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Ash Peak: In Part Original found in 1.1.22

A.F. Budge (Mining) Limited

TO: A.F. Budge

DATE: July 17, 1989

FROM: John W. Norby with
A.F. Budge (Mining) Limited

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SUBJECT: CURRENT PROJECTS - ASSESSMENT AND RECOMMENDED WORK

INTRODUCTION

A.F. Budge (Mining) Limited (Budge) currently has two producing precious metal properties (both in Arizona); the United Verde Extension (UVX) underground gold flux mine and the Vulture Mine mill tailings gold heap leach facility. In addition to the mined orebody at UVX, a larger lower grade gold reserve has been delineated. At the Vulture Mine property, in addition to the tailings leaching operation, an exploration program has been conducted in search of 1) disseminated mineralization around the Vulture vein, 2) Vulture vein offsets, 3) other Vulture-like veins, and 4) placer gold. The company also controls a moderate sized open pit - heap leach gold reserve on the Cimarron property in Nevada. Additionally, Budge is participating in the Gold Canyon open pit - heap leach gold deposit exploration joint venture in Montana, and in the soon-to-be-dropped Ash Peak underground silver-silica flux mine exploration joint venture in Arizona.

In planning for future development of additional economic precious metal reserves, and attendant company growth, the first order of business is to determine the potential of properties in hand. A quick summary of mineral inventory, past exploration, and expenditures is included for each property as a gauge of past performance, a partial indicator of future potential. Recommended action on each property is included.

1.2.13

ASH PEAK

EXPLORATION SUMMARY

On March 7, 1989, Budge paid $50,000 to enter into a 6 month option to earn a 50% interest in the operating Ash Peak silver-silica flux vein mine hosted in Tertiary volcanic rocks near Safford, Arizona (option expires September 7). An economic evaluation indicated further exploration and development of the silver-silica vein reserve would not be economic. However, manto-style silver-gold-zinc-lead-copper replacement mineralization in lime-bearing sediments underlying the local volcanic pile could be profitable if discovered. Depth to underlying favorable sediments was unknown. High risk exploration for this deep manto deposit was thought to be justified by the lucrative target. Two relatively deep core holes tested the down-dip and -rake northwest portion of the vein system in search of manto mineralization or at least favorable sedimentary host rocks. The deepest hole tested the local geologic section to 2400 ft, finding no favorable sedimentary rocks. This drill program tested what is probably an economic depth for development of a high-grade manto deposit. Exploration costs totalled $140,000, for a total Ash Peak expenditure of $190,000. John McKinney will have the exploration summary report completed this week.

RECOMMENDATIONS

1) Let the option expire September 7, as recommended in the exploration report.

2) Return all data to Canamin.

A.F. Budge (Mining) Limited

TO: A.F. Budge
R.R. Short
C.A. O'Brien
D.A. Allen

DATE: May 11, 1989

COPIES: J.A. McKenney
File

FROM: J.W. Norby

SUBJECT: ECONOMIC EVALUATION OF ASH PEAK SILVER VEIN TARGET

If no basement sedimentary rocks (capable of hosting higher grade manto mineralization) are located within an economic depth in drill hole B-2, then the remaining exploration target at Ash Peak is the silver vein system. Within the vein trend, the Shamrock Mine area would be the best place to concentrate exploration because it has the best developed known silver vein, a possible reserve, and the most workings. A 1988 evaluation by J.R. Woodcock, P.E. suggests that a possible reserve of about 250,000 tons grading an estimated 5.5 oz silver/ton exists at the Shamrock Mine within the area of previous development above the 975 ft level. He further states that based on historical production (1916 - present), silver grades expected for much of the future mining will vary between 4 and 8 oz silver/ton. Unfortuneately, historical gold grades have never averaged above the 0.03 oz gold/ton smelter cut-off grade.

Considering that the smelter pays $18/ton for silica flux and 75% of silver value, 5.5 and 8 oz silver/ton grades are equivalent to 0.110 and 0.138 oz gold/ton grades, respectively, at Wednesday's quotes. Intuitively, these gold equivalents suggest the grade is one-half to one-third of that needed to comfortably project a profitable underground operation. To confirm this initial reaction, cost vs. recoverable value calculations were run for 1) the quarter million ton possible reserve above the 975 ft level and 2) an as yet undiscovered half million ton orebody between the 975 and a hypothetical 2000 ft level (Apc 1 and 2). These orebodies would loose an estimated $3.4 and $7.7 million, respectively. Not included in those calculations are the initial $1 million buy-in and a $150,000 debt repayment to Southern Gold Resources Limited. The economic estimates include conservative $30-35/ton mining costs.

Another consideration is that it would be extremely difficult to develop a reserve large and rich enough to justify a mill. Therefore, Ash Peak will probably continue to be a flux mine, subject to the whims of smelter contracts.

Appendix 1. Net Value Calculation for Shamrock Mine Possible Reserve above the 975 ft level.

Assumptions

250,000 tons
5.5 oz silver/ton
0.015 oz gold/ton
$6/oz silver
75% smelter payment for silver
no smelter payment for gold
$18/ton smelter payment for flux (silica)
$2/ton + 6.25% of metal value royalty
$5/ton crushing
$14/ton shipping
$30/ton mining

Recoverable Value

250,000 tons x 5.5 oz Ag/ton x 75% x $6/oz Ag	=	$ 6,187,500
250,000 tons x $18/ton flux	=	4,500,000
Total Recoverable Value		$10,687,500

Costs (underground costs estimated by R.R. Short)

250,000 tons x $5 crushing/ton	=	$ 1,250,000
250,000 tons x $14 shipping/ton	=	3,500,000
250,000 tons x $2/ton + (6.25% x $6,187,500)	=	886,718
250,000 tons x $30/ton mining	=	7,500,000
Shaft Rehabilitation	=	500,000
Level Rehabilitation	=	300,000
Drill Confirmation of Reserves	=	125,000
Total Costs		$14,061,718

Net Value

(-$3,374,218)

Appendix 2. Net Value Calculation for Hypothetical Shamrock Mine Reserve between 975 and 2000 ft Levels.

Assumptions

Same as in Appendix 1, with the following exceptions:
500,000 tons
8 oz silver/ton
$35/ton mining costs (deeper)

Recoverable Value

500,000 tons x 8 oz Ag/ton x 75% x $6/oz Ag	=	$18,000,000
500,000 tons x $18/ton flux	=	9,000,000
Total Recoverable Value		$27,000,000

Costs (underground costs estimated by R.R. Short)

500,000 tons x $5/ton crushing	=	$ 2,500,000
500,000 tons x $14/ton shipping	=	7,000,000
500,000 tons x $2/ton + (6.25% x $18,000,000)	=	2,170,000
500,000 tons x $35/ton mining	=	17,500,000
1000 ft shaft x $2500/ft	=	2,500,000
2500 ft development drift x $250/ft	=	625,000
Secondary escapeway bean hole raises	=	250,000
Stope development	=	1,000,000
Equipment capital	=	250,000
Exploration (10 surface holes)	=	500,000
(30 underground holes)	=	400,000
Total Costs		$34,695,000

Net Value

(-$7,695,000)

CANAMIN RESOURCES LTD.

Suite 220, Quayside Plaza, 145 Chadwick Court
North Vancouver, B.C. Canada V7M 3K1

(604) 986-3376
Fax (604) 986-5928

Ash Peak
Ag - Si - Flux
Data for A.F. Budge office + Ron Short
from Don White
12-21-88

November 16, 1988

Mr. Donald C. White
521 East Willis Street
Prescott, Arizona
86301 U.S.A.

Dear Mr. White:

Re: Ash Peak Mine, Duncan, Arizona

Further to our conversation of 15th November 1988, I enclose the requested technical data on the Ash Peak Mine. This includes the following items:

1. 1988 Cash Flow Actual & Projected
2. Shipment Records 1988
3. Ash Peak Report (Woodcock P. Eng) 1988
4. Ash Peak Petrology (Woodcock P. Eng) 1988
5. Progress Reports (S.P. Quin) Aug. & Nov. 1988
6. 1983 Drilling (Phelps Dodge)
7. Sage & Assoc. Evaluation, July 1976
8. Inspiration Reports 1941
9. Assay Long Sections & Shaft Cross Section
10. Level Plans Assay & Geology (where available)

I trust the above information will be sufficient to permit you to fully evaluate the Ash Peak Mine. Should you have any questions about the data or feel you require additional information please call me at the above number.

I think you will find the Ash Peak Mine has excellent potential to be a major supplier of flux for a long period. Current "reserves" are estimated in one of the progress reports. Redpath estimate 35,000 tons mineable in the 200E stope. Long term it is our intention to develop the additional reserves indicated at lower

levels; the Ash Peak vein on the 800 level (22,050 tons @ 10.95 oz/ton and the 900 level (41,500 tons @ 8.10 oz/ton) assuming a 7-foot width. Further, the Hanging Wall vein is unmined below the 500 level but explored to the 700 level, indicating 150,000 - 300,000 tons for a 10 - 20 foot wide vein. This fairly well-defined reserve potential should keep us in production for an additional 3 - 5 years without major development or exploration.

Feel free to discuss any questions that arise and I plan to visit the mine the week of the 28th November.

Yours truly,
CANAMIN RESOURCES LTD.

Stephen P. Quin
Vice-President, Exploration

Enclosures

C:\WP50\C\LETTER\WHITE.LTR

A.F. BUDGE (MINING) LIMITED

TO: A.F. Budge
R.R. Short
C.A. O'Brien
D.A. Allen

DATE: May 10, 1989

COPIES: File

FROM: J.W. Norby
J.A. McKenney

SUBJECT: ASH PEAK DRILL PROGRAM UPDATE

A two hole core drill program at Ash Peak is designed to follow the relatively low grade Ash Peak silver vein system (5.5 - 8 oz silver/ton historical and current production grades) down-dip through relatively unprospective volcanic host rock to underlying and more prospective (reactive) sedimentary rocks. If these sediments are limestone or contain limey or silty beds, then relatively rich silver - base metal manto ore (finger like replacements out into the surrounding sediments) is possible in the vicinity of the vein. Depth to these sediments is a significant economic consideration and the favorable composition of these sediments can not be projected into the Ash Peak area from regional geologic maps with certainty.

The first hole, B-1, was designed to intersect the vein at relatively shallow depth in order to 1) confirm the local dip of the vein, 2) obtain a relatively shallow vein geochemical signature for comparison with a deeper intersection, and 3) gain experience with the critical drill deviation. B-1 (-70 degrees, N40E) was collared April 3, 1989 and completed April 15 at a depth of 1201 feet. The Ash Peak Vein was intersected 860 feet down-dip from the surface (beneath the Hardy Shaft headframe), confirming an 80 degree southwest dip. The intersection is 6.0 true feet thick and grades 5.72 oz silver/ton and 0.025 oz gold/ton, which is uneconomic. The hanging wall portion of the vein is of higher tenor containing 1.8 true feet grading 16.26 oz silver/ton and 0.019 oz gold/ton. The vein also contains a weighted average 0.160 % zinc, 754 ppm lead, 170 ppm copper, 4 ppm antimony, <2 ppm arsenic, and 0.021 % manganese. A second, thin silver vein with marginal breccias was intersected 31 true feet footwall to the Ash Peak vein. This footwall vein-breccia package is 4.2 true feet wide and grades 1.36 oz silver/ton and 0.006 oz gold/ton (0.150 % zinc, 421 ppm lead, 213 ppm copper, <2 ppm antimony, 10 ppm arsenic, and 0.039 % manganese). Drilling costs for B-1 totalled $31,000 or $26.09/foot. Assay costs were $2,603.

The second hole, B-2 (-68 degrees, N44E), was collared April 21 and is at 1800 feet as of this writing. It is designed to intersect the vein at a depth more than twice that of B-1, and to test for underlying sediments within an economic depth. At

the current angle (-74 degrees) the vein intercept is projected to be at 2100-2200 foot drill depth (2050 feet down-dip from the surface). The hole will be continued to approximately 2500 feet (2380 feet below the surface) primarily to test for underlying sediments containing manto mineralization, and secondarily to test for parallel veins.

This two hole deep drill program will satisfy the $100,000 minimum expenditure requirement of the six month option period ending September 7, 1989. An additional $75,000 payment is required to extend the option another six months. If no basement sediments are intersected within the 2380 foot section tested by B-2, then additional deeper drill tests are not recommended because the target would be at an uneconomic depth. Exploration of the silver vein system is also not recommended based on its historically low grade. An economic evaluation of the development and mining of a silver vein reserve at Ash Peak suggests a negative cash flow. This evaluation is detailed in a separate forthcoming memo.

A.F. BUDGE (MINING) LIMITED

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R.R. Short
C.A. O'Brien
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2nd Copy

ASH PEAK MINE

A Silver Quartz-Flux Mine
located in Arizona, USA

SUMMARY REPORT

FOR

CANAMIN RESOURCES LTD.
Suite 220, 145 Chadwick Court
North Vancouver, B.C. V7M 3K1

(Steve)
Stephen P. Quin
Mining Geologist

March 1, 1988

TABLE OF CONTENTS

1. INTRODUCTION

CanaMin Resources Ltd. has acquired a 100% interest in the Ash Peak silver quartz-flux mine in southeastern Arizona through Arizona Flux Mines, Inc. (AFM). This mine is currently in production at a rate of 100 tpd and is in the process of expanding to a rate of 300-400 tpd. CanaMin's investment will allow this expansion to be completed more efficiently and on schedule, to reach full production by the end of April 1988.

The following report outlines the location, history and geology of the Ash Peak Property and attempts to give some ideas as to the potential profitability of the operation.

2. LOCATION AND ACCESS

The Ash Peak Mine is located 0.4 km south of Arizona State Highway #70, 16km west of the town of Duncan in Greenlee County, southeastern Arizona. The mine is approximately 320km east of Phoenix, Arizona, and 320 km west of El Paso, Texas.

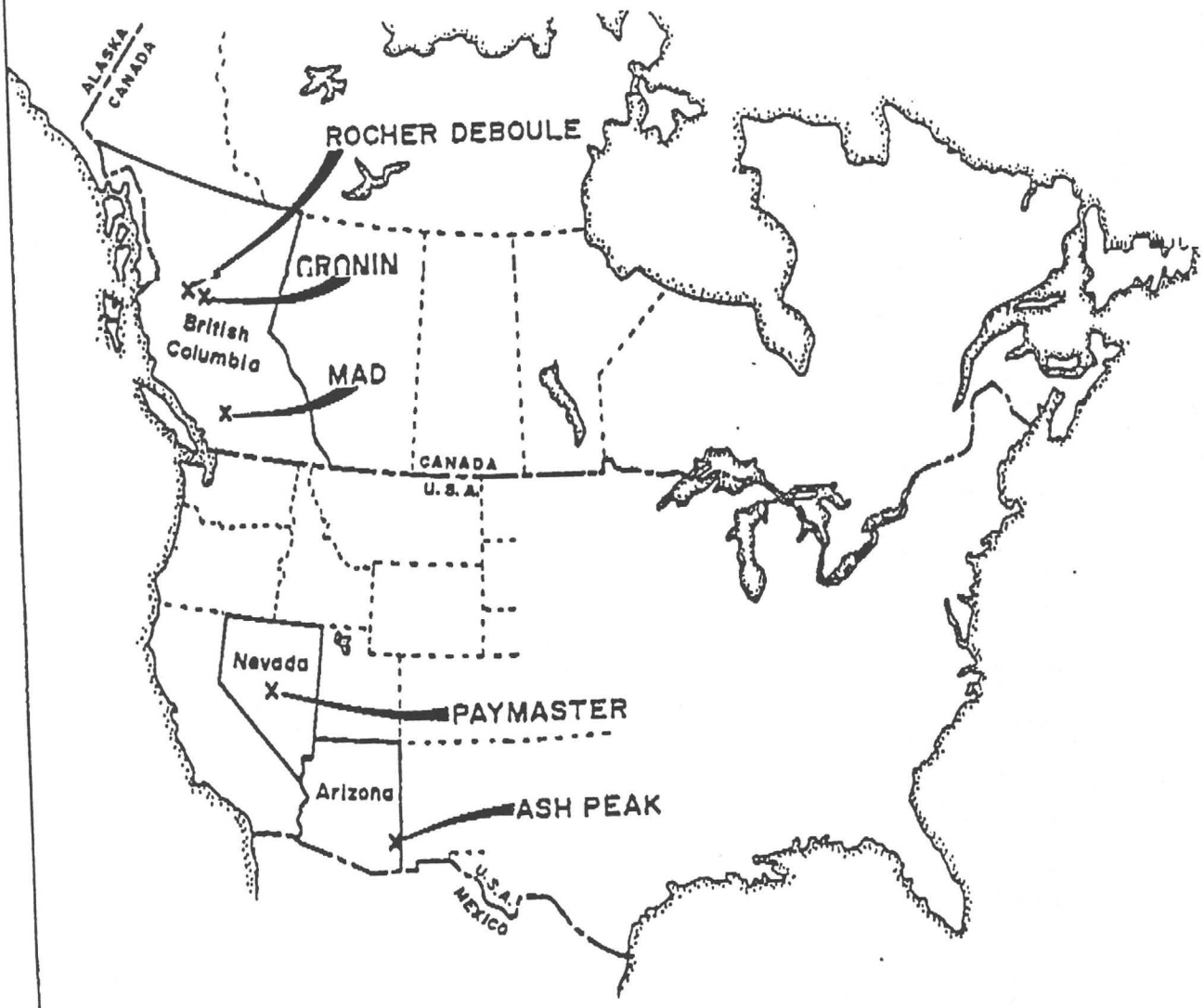
The area is well serviced by paved highways to all major supply centers and air and rail transport points are within reasonable distances. A large, trained labour pool is available from other mining districts in Arizona or nearby New Mexico. Limited supplies of electrical power and water are available on the property, sufficient for the current operations and the proposed expanded operations.

Within a radius of 240 km there are four operating copper smelters, with several additional smelters not much further away. This puts the Ash Peak Mine in an ideal position to supply flux to the smelter industry.

The climate is mild, permitting operations to be continued year round. The mine is at an approximate elevation of 1422m in an arid, desert setting.

PROPERTY LOCATIONS

SOUTHERN GOLD RESOURCES LTD.



3. PROPERTY

The Ash Peak Mine Property comprises 5 patented mining claims, 2 patented mill sites and 33 unpatented mining claims, as listed below:

LIST OF CLAIMS

Name	Type	Status	Patent #	Date
Great Eastern	Lode	Patented	783751	7 Mar 1921
Commerce	Lode	Patented	783751	7 Mar 1921
Fraction	Lode	Patented	783751	7 Mar 1921
Summit	Lode	Patented	783751	7 Mar 1921
Homestead	Lode	Patented	783751	7 Mar 1921
Commerce	Millsite	Patented	783751	7 Mar 1921
Summit	Millsite	Patented	783751	7 Mar 1921
			BLM Serial #	
Shamrock	Placer	Unpatented	41275	19 May 1963
Shamrock #1	Placer	Unpatented	41276	19 May 1963
Shamrock #2	Placer	Unpatented	41277	19 May 1963
Patton #1-7	Lode	Unpatented	57278-84	14 Jul 1978
" (relocated)	Lode	Unpatented	(165054-165060)	24 Feb 1982
Hardy #1-2	Lode	Unpatented	N/A	9 Feb 1972
Lone Camp #3, #6	Lode	Unpatented	N/A	9 Feb 1972
Hellfire #2	Lode	Unpatented	N/A	9 Feb 1972
Suden #2	Lode	Unpatented	N/A	9 Feb 1972
Fran #2	Lode	Unpatented	N/A	9 Feb 1972
Cougar #2	Lode	Unpatented	N/A	9 Feb 1972
Granduc #2, #5-7	Lode	Unpatented	N/A	9 Feb 1972
Harmony #1	Lode	Unpatented	N/A	24 Feb 1982
B&B #1-4	Lode	Unpatented	100836-100839	13 Jan 1980
MAB #1-6	Lode	Unpatented	100840-100845	13 Jan 1980

LOCATION?

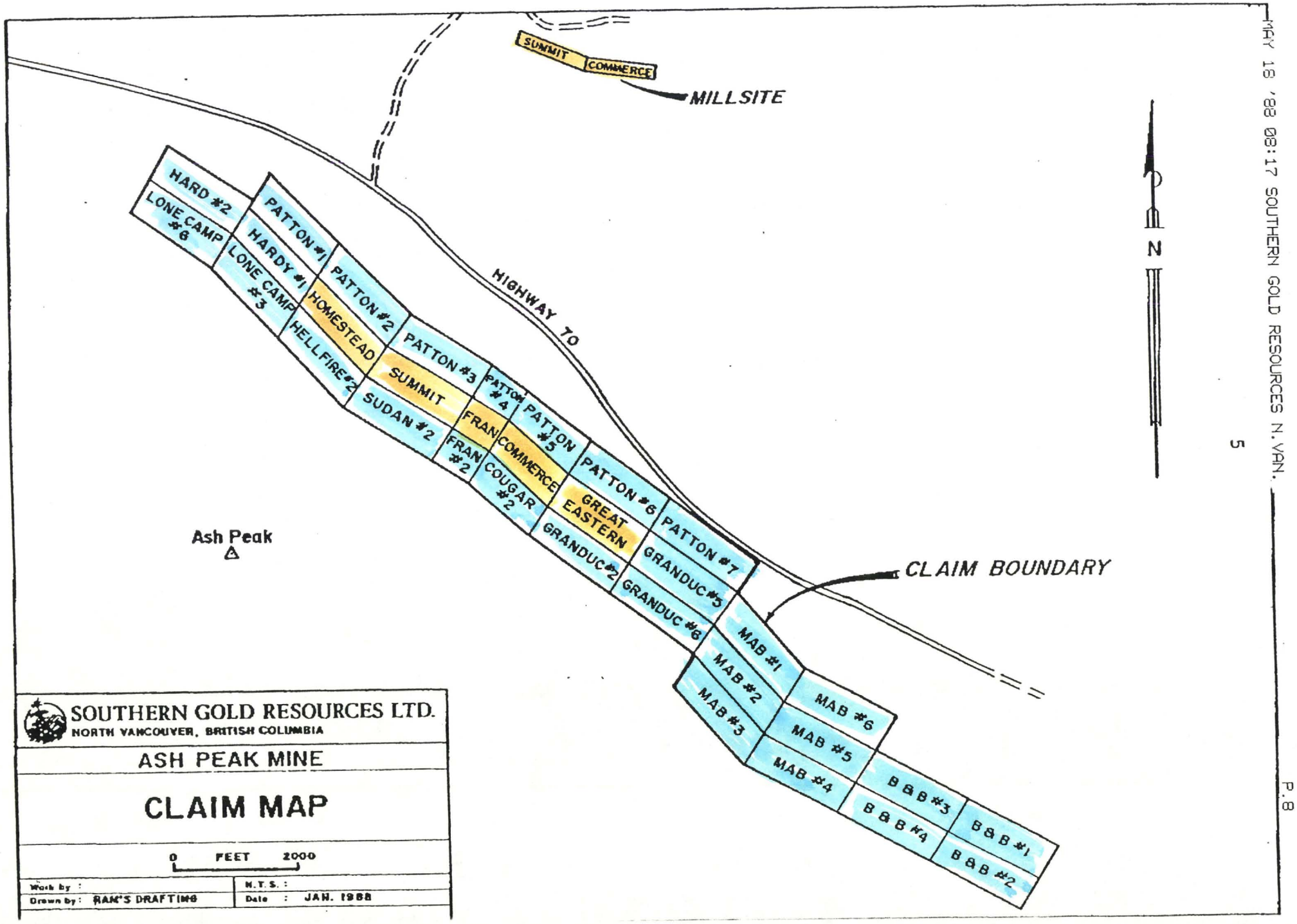
LOCATION?

These claims are held under option by Arizona Flux Mines, Inc. ("AFM"). AFM is required to make minimum monthly payments to the property owners of US $6,250 per month or to pay the equivalent of a net smelter royalty, whichever is greater. If the minimum monthly payments exceed the royalty, the balance of the difference is held as a credit against future royalties that might exceed the minimum monthly amounts. As of January 1988, AFM has a credit of $74,432 against future royalty payments. The effective rate of this NSR after using up available credits, is approximately 8-10%, as set out below:

VALUE OF ROYALTY

Net Metal Value	Royalty	Effective Rate
Less than $20/ton	$2/ton 6 OR 8	10%
$20/ton to $52/ton	$2 + 6.25% of amount over $20	10% to 7.7%
$52/ton to $62/ton	$4 + 22.5% of amount over $52	7.7% to 10%
Greater than $62/ton	$6.25 + 37.5% of amount over $62	10% to 20%

The impact of this NSR is somewhat less than would be the case for most mining operations because of the limited on-site processing of the flux. Hence, capital and milling costs that are not deductible from the royalty form a much lesser percentage of the overall costs than would normally be the case. The royalty has provisions under which it may be eliminated by purchase.


SUMMIT
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N
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MAB #3
MAB #6
MAB #5
MAB #4
B & B #3
B & B #4
B & B #1
B & B #2
Ash Peak
CLAIM BOUNDARY
SOUTHERN GOLD RESOURCES LTD.
NORTH VANCOUVER, BRITISH COLUMBIA
ASH PEAK MINE
CLAIM MAP
0 FEET 2000
Work by :
Drawn by : RAM'S DRAFTING
N.T.S. :
Date : JAN. 1988

4. HISTORY

The Ash Peak Mine was discovered in 1899 and five claims were patented in 1913. Goldfield Consolidated Company then proceeded to develop the property under an option agreement, sinking 6 shafts totalling 625 meters, the Shamrock Shaft alone reaching 244 metres in depth, and 2,026 metres of lateral development. Goldfield could not then afford the purchase price of $1,000,000 and abandoned the property in 1918, even though they had developed 66 tons for every ton mined. Production for that period is estimated at 6,663 tons at an average grade of 18 OPT Ag and 0.05 OPT Au which was direct shipped to the smelter. Several ore reserve calculations were made shortly after closure and the average of all these indicated 443,300 tons remaining at an average grade of 14.3 OPT Ag (Sayre 1936).

FLOTATION RESULTS

5.4 RECOV.
2.5 TAILS
7.9 HEADS

$\frac{5.4}{7.9} = 68\%$

The property remained inactive until 1936 when Veta Mines, Inc. took over the property and rehabilitated the 3 main shafts, constructed a 300 ton per day flotation mill and connected the Shamrock and Commerce workings for ventilation purposes. The mill operated from September 1936 to January 1938, producing 173,282 tons of ore at an estimated head grade of 9.5 OPT silver and 0.035 OPT gold, but only recovered 5.4 OPT silver and 0.02 gold. The mine closed when the price of silver was cut from 77.5 cents per ounce to 64.5 cents per ounce. Poor recovery was also a factor in the closure decision, tailings assaying 2.5 OPT Ag according to Sayer (1935).

In 1941 the mine was reopened by the Inspiration Consolidated Copper Company and the ore direct shipped to their smelter at Miami, Arizona. Total production is estimated at 123,817 tons at an average grade of 9.23 OPT Ag and 0.04 OPT Au. Up until this time all production had come from the main, or Ash Peak, vein. Inspiration drove a cross cut into the hanging wall and discovered the "Hanging Wall" vein which has since proven to be nearly as extensive as, and of similar grade to, the Ash Peak vein, but does not outcrop on surface (Setter 1968).

In 1963 Sayer and Setter leased the property and sub-leased it to Beaver Mesa Exploration in 1968 who produced 17,606 tons averaging 4.04 OPT silver from open pits and commenced rehabilitation of the shaft. The ore was direct shipped to the Phelps Dodge Smelter (Setter??). The company then got out of the mining business to concentrate on oil and gas and abandoned the property.

During the early 1980's Phelps Dodge acquired an option on the property and drove 3 declines into the veins and produced 78,595 tons averaging 4.2 OPT silver and 0.02 OPT gold from the Ash Peak vein, principally from open pits around the Commerce shaft (?? 1981). Phelps Dodge abandoned the property with the collapse of the prices of copper and silver in 1983.

