

originally (G.W. & K.K. + B.) joint lease (25 years) GMA
Confidential

801213

PRELIMINARY IN-HOUSE REPORT

November 19, 1976.

From: G. W. Walkey

Note: Cash Inflow (conc. revenues mainly)
- Cash Outflow (fixed operating expenses)
= net cash flow

Subject: New Denver Operation.

DEFIN OF NET CASH FLOW

Production Record parameters

One Reserve (W. end)

1(a) In the four-month period, June to September, 1976 inclusive, operations generated a net cash flow of \$149,281.

Total tonnage treated was 7,768 tons or 1,942 tons per month.

\$19.22/ton

avg 1976 - 1500.5 tons/mo.
(low 1000 & high of 2200+)

2. (b) In addition to the ^{net} cash flow as noted above, the operation provided a royalty of \$23,304 to Kam-Kotia and mill rental of \$9,000 to Carnegie.

10% detail in terms of net op. profit.

3. (c) All production came from between elevations 4,450 and 4,550 in area developed by a decline driven from the 4,625 east decline. This decline has been driven in the H.W. of the lode, as the F.W. rocks are very weak, and access to the ore has been from flat laterals driven into the ore zone.

Current mining ops.

The rate of production has been, and will continue to be limited by: 1) the rate of advance of the decline, 2) availability of miners, 3) capacity of the scooptram and 4) the ability to provide ventilation.

Every foot of decline advance reduces the capacity of the scooptrams and the additional tonnage that can be developed by this decline is limited by scooptram capacity, and not potential ore.

show table of scooptram capacities with distance here

The other area of possible and indicated reserves lies west of the main x-cut, dipping below the 4,625 level, and appears to be the down faulted extension down dip, of the zone that provided production from 1970 to 1975. Diamond drilling has indicated good metal values, although the variations in grade and thickness are substantial. However, the extent of the potential of this zone is not known, due to limited drill testing but, the down-dip potential could be substantial.

check out on maps

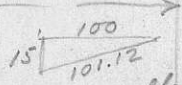
A start has been made on driving a decline to develop this area down to an elevation of about 4,500 ft. and about 800 ft. of decline are required to reach the zone plus, of course, the footage to develop for mining.

800' ft. from col. of decline & reach edge of zone

Current Mining Ops.

Diamond drill testing has shown ore to an elevation of about 4,540 ft. where the thickest and best grade sections occur. The down-dip potential should be substantial but, the depth to which the decline can be taken will be limited to about 4,400 ft. elevation, and, of course, very limited strike extent.

West end mine



Explor. Reserve (W. end) see also p. 9

(A) 4622 - 4500 @ -15% : V = 122', H = 813', S = 822' ; say 1000' incl flat lateral @ 4500' mining horizon

(B) 4622 - 4400 @ -15% : V = 222', H = 1480', S = 1496' ; say 2000' incl east of flat lateral @ 4400' min. horizon

It might be a good idea to sketch - analyze each of the principal orebodies along the Silver lode, as well as showing them only on a composite long-west-sect.

4. Continuing study of local and regional data on the main lode system involving relating Silmonac's experience and ore deposits to those to the east and west shows that the vertical interval for almost all the ore mined lies between 4,000 and 5,200 ft. While the lode system has been traced for over six miles along strike, the bulk of the mining has been done at the east and west ends where contours made the lode easily accessible. At the east end, with access from White and Sandon Creeks, about 1.5 miles of lode strike were very productive and, at the west about 2 miles were productive with access from creeks off Silverton Creek. Silmonac controls about 10,000 ft. of strike length between these two areas, and has investigated about 2,100 ft. of strike length at the east end of the property. This strike interval has been tested between elevations 4,400 and 4,800 with minor testing below 4,400 over a very short strike interval. To date, about 130,000 tons grading an average 16.45 ounces Ag., 5.92% Pb. and 5.90% Zn. have been mined from this strike interval. There is substantial additional possible reserves along this interval, but, these lie below the 4,625 level.

