill)	750,000
19	Buy further underground equipment	150,000
20	Further housing	250,000
	Contingencies	209,000
	Total	$2,250,000