July 29, 1965

Memorandum

To: Chief, Division of Exploration Operations

From: Acting Field Officer, Region I

Subject: Application Examination Report
OME-6420 (Silver-Gold)
Champion Silver Mining Co.
Champion Mine
Deer Lodge County, Montana

Introduction

In an application dated February 11, 1965, Champion Silver Mining Company requested assistance to explore for silver-gold ore bodies in the Ore Fino mining district, secs. 28 and 33, T. 6 N., R. 8 W., P.M. The proposed work was:

1. Deepen an existing 2-compartment shaft from the 900 level on the Champion vein to the 1050 level.

2. Excavate a station and ore pocket on the 1000 level.

3. From the 1000 level station, crosscut to and drift on the Champion vein below areas previously stoped.

4. From the Champion 600 level, drift 1000 feet northerly on the Lucky Strike vein.

The cost of the proposed work was estimated by the applicant to be $84,000.00, of which the Government's share would be 75 percent, or $63,000.00.

In a letter dated February 24, 1965, the Chief, Division of Exploration Operations advised the applicant that only proposal 4 could be considered as exploration. This was acceptable to the applicant, and the project was referred to the field. An examination was made May 15, 1965, accompanied by Miles Blunt, President, Fred N. Earll, consultant, and Victor DeNeal, superintendent for the applicant company. About 5 hours were spent on the property, and 1 hour was spent in Mr. Earll's office going over his file of relevant maps and having part of one map reproduced for reference in preparing figure 2.

Accessibility

From U. S. Highway 10, turn east at race track, about 5.5 miles north of Warm Springs or 10.4 miles south of Deer Lodge, and follow a good gravel-surfaced road for about 4 miles to a fork marked by a sign indicating the Champion Mine. Take the left fork and proceed about 3 miles to the mine.

Property

The company holds four patented claims under lease and option from the Anaconda Company and seven unpatented claims by right of location, all in secs. 28 and 33, T. 6 N., R. 8 W., and one unpatented claim in sec. 34, T. 6 N., R. 8 W. Of these, not more than three would be involved in the proposed Lucky Strike drift.

The intersection of the Lucky Strike vein and the Champion vein is on the Augusta claim about 225 feet from the east end line (fig. 1). The old shallow workings on the Lucky Strike vein are on the Lucky Strike claim. The trace of the Lucky Strike vein passes within about 20 feet of the northwest corner of the Lillie claim, as nearly as can be determined from the applicant's maps. In the old workings the Lucky Strike vein is said to dip 80° to 85° E.; on the Champion 600 level it dips 80° to 85° W. (fig. 2). Because of the changes in dip and the apparently short distance on the surface between the vein and the northwest corner of the Lillie claim, the claims included in any OME contract should be:

Augusta	Survey No. 2561;
Lillie	Survey No. 256;
Lucky Strike	Unsurveyed--recorded in Book 24, page 352.

Geology

The geology of the Oro Fino district and the Champion mine is briefly mentioned by J. T. Pardee and F. C. Schroeder (1933) in "Metalliferous Deposits of the Greater Helena Mining Region, Montana" (U. S. Geol. Survey Bull. 842, p. 233-235).

At the Champion mine the rocks are quartz monzonite or granite related to the Boulder Batholith and are cut by at least two shear zones. One shear zone strikes about N. 70° E. and dips 65° to 80° southeasterly and is called the Champion vein; the other strikes N. 10° to 15° E. and dips from 80° to 85° E. at the northern end, from 80° to 85° W. at the southern end, and is called the Lucky Strike vein.

The Champion vein has been developed through the Champion shaft to a depth of 850 feet, from which seven levels have been driven, the deepest being the 800 level. About 2400 feet westerly of the Champion

shaft, a tunnel was started from the surface and driven easterly to connect with the 600 level. Most of the ore mined from this vein came from within an area 900 feet long and 450 feet high. This area extends laterally from the Champion shaft about 600 feet west and 300 feet east, and vertically from the 250 level to the 700 level (applicant's Exhibit 7). Ore stoped from outside this area will pretty well make up for the pillars left within it. From the widths of samples shown on the 800 level map (applicant's Exhibit 5) an average mining width of 4 feet is a reasonable minimum to assume. Also assuming 12 cubic feet per ton, it is estimated that the total production from the Champion vein to date is 135,000 tons. According to Miles Flunt, mill heads ranged from 8 to 13 ounces silver per ton. Actual production of silver based on settlement sheets is not available but based on the above estimates, between 1,000,000 and 1,750,000 ounces of silver was mined.