Extending to → 136,039 s.d.t @ 16.43 oz/ton Ag & 5.8% Pb, 5.9% Zn (+Cd)
Dec 31/76

There is a strike length of about 7,000 ft. between the most westerly Silmonac workings and the boundary line with the Mammoth Mine. Considerable exploration was done on the upper part of the west portion of the lode, from 5,400 ft. up, by Kelowna Exploration and previous operators. However, no work has been done on this portion, at the favourable vertical interval of 4,000 to 5,000 ft. The reason, of course, is that the lode interval is deeply buried, and surface testing by diamond drilling is almost impossible. To provide access from the surface by x-cutting and drifting would be a major project. The selection of the 4,000 to 5,000 ft. vertical interval as favourable is based on statistical data, rather than geological data. The bulk of the ore mined from the (Standard) - Silversmith lode system has occurred between these two elevations. Adjacent to the Mammoth strike interval, the lode was tested by Carnation workings along a strike length of nearly 4,000 ft. at elevations from 5,400 to 6,500 and the lode was not productive. Along the 2,000 ft. of strike interval tested by Silmonac, maximum elevation of ore has been about 4,800 ft. While the bulk of the ore mined to date has been above the 4,625 elevation, this is because the adit was set at this level, based on surface and U.G. drill holes from the 3,990 level, and, initially, there was no testing below this elevation as all mining and development was carried out to mine the ore above the level. Exploration along strike both east and west was disappointing at elevation 4,625 to 4,750 and up-dip exploration, where tested, was disappointing.

Best mass of the ore may be closer to the boundary elevation
EXPLORATION & DEVELOPMENT CONSIDERATIONS

* Note that good concept of favourable W-dip panel from a geological & statistical study of the lode in of former productive zones; hence, once this is recognized exploration can go ahead on the basis of a statistical or geological basis - whichever appears to the investigator
also note that D.B. page W-dip panel is the only one available to meet the criteria re target zone selection (time & \$)

* Note orebodies on outcropping lodes tend to be grouped closer to a particular over-tour area & may extend some distance both up-dip and/or down-dip of it.

Standard - Hecla Mammoth (Buffalo) COT on map & L.V.P.
EXPLORATION DEVELOPMENT CONSIDERATIONS

"EXPLORATION-
DEVELOPMENT-
CONSIDERATION"

In 1974, ^{1973?} ^{systematic} ^{diamond drilling} exploration was initiated to test below the 4,625 elevation, first to the east, where results were favourable, and, later, minor testing was done to the west. All this testing has had to be done from x-cuts and lateral drifts in the H.W. of the lode, and, is, of course, very expensive, as the exploration drifts have no future value for production purposes and relatively long drill holes are required to test any dip length. Development of the zone east of the main x-cut was undertaken by a decline using scooptram, and for the past two years most of production came from below the 4,625 level, via this decline, and, for the past several months, all production has been from this decline. The ore appears to continue down dip and to the east, but, continuing development is limited by the haulage length as it increases, which reduces production capacity of the scooptram directly.

4625 x-c
4640 (below)
at why

Currently, a second decline is being driven to the west to develop a zone indicated by drilling. Neither the strike potential or the down dip potential of this zone has been defined by drill testing although the decline will only be able to develop this zone over a short strike distance and to an elevation of perhaps 4,400 ft.

4600 W. Decline started from #4600

W. Zone

short rel.
haul distance
to daily
capacity
all have done up
good
my
production of
of the Scooptrama

Unless a major development program is carried out to provide a means of moving the ore to surface, operations will gradually become impossible due to declining capacity.

59C

General Geology, structural and economic

The Silverton - Sandon area of the Slocan district has had extensive study, on a local basis by staffs of mining and exploration companies operating in the area, and, on a regional basis by both the Federal Government's Geology Survey of Canada i.e. M. F. Bancroft in 1917 - 1919, C. E. Cairnes, 1925 to 1934, who published an extensive report, memoir 173 in 1934 and by the Provincial Department of Mines, M. J. Hedley, under whose direction detailed field mapping was carried out in 1946 - 1950, the results of which are in Bulletin 29, Geology and Ore Deposits, Sandon area, Slocan district, B.C. published in 1952. Mr. Hedley and his assistants mapped all available mine openings and developed structural interpretations and ore controls for the area and his report is a definitive work based on his own observations and the previous work of others, notably C. E. Cairnes, and The Kelowna Exploration Co. staff under Dr. Paul Billingsley.

Inter-Adventuring
exploration
test
principal refs
to the
geology of the
Slocan mining
camp - and to
the main lode
in particular

locally
check mapped

There is, therefore, a great amount of data available as well as many theories, beliefs and legends, which have been built up over the years, many of which may be coloured or have been developed by external factors, concerning "ore controls".