Total production up to 1986 is estimated at 401,063 tons averaging 8.3 OPT silver and 0.03 OPT gold. This includes 3 million ounces of silver and 12,500 ounces of gold. The production figures are summarised below:

SUMMARY OF PRODUCTION

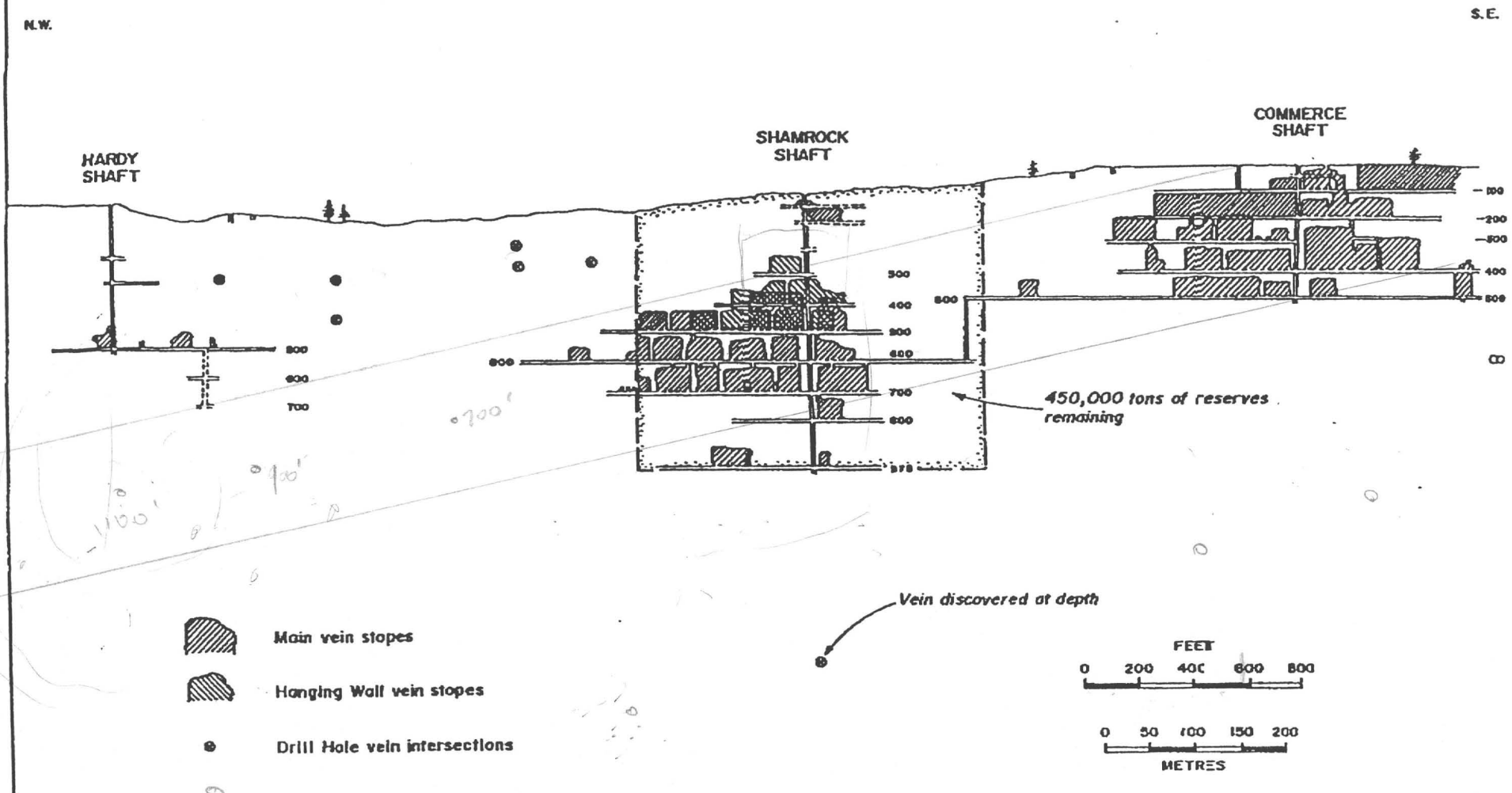
Company	Production	Silver Grade (OPT)	Gold Grade (OPT)
Goldfields	6,663	18.00	0.05
Veta Mines	173,282	9.50 (5.4)*	0.035 (0.02)*
Inspiration	123,917	9.23	0.035
Beaver Mesa	17,606	4.04	0.02
Phelps Dodge	79,595	4.20	0.02
	401,063	8.27	0.032

* Recovered Grade in bracket. Head grade estimated.

Arizona Flux Mines, Inc. acquired a lease on the property in June 1986. They commenced limited production immediately at 70-80 tpd, while rehabilitating old workings, principally around the Shamrock shaft. Rehabilitation to the 350 ft. level was completed in February 1988 and development on the 300 ft. level commenced. The first development ore was hauled up the shaft on 26 February 1988 and stope production is expected by 1 April 1988.

ASH PEAK MINE, ARIZONA

SOUTHERN GOLD RESOURCES LTD.



5. GEOLOGY

The rocks in the area are Tertiary volcanics, mainly andesites, rhyolites and rhyolite tuffs. The Ash Peak system of veins has been emplaced along very strong fault zones trending northwest. The Ash Peak vein itself is in a fault zone that ranges from 8 to 18 metres in width and this fault zone can be traced along its strike for more than three kilometers (Karnei, 1986). In general, the veins are steep and their dips range from 70 degrees to nearly vertical. Parallel veins such as the Hanging Wall vein south of the Ash Peak vein, and the Green vein north of the Ash Peak vein, have been found. It is highly possible that other similar, as yet undiscovered veins might exist on the property. The Ash Peak vein itself has been delineated at depth through extensive underground and surface drilling (the latter mostly by Phelps Dodge) and by extensive sampling in underground workings. The Hanging Wall vein has only been partially explored by widely spaced drill holes and cross cuts. The Green vein is unexplored.

The veins consist of massive chalcedonic quartz. Siliceous material is also evident in the wall rocks adjacent to the veins, where the rocks are strongly brecciated and silicified. It is evident that several stages of brecciation and silicification have taken place along the pre-existing fault zones or fissures. Colloform banding, brecciation and increasing grade with depth all indicate an epithermal origin.

The minerals in the veins, in order of importance, are chalcedony, quartz, calcite, rhodochrosite, amethyst, argentite, pyrite and gold. Secondary minerals present are cerargyrite, malachite and gypsum. The silver-bearing mineral, argentite, is difficult to readily identify in the field; it is often observed as white "clouds" and in places is often associated with rhodochrosite and copper oxide stains. Very often, the only way to discern economic silver ore from waste is through assaying (Karnei, 1986). The low sulphide content is an additional attraction to the smelters, as are the low aluminum and carbonate levels.

6. RESERVES

Several reserve estimates have been made over the years, evaluating the developed tonnages in the old mine workings. Unfortunately, these figures are basically unreliable since they rely on historical sample data that is from numerous unverifiable sources, of very uneven distribution and frequently does not include the sample widths. Further, samples were often only taken over a 1.5m to 2m width, which was the historical stope width, and rarely took into account the actual vein width. The veins, in fact, vary from 1.5m to 10.7m in width. In addition, there are numerous references to drilling and drifting into the virtually untapped Hanging Wall vein with significant widths intercepted. This vein has a 15m width on the 600 foot level. No reserves have been assigned to the Hanging Wall vein in these calculations.

Leon summarised the available reserves in 1985 as follows:

RESERVE POTENTIAL

	Proven	Probable	Possible	Total
Commerce	56,000 @ 5.7	166,000 @ 5.7		222,000 @ 5.7
Shamrock	6,000 @ 13.6	88,000 @ 8.0		92,000 @ 8.5
"Depth"	-	-	166,000 @ 5.0	166,000 @ 5.0
	62,000 @ 6.5	254,000 @ 6.5	166,000 @ 5.0	480,000 @ 6.0

Merz, in his planning document dated October 1987, looked at the overall potential of the property as indicated not only by assay data but also by documented reports of other veins, intersections, etc. He concluded that "a total potential of 800,000 tons remained above the 975 level, within 600 feet of the Shamrock shaft, at an average width of 5 feet for each of the two veins." This does not include any potential below the 975 foot level, where there is a drill intersection at "1600 feet of good grade and width" (Merz, 1987). He further estimates there is potential for a million tons in the area of the Hardy shaft, where virtually no production has occurred. The author is of the opinion that, overall, there may be a geological potential for as much as 5 to 10 million tons of vein in the vicinity of the existing workings, taking into account the full width of the vein and the total known extent of the two veins.

7. CURRENT OPERATIONS

Arizona Flux Mines, Inc. has rehabilitated the Shamrock shaft to the 375 foot level. This rehabilitation involved complete retimbering of the shaft, a new poured concrete shaft collar, new headframe, hoist, compressor, power facilities and underground haulage equipment. This will immediately access an estimated 60,000 tons of ore on the 200 to 300 foot levels, sufficient for 9 months operation at 300 tpd. Ongoing development will continue to access the 600,000 tons of reserves indicated by Merz (1987) above the 875 foot level.

The current operation entails driving production drifts 35m west and east of the shaft in the Ash Peak vein. This is producing shipping ore during the driving of the levels. Each level will then have four stopes developed adjacent to the shaft, one each east and west of the shaft in both the Hanging Wall and Ash Peak veins. The mining method will be shrinkage stoping over the full width of the vein. Ore chutes will feed into the haulage levels and broken ore will be drawn by slushers to the shaft. Drifts will gradually be tracked for later development of additional stopes along strike.

The slusher will drop the ore into pockets which will feed the self dumping 5-ton skip which feeds into a 50 ton coarse ore bin built into the headframe. A gate can divert barren development waste into a chute for dumping elsewhere. The ore bin drops on to an apron feeder and conveyor that feeds into a jaw crusher with a grizzly to screen off 6 inch plus material for later contract crushing. The jaw crusher reduces the feed to 2 inch minus prior to feeding a 50 ton per hour semi-autogenous grinder. The outflow from the grinder is triple screened with the -10 mesh fraction and the 1/4" - 3/4" fraction screened off for stockpiling and shipping. The -10 mesh to 1/4" and the oversize ore sent back to the grinder for further size reduction. This process route ensures approximately 50% each of the -10 mesh and 1/4" product, the most marketable size fractions.

The flux is contract hauled in 25 ton loads to the various smelters at a rate of $0.10 per ton per mile. The smelters assay the flux product. The flux is paid for on a weekly, as delivered basis, at a current rate of US $18.00 per ton. Payment for precious metals is currently on the basis of 75% of the silver content and nothing for the gold, because of the irregularity of shipments and variability of grade. Normal payment would be for up to 90% of the silver and gold content, provided consistent regular supplies are shipped. At a 90% rate the $18.00 flux payment would be eliminated. Thus renegotiations of the smelter contracts has to be a top priority once full production is achieved. A 90% payment rate will dramatically improve the economics of the Ash Peak operation. The precious metal content is paid for after 30 days. Half of the assay sample is shipped

to AFM for check assaying and disputes can be settled by independent referee.

The whole operation is expected to require a work force of 20 men at all levels. Miners currently earn an average of US$98.00 per day. It is planned to put the crew on a profit sharing bonus rate, scaled according to their impact on grade control and production rates (i.e. Miners get highest rates, surface workers lowest). Capital requirements are minimal since there are no milling facilities and the crushing plant is already on site. A new hoist, electrical equipment, compressor, jack-legs, mine trucks and muckers have all been purchased and are on site. These factors illustrate one of the principal advantages of this operation; it is neither capital nor labour intensive.

8. ECONOMICS

Only tentative estimates of productions costs and revenues can be made at this time since the operation is neither in full production, nor have the new smelter contracts been negotiated based on increased production and higher grade material. However, certain estimates as to production costs and revenues can be made.

COSTS:

Payroll covers all workers employed in the operation and averaged up to $10 per hour. The actual payroll rates are $4.50 to $10.00 per hour, hence these payroll costs are conservative. The estimates for consumables are based on experience in the three stopes already completed by AFM during 1987. Adminstration costs reflect the actual administration costs, doubled to account for increased production rates.
A detailed schedule of costs is given below and reduced to a dollar per ton figure.

		US$/day	US$/ton	
Payroll				
Miners/Hoistmen	(14 @ $10/hr)	$1,120	$3.73	
Shift bosses	(2 @ $12/hr)	$192	$0.64	
Crushermen	(2 @ $8/hr)	$128	$0.43	
Maintenance	(1 @ $15/hr)	$120	$0.40	
Superintendent	(1 @ $20/hr)	$160	$0.53	
		$1,720	$5.73	
Payroll taxes @ 15%		$258	$0.86	
		$1,978	$6.59	$6.59
Consumables				
Steel/Bits		$129	$0.43	
Parts/Repairs		$75	$0.25	
Explosives		$495	$1.65	
Electric/Fuel		$372	$1.24	
Crusher Parts		$90	$0.30	
Miscellaneous		$180	$0.60	
		$1,341	$4.47	$4.47
Administration				
President, Secretary, etc.		$183	$0.61	
Assays (Independent)		$39	$0.13	
Engineering, Geology		$198	$0.66	
Travel/Insurance		$111	$0.37	
Phone/Supplies, etc.		$27	$0.09	
		$561	$1.87	$1.87
Sub-Total				$12.94
25% Contingency				$3.23
TOTAL				$16.17

REVENUES:

Smelter schedules are currently based on a fixed payment of $18 per ton and 75% of the silver content. These figures are lower than normal due to irregular shipments of variable grade material while production came from scavenging what material could be obtained from the declines. Now the shaft is in use and regular shipments of a consistent grade are being made, the contracts are under negotiation for an upward revision. However, the revenue scenario's illustrated in the attached graphs indicate a net operating profit of $10 ton to $15 per ton at a production rate of 300 tons per day. In these analyses the following base assumptions made, unless otherwise stated, are as follows:

Silver Grade	5.5 OPT
Silver Payment	75%
Silver Price	US $6.20 per ounce
Gold Grade	0.03 OPT
Gold Payment	25%
Gold Price	US $430.00 per ounce
Flux Payment	US $18.00 per ton
Mining Rate	300 tons per day
Mining Costs	US $17.00 per ton
Royalty Rates	As per agreement

The results of this analysis indicate that the economic viability of the operation is most sensitive to changes in metal prices and grade. The operation is much less sensitive to mining rate than grade and price. Other factors are important, but not crucially so.

Metal prices are beyond the control of this operation so the most significant factor, as far as profitability is concerned, becomes grade control. As a result of this, AFM has purchased a "MAP" machine. This is a hand held assay machine that has proven extremely reliable and accurate for silver by the US Bureau of Mines. The assay method is simply to hold the machine against rock face for 3-4 minutes and wait for a read out. This obviously reduces assay costs significantly and greatly enhances grade control since every round can be checked before blasting with an immediate result available. Thus a tight control becomes possible, allowing grade to be maintained, even at the expense of productivity. Mining a consistently higher grade material will greatly enhance the profitability of the operation.

9. POTENTIAL

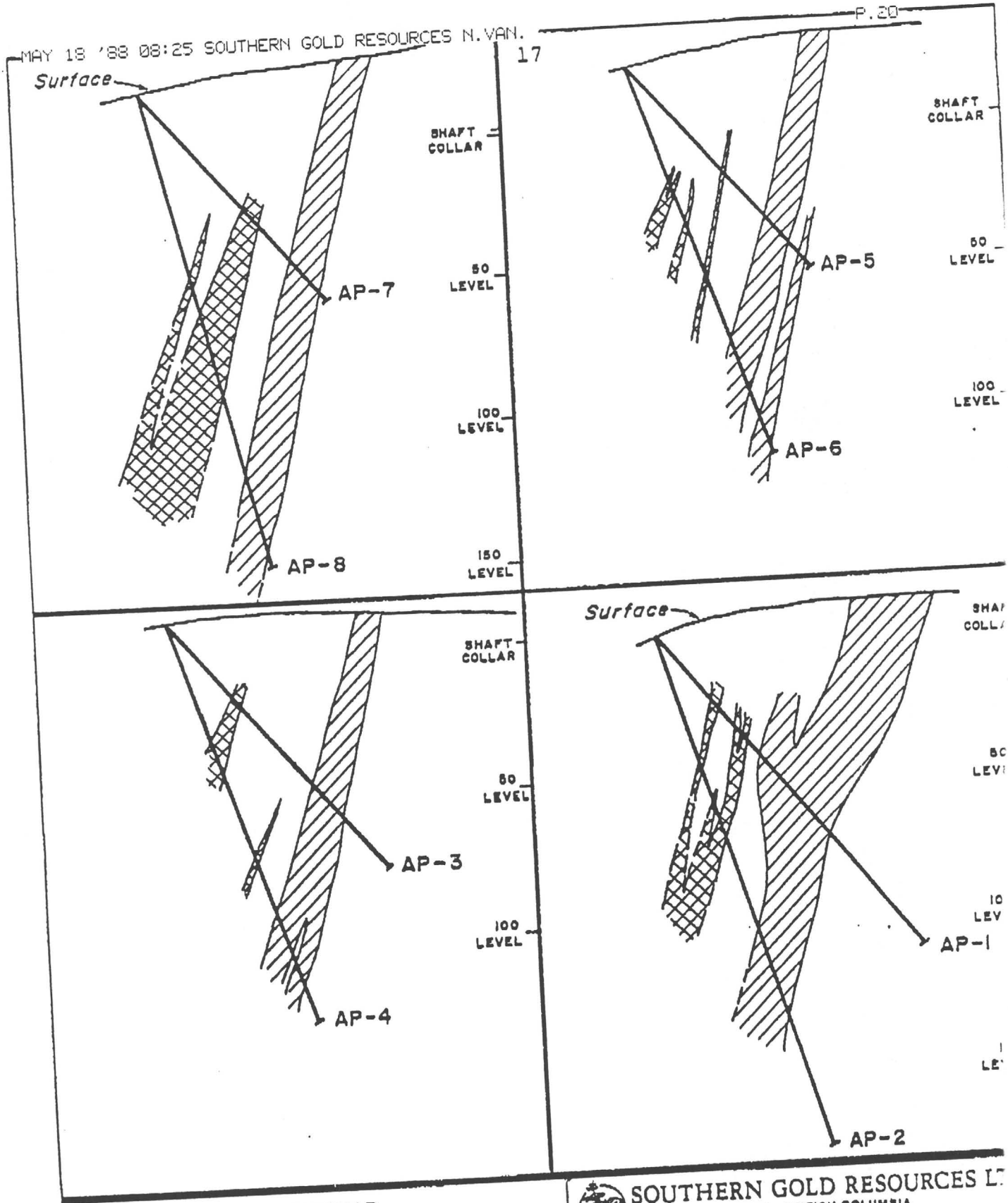
The Ash Peak property is largely unexplored. Very little in the way of exploration was conducted by the early operator, Goldfield, since considerable reserves were available in close proximity to the two main shafts. Veta Mines connected these two shafts for ventilation purposes and is reported (Billingsley 1987) to have encountered vein along the entire length of this 1050 feet of drift, very little of which is in any of the above mentioned reserve categories. The main Ash Peak vein has been developed in all three shafts over a strike length of 1500 metres and developed to a depth of 300 metres on the 975 level. Continuity of the vein over this length is further confirmed by the production and drilling activities of Phelps Dodge in the early 1980's. Near surface drilling between the Hardy and Shamrock shafts, and northwest of the Hardy shaft, all above the 100 foot level, intersected between 1.5 and 10 metres of Ash Peak vein averaging 4 OPT silver (???, 1983). This grade corresponds fairly closely to the grade recovered from shallow workings in other areas. Murphy (1940) reports "the mine has been drilled to 1400 feet and large and comparatively high grade ore are located by drilling". Merz (1987) reports a drill hole tracing the vein from the 975 foot level to "1600 feet", an additional dip extent of 190 metres. Hence, at an average width of 2 metres, a geological potential of 4 million metric tons exists in this vein alone.

Inspiration discovered the Hanging Wall vein by driving a cross cut into the hanging wall of the main Ash Peak vein on the 400 foot level of the Shamrock workings. Inspiration then developed the Hanging Wall vein on the 400 foot and 500 foot levels and drilled it every 100 feet for 1200 feet along the 600 foot level, encountering "good widths" (Setter 1968). The only grade figures reported are in a cross cut on the 600 foot level where "50 feet of 5.6 OPT silver" was encountered (Setter 1968). In addition, the Hanging Wall vein has been located in the Hardy and Commerce shaft areas, indicating a potential strike length of at least 1200 metres. The geological potential is therefore indicated to be in excess of 1 million metric tons at an average width of 2 metres.

In addition to the two veins described above, other veins may also exist. A "Green vein" with "good widths" is reported some 200 feet into the foot wall of the Ash Peak vein, discovered while drifting for water. This may or may not be the vein reported by Setter (1968) in the vicinity of the Hardy shaft, dipping towards the Ash Peak vein. The potential of these other veins is untested.

Finally, some authors (e.g. Karnie, 1986) feel there is potential for "Manto-type" deposits at or below the contact with the sediments below the volcanics. The contact is expected to be

at a depth of 500 metres or more. Mantos are replacement type deposits where fluids selectively replace favorable horizons (usually limestones). Such deposits tend to be large and high grade. For example, at Potosi in Mexico, the individual bodies reach lengths of 1000 plus metres and cross sections of 100 to 5000 square metres. Therefore, tonnages range from 250,000 tons to over 10,000,000 tons. The average grade is typically 9-15 OPT silver and 9-10% each lead and zinc (Bateman, 1979). There is no direct evidence of limestones below the volcanics at Ash Peak. However, Crowther (1924) states, in direct reference to Ash Peak, that "this fissuring has extended to the underlying limestone and that ascending solutions, in passing through the limestone, lost much of their mineral content before reaching the upper tertiary zone". One has to assume that he is inferring this as a reason for the lack of lead and zinc in the veins, unless he had evidence of limestone not available to this author.



LEGEND

Ash Peak Vein

Hanging Wall Vein

Drill Hole and Number

AP-3

SOUTHERN GOLD RESOURCES LT
NORTH VANCOUVER, BRITISH COLUMBIA

ASH PEAK MINE

CROSS SECTIONS

0 50 100 FT.

Work by :	PHELPS DODGE	N.T.S. :	
Drawn by :	RAM N. GOPAL	Date :	JANUARY, 1988

10. CONCLUSIONS

The Ash Peak vein system appears to be related to a major structural break that has resulted in several phases of veining, not necessarily along the same channel. This has resulted in several parallel veins. The veining is clearly of epithermal origin and as such, grade increase with depth. This grade change is confirmed by historical assay data. The geological potential of this property is virtually untested and its reserves untapped. As a silver mine, with its current low grade and poor recoverability, it is not economic. However, as a direct shipped flux with minimal processing and capital requirements, a different picture emerges. The reduced operating costs and minimal servicing of capital allow much lower grade material to be profitably extracted and shipped. Precisely how profitable the mine will be has yet to be determined, because the operation is not in full production and cannot obtain the highest smelter payments until it can consistently deliver a reliable product. However, the potential profitability looks very encouraging.

Two areas allow room for further improvements; grade and tonnage. If the grade can be significantly increased to, for example, 8.0 OPT silver, the economics are significantly enhanced. Such an expected grade is not unreasonable, since that is the average of all material ever mined on the property. This should be the prime focus of future operations. Secondly, there is room to increase production. This would require additional capital expenditures since the shaft cannot, as it stands, produce much more than 400 tpd. However, the shaft capacity could be increased with a second skip. This would necessitate the removal of the man-way and an alternate would have to be provided. Similarly, more equipment and more personnel would be required to achieve an increase to 800 - 1000 tons per day.

In conclusion, there are the following reasons for CanaMin acquiring a 100% interest in this operation:

1. It is a producing mine.

2. At 300 - 400 tpd it should provide future long term income.

3. The geological potential of the deposit is untested and appears to be very large.

4. The grade can almost certainly be increased well above the initial expected 5.5 OPT silver.

5. In the longer term the potential indicates room for significant increases in the rate of production.

11. PROPOSALS

1. Assist AFM in obtaining the desired production of 300-400 tpd as soon as possible and thus prove it to be a profitable operation with a history of profits.

2. Conduct the required engineering studies to evaluate ways of significantly increasing the existing levels of production.

3. Renegotiate all smelter contracts, once a consistent, reliable product is available.

4. Conduct a near surface exploration drill program to increase the confidence levels for grade and tonnage to provide data for near term mine development planning.

5. Consider a deeper orientated exploration drill program to test beyond the 600 level for much higher grade ore reserves in the veins and to test for Manto type deposits.

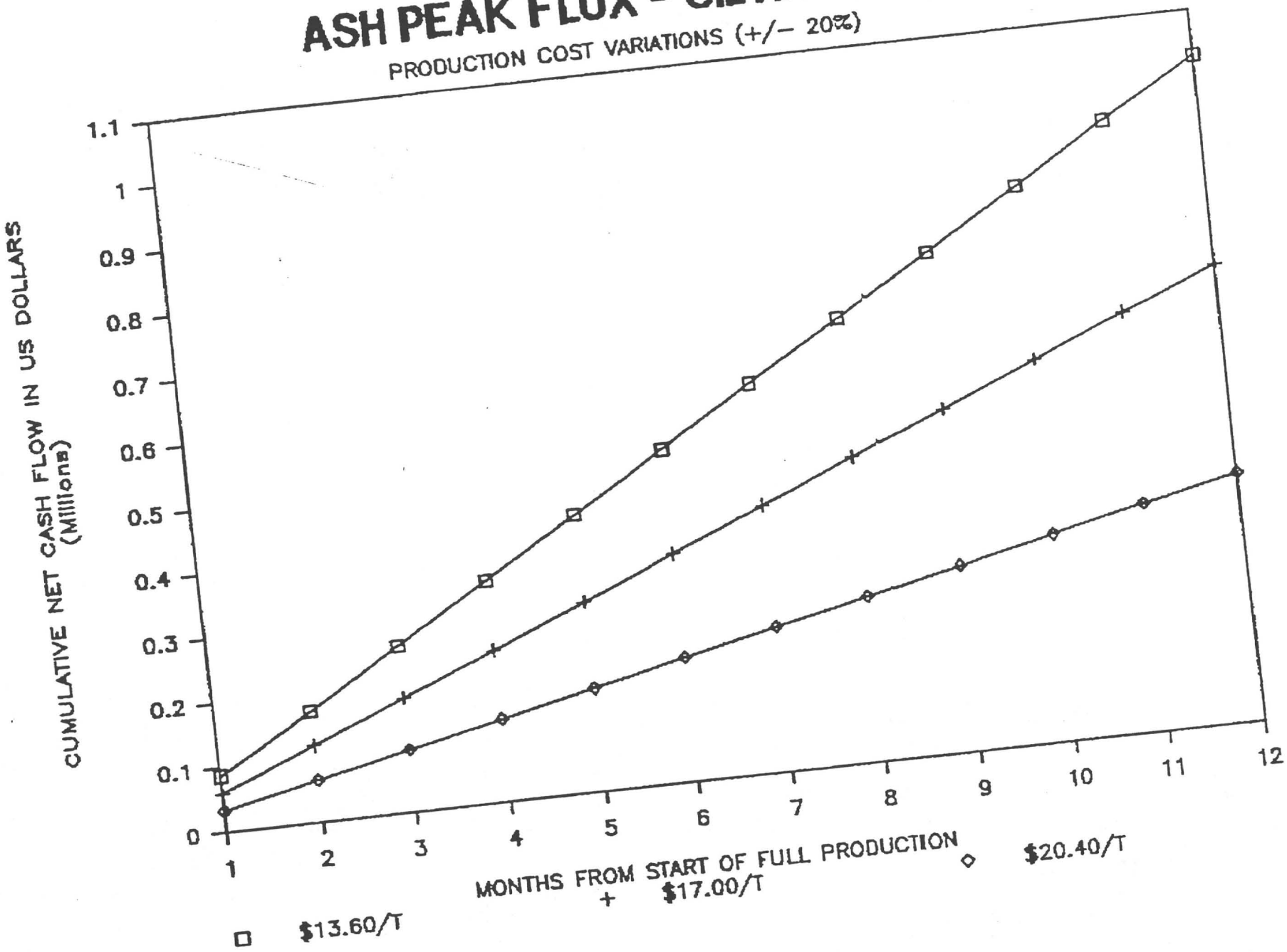
6. Explore and develop the reserve potential along strike of the current Shamrock workings, particularly in the area of the Hardy shaft and between the Shamrock and Commerce workings.