There has been no production reported from the Champion vein since 1925. In 1963 two holes were diamond drilled from the surface. The first hole cut a vein having a corrected grade of 0.052 ounces gold and 15.5 ounces silver per ton over a mining width of 4 feet; the vein intercept of this hole is about 810 feet westerly from the Champion shaft at a depth of about 940 feet vertically below the shaft collar. The second hole cut a vein having a corrected grade of 0.038 ounce gold and 17.3 ounces silver per ton over a mining width of 4 feet; the vein intercept is about 990 feet west of the shaft at a depth of about 1,020 feet below the shaft collar. As a result of the showings in these two holes, the applicant reopened the 600 level portal and rehabilitated the 600 level for a distance of about 1,150 feet easterly. At 1,125 feet from the portal a new 2-compartment vertical shaft was put down to a depth of about 340 feet below the 600 level, and a crosscut to and drift on the vein at the 900 level has been driven from the shaft.

During the examination, the 600 level was examined as far as it had been reopened, and the new 900 level was examined to the face, which lacked about 80 foot of being above the second drill hole (fig. 1). The vein is a shear zone up to 10 feet wide in which quartz lenses en echelon have been deposited.

About 750 feet from the portal, a shear zone 5 feet wide, striking about N. 10 E. and dipping 85 W. crosses the 600 level drift. This is believed to be the Lucky Strike vein. The hanging wall part of the vein is soft gouge fairly heavily stained by iron oxide and contains broken vein quartz; the balance is sericitized, soft, ground-up quartz and quartz monzonite. Both walls are sharply defined by hard, slightly sericitized quartz monzonite. A sample of the hanging wall section assayed Tr gold and Tr silver per ton over a width of 1.5 feet, and one of the rest of the vein assayed Tr gold and Tr silver

per ton over a width of 4 feet. A sample taken at this exposure by the applicant assayed Tr gold and 0.3 ounce silver per ton over a width of 5 feet. About 240 feet from the 600 level portal, a drift has been turned northerly to follow the Lucky Strike vein, but a cave at about 110 feet prohibited further entry. By shining a light over the top of the cave, a second larger one could be seen about 35 feet beyond. When it was open, this drift was mapped by Anaconda Company geologists. Their map was traced and shows the vein as coming into the east wall of the drift beyond the caves (fig. 2).

The road from the camp to the shallow workings on the Lucky Strike claim was not passable, and the workings were not visited. Mr. DeNeal mined from those workings in 1940 and gave the following information. At a depth of 80 feet in the shaft, a drift was run southerly for 60 to 70 feet. Ore was mined nearly to the surface with a 3-foot vein width at the level. Above the level, the vein narrowed to 10 to 18 inches and was mined selectively. The shaft was put down vertically, but the dip of the vein varied from 80° to 85° easterly. The last shipment was made in 1941. DeNeal stated that he was not sure of the shaft depth but that no stoping has been done below the 80 level. Of 14 settlement sheets cited by the applicant, one may be erratic and is discarded, but the other 13 show that 540,962 dry pounds, or 270.481 tons shipped from the Lucky Strike shallow workings produced 13.25 ounces gold and 6,107.46 ounces silver, equal to an average grade of 0.049 ounce gold and 22.58 ounces silver per ton. Although only 30 of the assays shown on the applicant's exhibit 5 were averaged, they indicate at the 800 level a grade of 26 ounces silver per ton, and the two drill holes to the Champion vein averaged 16.4 ounces silver per ton. Thus it would appear that the grade of ore in the Champion and the Lucky Strike veins is in the order of 20 ounces silver per ton and, in the Champion vein, is fairly constant within a vertical range of at least 900 feet.