ORE
CONTROLS

Note that Selmonac operations have resulted in disclosure of certain ore controls that were not generally recognized as a result of investigations made to the end of 1954.

"Introductory" re - abstract was style

To understand the potential on the unexplored portion of Silmonac and the problems involved in testing and developing this potential, a general understanding of the general geology, structural and economic, plus regional topography and logistics is required.

by which individuals rel. to a report?

Topography

The area is alpine, and generally rugged and the contours form a ridge, known as Silver Ridge, which has a rough strike of slightly south of west. At the west, lies Slocan Valley, containing Slocan Lake which is a very steep lake. The valley of Carpenter Creek forms the north limits, and, to the east, there are several N/S striking draws e.g. Sandon and White Creeks, and Cody Creek. To the south, the contours drop to Silverton Creek. Access to the various properties in the area has been from the main valleys via contoured roads.

General Geology

Not refer to Hal. Sp - Dept. names, data

Hutton 1958 - "Concepts developed by the first presents and followed by this 'diagram' " stratigraphically & compositionally sequence

The rocks of the area consist of a (complex) of sedimentary rocks, known as the Slocan ^{Series} sediments. The series consist of argillites, quartzites and limestones, most of which are impure, are fine grained and bedded. The general strike is N.W. and dips vary from west to east. The rocks are intensely folded as part of the Slocan recumbent fold due to pressures and buckling and there is some drag folding. The rocks are silicified in places and generally metamorphosed and there are gradational changes in character of individual beds. All the above makes it very difficult to project individual beds and relate and project local structures.

easy T.L.D. whitewater N.W. Falls

in the zone of sed. enclosing the (main) Slocan lode, particularly

The sediments are cut by a series of intrusive rocks, occurring as dikes, sills, and stocks or bosses, and generally referred to as porphyries, and are pre-mineral in age. They appear to be pre-faulting in age and as such, may cause some of the warping and change in attitude of the lodes. The intrusives are probably related to the Nelson batholith (granites).

part also show signs of being cut by initial structural functions.

this is total relief actual mineral thickness in range of 25,000 - 35,000 ft.

The sediments are estimated to have a thickness of 6,500 ft. some of which has been lost by erosion.

misunderstood by Graham.

It is probable that the sediments overlies granites of Nelson batholith age, but, the attitude of the basement is not known as it has not been located in the area. There is reason to think that the basement slopes to the west. As it is probable that the mineral solutions making up the ore zones come from the basement rocks, the attitude of the basement is important.

granites could be determined.

might be relevant if configuration of basement

not all that important

Faulting

The sediments are cut by numerous faults, of two main types described as 1) x-cutting faults and 2) Tangential faults. The size, extent, and offset of the faults varies greatly. All faults are normal, i.e. H.W. down.

X-cutting faults

These are faults that cut across the formations and strike generally north of east, and dip to the south. Both strike and dip of the major x-cutting faults change probably due to changes in the host rocks and possibly due to changes in the host rocks and possibly the influence of the intrusives. All the known lodes, and mineralized sections occur in this type of fault. -- but not the Echo or even parts of the Silversmith.

Tangential faults

These are faults which cut across the formations at a small angle and, in some cases, follow the bedding. As such, they are hard to distinguish on the surface. There are a great many of these faults and as they displace lodes, they are probably post mineral.

Displacement varies greatly as does strike length and as such, their importance varies. Several of this type of fault have been identified on Silmonac's working and one such fault has displaced the lode vertically by about 60 ft. and the horizontal displacement is not known. Work in progress may provide some answers on the horizontal component.

There are a great many x-cutting faults, many of which are small, and have limited strike extent and 5 (five) major lode faults have been identified from which economic ore has been extracted. Several of the smaller faults have been productive, and an example is the Victor Mine.

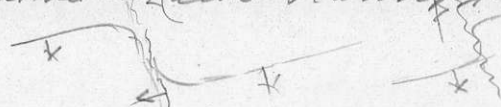
The major x-cutting fault system, known as the Standard Silversmith fault has a known strike length of about 6 miles strikes generally north of east, dips to the south and has been extensively developed and mined at the west and east ends, where access to the system was relatively easy. Accurate statistics on production are not available, but, the Sandon area produced over 900,000 tons, grading at least 28 ounces of silver, 12% lead, and 2.5% Zinc. The tonnage actually mined is probably much higher and the actual grades of silver and lead lower, with zinc grade higher, due to sorting and discarding ores high in zinc in the early operating years. Production from the main lode, along a strike length of about 7,000 ft., east

where most of the productive vertical interval of the structure escaped erosion, and where the topography was such that relatively easy access to it was possible.