12. REFERENCES

Bateman A. & Jensen M.	1979	Economic Mineral Deposits (Wiley)
Billingsley L.	1988	Personal Communications
Crowther H.	1921	Untitled report summarizing the Ash Peak property
Karnie, K.	1986	Preliminary Report of Investigations: Ash Peak Mine (Unpublished)
Leon F.	1985	Summary report on the Ash Peak silver, gold and silica mine, Greenlee County, Az. (unpublished)
Lines, H.	1940	Mining and milling methods and costs at the Ash Peak Mine of the Veta Mines, Inc., Duncan, Az. (U.S. Dept. Interior, IC7119)
Merz J. Becker W.	1987	Rehabilitation plan for the Ash & Peak Mine (unpublished)
Murphy A.	1940	Two page memo (unpublished)
Sayer R.	1935	Preliminary report on the Ash Peak Mines (unpublished)
Sayer R.	1935	Supplementary report on the Ash Peak Mine (unpublished)
Setter A.G.	1968	History of the Ash Peak Mines (Summit Engineering, unpublished)
??	1941	Untitled and uncredited evaluation of the Ash Peak Mines
??	1981	Untitled and uncredited summary of Phelps Dodge production records
??	1983	Untitled and uncredited summary of Phelps Dodge drill hole results

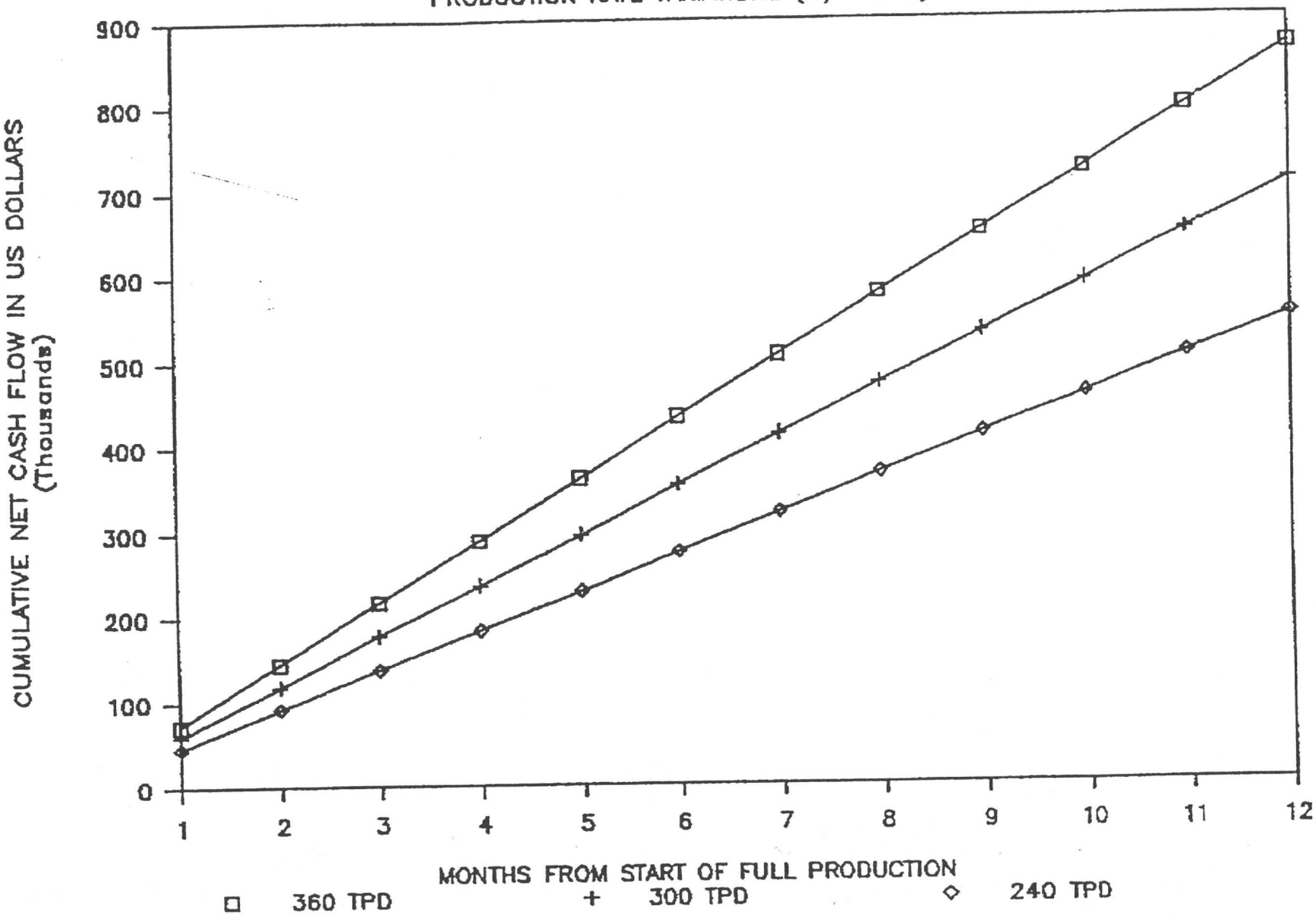
ASH PEAK FLUX - SILVER MINE

PRODUCTION COST VARIATIONS (+/- 20%)



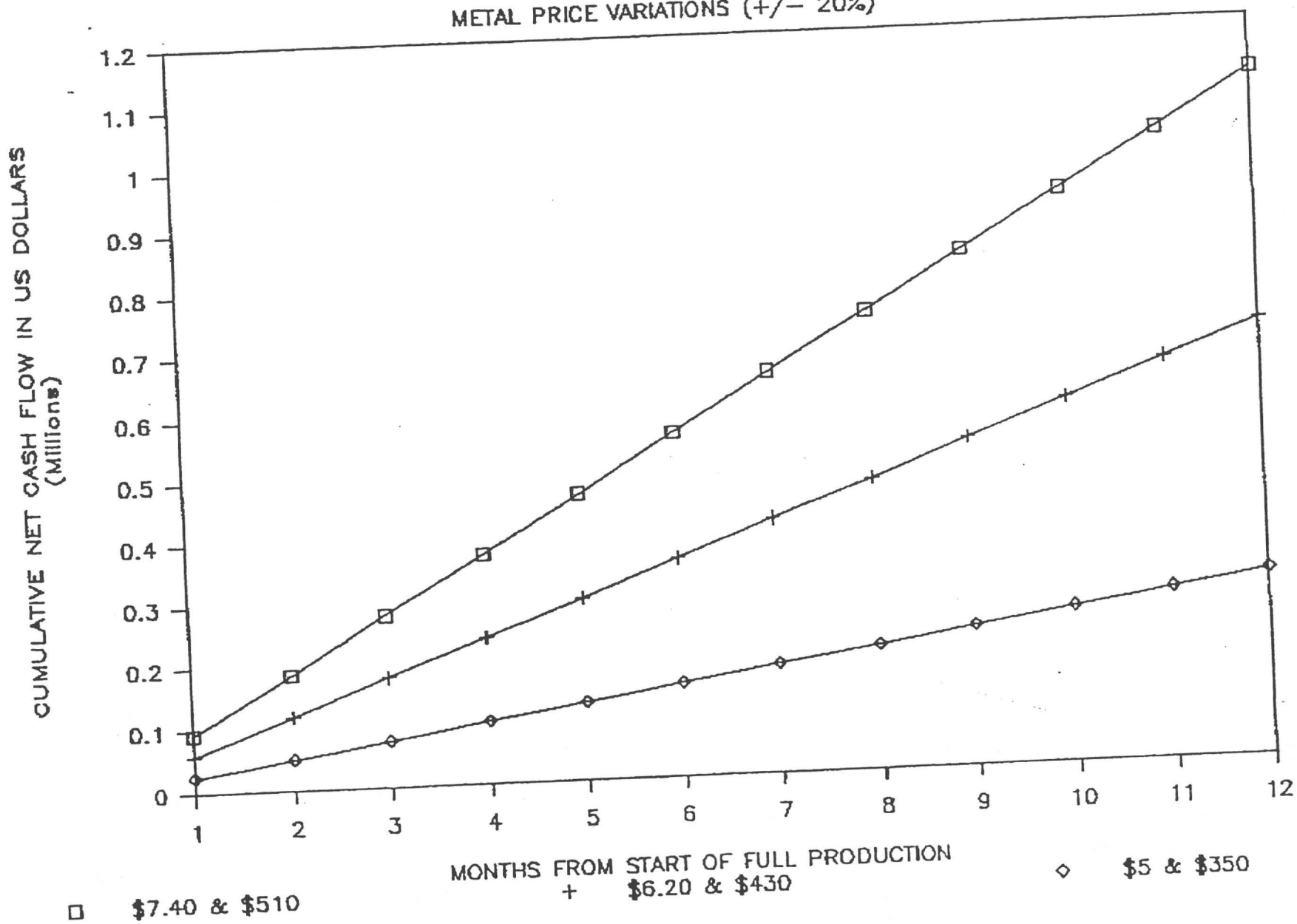
ASH PEAK FLUX - SILVER MINE

PRODUCTION RATE VARIATIONS (+/- 20%)



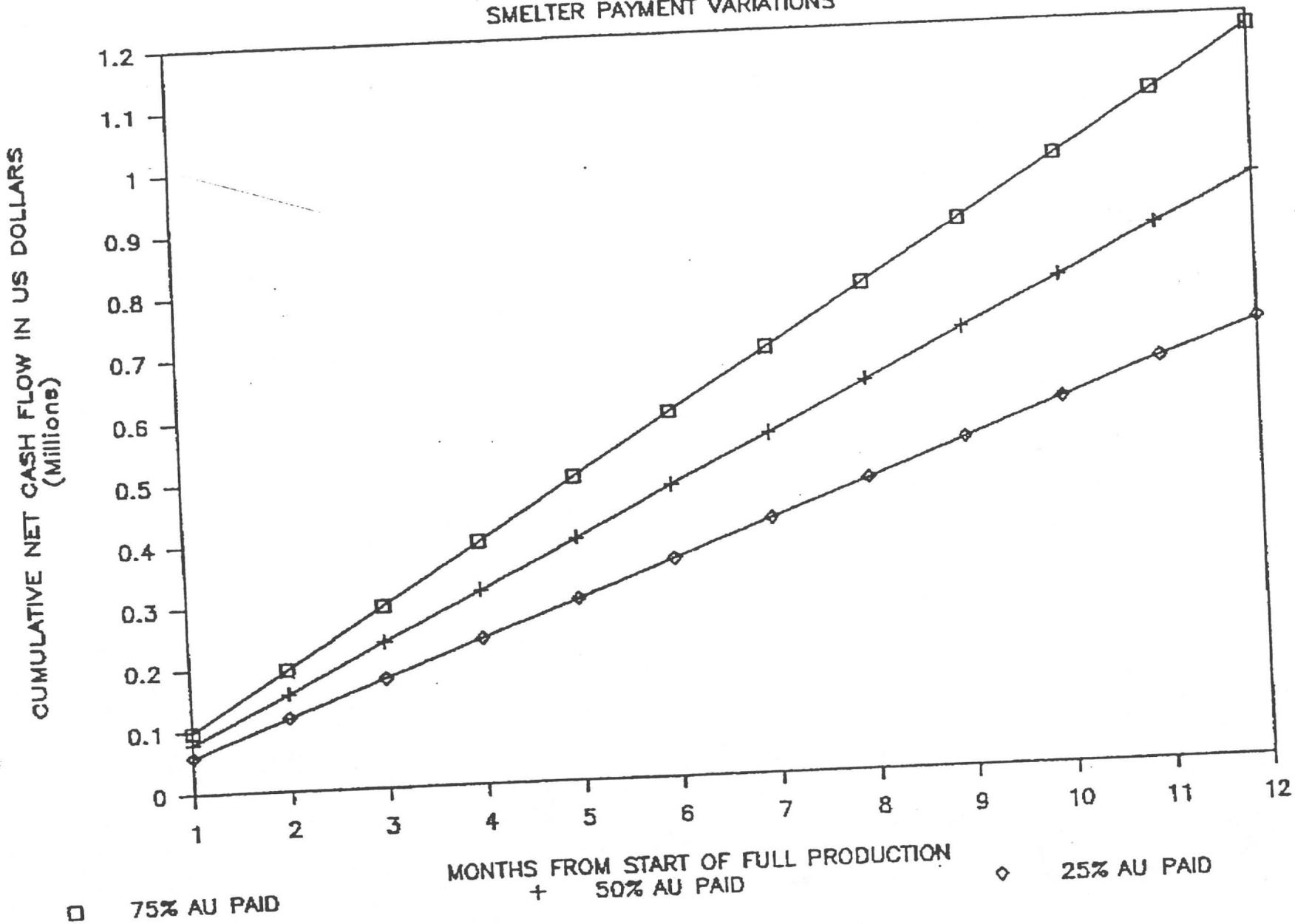
ASH PEAK FLUX - SILVER MINE

METAL PRICE VARIATIONS (+/- 20%)



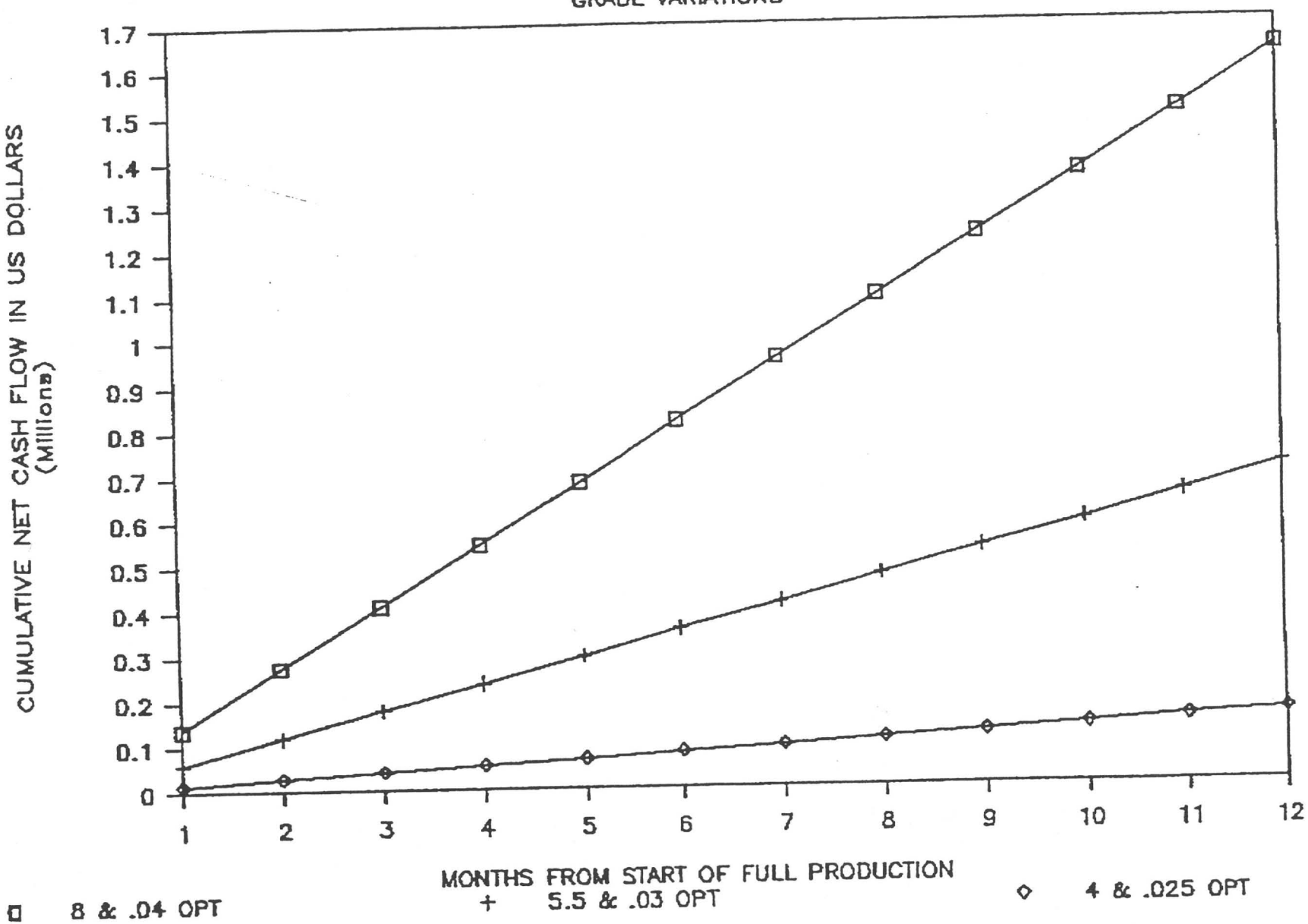
ASH PEAK FLUX - SILVER MINE

SMELTER PAYMENT VARIATIONS



ASH PEAK FLUX - SILVER MINE

GRADE VARIATIONS



B

ASH PEAK MINE

A Silver Quartz-Flux Mine
located in Arizona, USA

SUMMARY REPORT

FOR

CANAMIN RESOURCES LTD.
Suite 220, 145 Chadwick Court
North Vancouver, B.C. V7M 3K1

100% Az Flux mines.

(steve)
Stephen P. Quin
Mining Geologist

March 1, 1988

TABLE OF CONTENTS

1. INTRODUCTION

CanaMin Resources Ltd. has acquired a 100% interest in the Ash Peak silver quartz-flux mine in southeastern Arizona through Arizona Flux Mines, Inc. (AFM). This mine is currently in production at a rate of 100 tpd and is in the process of expanding to a rate of 300-400 tpd. CanaMin's investment will allow this expansion to be completed more efficiently and on schedule, to reach full production by the end of April 1988.

The following report outlines the location, history and geology of the Ash Peak Property and attempts to give some ideas as to the potential profitability of the operation.

2. LOCATION AND ACCESS

The Ash Peak Mine is located 0.4 km south of Arizona State Highway #70, 16km west of the town of Duncan in Greenlee County, southeastern Arizona. The mine is approximately 320km east of Phoenix, Arizona, and 320 km west of El Paso, Texas.

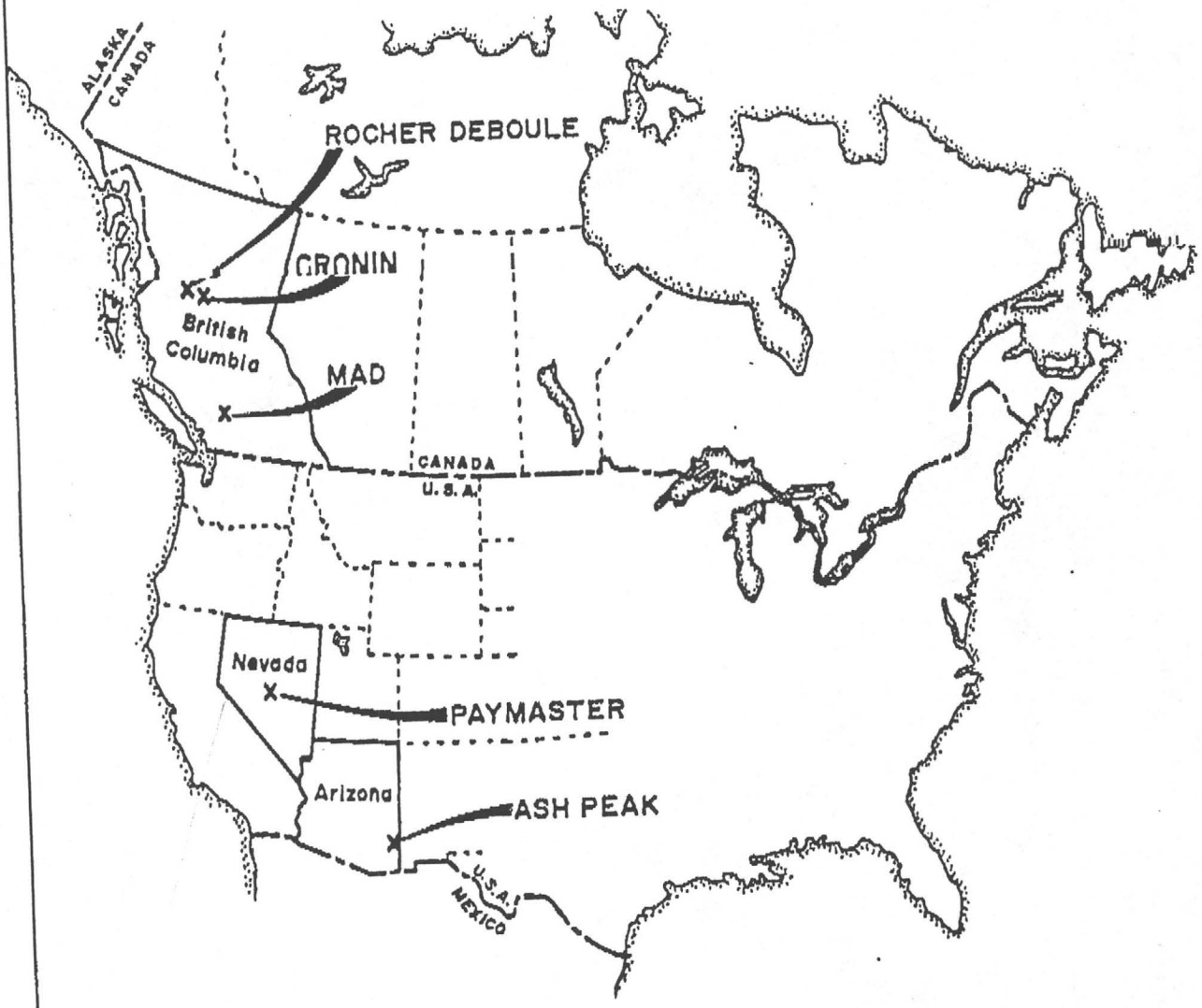
The area is well serviced by paved highways to all major supply centers and air and rail transport points are within reasonable distances. A large, trained labour pool is available from other mining districts in Arizona or nearby New Mexico. Limited supplies of electrical power and water are available on the property, sufficient for the current operations and the proposed expanded operations.

Within a radius of 240 km there are four operating copper smelters, with several additional smelters not much further away. This puts the Ash Peak Mine in an ideal position to supply flux to the smelter industry.

The climate is mild, permitting operations to be continued year round. The mine is at an approximate elevation of 1422m in an arid, desert setting.

PROPERTY LOCATIONS

SOUTHERN GOLD RESOURCES LTD.



3. PROPERTY

The Ash Peak Mine Property comprises 5 patented mining claims, 2 patented mill sites and 33 unpatented mining claims, as listed below:

LIST OF CLAIMS

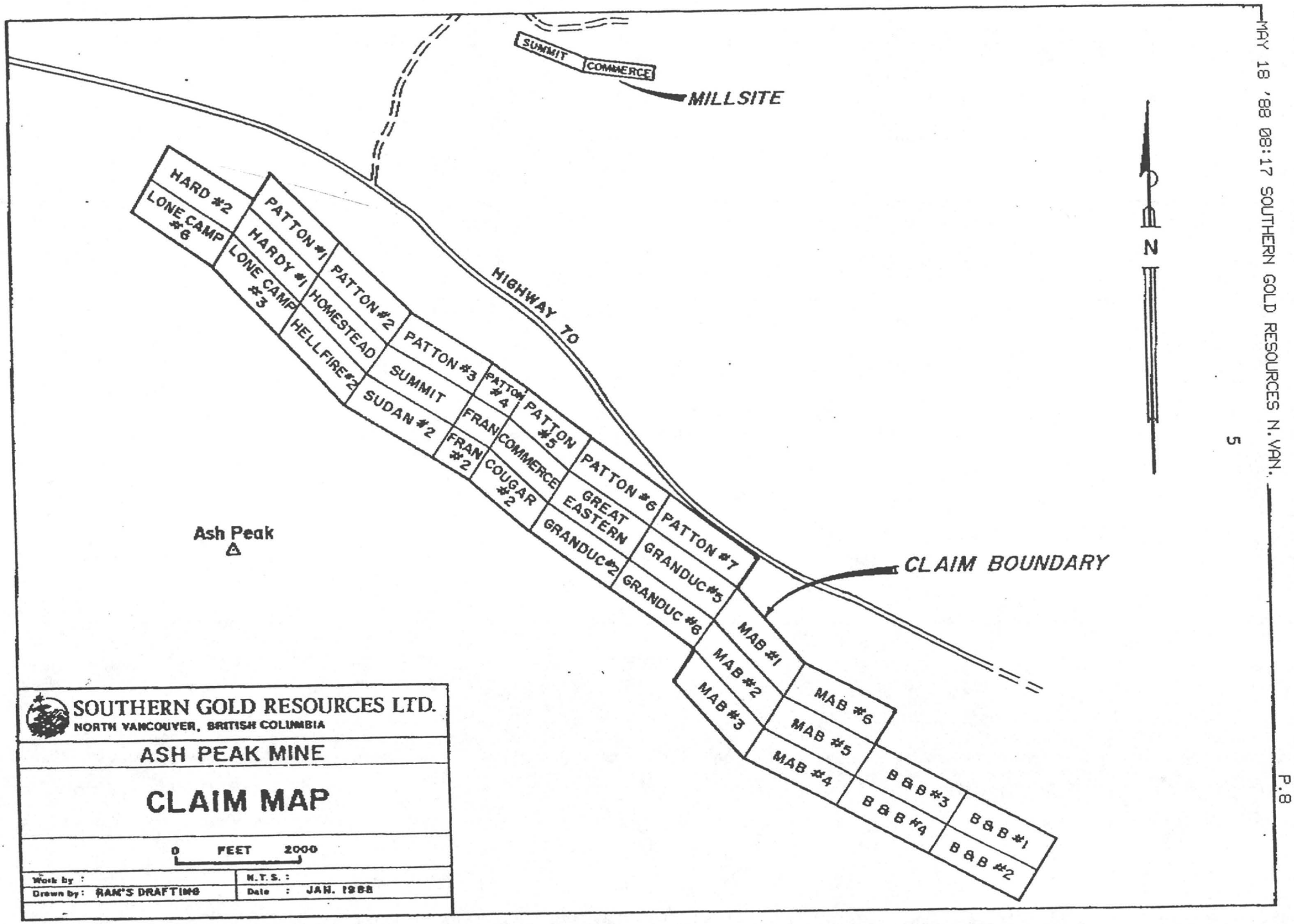
Name	Type	Status	Patent #	Date
Great Eastern	Lode	Patented	783751	7 Mar 1921
Commerce	Lode	Patented	783751	7 Mar 1921
Fraction	Lode	Patented	783751	7 Mar 1921
Summit	Lode	Patented	783751	7 Mar 1921
Homestead	Lode	Patented	783751	7 Mar 1921
Commerce	Millsite	Patented	783751	7 Mar 1921
Summit	Millsite	Patented	783751	7 Mar 1921
			BLM Serial #	
Shamrock	Placer	Unpatented	41275	19 May 1963
Shamrock #1	Placer	Unpatented	41276	19 May 1963
Shamrock #2	Placer	Unpatented	41277	19 May 1963
Patton #1-7	Lode	Unpatented	57278-84	14 Jul 1978
" (relocated)	Lode	Unpatented	(165054-165060)	24 Feb 1982
Hardy #1-2	Lode	Unpatented	N/A	9 Feb 1972
Lone Camp #3, #6	Lode	Unpatented	N/A	9 Feb 1972
Hellfire #2	Lode	Unpatented	N/A	9 Feb 1972
Suden #2	Lode	Unpatented	N/A	9 Feb 1972
Fran #2	Lode	Unpatented	N/A	9 Feb 1972
Cougar #2	Lode	Unpatented	N/A	9 Feb 1972
Granduc #2, #5-7	Lode	Unpatented	N/A	9 Feb 1972
Harmony #1	Lode	Unpatented	N/A	24 Feb 1982
B&B #1-4	Lode	Unpatented	100836-100839	13 Jan 1980
MAB #1-6	Lode	Unpatented	100840-100845	13 Jan 1980

These claims are held under option by Arizona Flux Mines, Inc. ("AFM"). AFM is required to make minimum monthly payments to the property owners of US $6,250 per month or to pay the equivalent of a net smelter royalty, whichever is greater. If the minimum monthly payments exceed the royalty, the balance of the difference is held as a credit against future royalties that might exceed the minimum monthly amounts. As of January 1988, AFM has a credit of $74,432 against future royalty payments. The effective rate of this NSR after using up available credits, is approximately 8-10%, as set out below:

VALUE OF ROYALTY

Net Metal Value	Royalty	Effective Rate
Less than $20/ton	$2/ton	10%
$20/ton to $52/ton	$2 + 6.25% of amount over $20	10% to 7.7%
$52/ton to $62/ton	$4 + 22.5% of amount over $52	7.7% to 10%
Greater than $62/ton	$6.25 + 37.5% of amount over $62	10% to 20%

The impact of this NSR is somewhat less than would be the case for most mining operations because of the limited on-site processing of the flux. Hence, capital and milling costs that are not deductible from the royalty form a much lesser percentage of the overall costs than would normally be the case. The royalty has provisions under which it may be eliminated by purchase.


SUMMIT
COMMERCE
MILLSITE
HIGHWAY TO
N
HARD #2
LONE CAMP #6
PATTON #1
HARDY #1
LONE CAMP #3
PATTON #2
HOMESTEAD
HELLFIRE #2
PATTON #3
SUMMIT
SUDAN #2
PATTON #4
FRAN
FRAN #2
PATTON #5
COMMERCE
COUGAR #2
PATTON #6
GREAT EASTERN
GRANDUC #2
PATTON #7
GRANDUC #5
GRANDUC #6
MAB #1
MAB #2
MAB #3
MAB #6
MAB #5
MAB #4
B & B #3
B & B #4
B & B #1
B & B #2
CLAIM BOUNDARY
Ash Peak
SOUTHERN GOLD RESOURCES LTD.
NORTH VANCOUVER, BRITISH COLUMBIA
ASH PEAK MINE
CLAIM MAP
0 FEET 2000
Work by :
Drawn by: RAM'S DRAFTING
N.T.S. :
Date : JAN. 1988

4. HISTORY

The Ash Peak Mine was discovered in 1899 and five claims were patented in 1913. Goldfield Consolidated Company then proceeded to develop the property under an option agreement, sinking 6 shafts totalling 625 meters, the Shamrock Shaft alone reaching 244 metres in depth, and 2,026 metres of lateral development. Goldfield could not then afford the purchase price of $1,000,000 and abandoned the property in 1918, even though they had developed 66 tons for every ton mined. Production for that period is estimated at 6,663 tons at an average grade of 18 OPT Ag and 0.05 OPT Au which was direct shipped to the smelter. Several ore reserve calculations were made shortly after closure and the average of all these indicated 443,300 tons remaining at an average grade of 14.3 OPT Ag (Sayre 1936).

The property remained inactive until 1936 when Veta Mines, Inc. took over the property and rehabilitated the 3 main shafts, constructed a 300 ton per day flotation mill and connected the Shamrock and Commerce workings for ventilation purposes. The mill operated from September 1936 to January 1938, producing 173,282 tons of ore at an estimated head grade of 9.5 OPT silver and 0.035 OPT gold, but only recovered 5.4 OPT silver and 0.02 gold. The mine closed when the price of silver was cut from 77.5 cents per ounce to 64.5 cents per ounce. Poor recovery was also a factor in the closure decision, tailings assaying 2.5 OPT Ag according to Sayer (1935).

In 1941 the mine was reopened by the Inspiration Consolidated Copper Company and the ore direct shipped to their smelter at Miami, Arizona. Total production is estimated at 123,917 tons at an average grade of 9.23 OPT Ag and 0.04 OPT Au. Up until this time all production had come from the main, or Ash Peak, vein. Inspiration drove a cross cut into the hanging wall and discovered the "Hanging Wall" vein which has since proven to be nearly as extensive as, and of similar grade to, the Ash Peak vein, but does not outcrop on surface (Setter 1968).

In 1963 Sayer and Setter leased the property and sub-leased it to Beaver Mesa Exploration in 1968 who produced 17,606 tons averaging 4.04 OPT silver from open pits and commenced rehabilitation of the shaft. The ore was direct shipped to the Phelps Dodge Smelter (Setter??). The company then got out of the mining business to concentrate on oil and gas and abandoned the property.

During the early 1980's Phelps Dodge acquired an option on the property and drove 3 declines into the veins and produced 79,595 tons averaging 4.2 OPT silver and 0.02 OPT gold from the Ash Peak vein, principally from open pits around the Commerce shaft (?? 1981). Phelps Dodge abandoned the property with the collapse of the prices of copper and silver in 1983.