Conclusions

Although exact elevations are not available, from the Butte North quadrangle map it appears that the collar of the Lucky Strike shaft is about 140 feet lower than that of the Champion shaft. It is therefore concluded that the proposed drift northerly on the Lucky Strike vein will pass about 370 feet below the known stoped area. It is also concluded that the chance of any ore on the Lucky Strike vein continuing to the 600 level is good.

Due to the fairly steep slopes, the heavy timber cover, and the boulder-filled overburden, trenching across the veins to locate possible ore shoots between the known shoot and the Champion vein would be costly and difficult and could be wasteful. However, the Lucky Strike ore shoot and the Champion ore shoot indicate that the chance of finding additional ore shoots by further work on either

structure is better than fair. It is concluded that drifting below the Lucky Strike ore shoot would be development but that drifting from the Champion vein to the proximity of the Lucky Strike ore shoot would be exploration and is reasonable. The distance between the end of the 600 level Lucky Strike drift and the old workings is about 1,050 feet.

The suggestion in your memorandum of April 7, 1965, that consideration might be given to starting a drift on the vein from a higher elevation on the hill above the Champion adit was discussed with the applicant. The location of the Lucky Strike shaft and the intersection of the Lucky Strike-Champion veins were plotted on the Butte North quadrangle topographic sheet. This indicates that the Lucky Strike vein crops out about 240 feet vertically above the intersection. The applicant gives the backs at this point as 250 feet. A drift started here would be about 130 feet below the Lucky Strike workings, and the amount of drifting in order to explore the intervening ground would be the same. As there is evidence that the silver values in the Champion vein are fairly constant to a depth of some 800 feet below the 600 level, there is no reason to expect that they will die out in the Lucky Strike vein above the 600 level. Moreover, to start this portal would require about 2 to 3 miles of new access road which, due to the nature of the terrain, would be costly. For these reasons, the applicant is unwilling to start a new tunnel from the surface. For the same reasons, he is not receptive to preliminary trenching or diamond drilling from the surface. It is concluded that his reluctance to consider these suggestions is reasonable.

Recommendations

Because it is uncertain but possible that the Lucky Strike vein may cross the northwest corner of the Lillie claim, it is recommended that this claim be included in the land described in Annex I of a contract, and that the applicant be required to furnish an appropriate guarantee to protect the Government's right to royalty on production from this claim and the Augusta claim. Except for these two claims and the Lucky Strike claim, none of the other claims owned or controlled by the applicant will be affected by the exploration work.

It is not possible to determine how much rehabilitation will be required in the existing Lucky Strike drift. It is therefore recommended that the applicant be asked if he is willing to undertake this at his own expense.

It is recommended, after these two points have been satisfactorily met, that a two-stage contract be prepared as follows:

Stage I.—From the face of the existing 600 level Lucky Strike drift, follow the vein northerly for a distance of 650 feet. This is about two-thirds of the distance to the south end of the Lucky Strike workings. At 200, 400, and 600 feet from the start of the OME drift, drill long holes up to 50 feet deep into the east wall to probe for possible vein splits or en echelon veins. If offsetting faults are encountered, provision for up to 50 feet of crosscutting, in addition to 650 feet of drifting, is recommended.

Stage II.—If an ore shoot is found by Stage I work, or if there is an encouraging and consistent increase in silver values near the end of Stage I, the drift may, with Government approval, be continued an additional 300 feet.

Costs

Drifting

950 feet of drift and 50 feet of crosscut, 5'x7' rock or timber section. Estimated rate of advance 5 feet/shift, 2 shifts/day, 22 days/month; 4.5, say 5, months required.