Geol. & Mineral. See Regional

main displacement near interbed slip, hence largely ore folded & pre-ore effects due to late movements of displacement and may, a very small displacement vector.

Geol. & Mineral. See main lode



link with lodes since many pre-mineral

The amount of post-ore faulting has occurred.

sheet headed Ore Controls.

of Silmonac, with access up Sandon and White creek valleys, was close to 500,000 tons, with average grades close to 20 ounces silver and 10 to 12% lead and zinc combined. The main producers were Silversmith, Slocan Star, Richmond Eureka, and Ruth Mines, now owned by Carnegie Mines. At the west end of the fault system, along strike length of perhaps 2 miles, tonnage mined is at least 900,000 tons, with heads of 12 ounces silver and about 10% lead and zinc, with the producers being The Standard, Hecla and Mammoth Mines. Silmonac controls the centre section between the above two areas, a strike length of about 10,000 ft. and has investigated and mined along a strike length of about 2,000 ft., mainly above the 4,600 elevation. Total production to date has been about 135,000 tons grading 16.45 ounces silver, 5.9% Pb. and 5.8% Zinc. West of this strike interval, Silmonac controls about 7,000 ft. of strike length of the lode, which is unexplored except by the Carnation workings at elevation from 5,500 to 6,500 ft. To the east, there is about 1,000 ft. of strike length with some exploration done from the 4,000 ft. level.

"Geology & mineral in sec. main lode"

*Take Bills Calc for grade recovery.
500,000
900,000
135,000
1,535,000
CK - 1000'
2100 " - 2000'
2000 " - 7000'
Silmonac 10,000'
adj. 2 miles*

The potential in the west strike interval is estimated at 500,000 tons (minimum) with a net smelter value at current prices of about \$40,000,000 and \$5,000,000 to \$10,000,000 in the east interval.

ORE RESERVES

Ore Controls

Ore minerals, and mineralization, is widely distributed and nearly all x-cutting faults, large and small contain ore minerals, although not necessarily ore deposits. While the lodes, i.e. mineralized sections of faults are quite extensive, and can be quite large, the ore bodies are relatively small and have limited dip and strike extent. To some extent the size of some ore bodies has been a matter of metal prices and overall economics.

more in preamble to "Ore Controls"

In the case of Silmonac, about 25% of the lode area explored and developed has been ore grade.

Much has been written on the subject of ore controls for the Slocan lodes and theories and beliefs have been built up over the year based on local observations and ideas. It appears obvious that the mineralizing solutions had access to nearly all the x-cutting faults and concentrations sufficient to make ore have occurred due to local conditions along strike and dip. The suitable local conditions are a combination of structure and geology i.e. rock types. One widely held belief was that one set of rocks was most favourable, and bearing in mind the major folding, much effort was spent on working out structure to locate this formation along the lode strike and then investigate at the best elevation. My personal observations

ORE RESERVES

showed least dip

where is this, and who did this? perhaps P.B. on basis of his initial idea that strike was most favourable.

2 ref. to Carnation 5480 program?

guess he means P.B. info in with the Q.B. G.H. Kelt

have been limited to the lode on Silmonac. However, a study of all the information available does not support this belief *discarded* in my opinion. Another ^{once} widely held view is that ore is found *after 1950* mainly in quartzites. This tends to be misleading unless the *(Conn 5480)* term quartzite is defined. There is little pure quartzite in the district, and much of the rocks are a mixture of argillites and quartzite and silicified argillites.