Total production up to 1986 is estimated at 401,063 tons averaging 8.3 OPT silver and 0.03 OPT gold. This includes 3 million ounces of silver and 12,500 ounces of gold. The production figures are summarised below:

SUMMARY OF PRODUCTION

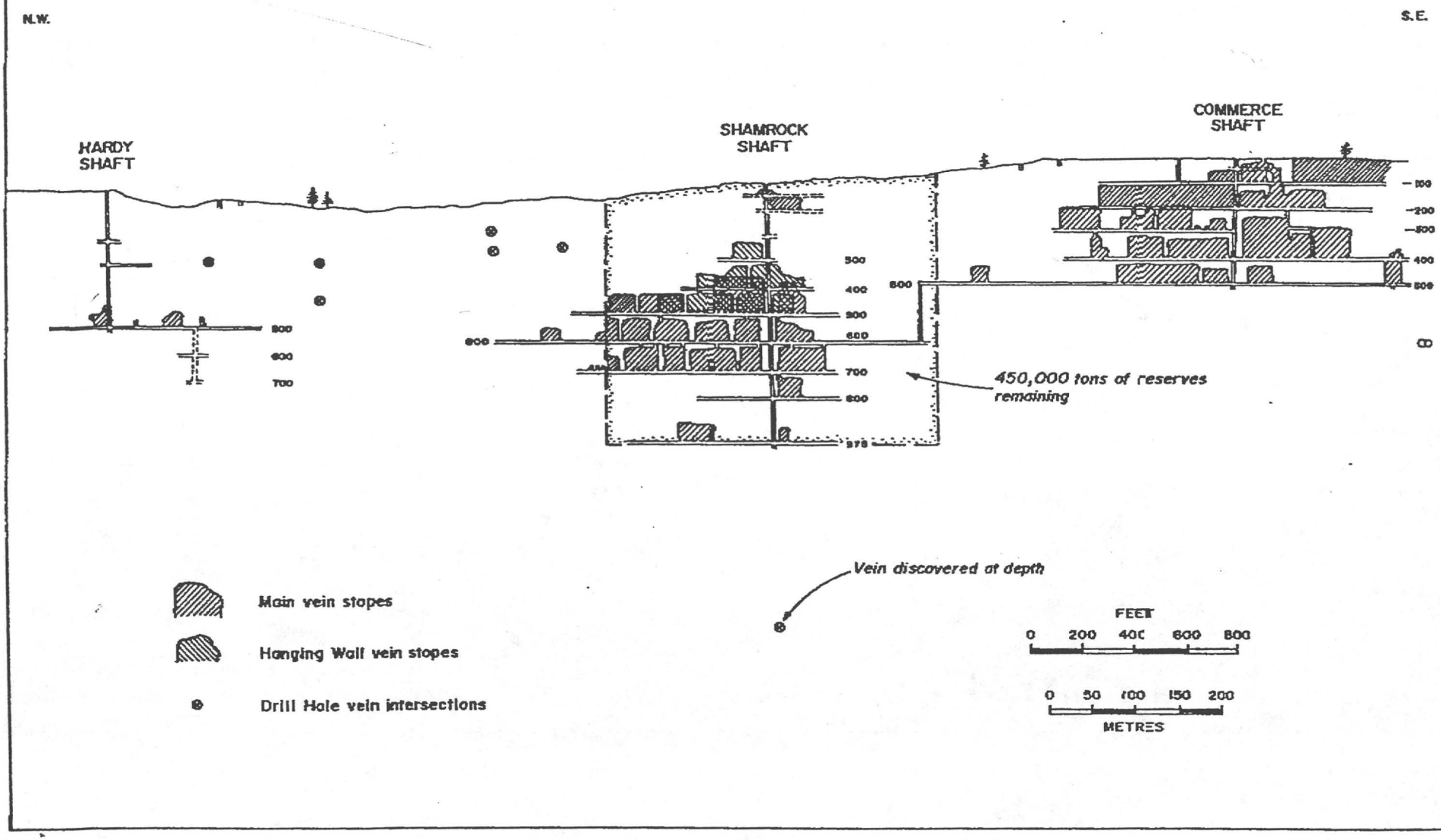
Company	Production	Silver Grade (OPT)	Gold Grade (OPT)
Goldfields	6,663	18.00	0.05
Veta Mines	173,282	9.50 (5.4)*	0.035 (0.02)*
Inspiration	123,917	9.23	0.035
Beaver Mesa	17,606	4.04	0.02
Phelps Dodge	79,595	4.20	0.02
	401,063	8.27	0.032

* Recovered Grade in bracket. Head grade estimated.

Arizona Flux Mines, Inc. acquired a lease on the property in June 1986. They commenced limited production immediately at 70-80 tpd, while rehabilitating old workings, principally around the Shamrock shaft. Rehabilitation to the 350 ft. level was completed in February 1988 and development on the 300 ft. level commenced. The first development ore was hauled up the shaft on 26 February 1988 and stope production is expected by 1 April 1988.

ASH PEAK MINE, ARIZONA

SOUTHERN GOLD RESOURCES LTD.



5. GEOLOGY

The rocks in the area are Tertiary volcanics, mainly andesites, rhyolites and rhyolite tuffs. The Ash Peak system of veins has been emplaced along very strong fault zones trending northwest. The Ash Peak vein itself is in a fault zone that ranges from 8 to 18 metres in width and this fault zone can be traced along its strike for more than three kilometers (Karnei, 1986). In general, the veins are steep and their dips range from 70 degrees to nearly vertical. Parallel veins such as the Hanging Wall vein south of the Ash Peak vein, and the Green vein north of the Ash Peak vein, have been found. It is highly possible that other similar, as yet undiscovered veins might exist on the property. The Ash Peak vein itself has been delineated at depth through extensive underground and surface drilling (the latter mostly by Phelps Dodge) and by extensive sampling in underground workings. The Hanging Wall vein has only been partially explored by widely spaced drill holes and cross cuts. The Green vein is unexplored.

The veins consist of massive chalcedonic quartz. Siliceous material is also evident in the wall rocks adjacent to the veins, where the rocks are strongly brecciated and silicified. It is evident that several stages of brecciation and silicification have taken place along the pre-existing fault zones or fissures. Colloform banding, brecciation and increasing grade with depth all indicate an epithermal origin.

The minerals in the veins, in order of importance, are chalcedony, quartz, calcite, rhodochrosite, amethyst, argentite, pyrite and gold. Secondary minerals present are cerargyrite, malachite and gypsum. The silver-bearing mineral, argentite, is difficult to readily identify in the field; it is often observed as white "clouds" and in places is often associated with rhodochrosite and copper oxide stains. Very often, the only way to discern economic silver ore from waste is through assaying (Karnei, 1986). The low sulphide content is an additional attraction to the smelters, as are the low aluminum and carbonate levels.

6. RESERVES

Several reserve estimates have been made over the years, evaluating the developed tonnages in the old mine workings. Unfortunately, these figures are basically unreliable since they rely on historical sample data that is from numerous unverifiable sources, of very uneven distribution and frequently does not include the sample widths. Further, samples were often only taken over a 1.5m to 2m width, which was the historical stope width, and rarely took into account the actual vein width. The veins, in fact, vary from 1.5m to 10.7m in width. In addition, there are numerous references to drilling and drifting into the virtually untapped Hanging Wall vein with significant widths intercepted. This vein has a 15m width on the 600 foot level. No reserves have been assigned to the Hanging Wall vein in these calculations.

Leon summarised the available reserves in 1985 as follows:

RESERVE POTENTIAL

	Proven	Probable	Possible	Total
Commerce	56,000 @ 5.7	166,000 @ 5.7		222,000 @ 5.7
Shamrock	6,000 @ 13.6	88,000 @ 8.0		92,000 @ 8.5
"Depth"	-	-	166,000 @ 5.0	166,000 @ 5.0
	62,000 @ 6.5	254,000 @ 6.5	166,000 @ 5.0	480,000 @ 6.0

Merz, in his planning document dated October 1987, looked at the overall potential of the property as indicated not only by assay data but also by documented reports of other veins, intersections, etc. He concluded that "a total potential of 800,000 tons remained above the 975 level, within 600 feet of the Shamrock shaft, at an average width of 5 feet for each of the two veins." This does not include any potential below the 975 foot level, where there is a drill intersection at "1600 feet of good grade and width" (Merz, 1987). He further estimates there is potential for a million tons in the area of the Hardy shaft, where virtually no production has occurred. The author is of the opinion that, overall, there may be a geological potential for as much as 5 to 10 million tons of vein in the vicinity of the existing workings, taking into account the full width of the vein and the total known extent of the two veins.

7. CURRENT OPERATIONS

Arizona Flux Mines, Inc. has rehabilitated the Shamrock shaft to the 375 foot level. This rehabilitation involved complete retimbering of the shaft, a new poured concrete shaft collar, new headframe, hoist, compressor, power facilities and underground haulage equipment. This will immediately access an estimated 60,000 tons of ore on the 200 to 300 foot levels, sufficient for 9 months operation at 300 tpd. Ongoing development will continue to access the 600,000 tons of reserves indicated by Merz (1987) above the 875 foot level.

The current operation entails driving production drifts 35m west and east of the shaft in the Ash Peak vein. This is producing shipping ore during the driving of the levels. Each level will then have four stopes developed adjacent to the shaft, one each east and west of the shaft in both the Hanging Wall and Ash Peak veins. The mining method will be shrinkage stoping over the full width of the vein. Ore chutes will feed into the haulage levels and broken ore will be drawn by slushers to the shaft. Drifts will gradually be tracked for later development of additional stopes along strike.

The slusher will drop the ore into pockets which will feed the self dumping 5-ton skip which feeds into a 50 ton coarse ore bin built into the headframe. A gate can divert barren development waste into a chute for dumping elsewhere. The ore bin drops on to an apron feeder and conveyor that feeds into a jaw crusher with a grizzly to screen off 6 inch plus material for later contract crushing. The jaw crusher reduces the feed to 2 inch minus prior to feeding a 50 ton per hour semi-autogenous grinder. The outflow from the grinder is triple screened with the -10 mesh fraction and the 1/4" - 3/4" fraction screened off for stockpiling and shipping. The -10 mesh to 1/4" and the oversize ore sent back to the grinder for further size reduction. This process route ensures approximately 50% each of the -10 mesh and 1/4" product, the most marketable size fractions.

The flux is contract hauled in 25 ton loads to the various smelters at a rate of $0.10 per ton per mile. The smelters assay the flux product. The flux is paid for on a weekly, as delivered basis, at a current rate of US $18.00 per ton. Payment for precious metals is currently on the basis of 75% of the silver content and nothing for the gold, because of the irregularity of shipments and variability of grade. Normal payment would be for up to 90% of the silver and gold content, provided consistent regular supplies are shipped. At a 90% rate the $18.00 flux payment would be eliminated. Thus renegotiations of the smelter contracts has to be a top priority once full production is achieved. A 90% payment rate will dramatically improve the economics of the Ash Peak operation. The precious metal content is paid for after 30 days. Half of the assay sample is shipped

to AFM for check assaying and disputes can be settled by independent referee.

The whole operation is expected to require a work force of 20 men at all levels. Miners currently earn an average of US$96.00 per day. It is planned to put the crew on a profit sharing bonus rate, scaled according to their impact on grade control and production rates (i.e. Miners get highest rates, surface workers lowest). Capital requirements are minimal since there are no milling facilities and the crushing plant is already on site. A new hoist, electrical equipment, compressor, jack-legs, mine trucks and muckers have all been purchased and are on site. These factors illustrate one of the principal advantages of this operation; it is neither capital nor labour intensive.

8. ECONOMICS

Only tentative estimates of productions costs and revenues can be made at this time since the operation is neither in full production, nor have the new smelter contracts been negotiated based on increased production and higher grade material. However, certain estimates as to production costs and revenues can be made.

COSTS:

Payroll covers all workers employed in the operation and averaged up to $10 per hour. The actual payroll rates are $4.50 to $10.00 per hour, hence these payroll costs are conservative. The estimates for consumables are based on experience in the three stopes already completed by AFM during 1987. Adminstration costs reflect the actual administration costs, doubled to account for increased production rates.
A detailed schedule of costs is given below and reduced to a dollar per ton figure.

		US$/day	US$/ton	
Payroll				
Miners/Hoistmen	(14 @ $10/hr)	$1,120	$3.73	
Shift bosses	(2 @ $12/hr)	$192	$0.64	
Crushermen	(2 @ $8/hr)	$128	$0.43	
Maintenance	(1 @ $15/hr)	$120	$0.40	
Superintendent	(1 @ $20/hr)	$160	$0.53	
		$1,720	$5.73	
Payroll taxes @ 15%		$258	$0.86	
		$1,978	$6.59	$6.59
Consumables				
Steel/Bits		$129	$0.43	
Parts/Repairs		$75	$0.25	
Explosives		$495	$1.65	
Electric/Fuel		$372	$1.24	
Crusher Parts		$90	$0.30	
Miscellaneous		$180	$0.60	
		$1,341	$4.47	$4.47
Administration				
President, Secretary, etc.		$183	$0.61	
Assays (Independent)		$39	$0.13	
Engineering, Geology		$198	$0.66	
Travel/Insurance		$111	$0.37	
Phone/Supplies, etc.		$27	$0.09	
		$561	$1.87	$1.87
Sub-Total				$12.94
25% Contingency				$3.23
TOTAL				$16.17

REVENUES:

Smelter schedules are currently based on a fixed payment of $18 per ton and 75% of the silver content. These figures are lower than normal due to irregular shipments of variable grade material while production came from scavenging what material could be obtained from the declines. Now the shaft is in use and regular shipments of a consistent grade are being made, the contracts are under negotiation for an upward revision. However, the revenue scenario's illustrated in the attached graphs indicate a net operating profit of $10 ton to $15 per ton at a production rate of 300 tons per day. In these analyses the following base assumptions made, unless otherwise stated, are as follows:

Silver Grade	5.5 OPT
Silver Payment	75%
Silver Price	US $6.20 per ounce
Gold Grade	0.03 OPT
Gold Payment	25%
Gold Price	US $430.00 per ounce
Flux Payment	US $18.00 per ton
Mining Rate	300 tons per day
Mining Costs	US $17.00 per ton
Royalty Rates	As per agreement

The results of this analysis indicate that the economic viability of the operation is most sensitive to changes in metal prices and grade. The operation is much less sensitive to mining rate than grade and price. Other factors are important, but not crucially so.

Metal prices are beyond the control of this operation so the most significant factor, as far as profitability is concerned, becomes grade control. As a result of this, AFM has purchased a "MAP" machine. This is a hand held assay machine that has proven extremely reliable and accurate for silver by the US Bureau of Mines. The assay method is simply to hold the machine against a rock face for 3-4 minutes and wait for a read out. This obviously reduces assay costs significantly and greatly enhances grade control since every round can be checked before blasting, with an immediate result available. Thus a tight control becomes possible, allowing grade to be maintained, even at the expense of productivity. Mining a consistently higher grade material will greatly enhance the profitability of the operation.

9. POTENTIAL

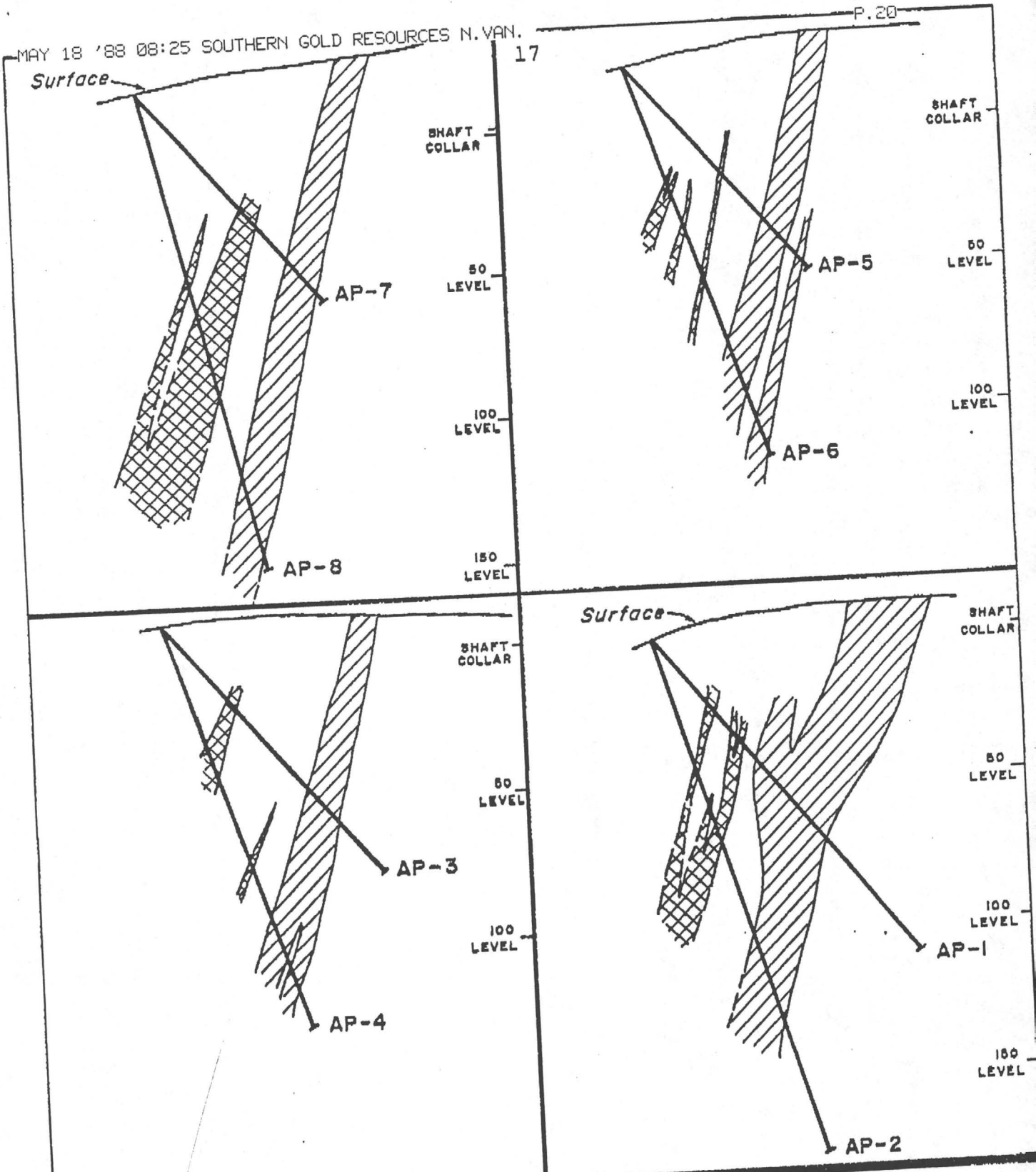
The Ash Peak property is largely unexplored. Very little in the way of exploration was conducted by the early operator, Goldfield, since considerable reserves were available in close proximity to the two main shafts. Veta Mines connected these two shafts for ventilation purposes and is reported (Billingsley 1987) to have encountered vein along the entire length of this 1050 feet of drift, very little of which is in any of the above mentioned reserve categories. The main Ash Peak vein has been developed in all three shafts over a strike length of 1500 metres and developed to a depth of 300 metres on the 975 level. Continuity of the vein over this length is further confirmed by the production and drilling activities of Phelps Dodge in the early 1980's. Near surface drilling between the Hardy and Shamrock shafts, and northwest of the Hardy shaft, all above the 100 foot level, intersected between 1.5 and 10 metres of Ash Peak vein averaging 4 OPT silver (???, 1983). This grade corresponds fairly closely to the grade recovered from shallow workings in other areas. Murphy (1940) reports "the mine has been drilled to 1400 feet and large and comparatively high grade ore are located by drilling". Merz (1987) reports a drill hole tracing the vein from the 975 foot level to "1600 feet", an additional dip extent of 190 metres. Hence, at an average width of 2 metres, a geological potential of 4 million metric tons exists in this vein alone.

Inspiration discovered the Hanging Wall vein by driving a cross cut into the hanging wall of the main Ash Peak vein on the 400 foot level of the Shamrock workings. Inspiration then developed the Hanging Wall vein on the 400 foot and 500 foot levels and drilled it every 100 feet for 1200 feet along the 600 foot level, encountering "good widths" (Setter 1968). The only grade figures reported are in a cross cut on the 600 foot level where "50 feet of 5.6 OPT silver" was encountered (Setter 1968). In addition, the Hanging Wall vein has been located in the Hardy and Commerce shaft areas, indicating a potential strike length of at least 1200 metres. The geological potential is therefore indicated to be in excess of 1 million metric tons at an average width of 2 metres.

In addition to the two veins described above, other veins may also exist. A "Green vein" with "good widths" is reported some 200 feet into the foot wall of the Ash Peak vein, discovered while drifting for water. This may or may not be the vein reported by Setter (1968) in the vicinity of the Hardy shaft, dipping towards the Ash Peak vein. The potential of these other veins is untested.

Finally, some authors (e.g. Karnie, 1986) feel there is potential for "Manto-type" deposits at or below the contact with the sediments below the volcanics. The contact is expected to be

at a depth of 500 metres or more. Mantos are replacement type deposits where fluids selectively replace favorable horizons (usually limestones). Such deposits tend to be large and high grade. For example, at Potosi in Mexico, the individual bodies reach lengths of 1000 plus metres and cross sections of 100 to 5000 square metres. Therefore, tonnages range from 250,000 tons to over 10,000,000 tons. The average grade is typically 9-15 OPT silver and 9-10% each lead and zinc (Bateman, 1979). There is no direct evidence of limestones below the volcanics at Ash Peak. However, Crowther (1924) states, in direct reference to Ash Peak, that "this fissuring has extended to the underlying limestone and that ascending solutions, in passing through the limestone, lost much of their mineral content before reaching the upper tertiary zone". One has to assume that he is inferring this as a reason for the lack of lead and zinc in the veins, unless he had evidence of limestone not available to this author.



LEGEND

Ash Peak Vein

Hanging Wall Vein

Drill Hole and Number

AP-3

SOUTHERN GOLD RESOURCES LTD.
NORTH VANCOUVER, BRITISH COLUMBIA

ASH PEAK MINE

CROSS SECTIONS

0 50 100 FT.

Work by :	PHELPS DODGE	N.T.S. :	
Drawn by :	RAM N. GOPAL	Date :	JANUARY, 1988

10. CONCLUSIONS

The Ash Peak vein system appears to be related to a major structural break that has resulted in several phases of veining, not necessarily along the same channel. This has resulted in several parallel veins. The veining is clearly of epithermal origin and as such, grade increase with depth. This grade change is confirmed by historical assay data. The geological potential of this property is virtually untested and its reserves untapped. As a silver mine, with its current low grade and poor recoverability, it is not economic. However, as a direct shipped flux with minimal processing and capital requirements, a different picture emerges. The reduced operating costs and minimal servicing of capital allow much lower grade material to be profitably extracted and shipped. Precisely how profitable the mine will be has yet to be determined, because the operation is not in full production and cannot obtain the highest smelter payments until it can consistently deliver a reliable product. However, the potential profitability looks very encouraging.

Two areas allow room for further improvements; grade and tonnage. If the grade can be significantly increased to, for example, 8.0 OPT silver, the economics are significantly enhanced. Such an expected grade is not unreasonable, since that is the average of all material ever mined on the property. This should be the prime focus of future operations. Secondly, there is room to increase production. This would require additional capital expenditures since the shaft cannot, as it stands, produce much more than 400 tpd. However, the shaft capacity could be increased with a second skip. This would necessitate the removal of the man-way and an alternate would have to be provided. Similarly, more equipment and more personnel would be required to achieve an increase to 800 - 1000 tons per day.

In conclusion, there are the following reasons for CanaMin acquiring a 100% interest in this operation:

1. It is a producing mine.

2. At 300 - 400 tpd it should provide future long term income.

3. The geological potential of the deposit is untested and appears to be very large.

4. The grade can almost certainly be increased well above the initial expected 5.5 OPT silver.

5. In the longer term the potential indicates room for significant increases in the rate of production.

11. PROPOSALS

1. Assist AFM in obtaining the desired production of 300-400 tpd as soon as possible and thus prove it to be a profitable operation with a history of profits.

2. Conduct the required engineering studies to evaluate ways of significantly increasing the existing levels of production.

3. Renegotiate all smelter contracts, once a consistent, reliable product is available.

4. Conduct a near surface exploration drill program to increase the confidence levels for grade and tonnage to provide data for near term mine development planning.

5. Consider a deeper orientated exploration drill program to test beyond the 600 level for much higher grade ore reserves in the veins and to test for Manto type deposits.

6. Explore and develop the reserve potential along strike of the current Shamrock workings, particularly in the area of the Hardy shaft and between the Shamrock and Commerce workings.

12. REFERENCES

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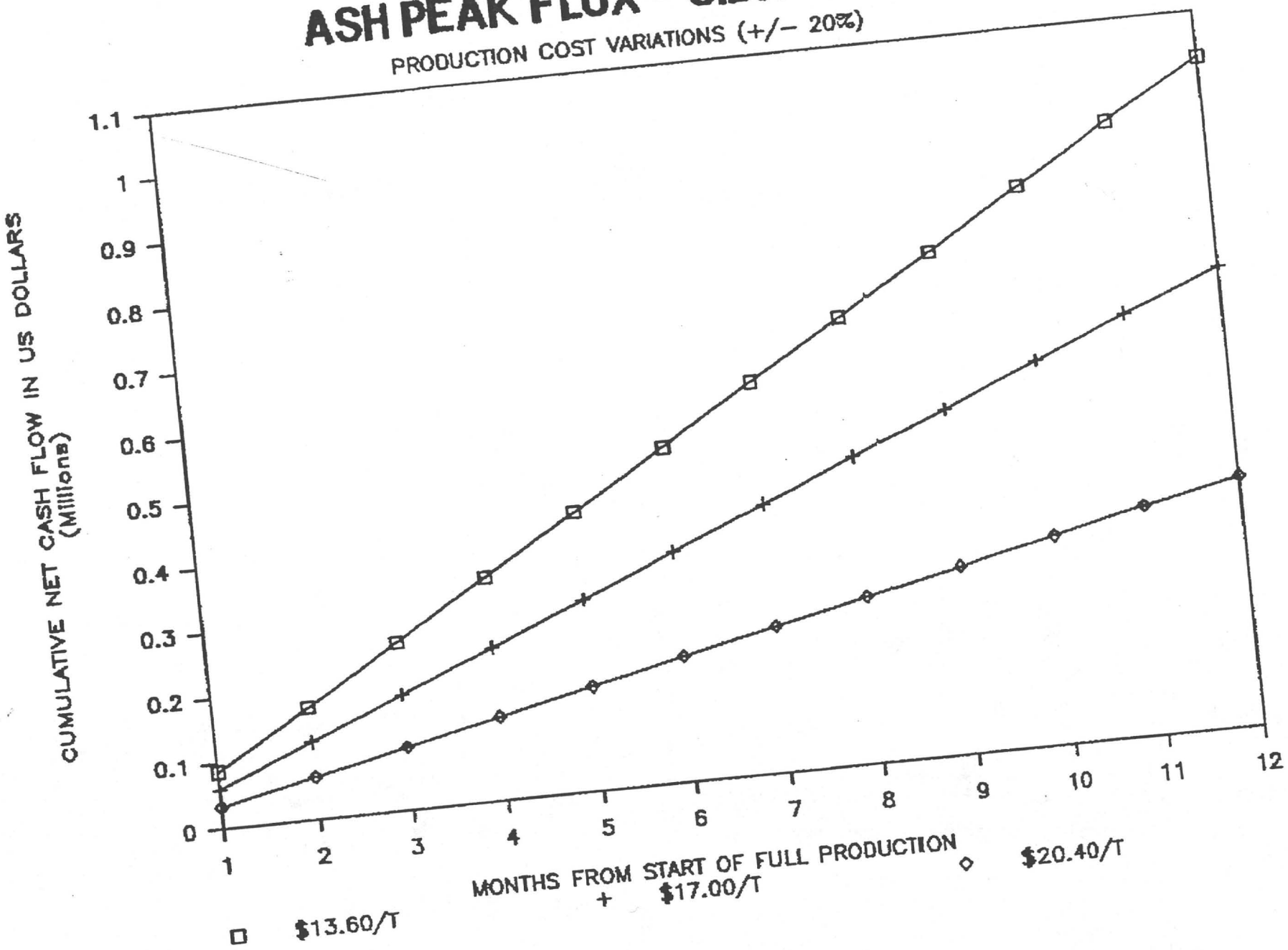
??	1941	Untitled and uncredited evaluation of the Ash Peak Mines
??	1981	Untitled and uncredited summary of Phelps Dodge production records
??	1983	Untitled and uncredited summary of Phelps Dodge drill hole results

