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May 16 - BRISTOL SILVER MINES CORPORATION  
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Snyder interests

Mine at 7300' elevation in north end of Bristol Range; 25 miles from Pioche by road or 12 miles air line south to Pioche.

Surrounding country surprisingly green and "thickly" vegetated for Nevada. Plenty of rain this year with production of many species of flowers including wild cherry or plum, wild sweet peas, several species of daisy. Also many cactus and sage blossoms. Greasewood, mountain cedar and pinon trees. No vast expanses of white limestone as anticipated!

Aerial tram about two miles to Jackrabbit Mine near highway where a company owned spur railroad connects with U. P. branch in Pioche from Caliente. Tram has 35 buckets 800# each. Capacity of tram about 300 tons per day. 1 3/8" supporting cable - 5/8" pulling cable activated by 15 h. p. induction motor. Ore in "old days" taken out on mules. Road into camp in worst spot about 15° or 26%).

About 60 tons per day sent by tram. Only one shift and most of ore from lower levels - 1500-1700.

Present policy is to block out plenty of ore and just mine enough to keep ahead of expenses. This policy outgrowth of earlier experience (before 1936) when not sufficient ore blocked out.

Total production of Bristol Silver Mine has been in excess of \$7,400,000 over period 1878-1940.

For each foot of development since 1924, 7.8 tons ore produced. Ore is properly mixed to get the most economical smelter and freight rates.

From 1906-1940 378,872 tons ore shipped to Salt Lake smelters with gross metal payment value of \$4,434,534 and a net mine value of \$3,122,433. Average net mine value of \$8.24 per ton. At present expected production is in excess of 36,000 tons per year at overall cost of not over \$5.00 per ton.



Recent developments on 1700 level indicate possible commercial sulphide ore above water level. Virtually all ore above this level is thoroughly oxidized.

Bristol Silver has 84% stock in Black Metals Mine (Jackrabbit) in which no work has been done since May 1927. From 1924 to 1927 22% manganese ore shipped to Colombia steel (25000 tons with net mine value of \$3.97 per ton. Total production between \$2,500,000 and \$3,000,000. Most of value in silver. Some 30-50 and 329 oz. ore. Ore below 300 was lower in grade.

COST PER TON ORE PRODUCED DURING FULL-YEAR OPERATING PERIODS

1934-1940 Bristol Silver Mines Company, Bristol Silver, Nevada.

	<u>1934</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u>
Direct Mine Cost	\$3.74	\$3.17	\$3.51	\$1.88	\$3.20	\$2.39
Ind. Cost	0.97	0.94	1.23	1.02	1.15	1.51
Devel. Cost	0.90	0.60	0.51	0.66	1.54	1.42
Tramway Cost	0.28	0.24	0.35	0.48	0.55	0.31
Salt Lake Office	0.25	0.22	0.22	0.23	0.40	0.32
Co. operated R.R. Cost	0.62	0.39	0.77	0.51	0.44	0.21
Development ft.	799	1,367	1,943	2,041	2,688	2,351
Production dry tons	12,670	16,246	16,652	20,386	13,729	10,414
Day's pay Miner's	3.75	4.25	4.87	5.00	5.00	5.10

(Above data high and low points in graph - taken from report by J. H. Buehler and Paul Gemmill, February 1941 with permission of Paul Gemmill.)

Different types of ore in Bristol Mine attributed to certain types of fissures carrying characteristic mineralizing solutions. There are four types of fissuring throughout mine which results in four classes of ore:

FOUR STAR BOND



(1)	<u>Secondary Copper:</u>			Cu	Zn	Fe	CuO	Mn	Insol.
	Au	Ag	Pb						
May Day N 65° E to E-W & dip 35°-55°S	01	5.0	0.1	17.5	--	12.5	10.8	1.0	15.6

(2)	<u>Iron-Copper</u>			Cu	Zn	Fe	CuO	Mn	Insol.
Tempest type more nearly E-W dip 70° S.	025	17.0	1.0	3.5	1.5	28.0	8.0	2.0	7.0

(3)	<u>Lead-Zinc</u>			Cu	Zn	Fe	CuO	Mn	Insol.
Gypsy type N 7°E to N 15° E - dip 65°- 80°E.	015	10.1	8.5	0.1	10.3	1.5	30.5	2.5	6.8

	<u>Lead</u>			Cu	Zn	Fe	CuO	Mn	Insol.
Lead-Zinc type N 20° W dip 75°- 80°W.	015	12.5	8.6	1.8	6.2	8.5	22.0	2.0	8.0

High Fe, Mn and CaO result in low treatment costs at smelters.