The major controls as per M. J. Hedley and other *and other geologists with extensive experience in the Silver Camp* observers, are:

- 1) Rocks of the right hardness and competency cut by the fault. Rocks too hard tend to break along a tight line. Too soft rocks tend to disintegrate to gouge. Rocks of the right hardness will shatter and form suitable conditions for mineral deposition. The importance of this feature is that ore will form in suitable rock and is not limited to one or more favourable bands.
- 2) Where a fault crosses the bedding at a large angle and the direction of the lode is across rather than with the bedding. (These conditions are clearly seen on Silmonac. *???*)
- 3) Cross faulting and fracturing - This can include strong jointing, tension fractures, branch faulting, links *faults and faults* between two ~~faults~~ *Component faults of a lode.*
- 4) Abrupt changes in the strike of the fault, rolls, and deflection. These features are also seen on Silmonac.
- 5) The intrusive rocks appear to be a factor in some cases perhaps because they have deformed the lode.
- 6) The source and amount available of mineralizing solution. The location along the fault in relation to the source of the minerals does not appear to be very important, as most of the x-cutting faults contain mineralization and some economic concentrations. Very few observers consider this important and there is no hard evidence to develop a case either way. I believe it may be important but, see no way to use it as an aid in exploration. *only from point of view that measure "of" well rock points and surrounding environment - but this partly by previous silicification*

It must be remembered that the ore bodies, discovered to date have been relatively small with limited extent either on dip or strike and sometimes both. The targets are small although the favourable areas are larger. However, using the controls to develop and guide and exploration program is difficult, primarily because projecting structure and geology appear to be impractical.

A study of the map area, shows that all the mines developed to date, with the exception of the Silmonac, and perhaps Mammoth, occur on the extremities of Silver Ridge and were found by following surface expressions. While surface *Final* *7.8 test* *inaccurate*

same point repeated

"Ore Controls"

take Bull's eye

lead & add

additional controls

as have been

indicated at

Silmonac, Standard

etc. (?)

access to these mines was not easy, access to the deposits from surface was relatively easy, and while some excellent work was done, most exploration was of a local nature.

In part at least, this was due to the fragmented ownership of the claims, and, while many properties were very profitable no strong mining groups developed, except possibly at the west end where Western Exploration put together many of the properties.

It is reasonably clear that mineral concentrations can occur anywhere on dip, up or down, at any elevation, and, along strike on any major x-cutting fault, where enough of the ore control conditions exist together. Economic ore can occur along the Standard - Silversmith lode at any elevation and, probably occurs down dip from the workings on the mines at the east end, as well as the Adams and Ivanhoe lodes. Along the Silmonac strike interval, testing of the lode at the upper horizons, at the Carnation, Mascot, and to some extent by Silmonac, has been unfavourable.

During the 1940's, Kelowna Exploration's staff recognized the potential of the centre portion of the Standard - Silversmith lode, and, over a period of time put together the various properties which comprise Silmonac. Kelowna carried out extensive mapping and regional studies, and did further development work on the Carnation interval, with no success.

In the 1960's, Silmonac was incorporated and the company carried out exploration on the lode west of the Ruth - Silversmith sections with little or no success, although work was limited.

In the late 1960's, the property was leased to Burkam and Kam-Kotia as operators, who continued exploration by driving a drift at 4,000 ft. to the west, located in the F.W. Access to this heading was via the Ruth 5 level, collared on the west flank of Sandon Creek, due south of Sandon. Unfortunately, a large intrusive stock warped the lode to the south and the Silmonac drive was too far in the F.W. to test the lode. Surface drilling intersected well mineralized lode sections, not necessarily ore grade, and, it was decided to investigate the lode by driving a crosscut to intersect the lode.

The x-cut was collared at 4,625 elevation in the East Tributary Creek draw. This elevation was the lowest possible elevation on Silmonac ground in the area. About 3,000 ft. of x-cutting was required to reach the lode. Strike laterals in the F.W. were driven off the x-cut, to provide drill bases for lode testing. The drill testing was favourable, and actual production

good point

*Final
supp. text
re "Ore
controls"*

*but how
much?*

HISTORY

*qualify
this!*

*check new
files & mem
reports.*

*check new
files &
mem reports*

*April 3 ↓
April 4 ↓
" X*

started in September, 1970. Production has been continuous since start up, although the production rate has varied sharply from a low of about 600 tons to a high of nearly 4,000 tons per month, depending on the availability of ore reserves.