1. Independent contracts		None
2. Labor and supervision (per day)		
4 miners @ $21.20/day	$ 84.80	
2 helper-trammers @ $19.59	39.18	
1 mechanic-electrician @ $24.00	24.00	
1 geologist-engineer-supervisor @ $750/month, say $34.00	34.00	
Total	$ 181.98	
FICA and other insurance @ 17.9%	32.57	
	$ 214.55	
At 10 feet/day		$ 21.45/foot

3. Operating materials and supplies (per 5-foot round)

17 lb 40% powder @ $27.50/cwt	$	4.67
50 lb ammonium nitrate prills @ $5.75/cwt		2.88
950 ft 2" air line w/fittings @ $.65/ft (less 50%—no salvage)		1.55
950 ft 1" water line (plastic) w/fittings @ $.15/ft (less 50%—no salvage)		.35
150 ft 1" air hose w/fittings @ $.44/ft		.33
150 ft ½" water hose w/fittings @ $.25/ft		.20
900 ft 12" vent tube @ $1.50/ft (less 50%—no salvage)		3.37
2.5 ties @ $.40 ea		1.00
62.25 lb 25# rail @ $150/T (less 50%—no salvage)		3.12
Spikes, fishplates, bolts, etc. @ $.50/ft		2.50
50 gal. diesel oil @ $.195/gal.		9.75
5 gal. gasoline @ $.31/gal.		1.55
Oil and grease, 10% of fuel		1.13
Steel, 1 replaced/300 ft @ $11.00 ea 150 ft/round		5.50
Bits, 1 replaced/300 ft @ $3.75 ea 150 ft/round		1.88
Small tools and repair parts @ $.50 ft		2.50
30 blasting caps, 6 and 7 delay, @ $.35		10.50
1000 ft blasting wire @ $.08/ft		.40
10 lb connecting wire @ $1.15/lb		.06
	$	53.24

At 5 ft/round $ 10.64/ft

4. Operating equipment

Owned by applicant	Present fair market value	Allowed deprec./mo.
1 IR Imperial 10 compressor	$4,475.00	$ 74.58
1 Baldwin-Westinghouse locomotive	5,000.00	83.33
1 Vent fan, 5 HP	150.00	2.50
6 1-ton mine cars	210.00	3.50
1 G-D jackleg drill	600.00	10.00
1 Cleveland drill	300.00	5.00
1 B-12 mucking machine	1,500.00	25.00
1 1-ton pickup truck	1,900.00	31.67
		$ 235.58
For 5 months		$1,177.90
At 1,000 ft		$ 1.18/ft

5. and 6. None

7. Miscellaneous

Assaying 300 cut and/or channel samples, assayed for gold and silver @ $3.20	$ 960.00
Total unit cost for drifting	$ 33.27 say $ 33.00/ft

Timbering

It is estimated that 30 percent, or 300 feet, of drift and crosscut may require timber and that one shift will stand, block, and lag three sets, or 15 feet. 300 feet will require 20 shifts.

1. Independent contracts — None

2. Labor and supervision (per shift)

1 miner @ $21.20	$ 21.20	
1 helper @ $19.59	19.59	
	$ 40.79	
FICA and other insurance @ 17.9%	7.30	
	$ 48.09	
At 15 ft/shift		$ 3.21/ft

3. Operating materials and supplies

122 posts 8"x8"x7',	4,555 bf		
61 caps 8"x8"x6'6",	2,115 bf		
122 collar braces 4"x6"x4'2"	1,017 bf		
1,000 lagging 2"x12"x5'	10,000 bf		
	17,687 bf		
At $75/M	$ 1,326.52		
Plus 10% (blocks, wedges, etc.)	132.65	$1,459.17	
At 300 feet of timber			$ 4.86/ft

4, 5, 6, and 7 — None

$ 8.07

Recapitulation

Stage I	
700 ft drift and crosscut @ $33.00/ft	$23,100.00
210 ft timbering @ $8.07/ft	1,694.70
Total	$24,794.70
Stage II	
300 ft drift and crosscut @ $33.00/ft	9,900.00
90 ft timbering @ $8.07/ft	726.00
	$10,626.30

Total, Stage I	$24,794.70
Govt. participation @ 75%	18,596.03
Total, Stage II	$10,626.30
Govt. participation @ 75%	7,969.72
Total project	$35,421.00
Govt. participation @ 75%	26,565.75

D. R. MacLaren

Attachments

Distribution:

CHE(2)
Docket
SRO ✓
MacLaren

OME-6420

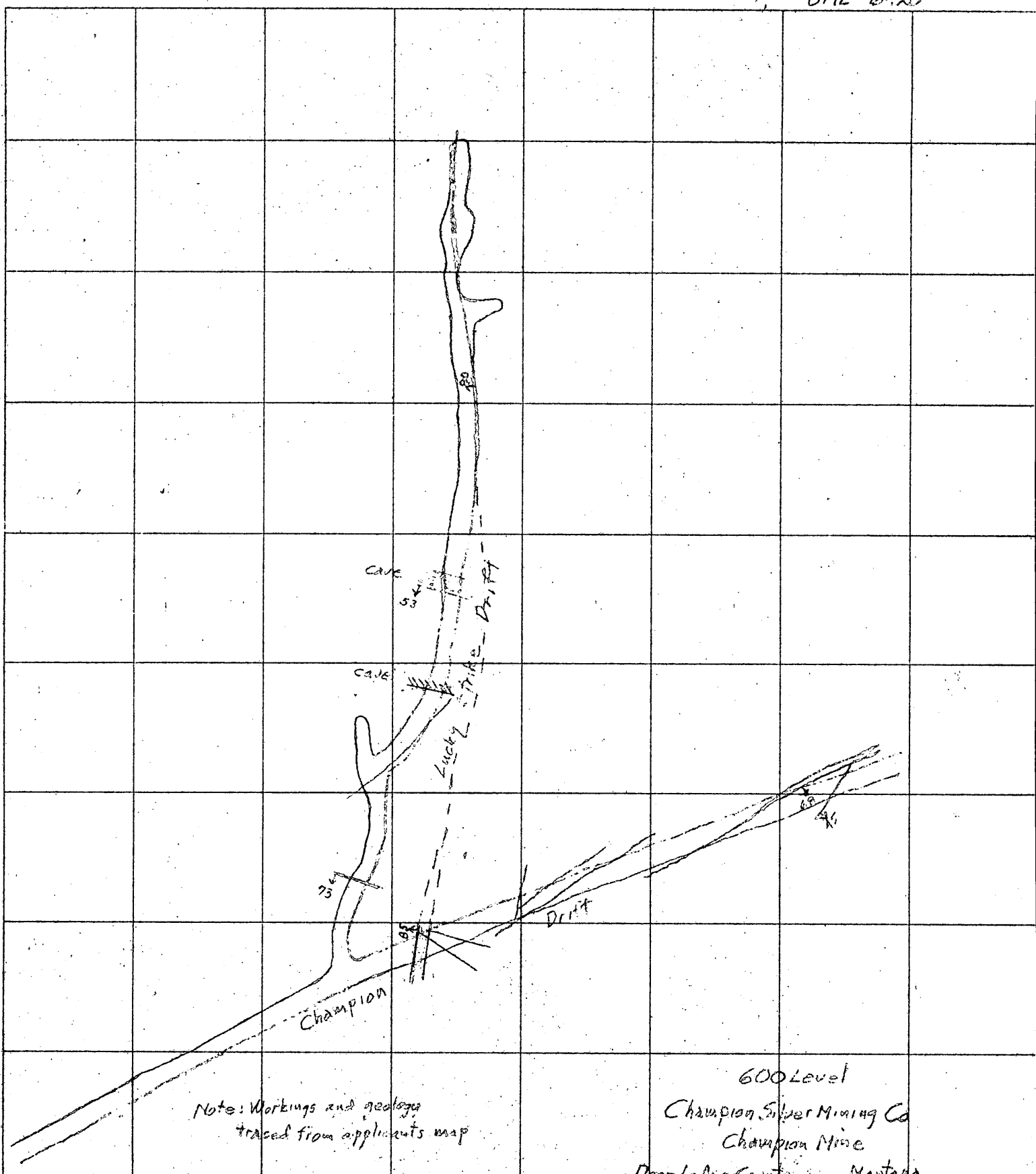

fig. 2

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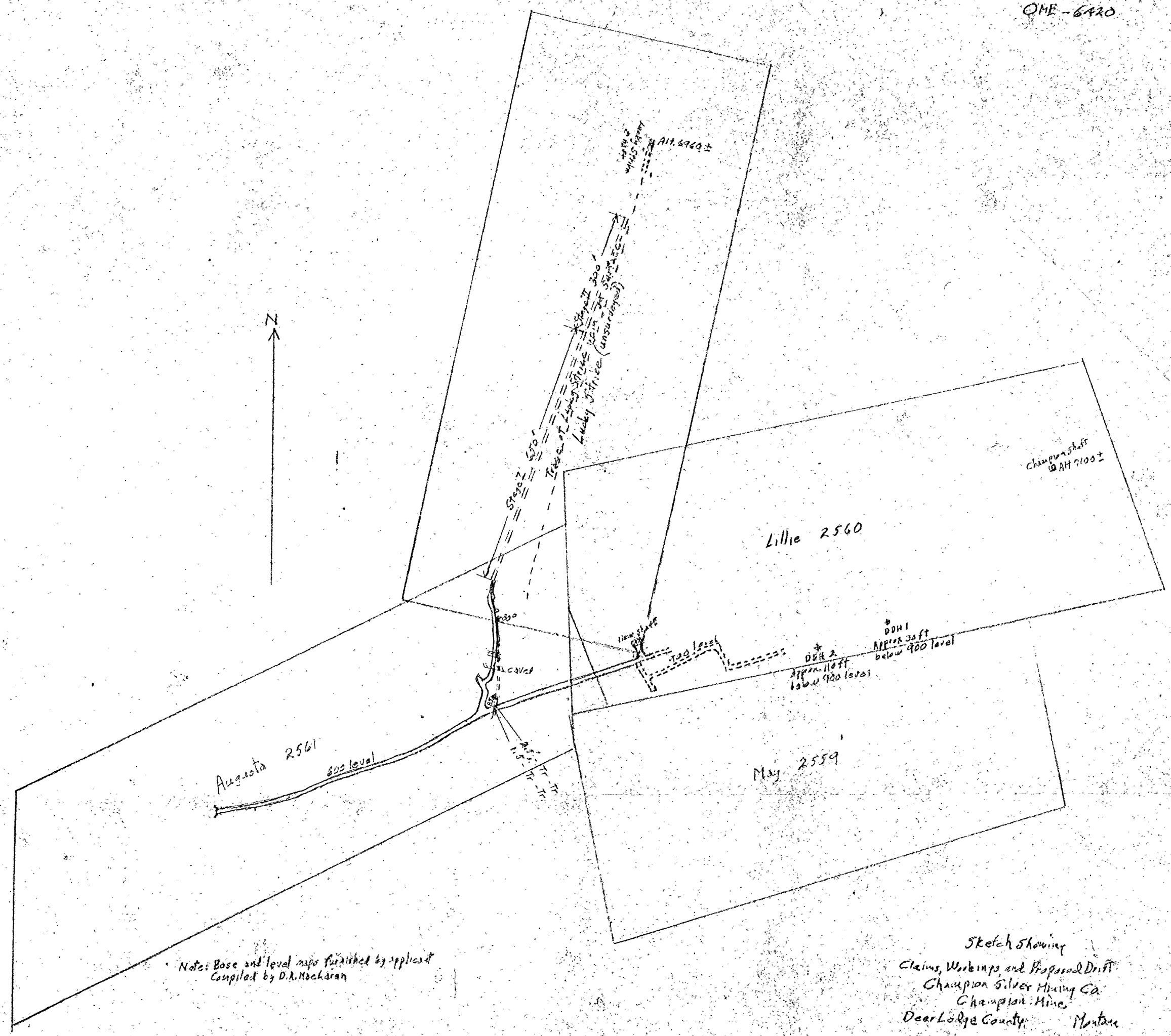

Note: Base and level maps furnished by applicant
Compiled by D.R. Mackaran

Sketch Showing
Claims, Workings and Proposed Drift
Champion Silver Mining Co.
Champion Mine
Deer Lodge County Montana

Scale
200 100 0 200 feet

Fig 1