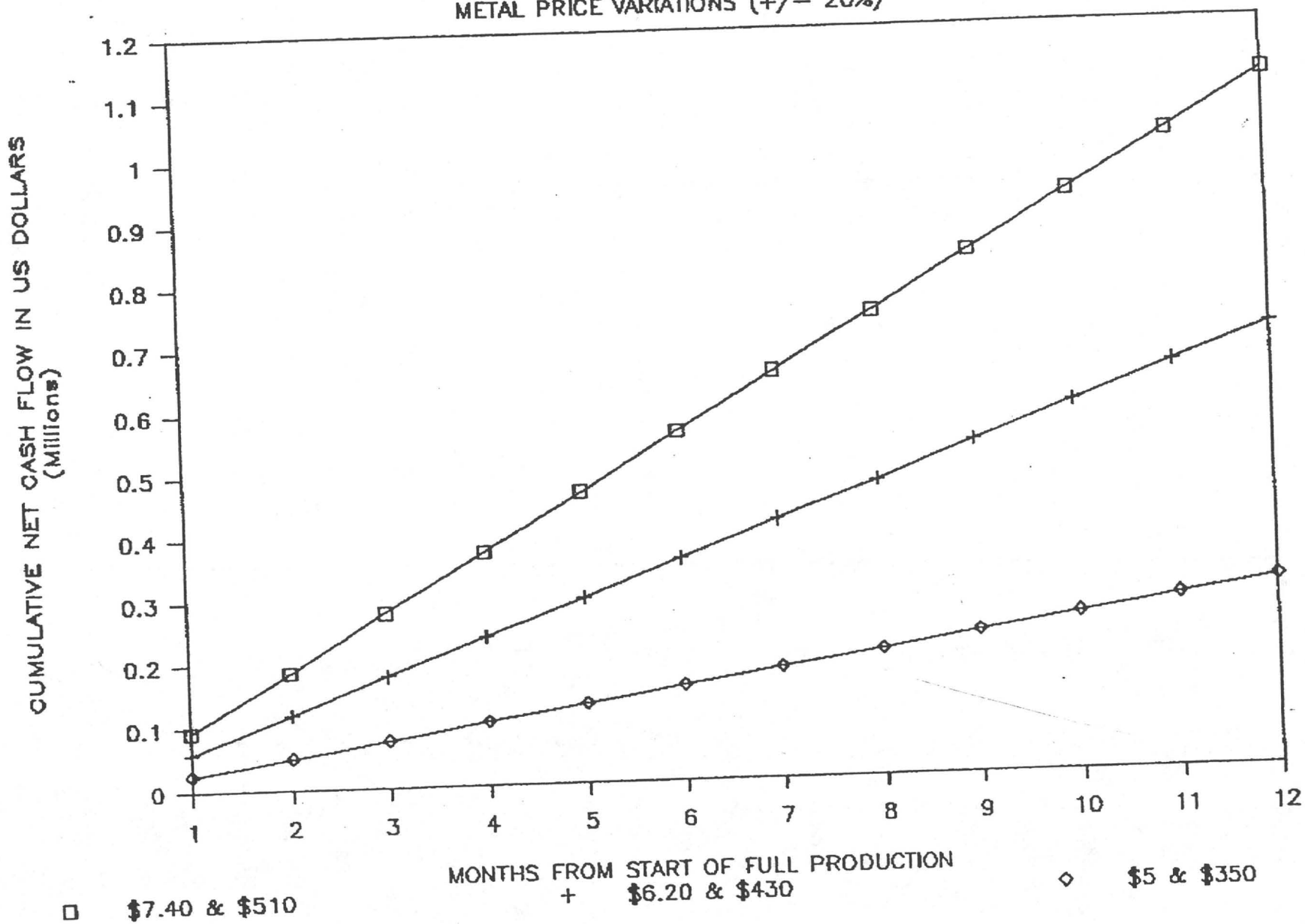
ASH PEAK FLUX - SILVER MINE

PRODUCTION COST VARIATIONS (+/- 20%)



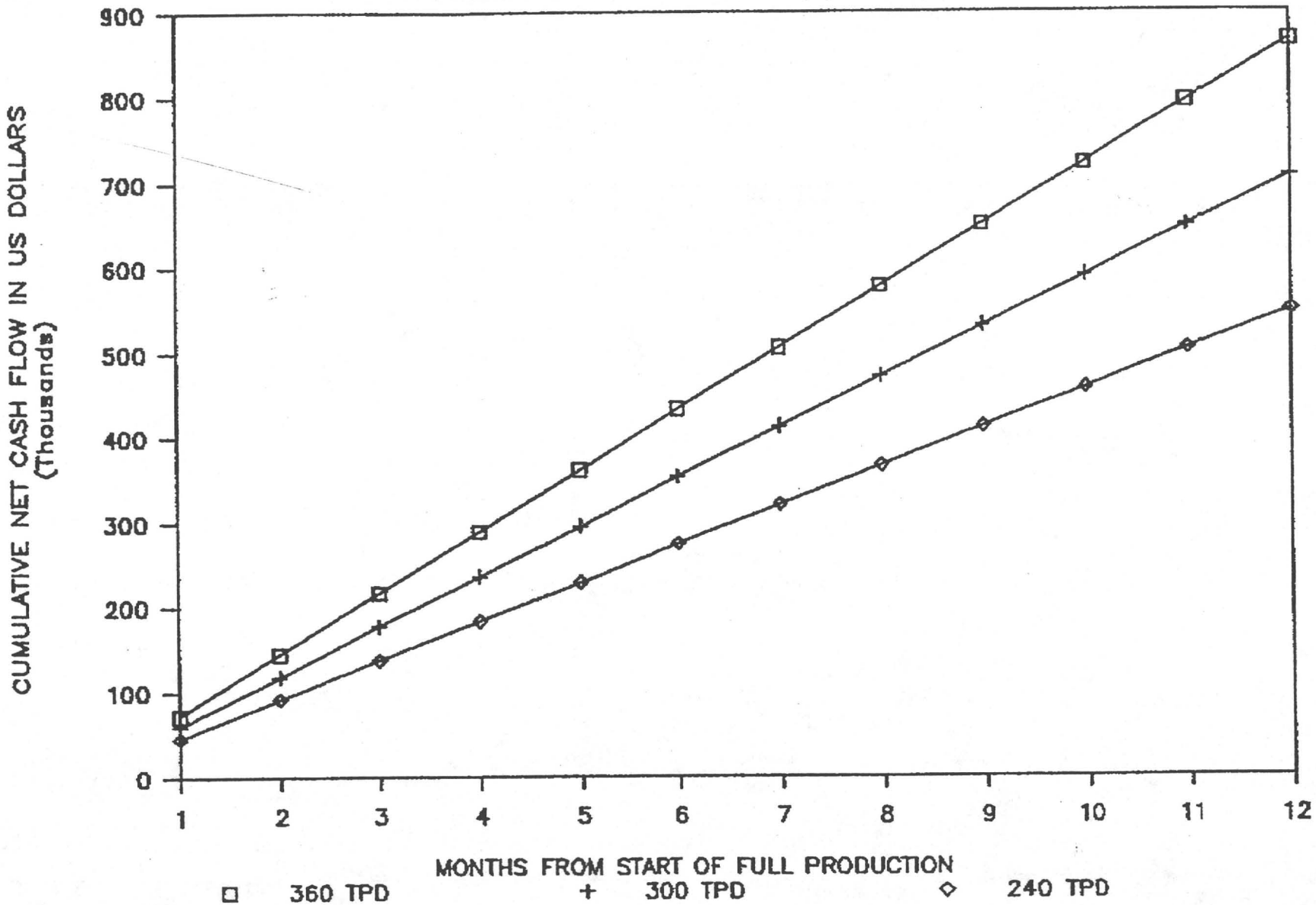
ASH PEAK FLUX - SILVER MINE

METAL PRICE VARIATIONS (+/- 20%)



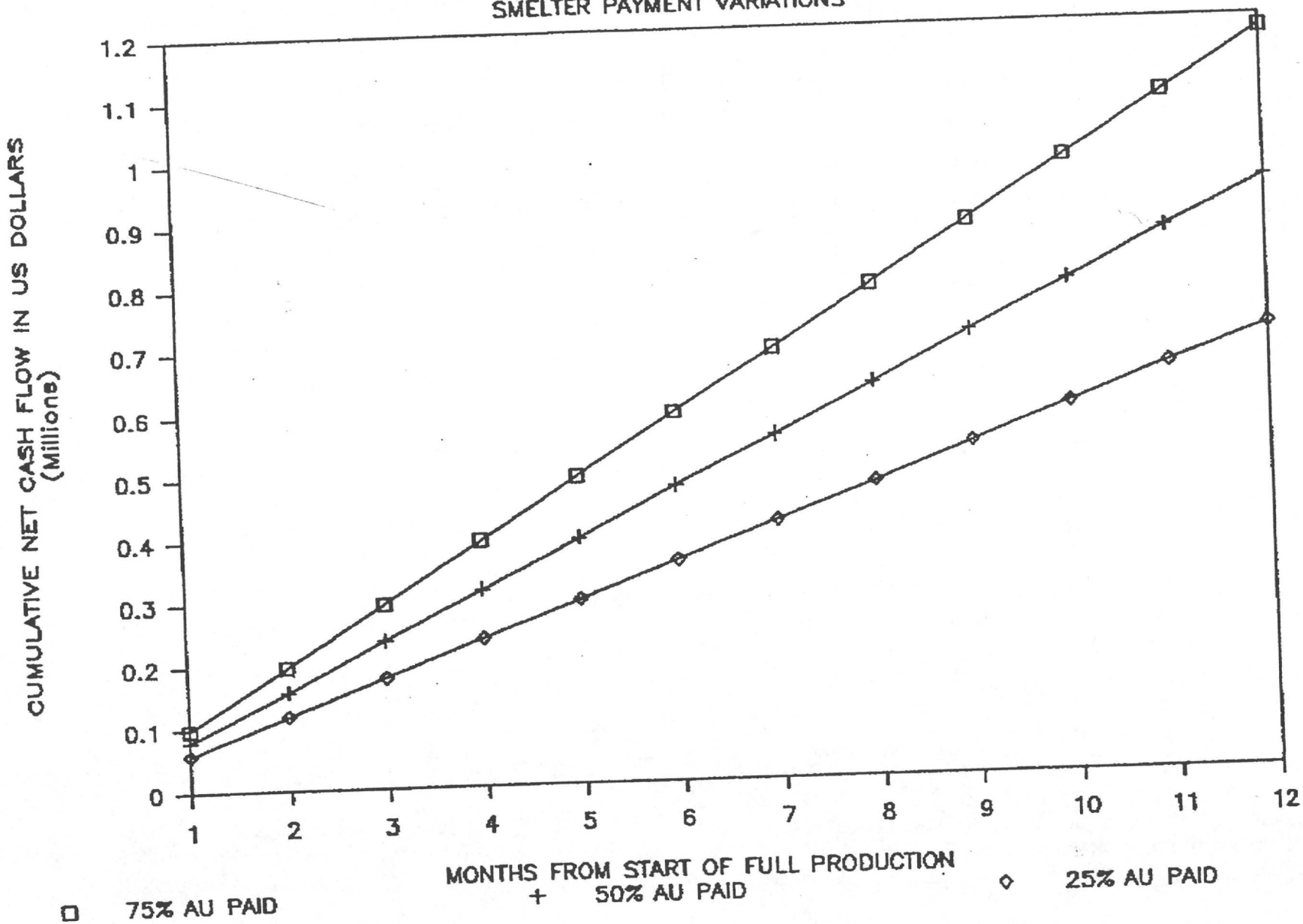
ASH PEAK FLUX - SILVER MINE

PRODUCTION RATE VARIATIONS (+/- 20%)



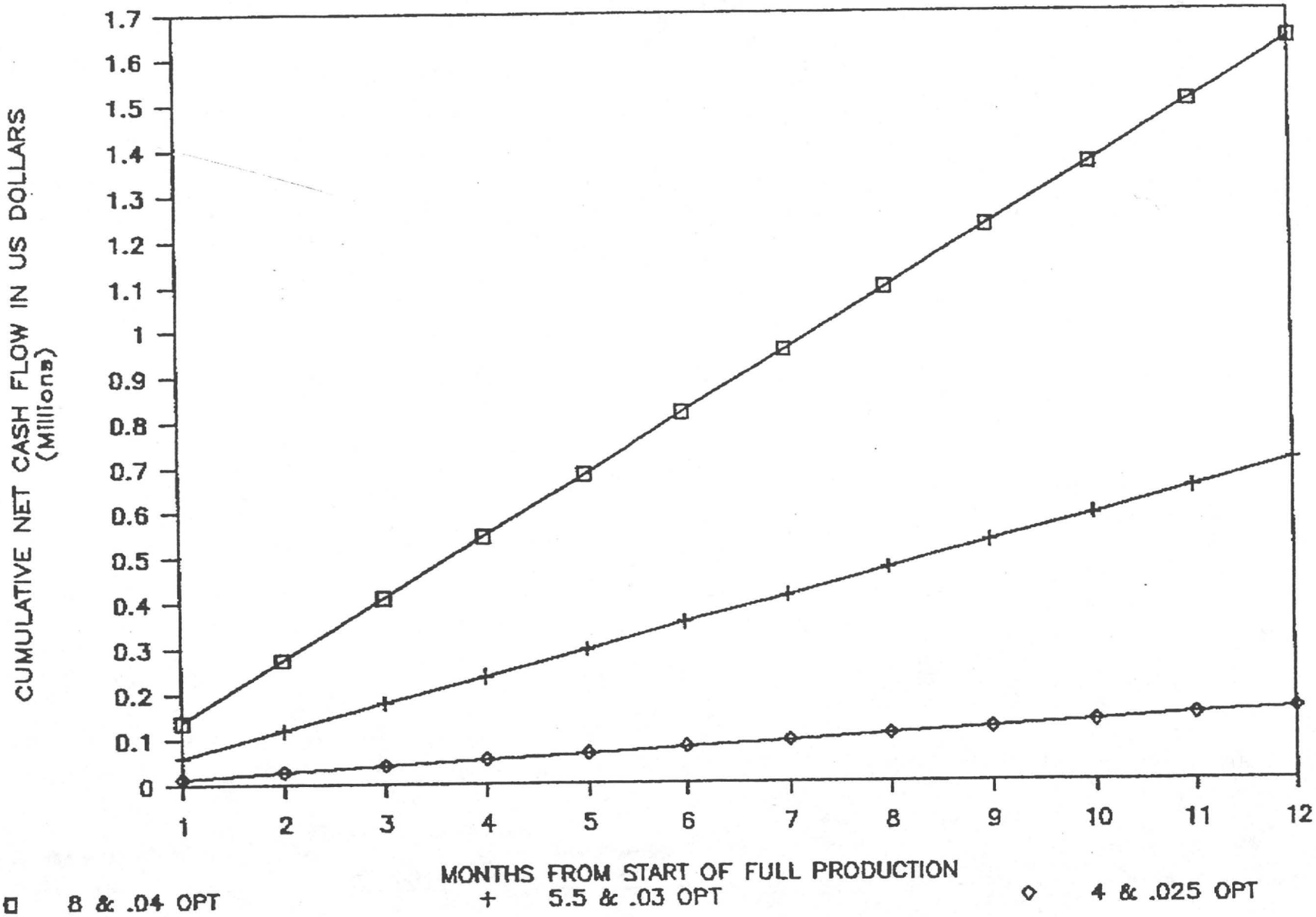
ASH PEAK FLUX - SILVER MINE

SMELTER PAYMENT VARIATIONS



ASH PEAK FLUX - SILVER MINE

GRADE VARIATIONS



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PRELIMINARY EVALUATION OF THE ASH PEAK DISTRICT

by

SAGE Associates Incorporated

Tucson, Arizona

July, 1976

PRELIMINARY EVALUATION OF THE ASH PEAK DISTRICT

Table of Contents

Illustrations

Tables

Summary

The Ash Peak District is located about 9 miles west-northwest of Duncan, Greenlee County, Arizona. Federal lode claims were first located in the district in 1899. The first large scale development occurred in 1918-1919 when Goldfield Consolidated Mines optioned the property. Veta Mines was responsible for the first significant production of ore between 1936 and 1939 when they produced 179,933 tons of ore. The Inspiration Copper Co. produced 164,030 tons of silica flux ore from 1941 to 1953. The majority of the production has been from the Commerce and Shamrock shafts. A total of 350,626 tons of ore grading 9.35 oz/ton silver and 0.035 oz/ton gold have been produced from the underground workings.

Tertiary volcanic rock cover the entire area of interest. These rocks in order of decreasing age are andesite, felsic flows, dikes, and domes; and post mineral basaltic andesite. The dominant structural trend is northwesterly and is defined by faults and the allignment of felsic intrusive rocks.

Silver mineralization occurs in quartz veins as argentite. Overlying the orebodies the veins can be identified by slightly anomalous silver values and irregular quartz stringers with minor iron-oxide staining and some chloritic and clay alteration. Total sulfide content in the veins is very low. Most of the mineralization is in the Ash

Peak vein, however there is some promising mineralization in the Green vein.

The exploration targets have been assigned three levels of priority. The first priority targets are (A) below the Hardy shaft on the Ash Peak vein, (B) in the Green vein, (C) below some superficial workings on the Ash Peak vein 1500 feet west of the Hardy shaft. The second priority targets are (A) at the intersection of the Ash Peak and Green veins and (B) on a fault/vein west of the intersection of the Ash Peak and Green veins. The third priority targets are (A) below the bottom of the Shamrock workings and (B) on a fault/vein about 300 feet south of and parallel to the Ash Peak vein. The first and third priority targets are entirely on land held by the Ash Peak partners while the second priority targets are held by SAGE Associates, Inc.

If exploration of the Ash Peak District is reasonably successful, the ore produced from the district may be sold to any one of a number of smelters in the region. An operation of this type should meet the criteria of a mine-life greater than five years, an annual cash flow of at least $1,000,000 and a DCF-ROI of at least 20 percent.

Conclusions and Recommendations

The Ash Peak District has excellent potential as a silicious smelter flux mine. The geological conditions at Ash Peak indicate that there is a high probability for the discovery of several hundred thousand to more than a million tons of ore grading about 9 oz/ton silver. The location of the property is also very favorable with respect to several smelters in southwestern New Mexico and southeastern Arizona.

It is recommended that SAGE Associates, Inc., retain 32 federal lode claims and 3 state prospecting permits at Ash Peak. These claims and prospecting permits may be retained for less than $6,000 for the first year. It is not, however, recommended that SAGE enter into negotiations with the Ash Peak Partners until the geology of the district has been more extensively examined, and the exploration for ore reserves has been planned.

PRELIMINARY EVALUATION OF THE ASH PEAK DISTRICT

Introduction

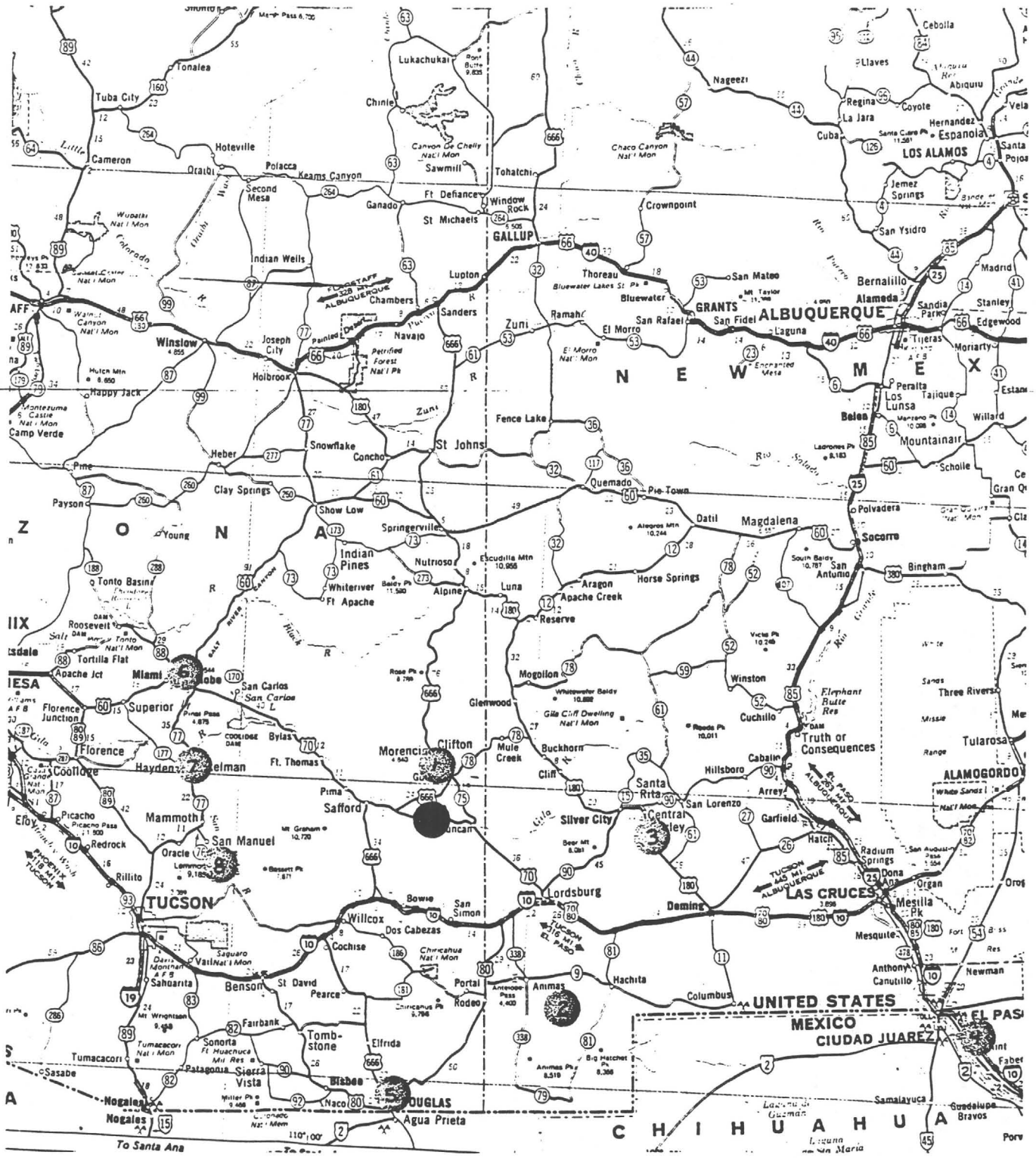
Location

The Ash Peak District is about 9 miles west-northwest of Duncan, Greenlee County, Arizona (Figure 1). Access to the property is via highway U. S. 70 which passes about 1/4 mile north of the mine area.

History

The Ash Peak mines were located in 1899 and first developed in 1900. During 1906-1909 there was some production from the Green vein and the Hardy Shaft on the Ash Peak vein. Goldfield Consolidated Mines explored the Ash Peak vein by sinking the Shamrock shaft to 800', the Commerce shaft to 500' and driving 6166 feet of drifts and cross-cuts in 1918-1919. Goldfield abandoned the mine when the company was unable to reach an equitable agreement with the mine owners.

Veta Mines operated the property from 1936 to 1939. Development consisted of deepening the Shamrock shaft to 975 feet and connecting the Shamrock and Commerce workings. Veta Mines milled and concentrated the ore by floatation but recovered only 65 percent of the gold and silver values. As a result, the operation proved uneconomical.



N

● Ash Peak Mines Area

● Smelter Locations

1 Morenci
2 Hachita
3 Hurley
4 El Paso
5 Douglas
6 Inspiration
7 Hayden
8 San Manuel

LOCATION MAP
ASH PEAK MINES AREA
Graham and Greenlee Countie
Arizona

Scale: 1 inch = 50 miles

Figure 1

Leasors shipped small amounts of silica flux to Inspiration Consolidated Copper Company at Miami, Arizona, during 1940-1941. Inspiration leased the property from July 1941 to July 1953. The Commerce and Shamrock Mines served as a steady source of flux during this period. The mine operator was under orders to do no new exploration or development work. Ore was shipped to the smelter until Inspiration believed that the ore developed by Goldfield and Veta Mines had been mined out.

Since 1953, some flux material from open-pits and mill tailings has been shipped to the Morenci, Douglas, and Inspiration smelters. The production history of the Ash Peak Mines (1899-1976) is listed in Table 1.

Geology

The Ash Peak Mine area is underlain by a thick sequence of mid-Tertiary volcanic rocks ranging in composition from basaltic andesite to rhyolite (Figure 2). The oldest rocks are fine-grained, vesicular andesite flows and massive andesite breccias. These rocks strike roughly north-south and dip about 15° to the west. The total thickness of these rocks is unknown since they are offset by several faults and they are not observed to overlie older rocks in the mine area. Cross-sections drawn through the area suggest that these andesites may be 2000-3000 feet in thickness.

Table 1

ASH PEAK MINES PRODUCTION HISTORY (1899-1976)

Year	Tons	Silver (oz)	Silver (oz/T)	Gold (oz)	Gold (oz/T)	Operator
1899-1906	Unknown					
1906-1936	6,663	119,998	18.00	335.5	0.05	Goldfields and others
1936-1939	179,933	1,695,767	9.42	6,329.0	0.035	Veta Mines
1940-1941	Unknown		---			Leasors
1941-1953	164,030	1,461,507	8.91	5,806.6	0.0354	Inspiration
1953-1968	Unknown					Leasors
1968-1970	17,607.7	71,220	4.045	--	--	E. E. Lewis Co. (open pit)
1970-present	0					
Total	368,234	3,348,492	9.04	12,471	0.035	
Total (underground)	350,626	3,277,272	9.35	12,471	0.035	

Production by Mine

Commerce	120,000 tons
Shamrock	223,612 tons
Hardy	7,000 tons

The andesites are unconformably overlain and cut by a sequence of felsic plugs, flow-dome complexes, vent breccias and air-fall tuffs. In the immediate Ash Peak Mine area these are up to 1000 feet in thickness. This suite of felsic rocks can be traced for more than 15 miles from the Gila Valley near Duncan northwesterly to the Slick-Rock Basin area. The trend of the felsic domes and dikes is N45W to N70W.

Unconformably overlying the andesites and rhyolites is a sequence of basaltic andesite flows and tuffs. These rocks have been dated at about 27 m.y. These rocks are post mineral and are not present in the area of interest.

The Ash Peak Mine area occurs in a northwest-trending zone of weakness at least 15 miles in length which is marked by felsic flow-domes, dikes, vent breccias, air-fall tuffs and northwest-trending normal faults of unknown displacement. This zone may represent the southwestern margin of a cauldron which lies to the northeast.

The principal structural direction within this zone is N70W and is marked by normal faults and felsic intrusions. The exact timing and duration of faulting is not well defined. The principal faults cut the felsic flows and older andesites; however, some felsic domes and dikes line up along or parallel to the principal fault zones. Consequently, it appears that faulting and felsic volcanism occurred concurrently. Faulting may have commenced prior to and terminated later than the

felsic volcanism. Both types of activity may have been related to the collapse of the postulated cauldron.

Mineralization

Silver and gold mineralization in the Ash Peak area occurs in quartz veins which strike between N30W and E-W (Figure 2). Nearly all of the ore mined to date has come from the Ash Peak vein. The Ash Peak vein is localized in a fault of unknown displacement which has been traced for more than six miles along strike. In the mine area this vein has been explored by the Commerce, Shamrock, and Hardy workings for about 4500 feet along strike and as much as 1000 feet down dip. Between the Shamrock and Commerce Mines the vein is from 3 feet to 50 feet wide and averages about 20 feet in width. In this area the vein strikes N55W and dips 70°-80° to the southwest. The vein consists of one or more distinct, subparallel splits separated by septae of altered wallrock, 5'-30' in width. More than one of these splits may be mineralized. The vein material consists of brecciated and recemented quartz, altered rock-fragments, calcite, siderate, and about 0.5 volume percent sulfides. The sulfide minerals are pyrite, chalcopyrite, galena, sphalerite, and argentite. As indicated by the chemical composition (Table 2) the Ash Peak ore is excellent silica flux material.

The Commerce and Shamrock orebodies, which were mined by shrinkage stoping, average about 800 feet in length, 400

Table 2

CHEMICAL CONTENTS OF THE ORE
/U.S.B.M. IC-7119 (1940)/

Ag	11.27 oz/ton
Au	0.025 oz/ton
SiO_2	85.8%
S	0.045%
Fe_2O_3	3.21%
Al_2O_3	3.28%
CaO	5.07%
Mn	0.45%
H_2O	2.1%

feet in vertical extent, and 7 feet in width. These orebodies occur in flexure zones in the Ash Peak fault. Ore-grade silver mineralization, which averages more than 9 oz/ton with a 6 oz/ton cutoff-grade, occurs in shoots or lenses within the vein (Figure 3). The ore is bounded by assay walls and is less extensive than the quartz veins. The average grade of the orebodies appears to be increasing to the west (Figure 3).

Between the Commerce and Hardy shafts a line parallel to the tops of the ore zones plunges about 12° to the west (Figure 4). East of the Commerce Mine the ore zone appears to have been eroded away. The Commerce orebody crops-out, the Shamrock orebody tops-out about 300 feet below the ground surface and the top of the ore-grade mineralization in the Hardy shaft is at least 600 feet below the ground surface. Because of the westward inclination of the tops of the ore zones, the Ash Peak vein has not been adequately tested west of the Shamrock orebody.

The Ash Peak vein crops-out continuously from the Commerce to the Shamrock shaft. It is exposed locally from the Shamrock shaft to a point 1000 feet west of the Hardy shaft. West of this point the vein consists of a broad zone of broken rock, 50' to several hundred feet wide, cut by quartz and quartz-calcite veinlets and locally altered to clay and chlorite. These zones of veinlets and diffuse

alteration are similar to those found in other districts above commercial mineralization.

Several other fault/veins have been mapped in the Ash Peak area. Of these veins, only the Green vein and a zone of alteration and silicification south of and parallel to the Ash Peak vein appear to be of interest. Veins found east of the Commerce shaft appear to be the eroded root zones of a vein system.

The Green vein (Figure 2) crops-out for about 2000 feet along strike. It terminates to the east and may merge with the Ash Peak vein to the west. This vein ranges from 3 to 45 feet in width with an average width of about 10 feet. It is composed of coarse-grained, vuggy quartz veinlets; angular rock-fragments; adularia; bull quartz; porcelaneous quartz; calcite; minor rhodochrosite; and less than one percent sulfide minerals. There has been minor open-pit production from the Green vein.