Explor. Develop. consid. incl. in preamble

Strike exploration at and above 4,625 level was favourable for a length of about 1,100 ft. and some ore was mined to an elevation of about 4,850 ft. Exploration to the east and west of the 1,100 ft. interval has been unfavourable above the 4,625 level, *but has real possibility at least of the 1,100 ft interval below the 4,625 level.*

omit as repeated

The most favourable strike interval is the 7,000 ft. interval between the Mammoth mine and Silmonac workings, and the most favourable vertical interval appears to be between 4,000 and 5,000 ft. Although there is no known reason why ore deposits will not occur below 4,000 ft. *or above the 5000 ft. elev.*

"Explor. Develop. consid. in preamble"

Currently, it is known that ore occurs down to at least 4,380 ft. in one strike interval, in an interval of about 500 ft. and to the west, another strike length of at least 400 ft. has been tested to about 4,550 elevation. Down dip testing has been limited due to the very high cost of the testing and the limited funds available.

East End head drilling from 4625 E.H.W. lat.

As pointed out earlier, all indicated ore reserves now lie below the 4,625 level, and, unless a major program of exploration and development is undertaken the future life of the operation is very limited, and will depend on results from the 4,600 west decline currently being driven.

West End

Bearing in mind the fact that ore deposits can occur at any vertical interval, and the impossibility of projecting structure and geology, strike exploration of the 7,000 ft. interval should be carried out in stages. While statistically, the most favourable interval is between 4,000 and 5,000 ft., this represents a dip length of about 2,000 ft. and a total plane area of about 14,000,000 sq. ft., located deeply buried in Silver Ridge. While the potential is very large, the logistics involved in developing a feasible plan are very complex.

2000 x 2000 / 1000'

While perhaps not essential, it seems wise to use a plan that will provide a means of developing the indicated ore below the 4,625 level, in such a way as to provide a maximum extraction rate.

There are several alternatives, which should be considered:

B1.

Surface drilling

While theoretically possible, this is not practical. Surface contours and the lode dip would require holes of well over 2,000 ft. in length. It is probable that, due to deflection and deviation in dip, the holes would never reach the lode.

1977. unlog drill @ 12/ft. contract price + prep. min. services @ 15/ft. contract price

Exploration - Develop. alternative outline of alternatives

It is estimated that 5 (five) holes would cost about \$200,000 to drill.

2 C - Drive a x-cut at 4,000 ft. elevation

access road & portal facilities, estimate \$100,000

Collared at East Fork of Tributary Creek. Length of x-cut required would be between 5,500 and 6,000 ft. depending on strike target location. The cost of this x-cut, including portal facilities, is estimated at \$650,000. When the x-cut is finished, two raises would have to be driven, one for service and ventilation, and an ore pass. Both raises would provide service to the declines and allow decline developing over a 3,000 ft. radius area, i.e. 6,000 ft. of strike development. The cost of the raises, equipped for service is estimated at \$150,000.

Preliminary Vent Raise: 7000' - 4640' - 600' Ore pass: - 4040' - 4450 - 410'

"Exploratory Develop Considered"

The time required to complete the above, is estimated at about 20 (twenty) months, after which the x-cut could be used to provide haulage for decline production.

An additional \$200,000 should be provided to cover decline development carried out while the x-cut and raises are being driven.

The total capital cost is then \$1,000,000, which would be spent over a two year period.

Continuing strike and vertical development of the lode both east and west, could, it is expected, then be financed from production cash flow.

The collar and part of the proposed x-cut would be on ground owned by Silver Ridge Mining Co. and a lease or access rights would have to be obtained.

From a broad and long term viewpoint, this plan is probably the best. It would probably provide the lowest operating cost, and the most flexibility.

However, it does not provide any short term help and, it is doubtful that even break-even production could be maintained for the time required to complete the plan.

3 E - Re-activate the Silmonac 3,990 level

call it - 4000

This level which terminates below the 4,625 level workings, at about 4,000 plus elevation, is a lateral extension to the west of the Ruth 5 level. The Ruth 5 level is collared

all covered by history

off Sandon Creek just south of Sandon. From the portal to the mill is a short haul of perhaps one mile.

There are no facilities at the portal, and, as the level is blocked by caving, close to the portal, it is impossible to be precise in estimating the cost to rehabilitate and the time that would be required. While no serious caving is expected, considerable re-timbering will be required plus rock removal. Most of the piping will require replacing and perhaps some rail.

The total cost to rehabilitate and equip for mining as a haulage and exploration base is estimated at \$150,000 plus a contingency of \$50,000 for a total of \$200,000.

The drift would then be advanced about ~~900~~ ft. to the S.W. from where service and transfer raises would be driven through to the 4,625 level and the decline using a raise boring machine.