Production from Hillside Mine (above Bristol) principal supply for Bristol Wells Smelter (5 mi. W) in late '70's early '80's. Smelter ceased operations due to small amount sulphur in ore causing Cu and Ag. loss in slag. Then pan amalgamation site built at Roeder Mill Site and 10,000 tons from Hillside treated. Then mill shut down and ore and slag from smelter sent to Salt Lake and good profit.

Bristol Silver Mines Company organized 1919. Jackrabbit - Pioche narrow gauge purchased from Pioche Pacific R. R. June 5, 1930 and in first seven months \$21,503.34 saved in haulage cost to Caliente-Pioche branch of U. P. R. R. Total purchase price was \$35,000.

Prior to 1926 Bristol operated with gasoline engines. In 1926 two 240 H. P. Fairbanks Morse Diesel Engines, directly connected to two 2300-volt generators. In 1920 360-h. p. F. M. diesel and 440-h. p. I. R. diesel added. Total is 1,280 h. p. These operated from 1926 to September 1, 1937 when power was obtained from Boulder Pioche powerline. (Bristol and Combined Metals Reduction Company prime movers in getting Boulder Dam power to Pioche).

On monthly production of 3,000 tons and 250' development work, power consumption was 125,000 KWH per month. Former cost with diesel power



was 3¢ per KWH while Boulder Dam is 1¢ a KWH, thus saving \$2,500.00 per month or 83¢ a ton along with saving by purchase of R. R. Total reduction in <sup>cost</sup> was \$1.60 a ton.

Surface machinery:

Nordberg double drum hoist with time relay controls and direct connected to 125 h. p. Westinghouse slip ring ind. motor.

One Sullivan 850 c.f. Angle Compound compressor directly connected to G. E. 150 h. p. Synch. motor.

One I. R. 450 c. f. Comp. Compressor belted to 75 h. p. G. E.

June 7

Shaft is 70° incline to 1700 - 3/4" rope. Lowest point in mine is about 1780'. Water level now about 1735'. Excessive flow due to water table in porous rock prevents lowering water unless pumping head decreased by a tunnel which is estimated would cost near one-quarter million dollars.

Mine has very good air due to extensive open workings. Very little water in mine above 1700--water table rises very little with topography in this area due to the porous sedimentary rocks.

Ore is replacement in limestone--very irregular and difficult to follow. Mining method must be varied with ground conditions.

Most of ore now from 1300 and 1500. On 1300, wheelbarrows are used. On 1500, some square setting used. Many ore passes and gopher holes to get ore. In several places, solution caverns have formed with fair coatings of copper minerals. In one cavern we were told that secondary zinc was formed. Plumbojarosite easily seen near faulted zones. Several badly brecciated zones near faults carry good copper and lead ore with silver.

So called "porphyry dikes" seem to limit ore locally. "Porphyry" looks like diabase--from few inches to several feet wide in places.



Two triplex pumps, one on 1700, other on 1200 pump 35 g. p. m. from 1700 for drinking and drilling purposes.

35 men working underground.

90 day leases on ore given; lessees furnish all material. Not guaranteed wages.

Every mineral is oxidized down to 1700 where pyrite is first primary sulphide found.

On 1700 shales found--very dense and massive with pyrite heavy. Associated limestone also has pyrite. 840' diamond drill hole from 1700 seems to approach intrusive.

Ore shipped is just under \$18.00 a ton to get best freight and smelter rates.

Minerals: limonite, hematite,  $\text{MnO}_2$ ,  $\text{PbS}$ ,  $\text{PbCO}_3$ ,  $\text{PbSO}_4$ ,  $\text{CuSO}_4$ ,  $\text{CuCO}_3$ , malachite, chrysocolla, some azurite, melaconite, sphalerite and  $\text{ZnO}_3$ .