About 300 feet south of the Ash Peak vein there is a zone of chlorite alteration and diffuse quartz veining which parallels the Ash Peak vein for more than 8000 feet along strike. This zone may represent the top of a buried vein.

Geochemistry

Silver-gold geochemical and assay data are available from orebodies, vein-material above orebodies, barren vein-segments, untested vein-segments and weakly mineralized zones which may represent haloes above veins.

The distribution of silver values in known orebodies is shown in Figure 3. Geochemical and assay data from out-cropping vein segments above known orebodies average about 1-3 oz Ag/ton (31-100 ppm) and 0.01 to 0.00X oz Au/ton (0.3-0.1 ppm). Locally values of +10 oz Ag/ton were obtained from selected samples of out-cropping vein-segments above ore. In out-cropping veins silver values decrease with horizontal and vertical distance away from an underlying orebody. Samples taken from vein out-crops above areas in the mines which run less than 5 oz Ag/ton average about .2 to .4 oz Ag/ton (5-15 ppm).

Similarly, out-cropping vein segments of the Ash Peak vein above the Shamrock and Commerce orebodies contain strongly anomalous Ag/Au values. Locally ore grade Ag values occur at the surface near the Commerce shaft. Application of these findings to outcropping vein segments elsewhere in the district (Figures 2, 5) indicates the following:

1. Ash Peak vein segments east of the Commerce Mine contain only low or weakly anomalous Ag/Au values. These vein segments may either be the roots of orebodies now eroded away or barren vein segments.
2. Veins south and east of the Commerce Mine contain only low or weakly anomalous Ag/Au values. These are believed to be either barren vein segments or the roots of orebodies removed by erosion.

3. The Ash Peak vein crops-out only locally west of the Shamrock shaft. Ag/Au values from vein segments and altered wall rocks are generally low or weakly anomalous. However, +10 oz Ag values were obtained from material on the Hardy dump and from a prospect shaft west of the Hardy shaft. These two prospects occur in areas where the Ash Peak structure undergoes slight deviations in strike. Ore grade Ag mineralization encountered at the Hardy shaft may be from an untested orebody. Silver mineralization in the prospect west of the Hardy shaft may be leakage from another buried orebody.
4. The west end of the Green vein is up to 45 feet wide. Samples from this location contain up to 5 oz Ag/ton. This, and geologic data, suggest that the Green vein out-crop is the surface expression of a buried orebody.
5. The western extension of the Green-Ash Peak fault/vein is a fifty to several hundred foot wide zone of fractured andesite (altered to chlorite and clay minerals) cut by thin, discontinuous quartz-calcite veinlets. Samples of the veinlet material averaged about 1-2 ppm Ag. These values are considered to be weakly anomalous (average background Ag values for andesites is about 0.1 ppm). Visible mineralization

and Ag values here are similar to those encountered above productive veins in other districts. Consequently, this zone of diffuse mineralization may signal the presence of hidden ore-grade mineralization at depth.

Exploration Targets

Exploration targets in the Ash Peak district are listed in Table 3, and shown on the geologic map (Figure 2). Each target is estimated to have the potential for approximately 200,000 tons of ore grading about 9 oz/ton. The exploration targets are listed as having three levels of priority. First priority targets have an excellent chance of being discovered. Second priority targets have a good chance of being discovered but the exploration effort would be somewhat more difficult. Third priority targets would be explored only if exploration for the first priority targets had been successful.

The first priority targets are those with a high probability of being discovered. The first target is below the ore-grade mineralization encountered in the Hardy shaft (Figure 4). The second target is within the Green vein which contains nearly ore-grade mineralization at the surface. The third target is located on a flexure in the Ash Peak vein about 1500 feet west of the Hardy shaft. The prospective

Table 3

EXPLORATION TARGETS

Priority		Location (see geologic map)	Ownership
1	A	Below Hardy Shaft	Ash Peak Partners
	B	Green Vein	"
	C	Ash Peak Vein - west of Hardy Shaft	"
2	A	Intersection - Ash Peak & Green Vein	SAGE Associates
	B	Alteration Zone west of Intersection	"
3	A	Below Bottom of Shamrock Workings	Ash Peak Partners
	B	Vein - approximately 300' south of and parallel to Ash Peak Vein	"

orebody at this location is below a shallow shaft which encountered a narrow zone of ore-grade mineralization.

The second priority targets are all to the west of the first priority targets (Figure 2). The most promising location is at the intersection of the Ash Peak and Green veins. Another target is in a zone of quartz veinlets and diffuse alteration to the west of the intersection of the Ash Peak and Green veins. This zone is similar to those found in other districts above ore-grade mineralization.

The third priority targets occur below the productive portions of the Ash Peak vein and in the fault/vein about 300 feet south of the Ash Peak vein. Ore-grade mineralization is said to have been encountered over 400 feet below the bottom of the Shamrock shaft by drill hole No. 23 (Figure 4). If this is true, there may be an additional orebody below the Shamrock workings. The fault vein 300 feet south of and parallel to the Ash Peak vein may also contain one or more orebodies.

Property Status

SAGE Associates currently controls 165 unpatented federal lode claims and three state prospecting permits. As shown in Figure 6, it is recommended that 32 claims and the 3 prospecting permits be retained. The total cost of holding this land for one year is approximately $5,385--$130 for each claim and $1225 for the 3 prospecting permits.

The Ash Peak Partners control 5 patented and 12 unpatented claims in the area of interest. The terms listed in Table 4 were proposed by them via telephone. The mailing address of the Ash Peak Partners is 121 North 8th, Grand Junction, CO 81501.

Economic Evaluation

The potential of the Ash Peak District appears to be limited to the production of siliceous, silver-bearing rock for smelter flux. The grade of the ore produced in the past is too low to justify processing at the property. However, access to several smelters in the surrounding area via road and railroad is excellent (Figure 1). The Phelps Dodge smelter at Morenci is considered to be the most likely purchaser of silica-flux ore mined at Ash Peak. The Morenci smelter, only 42 highway miles from Ash Peak, has purchased siliceous smelter flux from the Ash Peak District in the past. Transportation costs from Ash Peak to Morenci were calculated based on truck haulage at 11¢/ton-mile. Railroad haulage from Duncan, Arizona, which is 10 miles east of Ash Peak, to Morenci would probably reduce the cost of transportation substantially.

The potential ore reserves of the Ash Peak district have been evaluated in increments of 210,000 tons which is equivalent to a 100 ton per day mine operating 350 days per year for 6 years (100 tons/day x 350 days/yr x 6 years = 210,000 tons). The tonnages of reserves which have been

considered are 210,000; 420,000; 630,000; 840,000; and 1,050,000 tons; therefore, the operating rates which have been considered are 100, 200, 300, 400, and 500 tons per day.

Information from the smelter schedule (Figure 7) and the capital and operating costs (Table 5) were used to calculate the annual cash flow and the DCF-ROI (Discounted Cash Flow--Return On Investment) (Figure 8). This was done for each of the five reserve-tonnages listed above and for silver prices from $4.50 to $7.00 per ounce for a deposit with an average grade of 9 oz/ton as shown in Table 6. These combinations of average grade, reserve-tonnage, and silver price which yield a cash flow of greater than $1,000,000 and a DCF-ROI greater than 20% are illustrated in Figure 9.

There appears to be an excellent chance that the price of silver will rise more rapidly than the rate of inflation. Should this occur, the cash flow and DCF-ROI projections for a mine at Ash Peak would improve substantially.

Figure 7

EXAMPLE SMELTER FLUX SCHEDULE
(should approximate P.D. Flux Schedule)

Metal	Grade	Metal Price	
Gold	(0.035 - 0.02) x 92.5%	x (120.00 - 1.00) =	$ 1.65
Silver	(9.0 - 0.5) x 95%	x (5.00 - 0.10) =	39.57
			$41.22
Base Charge		= 1.50	
Value Charge	(41.22 - 25.00) x 10%	= 1.62	3.12
	Pay Shipper @ Smelter		38.10
	Trucking 42 miles @ 0.11/mile		4.62
	Value @ Mine		$33.48

Table 4

PROPOSED TERMS OF THE ASH PEAK PARTNERS

Year	Payments	Work Requirements
1	$10,000	$100,000
2	15,000	150,000
3	20,000	200,000
4	60,000	
All years thereafter	80,000	

Table 5

COST INFORMATION

Mining Rate (TPD)	100	200	300	400	500
Ore Reserves (Tons)	210,000	420,000	630,000	840,000	1,050,000
Exploration ($1,000)	100	175	250	325	425
Drilling Reserves (100' x 200' grid) ($1,000)	120	240	360	480	600
Development ($1,000)	950	1,675	2,350	2,975	3,600
Operating ($/T)	24	23	22	21	20

Figure 8

EXAMPLE CASH FLOW SHEET

Reserves 1,050,000
Capacity 500 T/day
350 day/yr

Mine Life 6 yrs.
Grade 9 oz/T Ag
0.025 oz/T Au

Metal Price $120/oz Au
$5.00/oz Ag

Smelter Flux - Morenci
Depr = Total Cap. Exp/yrs. op.

Gross Value = Grade x Capacity x Metal Price x Recovery
Values in ($1,000's)

Year		0	1	2	3	4	5	6	7	8	9	10
Gross Value (Smelter Schedule x T/yr)					5859.0	----------	----------	----------	----------	----------		
Royalties (2% + $80,000)		10	15	20	197.2							
Gross Income					5661.8							
Expenses												
Operating Cost $20/T					3500.0							
Depr. (straight line)					766.7							
State Property Tax (2% G.I.)					113.2							
Total Pre-depl. Expense					4379.9							
Pre-depl. Income					1281.9							
Depl. (15% G.I. or 50% PDI which ever is less)					640.9							
Taxable Income					641.0							
Inc. Tax (State + Fed) - 52%					333.3							
Profit					307.7							
Depr.					766.7							
Depl.					640.9							
Capitol Expenditures	4600	400	600	3600								
Net Cash Flow		-410	-615	-3620	1715.3	----------	----------	----------	----------	----------		

DCF-ROI 25%

Table 6

DCF-ROI AND YEARLY CASH FLOW
(SILVER GRADE - 9 oz/T)
ASH PEAK FLUX MINE WITH 6-YEAR MINE-LIFE
SHIPMENT TO PHELPS DODGE - MORENCI

TPD (Reserves) / $/oz	100 (210,000)	200 (420,000)	300 (630,000)	400 (840,000)	500 (1,050,000)
4.00					1% 811
4.50				9% 899	14% 1,263
5.00			16% 859	21% 1,261	25% 1,715
6.00		29% 868	38% 1,495	39% 1,938	41% 2,506
7.00	34% 558	42% 1,171	47% 1,813	50% 2,485	53% 3,190

D

ASH PEAK MINE

GREENLEE COUNTY, ARIZONA

UPDATE

for

CANAMIN RESOURCES LTD.

J. R. Woodcock, P. Eng.
June 10, 1988

JRW

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ASH PEAK MINE

ARIZONA FLUX MINES, INC.

1.0 SUMMARY

CanaMin Resources Ltd., a British Columbia company, has agreed to acquire Arizona Flux Mines, Inc. and its Ash Peak silver-silica mine in consideration for 555,567 shares of CanaMin and other considerations. Southern Gold Resources Ltd., a privately held company of British Columbia and a company which manages CanaMin Resources Ltd. has lent Arizona Flux Mines $150,000 for which it would receive a monthly loan payment of 50% of net cash flow until payout and 13.1% of the issued capital of Arizona Flux Mines, Inc.

The Ash Peak Mine has epithermal, silver-bearing chalcedonic quartz veins which have been in production intermittently over the past 80 years, initially as a silver mine and in later years as a silver-bearing silica flux mine. The vein system strikes northwesterly and two veins have been in production, most of it coming from the Ash Peak Vein with a lesser amount from the Hanging Wall Vein. This system has been developed by three shafts with drifts therefrom and with stopes from the central Shamrock Shaft and the southeasterly Commerce Shaft. The vein system is reported to occur over a length of about three kilometers; the distance developed by the shafts is 1340 meters.

Most of the production has been from the Shamrock Shaft with some from the Commerce Shaft but a minimal amount from the Hardy Shaft to the northwest. The main production was by Veta Mines Ltd. when the ore was milled on the property and by Inspiration Copper when the ore was shipped directly to the smelter. These two stages of production amount to 303,750 tons with an average grade of about 8.5 oz/ton Ag and 0.032 oz/ton Au. Subsequently Beaver Mesa Exploration and Phelps Dodge Corporation produced silver-bearing flux from the property above the old workings, both from surface open cuts and from declines. This amounted to 97,201 tons with an average grade of about 4.2 oz/ton Ag and 0.02 oz/ton Au.

In 1986 Arizona Flux Mines, Inc. acquired the lease on the property and commenced limited production while rehabilitating the old workings. The Shamrock Shaft has been rehabilitated to the 325-level and active stopes on the 300-level are producing. A hoist and compressor and a semi-autogenous grinding circuit have been installed and the mine connected to the local utilities for power.

The mining method is by shrinkage stoping over a full width of the vein. Ore shoots will lead into the haulage levels and this will gradually be tracked for later development of additional stopes. Initially a slusher will be used to take the ore to the shaft from stopes close to the shaft.

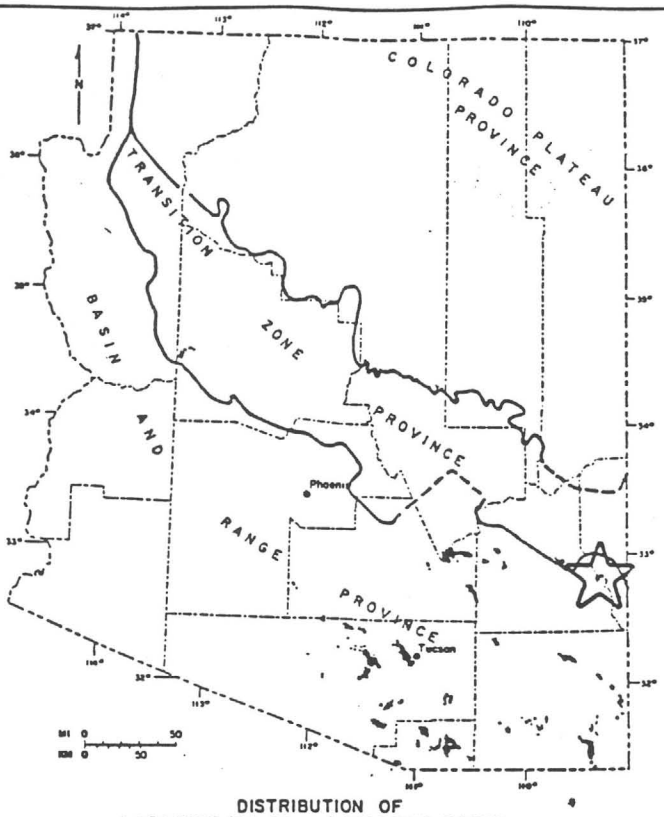
No geological maps are available for the underground workings; however the assay plans from Goldfields Consolidated have been obtained for the previous work. The control for the mineralization is not known; however there does seem to be an upper transition boundary to the higher grade portions that were mined in the past from the Commerce and the Shamrock shafts. There may also be a parallel lower bounding surface to the higher grade parts. Other more steeply dipping structures may also have controls over the distribution of the higher grade silver portions within the veins. In order to resolve the geological controls and conduct exploration for good grade zones it is necessary to have a full time geologist on the property.

Estimated ore reserves include 16,000 tons proven ore, 108,000 tons probable ore and 170,000 tons possible ore. However, the geological potential for more ore zones along this extensive structure is very good as practically no exploration has been done at depth away from the Shamrock Shaft.

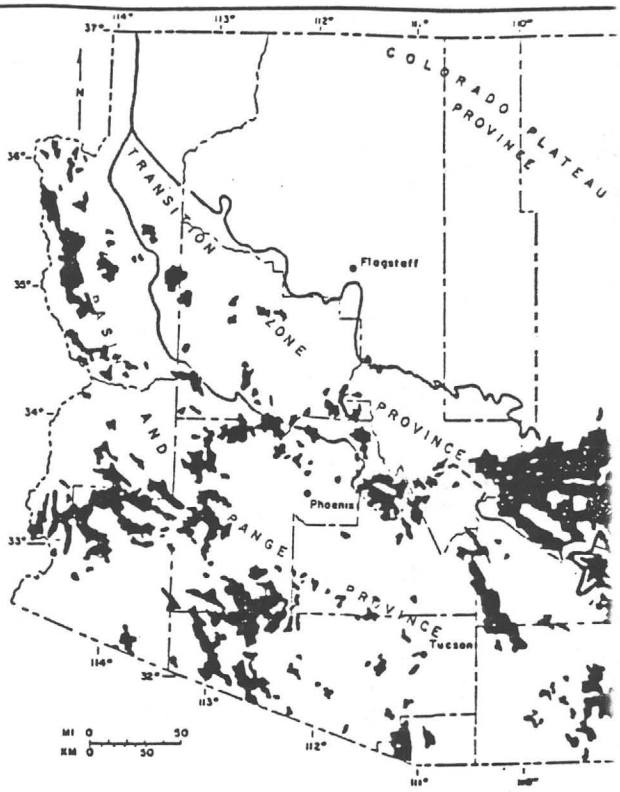
To make an economic appraisal of the property several scenarios were assumed. The most probable one with a grade of 5.5 oz/ton Ag, a mining rate of 300 tons per day and inclusion of book value of capital cost amounting to $550,000 shows a present value for a five-year life amounting to $2.4 million and for a ten-year life amounting to $3.7 million. In this appraisal a contingency of 25% was used on operating costs and a further contingency of 10% on total costs to cover possible fluctuations in prices, etc. The operators expect to improve the income of the operation through better product control and corresponding silver-silica flux prices and by introducing other operating efficiencies.

2.0 INTRODUCTION

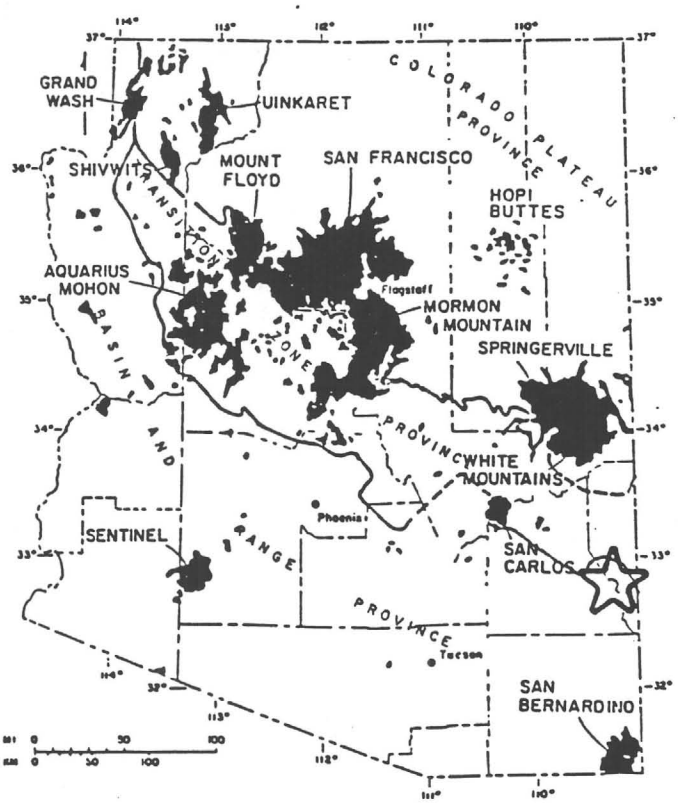
Southern Gold Resources Limited has acquired a 13% interest in the Ash Peak Mine in southeastern Arizona, through Arizona Flux Mines, Inc. This mine, which produces silver-bearing quartz flux for the large copper deposits in the region, is in production at a rate of approximately 200 tpd from two stopes and anticipates increasing to 300 tpd with development of a third stope.



DISTRIBUTION OF
LARAMIDE (80-50 m.y.) VOLCANIC ROCKS



DISTRIBUTION OF MID-TERTIARY (40-15 m.y.) VOLCANIC ROCKS



DISTRIBUTION OF UPPER CENOZOIC (0-15 m.y.)
VOLCANIC ROCKS AND VOLCANIC FIELDS

☆ ASH PEAK MINE

CANAMIN RESOURCES LTD.

NORTH VANCOUVER, BRITISH COLUMBIA

ASH PEAK MINE

GREENLEE COUNTY, ARIZONA

LOCATION MAP

SHOWING THE MAJOR GEOLOGICAL FEATURES OF ARIZONA

Work by:	Map Grid:
Drawn by:	Date: MARCH 1988
Scale:	Figure No: 1
J. R. WOODCOCK CONSULTANTS LTD.	

The writer was commissioned by CanaMin Resources Ltd. to examine the property and the available data and make a report with an evaluation of the project and recommendations for the ongoing program. The writer made a three day visit to Arizona in late February, 1988 to spend time at the offices of Arizona Flux Mines, Inc. in Tucson and to visit the mine to gather data. The visit to the mine entailed examination of surface facilities and examination of the geology on the surface and in the declines. The 300-level was being rehabilitated at the shaft and the hoist was undergoing some improvements; therefore the other underground workings were not examined. Rock specimens were collected from surface exposures and the declines for some preliminary petrographic studies. Observations and data gained from this visit were augmented by a number of prior reports which are listed in the "References."

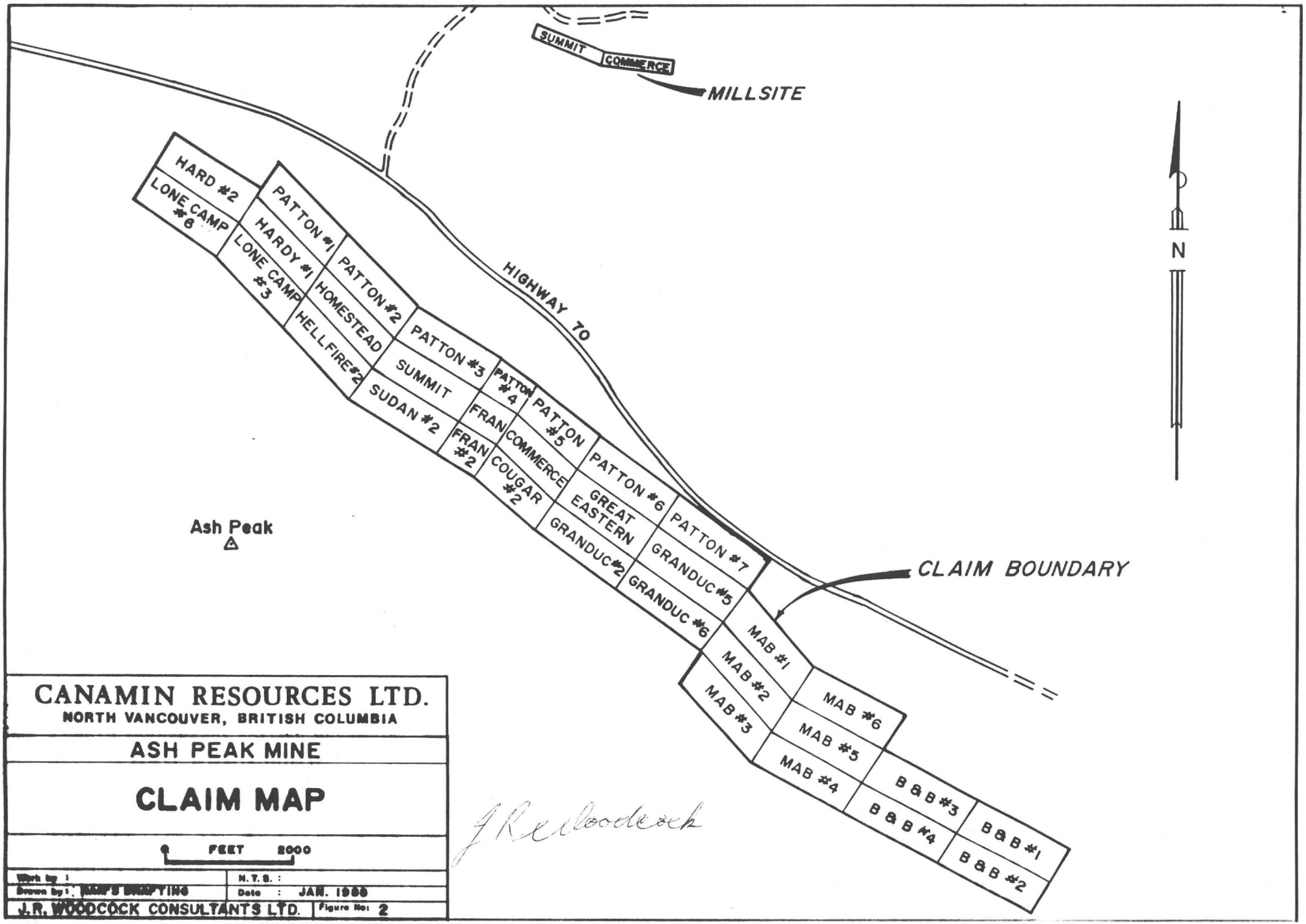
The first report, dated April 15, 1988, has been augmented by incorporation of data received from Sage Associates Incorporated. This included original assay plans from the work by Goldfields Consolidated. Data from the petrographic studies made by the writer has also been incorporated.

3.0 LOCATION AND ACCESS

The Ash Peak Mine is located 0.4 kilometers south of Arizona State Highway #70, 16 kilometers west of the town of Duncan in Greenly County of southeastern Arizona. It is also 50 kilometers east of the town of Safford. Safford is 270 kilometers by road east of Phoenix and 215 kilometers by road northeast of Tucson. The area is well serviced by paved highways to all major supply centers and air and rail transport points are within reasonable distances. A large, trained labour pool is available from other mining districts in Arizona or nearby New Mexico. Supplies of electrical power and limited supplies of water are available on the property, sufficient for the current operations and the proposed expanded operations.

Within a radius of 200 kilometers there are four operating copper smelters, all of which use silica flux in their processes. The closest is the Phelps Dodge operation near Morenci, about 75 miles by road to the northeast.

The mine is at an approximate elevation of 1422 meters in an arid desert setting. The climate is mild all year around, permitting operations to be continued throughout the year.


SUMMIT
COMMERCE
MILLSITE
HIGHWAY TO
N
HARD #2
LONE CAMP #6
PATTON #1
HARDY #1
LONE CAMP #3
PATTON #2
HOMESTEAD
HELLFIRE #2
PATTON #3
SUMMIT
SUDAN #2
PATTON #4
FRAN
FRAN #2
PATTON #5
COMMERCE
COUGAR #2
PATTON #6
GREAT EASTERN
GRANDUC #2
PATTON #7
GRANDUC #5
GRANDUC #6
MAB #1
MAB #2
MAB #3
MAB #6
MAB #5
MAB #4
B&B #3
B&B #4
B&B #1
B&B #2
Ash Peak
CLAIM BOUNDARY
CANAMIN RESOURCES LTD.
NORTH VANCOUVER, BRITISH COLUMBIA
ASH PEAK MINE
CLAIM MAP
0 FEET 2000
Work by :
N.T.S. :
Drawn by : MAP'S DRAFTING
Date : JAN. 1988
J.R. WOODCOCK CONSULTANTS LTD.
Figure No: 2
J R Woodcock

4.0 PROPERTY

The data for this section has been obtained from Mr. Stephen Quin, Vice President of Exploration for Southern Gold Resources Ltd. The writer has not investigated any aspects of the claim holdings or titles.

The property comprises five patented mining claims, two patented mill sites, and 33 unpatented mining claims as listed in Table I.

TABLE I

LIST OF CLAIMS

Name	Type	Status	Patent #	Date
Great Eastern	Lode	Patented	783751	7 Mar 1921
Commerce	Lode	Patented	783751	7 Mar 1921
Fraction	Lode	Patented	783751	7 Mar 1921
Summit	Lode	Patented	783751	7 Mar 1921
Homestead	Lode	Patented	783751	7 Mar 1921
Commerce	Millsite	Patented	783751	7 Mar 1921
Summit	Millsite	Patented	783751	7 Mar 1921
			BLM Serial #	
Shamrock	Placer	Unpatented	41275	19 May 1963
Shamrock #1	Placer	Unpatented	41276	19 May 1963
Shamrock #2	Placer	Unpatented	41277	19 May 1963
Patton #1-7	Lode	Unpatented	57278-84	14 Jul 1979
" (relocated)	Lode	Unpatented	(165054-165060)	24 Feb 1982
Hardy #1-2	Lode	Unpatented	n/a	9 Feb 1972
Lone Camp #3,#6	Lode	Unpatented	n/a	9 Feb 1972
Hellfire #2	Lode	Unpatented	n/a	9 Feb 1972
Suden #2	Lode	Unpatented	n/a	9 Feb 1972
Fran #2	Lode	Unpatented	n/a	9 Feb 1972
Cougar #2	Lode	Unpatented	n/a	9 Feb 1972
Granduc #2,#5-7	Lode	Unpatented	n/a	9 Feb 1972
Harmony #1	Lode	Unpatented	n/a	24 Feb 1982
B & B #1-4	Lode	Unpatented	100836-100839	13 Jan 1980
MAB #1-6	Lode	Unpatented	100840-100845	13 Jan 1980

The claims are held under option by Arizona Flux Mines, Inc. ("AFM"). AFM is required to make minimum monthly payments to the property owners of U.S. $6250 per month or to pay the equivalent of a net smelter royalty, whichever is greater. The effective rate of this NSR is approximately 8% to 10% as set out below:

TABLE II

VALUE OF ROYALTY

Net Metal Value	Royalty	Effective Rate
Less than $20/ton	$2/ton	10%
$20/ton to $52/ton	$2 + 6.25% of amount over $20	10% to 7.7%
$52/ton to $62/ton	$4 + 22.5% of amount over $52	7.7% to 10%
Greater than $62/ton	$6.25 + 37.5% of amount over $62	10% to 20%

5.0 INTER COMPANY RELATIONSHIPS

The following data has been supplied by Mr. Stephen Quin and/or taken from the share exchange agreement between the vendors of the property, Arizona Flux Mines, Inc. and CanaMin Resources Ltd. dated March 24, 1988 and effective April 1, 1988.