It would also be necessary to advance either the main 4,625 x-cut to the S.W. about 300 ft. or the 4,625 W. lateral to the S.E. about 300 ft. Total cost of the drifting is estimated at \$100,000 and the raising about \$150,000, making a total cost of \$450,000. To this must be added \$100,000 for decline development and connections, for a total cost of \$550,000.

The time required to complete to the point where decline production could be hauled on the 3,990 level is estimated at about 10 months.

This would provide a similar layout to item 2, except that the haulage distance to surface would be 8,700 ft. as compared with 5,500 to 6,000 ft. for the adit; *alternatives would permit*

Development could be carried out over a 3,000 ft. radius with the scooptrams. If results warranted, the ~~3,990~~ ⁴⁰⁰⁰ level could be extended to the west, and connection via raising made to the decline levels from which a further 3,000 ft. of strike could be developed.

4. Sink an internal shaft

Collared on the 4,625 level. Both an inclined and a vertical shaft have been considered and a vertical shaft, collared in the lode H.W. appears to have the most advantages. The shaft would be sited at a point about 400 ft. S.W. of the face of the 4,625 x-cut. Collar and installation development would

*Explores
Develop
considering
Preferred
playable
also mine
mill on
P. 14
Following*

*ref.
Kon Gordon
Steve Reilly
make estimates
on approx
check plans*

*check mine
all info
back desk
for report
estimates
back up sheets
to report*

slashed to re-align & reequip

*1 - vent raise
1 - mill (or) raise
all mine via declines*

4650
4650
600

New Denver Operation

- 12 -

November 19, 1976.

4650

- 700

3750 mil

require about 700 ft. of drifting plus about 150 ft. of raising. The shaft would be sunk a depth of 700 ft., with levels and stations cut at 100 ft. intervals, i.e. 4,500, 4,400, 4,300, 4,200, 4,100 and 4,000 ft., a total 6 (six) levels.

Cost estimates

Collar development work is estimated to cost about \$100,000. The cost of the shaft and minimum stations, equipped but excluding conveyances, ropes, hoist, power supply and other services, is estimated at \$400,000.

The cost of the equipment and services, on the basis of using used equipment where possible, is estimated at \$230,000.

Decline development to provide access to 4,500 and 4,400 levels would cost about \$100,000.

Total new capital is \$830,000.

The time required to complete, would depend on obtaining the necessary equipment for the shaft. The minimum time would be about 12 months, and, it could easily require 15 months.

There are several advantages in using a shaft. It would allow conventional development to be carried out, and, in the event ore continues below the 4,000 level, the shaft could be deepened, providing of course, the hoist selected has the required capacity. On the debit side, an additional cost to production costs would result, i.e. hoisting costs, which could amount to from \$2.50 to \$3.00 per ton, depending on production rates.

Develop by F.W. laterals, approx 4625 & 4000 levels.
5. There is one other plan that should be considered. Exploration to the west, along strike, above the 4,625 level has been unproductive, west of the tangential fault striking N.W. This fault dips to the S.W. and drops the H.W. down, and the lode is displaced perhaps 50 ft. or more. The lode strike west of this fault has also changed from N. 70 W. to almost due south. The strike will certainly change to the overall strike of S. 70 - 80 degrees west.

Exploration on the lode is best done by driving F.W. drifts and ring drilling the projected lode. If ore is found the F.W. drift becomes a haulage and production base, and the ore can be quickly developed for mining.

"Exploitation
Develop
Consider"

A

This should be noted in the proposal to Exploration Develop Consider

This o.k.

delete

However, exploration of the lode, below the 4,625 level, would require x-cuts and drifts in the H.W. paralleling the lode strike, followed by x-sectional drilling. If ore is found below the 4,625 level, the x-cuts and H.W. drifts would have little value as far as production is concerned, and, development would require expensive declines with limited range and eventually one of plans 1 to 4 would be required.

The strike length to the west, still unexplored, is about 7,000 ft.