1. The vendors of the property include Shamrock Enterprises (an Arizona partnership), Ash Peak Mining Company, Inc. (an Arizona corporation), and Ash Peak Resource and Development Co. (a limited partnership).

2. According to a purchase option agreement entered into on June 25, 1986 (the "Shamrock Agreement"), Arizona Flux Mines acquired the exclusive right and option to acquire 100% right, title and interest in the property.

3. In 1987 Southern Gold Resources Ltd. loaned Arizona Flux Mines U.S. $150,000 for which it will receive 50% of net cash flow each month until payout of the $150,000. In lieu of interest Southern Gold received 10% interest in Arizona Flux Mines shares. At the same time Southern Gold acquired a further 4,500 shares of Arizona Flux Mines at U.S. $1.00 per share bringing Southern Gold's equity to 13%.

4. The authorized capital of Arizona Flux Mines consists of 3,000,000 shares of common stock of which 222,187 shares are issued and outstanding.

5. By the agreement of April 1, 1988, CanaMin Resources Ltd., a British Columbia company, the purchaser, with agreement from the vendors, agreed to purchase all of the issued and outstanding shares in the capital of Arizona Flux Mines, Inc. The evaluation for the Arizona Flux Mines shares and the consideration paid to all shareholders is 555,567 common shares of CanaMin with the valued price of $1.10 Canadian, being the closing price of the common shares as quoted on the Vancouver Exchange on January 28, 1988, plus other considerations. This is 2.5 CanaMin shares for each share of Arizona Flux Mines. As additional consideration, Mr. W. Becker, Sr. receives a finder's fee of 100,000 CanaMin shares plus possible bonus shares based on net cash flow in the period May 1, 1988 to May 1, 1989.

6. The authorized capital of CanaMin Resources is 10,000,000 common shares of which 2,592,029 are issued and outstanding, prior to the share exchange pursuant to the agreement of April 1, 1988.

7. Other pertinent aspects can be obtained from the agreement.

8. Southern Gold Resources agrees to convert its $150,000 loan into shares of CanaMin Resources at a rate C $1.10 per share or a total of 174,136 CanaMin shares.

9. As of April 1, 1988 CanaMin had $365,000 cash in its treasury and Arizona Flux Mines had accounts payable of $508,302.89, including $394,126.00 in long term debts for equipment.

10. The equipment in use at the Ash Peak Mine has a book value of approximately $500,000. This will have very little re-sale value after the life of the mine. In addition equipment not in use has a sale value between $50,000 and $120,000.

11. The total accounts payable as of April 1, 1988 will be $508,302.89, part of which is owed on equipment under lease. This will be offset by an infusion of up to $365,000 which CanaMin had in its treasury, leaving a maximum total of $143,302.89 in accounts payable.

JRW

6.0 HISTORY

The Ash Peak Mine was discovered in 1899 and first developed in 1900. Goldfields Consolidated Company next optioned the property and from 1916 to 1918 sank six shafts totalling 625 meters. The deepest one, the Shamrock Shaft, reached 244 meters in depth and had 2026 meters of lateral development. Goldfields could not afford the purchase price of $1,000,000 and abandoned the property in 1918. Production for that period is estimated at 6663 tons at an average grade of 18 oz/ton silver and 0.05 oz/ton gold which was direct shipped to the smelter.

The property remained idle until 1936 when Veta Mines, Inc. took over the property and rehabilitated the three main shafts, constructed a 300 tpd flotation mill and connected the Shamrock and Commerce workings for ventilation purposes. The mill operated from September 1936 to January 1938, producing 173,282 tons of ore recovering 5.4 oz/ton silver and 0.02 oz/ton gold. Poor recovery was a problem as, according to Sayer (1935), the tailings assayed 2.5 oz/ton silver. The mine closed in 1938 when the price of silver was cut from $0.775 per ounce to $0.645 per ounce.

In 1941 the mine was re-opened by Inspiration Consolidated Copper Company and the ore direct shipped to their smelter at Miami, Arizona. Total production is estimated at 123,917 tons at an average grade of 9.23 oz/ton silver and 0.04 oz/ton gold. Up until this time all production had come from the Main (Ash Peak) Vein. Inspiration drove a crosscut into the hanging wall and discovered the "Hanging Wall" Vein which has since proven to be quite extensive and of similar grade to the Ash Peak Vein. However, it does not crop out at the surface (Setter, 1968).

In 1963 Sayer and Setter leased the property, and, in 1968, sub-leased it to Beaver Mesa Exploration. This company produced 17,606 tons averaging 4.04 oz/ton silver from open pits. The ore was direct shipped to the Phelps Dodge smelter. The company also commenced rehabilitation of the shaft.

In 1976, Sage Associates Inc. of Tucson staked large blocks of claims to the northwest and southeast of the ground held by the Ash Peak Partners. This organization compiled available data, did some mapping to select exploration targets and recommended further work.

During the early 1980's Phelps Dodge acquired an option on the property and drove three declines into the upper parts of the veins and produced 79,595 tons averaging 4.2 oz/ton silver and 0.02 oz/ton gold from the Ash Peak Vein, principally from open pits around the Commerce Shaft but also from underground. Phelps Dodge abandoned the property with the collapse of the price of copper and silver in 1983.

Petrographic examination of the rocks from these surface exposures and also of underground rocks adjacent to the Hanging Wall Vein, show that they are trachytes and trachy-andesites that are conspicuously devoid of amygdules in contrast to the flow rocks. More studies are needed to determine whether the non amygduloidal rocks are all dike rocks. If so, then varying textures might indicate the presence of several dikes in the hanging wall and also some dike rock in the footwall northeast of the Ash Peak Vein.

7.4 The Vein System

The main vein and the one which has received most development in the past is the "Ash Peak Vein," originally called the "No. 2 Vein." In addition there is a small Footwall Vein (the No. 1 Vein) lying to the northeast and a Hanging Wall Vein (the No. 3 Vein) lying about 25 feet southwest of the Ash Peak Vein. The Footwall Vein and the Hanging Wall Vein are blind veins which were discovered underground. In addition there is a Green Vein which crops out about 1500 feet north of the Hardy Shaft and trends northwesterly, presumably intersecting the Ash Peak Vein System about 400 feet along strike to the northwest. The Sage report shows another vein that is parallel to and lies about 400 feet south of the Ash Peak Vein. In addition there are a number of quartz veins lying southeast of the Ash Peak System, some of which are likely extensions of this system.

The Ash Peak Vein occurs along a strong fault fissure for over two miles (3.2 km), forming hogbacks in places. The vein strikes N 60° W and dips 75° to 85° SW. Three shafts, the "Main" or "Shamrock Shaft," the "Commerce Shaft" to the southeast, and the "Hardy Shaft" to the northwest have been placed along these hogbacks in the silicified breccia. The distance between the Hardy and Commerce Shafts is 4400 feet (1340 meters). The distance between the extremities of underground workings is 5300 feet (1615 meters).

The Ash Peak Vein is a silicified fault breccia which contains fragments of a variety of volcanic rocks in addition to fragments of chalcedonic silicified rock, indicating several stages of faulting and silicification. The silicified zone ranges generally from 3 to 18 feet (1 to 5 m) in width and averages about 7 feet (2.1 m).

The vein minerals are largely chalcedony of a variety of colours from grey to reddish, quartz, white to black calcite, argentite, pyrite, and traces of gold. Secondary minerals such as cerargyrite, malachite and gypsum are also present. The occurrence of malachite and also the recovery of some copper from the flotation (Setter, 1968) indicate presence of a copper mineral in the hypogene zone. A few veinlets of amethyst cut the silicified rock.

Arizona Flux Mines, Inc. acquired a lease on the property in June 1986. It commenced limited production immediately at 70 to 80 tpd from Phelps Dodge's declines while rehabilitating the old workings. Work was concentrated around the Shamrock Shaft with the intention of reaching a production of 300 to 400 tpd in 1988.

7.0 GEOLOGY

7.1 General

The data for this section was extracted from the prior reports listed in the References. Data on the stratigraphy is summarized from Karnie (1986) who studied available data at the University of Arizona and at the Arizona Bureau of Geology and Mineral Technology and from the Sage report. The writer's observations have also been added. Petrographic studies have been made by the writer on 25 thin sections and the results described in a separate report.

The Ash Peak vein structure strikes in a southeasterly direction and is flanked on the northeast by some low elongate hills which probably owe their existence to the resistant nature of the silicified breccias of this vein system. These resistant ledges crop out along much of the zone. To the southwest, across a slight depression, are the slopes of Ash Peak which extend up to bold cliffs of flat lying volcanic strata.

7.2 Rock Types

Ash Peak itself is part of a Tertiary eruptive center that was active 21 to 24 million years ago. Karnei (1986) reports that the strata of Ash Peak and the mine area fall into a number of broad units. The uppermost, capping Ash Peak, is approximately 975 feet (290 m) thick and consists of silica-rich, crystal-poor rhyolitic flows with some interbeds of pyroclastic flows and tuffs. Underlying this is a sequence of silica-rich, pale yellowish orange tuffs with a maximum exposed thickness of 400 feet (120 m).

Underlying these two acidic units is an andesitic unit which has been dated from 21.8 to 22.6 million years. This is brownish grey to greyish red in colour and at least 300 feet (90 m) thick. Underlying the andesitic unit is a sequence of thin-bedded, re-worked tuffaceous sandstones interbedded with airfall and other pyroclastic deposits with a maximum thickness of 100 feet (90 m). Karnie suggests that this is the unit that crops out on the northeast side of the Ash Peak Vein.

Below the andesite and tuffaceous units, which host much of the vein system, is a crystal-rich rhyolitic flow sequence of unknown thickness. This overlies the older sediments of limestone, shale and sandstone of Cretaceous and Palaeozoic ages.

The petrographic work has shown that the predominant volcanic rock types are sanidine trachytes and trachyandesites, formed predominantly of feldspar laths. These feldspars are mainly sanidine with from 0 to 50% twinned plagioclase. The matrix to these laths is generally aphanitic; the laths themselves can be easily observed with a hand lens. The rocks are generally greyish to reddish brown in colour, the colouration due to hematite scattered throughout. In addition some of the fractures have abundant brick red hematite which permeates the adjacent rock.

Many of the volcanic rocks are characterized by amygdules. These vary from rounded to distinctly ellipsoidal to those that are extremely irregular and compose much of the volume of the rock.

Volcanic clastics which occur adjacent to the Shamrock Shaft include tuffs in a variety of colours and grain sizes. Most of these are ash fall and reworked tuffs and most of them are characterized by angular fragments of the dark brown to reddish brown trachytes and trachyandesites. The matrix also has a pink tint due to the hematite.

7.3 The Intrusions

Several of the prior reports state that the strata are cut by numerous dikes and plugs. The Sage report indicates that these are especially abundant along the northwest trending zone of weakness that contains the Ash Peak Mine.

A number of the old reports mention a dike of augite andesite, locally called diabase, at the Hanging Wall Fault and one report suggests that the dike is later than vein because it cuts the vein. Karnie suggests that this may be part of the andesitic volcanic sequence.

Southeast of the Shamrock Shaft, small quarry exposes the hanging wall contact of the Ash Peak Vein System. The rock of the hanging wall has been highly sheared and faulted adjacent to the resistant silica vein. This zone of highly sheared rock with fault gouge has a banded appearance due to variations in the amount of shearing and pulverization of the rock. Bands up to 20 centimeters wide with practically no shearing do give the impression of dikes. Other banding is due to the variations in alteration and amount of shearing. Away from the fault the amount of shearing and alteration decreases so that it is considerably reduced at a distance of 15 meters from the fault.

Banding of the vari-coloured chalcedony is common in much of the silicified vein system. This banding can occur around fragments, in places a somewhat botryoidal structure is present.

There have been suggestions that good ore is recognized by clouds of argentite and in places it is associated with amethyst and copper stain. Calcite is more abundant near the footwall than near the hanging wall and values are low where calcite is predominant.

Lines (1940) gives the chemical content of the ore as follows:

Ag	11.27 oz/ton	Al_2O_3	3.28%
Au	0.025 oz/ton	Fe_2O_3	3.21%
SiO_2	85.8%	CaO	5.07%
S	0.045%	H_2O	2.1%
Mn	0.45%		

7.5 Hydrothermal Alteration

The petrography and the field observations indicate that the main alteration is silicfication of the host trachytes and the breccia fragments from these host rocks. This forms an extremely fine-grained quartz mixture which does contain some extremely fine-grained sericite. Introduction of quartz into the vein and the spaces around the silicified breccia fragments has produced the veins that are presently being mined.

Carbonate, probably mainly calcite, has mixed with the quartz vein material in places and also forms an alteration product in some of the rocks.

Probably the most widespread alteration product is hematite. Fine-grained specular hematite occurs throughout most of the trachytes and also occurs as an alteration product adjacent to fractures. This red colouration occurs in most of the trachytes that have been examined and also in the tuffaceous rocks near the vein system. Insufficient petrographic studies have been done away from the vein system to determine whether this alteration product is related to the faulting and the vein system or whether it is part of the original volcanic phenomena.

Early alteration, which is evident in some of the productive parts of the vein, has included quartz adularia. In parts of the vein system fragments of this early alteration product are now cemented by later fine-grained quartz or chalcedony.

An amber coloured, somewhat opaque, extremely fine-grained alteration product occurs in some of the specimens that were collected adjacent to the vein. Additional studies are needed to determine if this is secondary biotite. Also epidote has been detected in a specimen of so-called dike rock collected about 50 feet southwest of the Ash Peak Vein.

The rocks (possibly trachytic dikes) along the hanging wall have been highly sheared and much of this has been subsequently altered to a greenish product, probably a chlorite, and in places a white product, probably argillic alteration.

The Sage report stresses the presence of zones of quartz and quartz-calcite veinlets that are locally altered to clay and chlorite and may indicate the presence of underlying ore bodies. The report states that the Ash Peak Vein crops out continuously from the Commerce to the Shamrock Shaft and is exposed locally from the Shamrock Shaft to a point 1000 feet northwest of the Hardy Shaft. Further northwest the vein consists of broken rock with quartz and quartz-calcite veinlets and associated alteration. Also 300 feet south of the Ash Peak Vein there is a zone of chlorite alteration and diffuse quartz veining which parallels the Ash Peak Vein for more than 8000 feet along strike; this may represent the top of a buried vein.

7.6 Structure and Structural Control

Ash Peak and the extensions therefrom form a linear ridge or feature that extends in a northwesterly direction approximately parallel to the Ash Peak Vein. The Sage report states that the strata dip gently westerly. Locally there are some flexures in this general trend; the bedded tuffaceous rocks that lie northeast of the Ash Peak Vein and a short distance to the northwest of the Shamrock Shaft appear to dip southerly at about 10° (S. Quin, 1988).

The fault structure which contains the Ash Peak Vein System can be traced for at least 12,000 feet, with branching and deflecting additional veins further to the southeast. At the mine workings, the Ash Peak Vein dips steeply (about 80°) to the southwest.

The top of the better grade silver zones, as indicated in the Commerce, Shamrock, and Hardy workings plunges about 10° or 12° northwesterly. Such a limiting cap or boundary could indicate some thermal control related to a palaeo surface. However a more logical explanation would be a stratigraphic control at the intersection of favourable beds with strong quartz veins that dip steeply southwesterly but strike in a slightly different direction.

A similar lower boundary with the same plunge to the northwest appears to also mark the lower limits of the higher grade parts of the ore in the Commerce and the Shamrock Mines This could also be a similar lower stratigraphic control. These controls and other limiting controls are discussed in Section 8.4.

8.0 PRODUCTION AND ORE RESERVES

8.1 Production

The history indicates that production at this property took place under six different companies including the present operator, Arizona Flux Mines, Inc., which is in the process of revitalizing the operation. In all cases, excepting for the Veta Mines production, the ore was directly shipped to the smelters. Production for the past phases of operation are listed in Table III. Explanatory notes follow this table.

TABLE III

SUMMARY OF PRODUCTION

Notes	Company	Years	Comments	Production (short tons)	Silver Grade (OPT)	Gold Grade (OPT)
1.	Goldfields	1916-18		6,663	18	.05
2.	Veta Mines	1936-38	Recovered	173,282	5.4	.02
3.			Tailings		2.5	.01
			Heads		7.9	.03
4.			Dir. Ship.	6,551	7.6	.029
5.	Inspiration	1941-54		123,917	9.2	0.035
6.	Beaver Mesa	1968-70		17,606	4.04	.02
7.	Phelps Dodge	1981-84		79,595	4.2	.02

1. From 1935 report, probably by Sayer. This came from high grade shoots.

2. From production records of U. S. Bur. of Mines (Setter, 1968). Setter also states that the 173,282 tons of ore yielded 55,000 lbs. copper (.02%) and 118,000 lbs.lead (.03%).

3. A report with unknown author dated 1941 states that 5 samples from the tailings dump averaged 3.4 OPT silver and 0.01 OPT gold. The figure used on Table III is 2.5 from Setter's report (1968). Thus the heads could have slightly higher silver than 7.9 OPT.

4. From Setter, 1968.

5. From Setter, 1968.

6. The tons shipped and silver content are from Leon, 1985 who quotes GEM, 1972.

7. Compiled by GEM (probably George E. Moorehouse) from Phelps Dodge settlement sheets (1972).

8.2 Ore Grades

From the production statistics of Table III one can draw some conclusions on typical precious metal grades:

1. The production by Veta Mines and by Inspiration Copper took place largely from the Shamrock Shaft between levels 300 and 700 and from the Commerce Shaft between levels 200 and 500. This included 303,750 tons with an average grade of 8.42 oz/ton Ag, if one uses the grade of 2.5 oz/ton for mill tailings (Setter, 1968) or 8.93 oz/ton if one uses the value of 3.4 oz/ton Ag for surface sampling of the tailings pond. Gold content would average 0.032 oz/ton.

2. The production by Phelps Dodge was from above the 200-foot level and mainly from the Commerce Shaft area and this totalled 79,595 tons with a silver grade of 4.2 oz/ton and a gold grade of 0.02 oz/ton.

   Phelps Dodge, in its mining from surface and from declines, worked mainly above the 100-foot level at the Shamrock Shaft and above the 200-foot level and northwest of the shaft in the Commerce Shaft area.

   The production by Beaver Mesa (17,606 tons with 4.04 oz/ton Ag and 0.02 oz/ton Au) is similar in grade to the Phelps Dodge production. It also came from open cuts.

3. These comparative figures indicate that the values increase below the 200-foot level. Such a "top" of the better grade vein material would dip about 10° to the northwest and could explain why reports indicate that good values in the Hardy Shaft area are only encountered in the lowermost part of the workings. This could also be the reason for the relatively low values in the shallow drill holes placed by Phelps Dodge between the Shamrock Shaft and the Hardy Shaft and to the northwest of the Hardy Shaft.

4. The small amounts of ore extracted by Goldfields were from high grade shoots with a reported average grade of 18 oz/ton Ag and 0.05 oz/ton Au.

   Four pages of the results of car shipments to a number of smelters made between 1906 and 1909 show that nearly all shipments graded better than 10 oz/ ton Ag and 0.03 oz/ton Au and that many of these shipments were over 20 oz/ton Ag, with up to 30.5 oz/ton Ag, and up to 0.055 oz/ton Au. The Sage report states that this early production came from the Green Vein and from the Hardy Shaft.

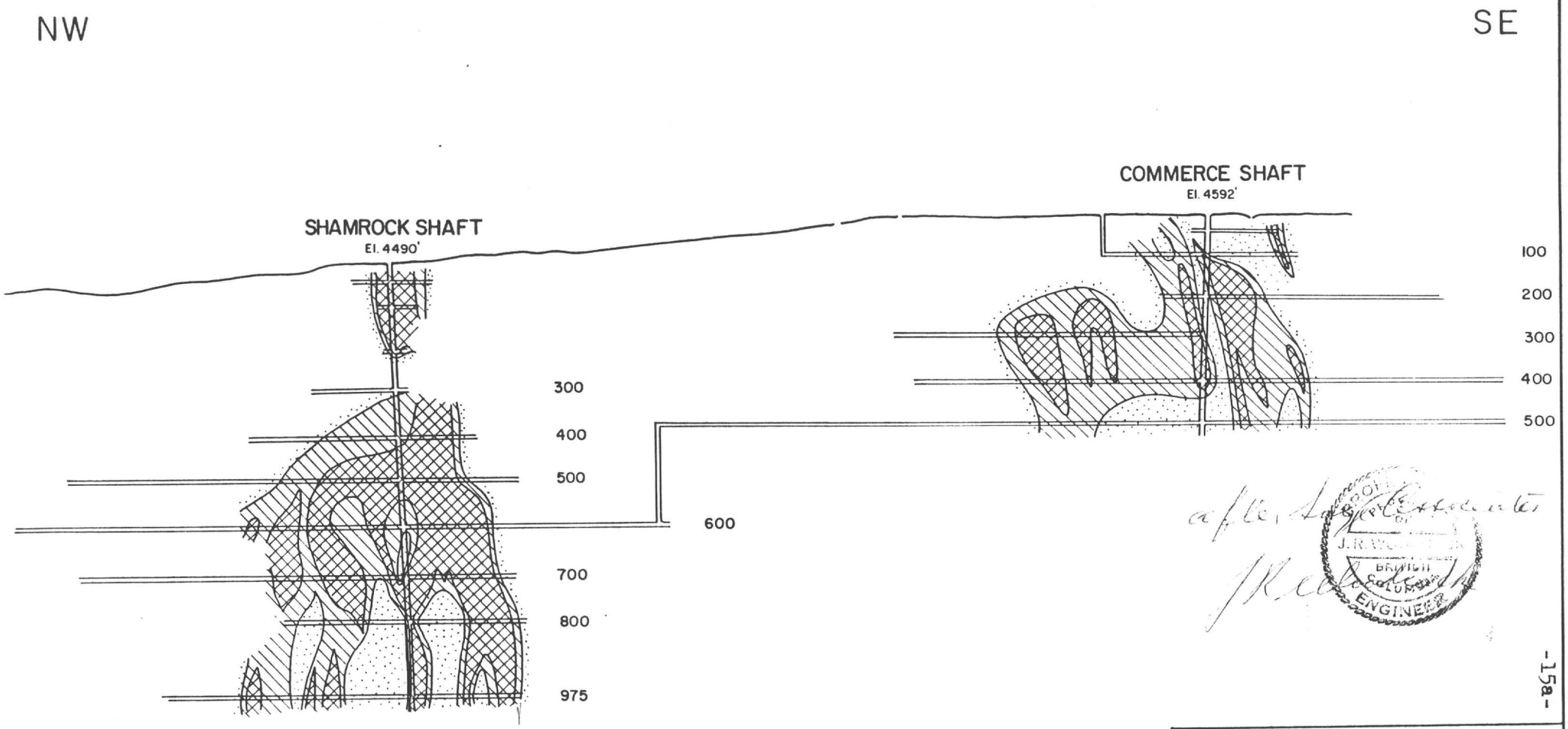
5. Based on the above data, silver grades expected for much of the future mining will vary between 4 and 8 oz/ton. Accordingly three cash flow projections have been made using silver grades of 4, 5.5 and 8 oz/ton.

6. The limited detailed assay data on hand, namely the Phelps Dodge data from the upper parts of the veins, indicate that, in detail, grades are quite erratic along the veins. Areas of relatively low grade material can have occasional high grade values within them and areas of generally good grade material can have numerous spots of very low grade material. Such observations have also been stated in some of the old reports.

8.3 Vein Widths

Mining operations throughout the history of this mine have taken place on three veins. The No. 2 Vein, now called the Ash Peak Vein, has been the source of most of the ore. Lying 15 feet to the northeast is the No. 1 or Footwall Vein. Minor old operations took place on the No. 1 Vein; however there is no specific record of the amount. About 1948 Inspiration discovered the No. 3, or Hanging Wall Vein, and it became the main producing vein. It is 25 to 30 feet southwest of the Ash Peak Vein and is reached by crosscuts from the shaft or from the drifts on the Ash Peak Vein. Only the Ash Peak Vein crops out on the surface; the other two veins are "blind" (H. Foard, 1953).

A number of average widths are quoted for the past mining history on the Ash Peak Vein. Herbert L. Lines (1940, p. 4) states that the ore ranges from 3 to 18 feet in width, averaging 7 feet. However, he also states that grade decreases from the hanging wall to the footwall and that the footwall of the ore body is an economic cut-off rather than a structural one. There is also the added factor that in the mining by Veta Mines a skin of quartz, about one foot wide, was left at the hanging wall to prevent sloughing from the fault zone adjacent to this hanging wall contact. Thus, average width quoted from the past production might be a minimum and might be increased under the present economic and mining condi-



ORE GRADE

- > 10 oz Ag / ton
- 6 - 10 " " / "
- < 6 " " / "

CANAMIN RESOURCES LTD.
NORTH VANCOUVER, BRITISH COLUMBIA

ASH PEAK MINE
GREENLEE COUNTY, ARIZONA

SHAMROCK-COMMERCE SHAFTS
CONTOURED SILVER GRADE

0 200 400 600 FEET

Work by :	Map Grid :
Drawn by :	Date : June 1988
Scale : As shown	Figure Nº 4
J.R. Woodcock Consultants Ltd	

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tions. The value of the silica for flux might allow one to extend further into the footwall and the plan to mine very close to the hanging wall, leaving relatively small pillars, might also increase the economic mining widths under today's planned operation.

The report of October 4, 1935 from which the author's name has been eradicated, possibly by Robert Sayer, also states that the vein varies from 3 to 18 feet in width with a stoping width of at least 6 feet and which may run up to 12 feet. In this same report he quotes reserve estimates by three authors, Henry F. Crowther, H. V. Snell, and J. W. Bible. It is interesting to note that Crowther, who presents ore reserves for two mining methods, does quote shrinkage stope widths of 13 feet for the Hardy Shaft area, 10 feet for the Shamrock Shaft area and 6 feet for the Commerce Shaft area.

Very little information is available on the width of the Hanging Wall Vein. Setter (1968, p. 2) states that in the work of Inspiration Copper, a crosscut driven on the 500-foot level from the Ash Peak Vein encountered the Hanging Wall Vein and a later crosscut from the 600-foot level intersected the vein which, at that place, was 50 feet wide with an average of 5.6 oz/ton Ag. The plan of the 500-foot level shows stope width from 8 feet to 25 feet, averaging about 15 feet.

8.4 Extent of Veins, Ore Zones, and Ore Shoots

The Ash Peak Vein has a proven length of several thousand feet as indicated by surface exposures and underground workings from three shafts. The Hanging Wall Vein, of equally good grade and widths where encountered, is a blind vein with no surface exposures and with investigations largely limited to the vicinity of the Shamrock Shaft between the 350 and 500-foot levels. However Phelps Dodge exposed the Hanging Wall Vein in a decline in the Commerce Shaft area and detected it in drill holes between the Commerce and Shamrock shafts, albeit not of good grade.

Most of the comments on ore limits will thus be based on work done on the Ash Peak Vein. The limits of the ore within the vein are governed by assay boundaries rather than sharp structural cut-offs. Also, there has been a tendency to mine ore that is close to the existing shafts as the underground tramming was done by hand. Mechanized tramming, operating costs that should come with small mine operators, and changing economic conditions should change such assay boundaries.

The change from lower grade (e.g. 4 oz/ton shipped by Phelps Dodge) in the upper levels in comparison with the higher grade values from the lower levels (about 8.5 oz/ton mined by Veta Mines and Inspiration Copper) has been discussed. This transition boundary, if actually present, would plunge about

10° to the northwest. It appears that the values in the Commerce Shaft area below the 500-foot level and in the Shamrock Shaft area below the 700-foot level are probably of lower grade than the values encountered immediately above these levels. A line indicating this possible lower transition is also included on Figure 3. This line would be parallel to the upper transition line and the vertical distance between these two lines is 400 feet.

Other possible controls may also be present. Foard (1953) mentions some structures in the Hanging Wall Vein. A fault which bounds the higher grade zone on the west has been detected on the 300-level and on the 550-level. The trace of this fault within the vein would dip about 36° northwest. Similarly, a subparallel fault bounds the higher grade portion on the southeast. It was detected on the 400-foot level and on the 600-foot level and the trace of this fault would dip 57° northwest. There are indications in the reports that the Hanging Wall Vein does extend northwesterly from the bounding fault where it has lower grades; in fact a stope on the 500-foot level is largely to the west of this projected fault trace. Also there is no indication to date that this fault has affected the Ash Peak Vein. Thus it is quite possible that this fault is pre ore and has had some control on the distribution of the silver values. It is necessary to determine just how real or how important the faults are.

The Sage report, using silver values from the plans of Consolidated Goldfields, presents a somewhat different picture for the Ash Peak Vein. The contoured values (Figure 4) show that the ore zones include a number of shoots that plunge about 75° southeasterly. The picture for the Shamrock Shaft is quite impressive in that one of these shoots, along the eastern part of the ore body, plunges throughout almost the total vertical range of the mine from the surface down to the 975-level. It is only discontinuous at the 300-level where information is lacking; however it is at the 300-level that the operation is presently finding good silver values. Thus this strong eastern ore shoot with its sharp southeastern cutoff, has extended from surface to the 975-level.

Presently the operations of Arizona Flux Mines are concentrated above the 300-foot level. Stopes have been prepared immediately southeast of the shaft where the muck has silver values between 7 oz/ton and 14 oz/ton as indicated by a MAP analyser. Also the operators have drifted northwest in the footwall on the 300-foot level, to bypass an old stope and develop ore about 200 feet northwest of the shaft. Muck samples indicate a silver grade of about 8 oz/ton using the MAP analyser. Smelter returns on shipments correlate satisfactorily with the indicated MAP values.

Additional encouraging information concerns the area between the Commerce and the Shamrock Shafts. Oral reports from people who worked on the connecting drift state that all of the development muck went through the mill in spite of the fairly long distance for hand tramming. They also state that a very high grade ore shoot was encountered. The mine plans do show a small stope on the connecting 500-level drift half way between the two shafts.

8.5 Ore Reserves

Because the data from past production is lacking it is impossible to accurately determine the distribution of silver within the veins. The bulk of the ore which was mined by Veta Mines and Inspiration Copper had an average of about 8.5 oz/ton Ag and 0.032 oz/ton Au. That mined from near the surface by Phelps Dodge had a grade of 4.2 oz/ton Ag and 0.02 oz/ton Au. There is no data in the report indicating the cut-off grades used by Veta Mines and Inspiration Copper. However, the fact that Phelps Dodge did mine near surface vein material with an average silver grade of 4.2 oz/ton adjacent to the old workings does indicate the possibility of at least an envelope of this lower grade material around the old mine workings.

The possible upper cap to the higher grade zone, i.e. the line dipping 10° to the northwest, is also based on somewhat flimsy data. This data includes the distribution of the old stopes, a few assay values in the old workings, the lower values in the Phelps Dodge shallow drill holes, and the results of surface sampling. This upper capping surface and a possible parallel lower limit to the high grade band will guide the estimates of reserves in spite of the fact that future work might disprove such guides. Some more steeply dipping crosscutting faults may control the higher grade portions of the deposit and also the envelopes of the lower grade material (i.e. four ounce material). It is only for the Hanging Wall Vein that such cross structures are suggested by Foard, but the certainty of such structures is not known.

On the basis of such considerations one can conclude:

1. There is limited proven ore.

2. Some probable ore can be suggested for areas in the vicinity of the old workings at the Shamrock Shaft for both the Ash Peak Vein and the Hanging Wall Vein.

3. Possible ore can be suggested for the area between the Commerce and the Shamrock workings and west of the Shamrock workings.

4. The main encouragement here is the great geological potential for additional ore zones at depths sparsely explored by the surface drill holes between the Commerce and the Hardy Shafts and also to the northwest of the Hardy Shaft.

5. With the present state of our knowledge estimates of ore reserves have little meaning. The property is in production and, as with many precious metal mines, the reserves must be found and developed as production proceeds. One can merely estimate a potential profitability for this deposit and base the value of the property on such estimates.

The estimated proven, probable and possible reserves are given in Table IV and the ore reserve blocks are indicated on Figure 3. Notes concerning the support for such estimates follow the table.

TABLE IV

ORE RESERVES

Reserve Block	Vein	Width	Tonnage
Proven Ore			
J	Ash Peak	7'	13,000
K	Ash Peak	5'	3,000
			16,000
Probable Ore			
A	Ash Peak	7'	32,000
A	Hanging Wall	7'	8,000
B	Ash Peak	7'	9,000
C	Hanging Wall	12'	40,000
D	Ash Peak	7'	6,000
L	Ash Peak	6'	13,000
			108,000
Possible Ore			
E	Hanging Wall	12'	60,000
F	Ash Peak	7'	40,000
G	Ash Peak	6'	56,000
H	Ash Peak	7'	14,000
			170,000

Notes

(A) Good values have been obtained in the Ash Peak Vein adjacent to the shaft which runs through the middle of this block and also in the stopes above and adjacent to the shaft. In addition, present mining indicates good values (in the order of 8 oz/ton) in the muck obtained just southeast of the shaft and about 150 feet northwest of the shaft on the 300-foot level.

In addition, present work along the 300-level east of the shaft, has encountered good ore and widths in the Hanging Wall Vein. Extent is unknown, but 8000 tons has been allowed.

With further work some of Block A might be upgraded to the proven category.

(B) This block lies above the 400-foot level; the stoping of the past has been continuous below this block.

(C) Because, at the close of operations by Inspiration Copper, mining was proceeding above the 500-foot level on the Hanging Wall Vein, it is quite likely that values would also be found below this level. Also it is adjacent to the part of the Ash Peak Vein that has been stoped over the whole length and it lies between the west and east bounding control faults.

(D) This block on the Ash Peak Vein lies below the 700-level; past mining has been continuous above this level throughout the length of this proposed block.

Setter (1988) states that Cliff Smith, former superintendent for Inspiration Copper Co., informed him that the Veta Mines operation used the Shamrock Shaft below the 600-foot level to "gob" their waste rock. The shaft is, therefore, filled up below this point and Inspiration never cleaned it out.

According to Foard, superintendent for Inspiration (1953), long-hole drill sampling failed to discover ore of commercial grade, but he did not state the extent of the drilling or what cut-off was used for commercial grade at that time. However, the assay data from Goldfields Consolidated indicate some good values below the 700-foot level.

The fact that the Ash Peak Vein was stoped continuously for a length of 800 feet above the 700-level and the fact that there are shafts, drifts, and some stopes established below the 700-foot level would lead one to suspect that good silver values are likely to occur in some of the area below the 700-foot level.

(E) This lies in the Hanging Wall Vein. It has the same characteristics as Block C of the probable ore, excepting that it is another 100 feet further removed from the ore that was mined on this vein.

(F) This block is below Block D (probable ore). It is placed as possible ore because it is 50 feet further removed from the stoped area, no ore is mined below it. The longitudinal sections reveal limited stopes on the 800 and 975-levels and a plan of a portion of the 800-level shows 32.7 feet of drift with an average of 11.8 oz/ton Ag and 0.04 oz/ton Au. However past reports do not indicate the average grades or positively state why very little mining took place between the 700 and 975-foot levels. Until this is firmly determined, the reserve should remain in the possible category.

(G) This large area of the Ash Peak Vein lies between the workings of the Commerce Shaft and the Shamrock Shaft. Oral reports state that ore from the development drift was milled and that an unusually high grade lens was stoped. These imply that mineralization is present between the two sets of workings. In this case the average width used (6 feet) is more in line with the widths of the Commerce workings. Only one quarter of the indicated vein area of the block has been included in the possible reserves.

(H) Block H is merely a bounding area west of the Shamrock Shaft workings and stopes. Presumably there will be some lower grade material in this area and eventually some exploration will be needed to determine the grade and extent.

(J) The assay plans from Goldfields Consolidated gives silver-gold values from muck samples taken along some of the lower drifts. In particular, 265 feet of drifting on the 700-foot level gives an average muck value of 13.5 oz/ton silver. Similarly, 265 feet of drifting on the 800-foot level gives an average much value of 5.6 oz/ton. Thus the reserve between these two levels (Block J) has an average silver value of 9.5 oz/ton. About one-third of the 800-foot level has an average value of 3.7 oz/ton; thus some selected mining would achieve a higher

grade with somewhat lower tonnage. The widths for the vein in this part of the mine are unknown. A width of seven feet as used in the other parts of the Ash Peak Vein, has been assumed.

(K) Muck values for the 700-foot level above Block K averaged 21.2 oz/ton silver; muck values along the 800-foot drift below Block K averaged 15.7 oz/ton silver. In this calculation an average value of 18.9 oz/ton is suggested. Although the actual vein width is not known, a width of 5 feet has been used.

The Goldfields Consolidated assy data also shows a limited amount of chip sampling along part of the 800-foot level. A weighted average indicates 11.37 oz/ton over a width of 4.06 feet. This would correspond to 16.9 oz/ton silver over a length of 40 feet obtained from the corresponding muck samples. Such a comparison indicates that caution is necessary when using the results of the muck sampling; however the data is insufficient to enable one to make a reliable corrective factor when treating the results of the muck samples.

9.0 PRESENT DEVELOPMENT

Arizona Flux Mines, Inc. acquired the lease on the property in June 1986 and commenced limited production at 70 to 80 tons per day from existing declines while rehabilitating the old workings. This production came from around the Shamrock Shaft and southeast of the Commerce Shaft between the surface and the 100-foot level.

Production from one stope, now at 100 tons per day, should increase in June to 200 tons per day with a second stope. These stopes are on the 300-level and production is from both the Ash Peak Vein and the Hanging Wall Vein.

The Shamrock Shaft has been rehabilitated to the 350-foot level which involved complete re-timbering, construction of a concrete shaft collar, a new head frame collar, a new hoist and compressor, and connection to the local utilities for power. A slusher is presently used to take the ore to the shaft.

The mining method will be shrinkage stoping over the full width of the vein. Ore shoots will lead into the haulage levels and this will gradually be tracked for later development of additional stopes along strike.

The slusher drops the ore into pockets which feed the five-ton self dumping skip which in turn dumps the ore into a 50-ton ore bin built into the head frame. Bottom feed onto the conveyor will carry the ore to the crushing and screening facility. A side dump on the ore bin will permit the separation of development wastes.

The crushing plant has a grizzley to screen off the six-inch plus material for later crushing. The minus six-inch material is screened to remove the -100 mesh fraction with the undersize stockpiled for shipment and the oversize put into a 50-ton per hour semiautogenous crusher. The product from this crusher istriple screened to remove the -100 mesh fraction and then the -1/4 inch fraction, both for stockpiling and sale and the oversize will re-enter the crusher for further grinding. The semi autogenous grinder and screening system are functioning satisfactorily.

The flux is hauled by contract in 25-ton loads to various smelters at a rate of $0.10 per ton per mile. This rate is based on a full 25-ton load and therefore it is advantageous to ensure that the truck is fully loaded. However, the Dept. of Highways penalizes loads over 25 tons. Consequently a scale has been installed at the mine.

10.0 ECONOMICS

The flux is paid for on a weekly, as delivered, basis at a current rate of $18.00 per ton. Payment for precious metals is currently on the basis of 75% of the silver content and nothing for the gold, because of the irregularity of shipments and the variability of grade. Normal payment would be for up to 90% of the silver and gold content, provided consistent regular supplies are shipped. However, at a 90% rate the $18.00 flux payment under the present contract would be eliminated. Thus renegotiation of the smelter contracts is a top priority once full production is achieved.

Capital requirements are minimal since there are no milling facilities and the crushing plant is already on site. The new hoist, electrical equipment, compressor, jacklegs, mine trucks, and muckers have all been purchased and are on site. Only tram equipment is needed and an allowance is made in the balance sheet of Table VII.

Only tentative estimates of production costs and revenue can be made at this time since the operation is neither in full production nor have new smelter contracts been negotiated based on increased production and higher and better controlled grade.

10.1 Production Costs

The estimated production costs of Table V have been supplied by Mr. Quin and discussed with the writer and many have been cross checked. The mining costs are unusually low, largely because of the low wage costs. However, the writer has checked the payroll for December 1987 and the fringe payroll costs. All the workers have their homes in the local towns and find the area a desirable place to live. When full production is achieved, a profit bonus for the workers is anticipated.

10.2 Cash Flow Analysis

A cash flow analysis (Table VI) has been made using silver grades of 4.0, 5.5, and 8.0 oz/ton and assuming a production of 300 tons per day. A present value has been calculated using a discount rate of 15% and a mine life of five years and ten years for the three different grade scenarios.

For these calculations the capital equipment and expenditures have been given a present book value of $500,000 and these have been depreciated on a straight line annual basis. The final present value has been adjusted to add the book value of this equipment plus another $50,000 for unused equipment which is for sale (Table VII). The simplified calculations have omitted adjustments for depletion and taxes.

It is assumed that the loans will be eliminated within the first five years; accordingly the net annual revenue for years six to ten has been increased by $72,000.

The mid grade scenario with a mine life of ten years is the most likely. Salvage grades adjacent to the present workings will probably have average grades between 4 and 5.5 oz/ton Ag; however one would anticipate an improvement in grade with the discovery of new zones.

The summary of current assets and liabilities is given in Table VIII. Such data is omitted from the present value estimates.

TABLE V

PRODUCTION COSTS

		U.S. $/day	
Payroll			
Miners, Hoistmen	14 @ $10/hr.	1,120	
Shift Bosses	2 @ $12/hr.	195	
Crushermen	2 @ $ 8/hr.	128	
Maintenance	1 @ $15/hr.	120	
Superintendent	1 @ $20/hr.	160	
Geologist	1 @ $13/hr.	104	
Helper	1 @ $ 8/hr.	64	
Surveyor (half time)	1 @ $15/hr.	60	
		1,951	
Payroll Taxes @ 15%		293	
		2,244	$ 7.47/ton
Consumables			300T/D
Steel, bits		180	
Parts, repairs		75	
Explosives		495	
Electricity, fuel		372	
Crusher parts		90	
Miscellaneous		180	
		1,392	4.64/ton
Exploration Drilling			1.00/ton
Administration		U.S. $/wk.	
President		460	
Secretary		200	
Payroll Tax		150	
Assays		200	
Consulting		500	
Telephone		50	
Office Supplies		50	
Promotion		50	
Travel		400	
Insurance		150	
Miscellaneous		205	
		2,415	1.61/ton
			$14.72/ton

TABLE VI

CASH FLOW ANALYSES

ASSUMPTIONS

Scenario	Grade (oz/ton) Ag	Grade (oz/ton) Au	Price (US $/oz) Ag	Price (US $/oz) Au	Smelter Payment (%) Ag	Smelter Payment (%) Au	Net Metal Value/ton	Flux Value/ton	Net Product Value/ton
I	4.0	0.025	6.40	450.00	75	0	19.20	18.00	37.20
II	5.5	0.03	6.40	450.00	75	0	26.40	18.00	44.40
III	8.0	0.04	6.40	450.00	75	25	42.90	18.00	60.40

MONTHLY CASH FLOWS

Scenario	Tons Mined	Gross Revenue	Royalty Payment	Mining Costs	Truck Costs	Loan Payments	Total Costs	Contingency @ 10%	Gross Costs	Net Revenue
I	6600	$245,520	$12,870	$121,440	$73,260	$6,000	$213,570	$21,357	$234,927	$ 10,593
II	6600	293,040	15,840	121,440	73,260	$6,000	216,540	21,654	238,194	54,846
III	6600	401,940	22,646	121,440	73,260	$6,000	223,346	22,335	245,681	156,259

PRESENT VALUE

	year 1 to year 5					year 5 to year 10			Total year 1 to year 10	
Scenario	Annual Revenue	Annual Depreciation	Net Annual Revenue	Present Value	Add Equip Value (550,000)	Annual Depreciation	Net Ann.* Revenue	Present Value	Add Present** Value Year 1 to 5	Add Equip Value (550,000)
I	127,116	100,000	27,116	90,838	640,838	50,000	149,116	249,172	507,780	1,057,780
II	658,152	100,000	558,152	1,869,809	2,419,809	50,000	680,152	1,136,534	3,175,971	3,725,971
III	1,875,110	100,000	1,775,110	5,946,618	6,496,618	50,000	1,897,110	3,170,070	9,290,576	9,840,576

* The loan repayment cost is eliminated.
**Changed to reflect $50,000 depreciation instead of $80,000.

All figures in U.S. funds.

TABLE VII

EQUIPMENT - BOOK VALUE

Underground Mining Equipment (Jack Hammer & Misc.)	$ 28,687
Electric Air Compressors, Chicago Pneumatic 400 CFM and Atlas Copco 900 CFM	27,000
Nordberg Double Drum Hoise incl. 1600' 1 1/2" Cable	55,870
Tico Kinetic Crusher	25,000
Three Slushers, Electric and Air	13,250
Miscellaneous Small Equipment (Drills, Steel, Hand Tools)	45,000
Three Conveyors (Misc. Lengths)	15,000
Terex Front End Loader	13,000
John Deere JD310 Backhoe with Trailer	12,000
1955 Dodge Dump Truck	1,000
1000' Well and Pump Equipment	18,000
Surface Improvements, Water Lines, Roads, Electrical Services, etc., estimated	25,000
Vulcan Skip and Cage	8,500
Immco Crusher	4,000
Chicago Pneumatic Track Drill	7,500
Underground equipment (being purchased)	25,000
Scitec (MAP Assay Machine)	34,650
Bar Mac Crusher	55,000
Front End Loader	18,000
Triple Deck Screens	8,000
22" Allis Chalmers Hydrocone, 15" x 24" Rogers Jaw Crusher, 3' x 12' Rex Chain Belt & Feeder, Merrick Weightometer, Seco 4' x 12' Double Deck Screen	36,200
Loader and Mobile Home	25,072
Cable	3,300
Maddux Southwestern Scale (0.5 of portable scale)	2,934
Triple Deck Screen	8,000
Front End Loader	18,000
	$532,963

EQUIPMENT FOR SALE

Asking Price or Book Value

Complete 100 Ton/Day Flotation Mill (from Hel Roc)	$ 75,000
Underground Hauling Equipment - Eimco Loader Sein Brute Truck	20,000
Cedar Rapids Jr. Commander Tandem Crushing Equipment (Sold for $25,000)	43,000
	$138,000
Revised to	$120,000

TABLE VIII

CURRENT ASSETS & LIABILITIES

ACCOUNTS PAYABLE.	Amount Outstanding	CanaMin to Pay off	Balance Outstanding
J. Gammon	$4,500.00	$4,500.00	$0.00
Industrial Motor (starter for crusher)	$5,715.00	$5,715.00	$0.00
Joy Merz, Geologist	$1,000.00	$1,000.00	$0.00
Oak Creek Contracting (equip. & concrete for shaft)	$3,969.61	$3,969.61	$0.00
D.L. Maxwell, Engineer	$1,671.19	$1,671.19	$0.00
Rocheford Insurance Co. (leased equip. insurance)	$1,225.00	$1,225.00	$0.00
Barnett & Deyoe (assumed from Hel-Roc)	$2,381.72	$2,381.72	$0.00
Cactus Rec. Centers (office staff 1/1/87 to 6/1/87)	$1,559.94	$1,559.94	$0.00
Copper State Analytical (assays)	$1,431.00	$1,431.00	$0.00
Maddux & Sons, Inc. (shippers)	$23,922.18	$10,000.00	$13,922.18
Glenbar Enterprises (fuel)	$12,051.00	$5,000.00	$7,051.00
Advances: W.R. Becker	$14,725.00	$14,725.00	$0.00
Advances: Jim Hilkemeyer	$12,500.00	$12,500.00	$0.00
Maddux Southwestern Scale (0.5 of portable scale)	$2,934.25	$2,934.25	$0.00
Reditos	$10,000.00	$10,000.00	$0.00
I.R.S. (Ateah)	$12,940.00	$1,000.00	$11,940.00
State Comp (Ateah)	$1,651.00	$200.00	$1,451.00
TOTAL	$114,176.89	$79,812.71	$34,364.18

INSTALLMENT NOTES PAYABLE

	Amount Outstanding (Incl. Interest)	CanaMin to Pay off	Long Term Debt left Outstanding
First Interstate Bank (Cedar Rapids 400 cfm Compressor, Tico Crusher)	$95,763.00	$0.00	$95,763.00
Mel Baker (Misc. Equipment)	$3,206.00	$3,206.00	$0.00
Western States Machinery (Underground Equip.)	$14,000.00	$14,000.00	$0.00
B. S. & K., Inc. (Compressor)	$14,000.00	$14,000.00	$0.00
Arizona Commerce Leasing (Loader & Mobile Home)	$25,072.00	$0.00	$25,072.00
John J. Young, Trustee (Assumed from Hel-Roc)	$6,000.00	$6,000.00	$0.00
San Jose Investment (Cable)	$3,300.00	$3,300.00	$0.00
Sky Land Corporation (Hoist)	$75,225.00	$0.00	$75,225.00
Sky Land Corporation (Crushing & Misc. Equip.)	$42,175.00	$0.00	$42,175.00
Valley National Bank (Working Capital)	$7,810.00	$7,810.00	$0.00
First Interstate Bank (Working Capital)	$7,568.00	$7,568.00	$0.00
Arizona Bank (Working Capital)	$4,691.00	$4,691.00	$0.00
Western Savings (Working Capital)	$2,316.00	$2,316.00	$0.00
Underground equipment - To be purchased	$25,000.00	$25,000.00	$0.00
Scitec (MAP Assay Machine) - Balance outstanding	$24,900.00	$24,900.00	$0.00
Jim Young (Balance outstanding on Bar Mac Crusher)	$38,000.00	$38,000.00	$0.00
SUB - TOTAL	$389,026.00	$150,791.00	$238,235.00
Accounts Payable	$114,176.89	$79,812.71	$34,364.18
TOTAL	$503,202.89	$230,603.71	$272,599.18
CANAMIN RESOURCES' CASH ON HAND		$365,000.00	
WORKING CAPITAL		$134,396.29	

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11.0 CONCLUSIONS AND RECOMMENDATIONS

1. The Ash Peak Mine has epithermal, silver-bearing chalcedonic quartz veins. These parallel veins strike northwesterly; the multiple structure is reported over a distance of two miles (3.2 km).

2. Production over the last 80 years has been mainly from the Ash Peak Vein with small amounts from the Hanging Wall Vein. Three shafts have been sunk along the structure in the Ash Peak Vein. These include the Commerce Shaft, the Shamrock Shaft, and the Hardy Shaft over a distance of 4400 feet (1340 meters). Most of the production has been from the Shamrock Shaft and from the Commerce Shaft; very little production has come from the Hardy Shaft.

3. The main production was by Veta Mines (milled on the property) and by Inspiration Copper (direct shipping to smelter). These two stages of production amounted to 303,750 tons with an average grade of about 8.5 oz/ton Ag and 0.032 oz/ton Au. Subsequently Beaver Mesa Exploration and Phelps Dodge Corporation produced from the property above the old workings, both from the surface open cuts and from declines. This amounted to 97,201 tons with an average grade of about 4.2 oz/ton Ag and 0.02 oz/ton Au.

4. Arizona Flux Mines, Inc. acquired the lease on the property in 1986 and commenced limited production while rehabilitating the old workings. In 1987 Southern Gold Resources lent Arizona Flux Mines $150,000 to carry on the work and on April 1, 1988 an associated company, CanaMin Resources Ltd. agreed to acquire all the outstanding shares of Arizona Flux Mines, Inc. for 555,567 shares of CanaMin and other considerations.

5. There are no geological maps available for the underground workings and it is not known whether geological maps were made during any of the phases of operation. Assay plans are also lacking for most of the previous work except for some muck sample results by Goldfields Consolidated and assay data from the near surface work of Phelps Dodge. Thus the only information available on the original distribution of the ore are inferred from the old plans and sections of the stopes. The cut-off grade is also not known; however it is suspected that there will be some reserves grading in the order of 4 to 5 oz/ton Ag adjacent to the old workings.

6. There seems to be a transition from the higher grade portions (mined parts in the past into the lower grade (4 oz/ton Ag) produced in the later phases of the operations. This plunges about 10° northwest. Shallow surface drilling along the strike of the structures was done by Phelps Dodge; it would not have penetrated the postulated transition zone

to the underlying higher grade material. There may also be an underlying parallel surface at which the values in the vein decreasewith depth; however this is even less certain.

In addition, two westerly dipping faults, which seem to control the higher grade mineralization within the Hanging Wall Vein have been reported. There has been no mention of such structures for the Ash Peak Vein.

A contoured silver assay longitudinal section by Sage Associates shows that ore shoots within the Ash Peak Vein plunge steeply southeast.

7. Practically no exploration has been done at depth away from the Shamrock Shaft and the potential to the northwest is good, especially below the Hardy Shaft which was beginning to get into some ore grade material before operations ceased.

8. The mine is now in production while the workings are being rehabilitated. Rehabilitation to the 300-foot level and the establishment of the surface support facilities are complete.

Plans call for shipping a silver-bearing flux to the local copper smelters and the demand for such flux appears to be greater than that which can be supplied by the mine.

9. Estimated ore reserves include 16,000 tons proven, 108,000 tons probable and 170,000 possible. However the geological potential for more ore zones in the structure is very good.

10. Production costs have been estimated with data from various sources including those that are being established at the operation. A 25% contingency has been added to these costs and another contingency of 10% has been added to the complete operation.

In the calculations of present value, production of 300 tons per day is used and three scenarios of values have been tried. These include 4 oz/ton Ag, 5.5 oz/ton Ag, and 8 oz/ton Ag, all with corresponding gold values. A 15% discount rate and two production periods have been used, a five-year life and a ten-year life. The results of these are given in Table VI; however the mid or most probable grade value returns a present value from production of about $1.87 million for the five-year life or $3.17 million for the ten-year life. To these values must be added the book value of about $550,000 for capital equipment.

11. Silver bearing flux will be shipped to the local copper smelter where demand is sufficient for anticipated production. The rate of smelter return presently being used is based on shipments that are somewhat erratic in time, and in

sizing and grade control. Indications are that the prices will be greater with a more consistent size control and it is expected that this will be achieved with the use of the semiautogenous crusher and the triple screening.

12. Exploration, development and mining have carried on intermittently at the Ash Peak Mine for more than 70 years and practically no data is available on geology. In most precious metal quartz veins, the veins thicken and thin and the good ore occurs in zones or shoots with intervening large areas of quartz with relatively low values. It is important to outline the distribution of the grade within the quartz veins in order to plan for the future and to optimize profitability. At this mine it is important to know what controls the distribution of quartz within the faults and what controls the distribution of silver within the veins. Possible controls that may have some effect are the flat lying and changing sequence of volcanics, cross structures which may be important to the changes in silver content, changes with depth which may be related to old palaeosurfaces. These unknowns should be resolved so as to make exploration drilling efficient.

13. For such work it is necessary to have a full time geologist on the property as the manager will not have time to devote undivided attention to outlining the grade distribution. This geologist will need help from an assistant and also from a part time surveyor who can be hired locally. The geologist must be primarily concerned with mapping the geology and getting it compiled in useful form. He should not become merely a grade control guide for the miners. The geologist should also supervise the compilation of the assay plans and obtaining the assay results whether they be by the use of the MAP machine or by sampling and assaying.

14. One of the more difficult aspects of mapping is geological identification of rock types and one of the greatest helps in this identification will be a sawn surface. Thus a diamond rock saw is essential for this mapping. Initially and intermittently a small amount of petrographic studies and thin sections will be needed to help classify the rock types.

15. One of the keys to unravelling the geology of the area is an accurate stratigraphic column. This will have to be compiled from diamond drill data as the operation proceeds. Thus, underground drill holes whether they be placed in the hanging wall or footwall of the vein and especially those that are inclined at a more acute angle to the vein should proceed beyond the vein to get some stratigraphic information on the opposite side. A conscientious effort to optimize the stratigraphic information from each drill hole will eventually lead to a good stratigraphic column.

16. The limited assay data on hand, namely the Phelps Dodge data from the upper parts of the vein, indicates that grades are very erratic along veins and that areas of relatively low grade material can have occasional high grade values and that areas of generally good grade material can have numerous spots of very low grade material. Thus one drill hole directly through a vein will not necessarily yield a reliable result. This can be overcome by drilling a fairly large number of holes, especially if the holes are short ones from underground workings. In exploration further out, however, it might be wise to drill steeply dipping holes at an acute angle to the vein so that, for each intersection, the core of the vein will be considerably greater than the true thickness of the vein. Whereas the resulting information would not give an exact indication of the width of the vein, it should be more efficient in locating the higher grade parts of the vein.

17. Plots of the cumulative net cash flow against variations in production cost, production rate, metal price, smelter payment, and grade, have been made by S. Quin. These graphs show that by far the greatest improvement in cash flow comes with improvement in grade. Other important factors are the metal price variations and the production costs. The production rate and the percentage of the gold included in the smelter payments have considerably less effect in the variation. Thus one can readily see that it is very important to get some exploration work done in the vicinity of the present workings but also in the areas away from the present workings and along strike.

J. R. Woodcock, P. Eng.

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Woodcock, J.R.	May 5 1988	Petrography at Ash Peak Mine
Various Authors	Mar. 24 1988	Arizona Flux Mine Share Exchange Agreement.
??	1941	Untitled and uncredited evaluation of the Ash Peak Mines.
??	1952	Uncredited and untitled letter addressed to Harold.
??	1981	Untitled and uncredited summary of Phelps Dodge production records.
??	1983	Untitled and uncredited summary of Phelps Dodge drill hole results.

* Except for the report by H. Lines, all reports are unpublished.

CERTIFICATE

June 10, 1988

I, John Richard Woodcock, with business address at 806 - 602 West Hastings Street, Vancouver, British Columbia, V6B 1P2 do hereby certify that:

1. I graduated from the University of British Columbia in 1951 with a Bachelor of Applied Science degree and from the California Institute of Technology in 1953 with a Master of Science degree.

2. I am a professional engineer registered with the association in the Province of British Columbia.

3. I have been engaged in mineral exploration in Canada, the United States and foreign countries since graduation and have been consulting in mineral exploration since 1969.

4. The report on the Ash Peak Mine is based on a review of the available data plus a two-day visit to the property.

5. I have no direct nor indirect interest in CanaMin Resources Ltd., Southern Gold Resources Ltd., or Arizona Flux Mines, Inc.

6. CanaMin Resources Ltd. is granted permission to use this report for its requirements at the Vancouver Stock Exchange and at the Superintendent of Brokers Office.

Respectfully submitted,

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J.R. WOODCOCK

J. R. Woodcock

JRW:me