It is still impossible to predict where necessary ore controls will occur, both along strike and dip, and the reasons have been covered earlier. On a statistic basis, ore deposits are likely to occur between 4,000 and 5,000 ft., along this strike interval. It is our view, although evidence and data to support the view is not positive, that the bulk of the potential will lie below the 4,625 level. This tends to make driving the 4,625 level to the west ^{rel} unattractive. *and driving of low level westward relatively attractive.*

To drive a drift to test 3,000 ft. of strike length, with diamond drilling at 100 ft. centres would cost, in round figures, about \$400,000 and take a year at least, to complete. Such a drift would not help current or future production, unless ore bodies are discovered that continue up dip from 4,625 level, and are close to the current mine openings, rather than at the west end of the 3,000 ft. length. Continuing exploration to the west from the 4,625 level, located in the lode F.W., certainly has great potential and requires consideration.

Current & short term status

CASH-FLOW PROJECTIONS *the net*

As pointed out earlier, ^{the net} cash flow for June to September, 1976 (4 months) was about \$150,000 or \$37,500 per month, with average monthly tonnage of 1,992 tons. The mill has a capacity of between 3,000 and 3,500 tons per month. For the above period, if monthly production could have averaged 2,500 tons, ^{net} cash flow would have doubled to \$75,000 per month or about \$300,000 for the period. *\$30 per ton*

As all indicated ore at this time lies below the 4,625 level, and must be mined by declines and scooptrams, production per month will decline by stages and reach the point where, even if indicated ore is still available, production will not be feasible. Profitable or break-even operations may continue well into 1977, but, cash flow will not provide enough funds for even minor exploration.

These should be made in the appendices to the report on Ore Development

"Exploit Develop based on" See, Proposed Plan

** Schedule all contracts to get out program. and results to be included in report. rel to Cash Flow PROJECTIONS*

Incorporate in expanded form, in report.

analyze and calculate or proposed schedule. 20,000 tons @ price \$4/70 gals - \$600,000

omit It is now quite clear, *that* unless major development is carried out, production will have to be terminated sometime in 1977.

A study of all available data indicates that the strike interval between Silmonac's current west workings, and the west boundary has substantial potential, estimated at least 500,000 tons, which a grade probably in the order of 15 ounces silver and 10% combined lead and zinc.

The most favoured vertical interval appears to be between 4,000 and 5,000 ft. with the bulk of the potential probably below 4,600 elevation.

Summary

Three plans have been outlined that would provide a method for exploring and developing the strike interval to the west, in such a way as to make it possible to get enough production to fully utilize the mill, assuming ore can be found. Two plans would explore parts of the load, but, would require additional major development.

Plan No. 3, i.e. re-activating the Ruth #5 (Silmonac 3,990 level) has the most advantages, requires less risk capital, and, could, depending on timing, allow a profitable operation to be maintained.

It is recommended that this plan be approved, providing:

1. Negotiations with Moneta can be finalized.
2. The capital required can be made available.

The amount of capital required, is estimated at \$550,000 + 110,000 = 660,000
and this figure may require revision upward. It seems certain that, to obtain the required labour force, a camp for single men is necessary. While accurate cost data is not yet available, this could cost from \$50,000 to \$100,000. *see 90,000 Jan 19/77*

3. While there is no certainty that the capital involved, will be recovered from operations, my judgement is that the odds are favourable, that it would be recovered from the development of known and indicated ore reserves and possible extensions *(of the indicated ore blocks?)*

However, the major return would come from the untested potential that could be explored, and the potential for profit is substantial.

ORE RESERVES
shown on
estimate to be
close to this
figure

Explor &
Develop
Considerations
See
Referred plan

RE. CASH FLOW PROJECTIONS

Review
initial capital
req \$ 20,000 low
of Jan - Feb/76
grants

90,000
Jan 19/77
\$ 750,000

4. Despite the above, the investment funds must be considered risk capital.

5. The total required, say ~~\$650,000~~, would be required over a period of 6 to 9 months, with major expenditures at the beginning and end of the project.

6. In the event that the funds cannot be made available or the decision on this matter is negative, operations should be terminated immediately it becomes evident that further operations will result in cash loss and consume available liquid reserves.

7. At the end of October, liquid reserves available to Kam-Kotia are estimated at about \$200,000. — to be used against ^{\$400,000} mortgage payable

The realized value of physical assets, net basis, is estimated about \$225,000.

The cost of terminating the operation, including termination pay etc., is estimated at about \$60,000.

The cost of maintaining the property, minimum basis, is estimated at \$50,000 per year (as a minimum).

GWW/rk

G. W. Walkey
G. W. Walkey.

* to Summary + conclusions

750,000 per day Jan 19/?? by GWW

to be used against \$400,000 mortgage payable