CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the A. F. Budge Mining Ltd. Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

Date: 8 November 1988

To: Canamin Resources Ltd.
Suite 220, Quayside Plaza
145 Chadwick Court
North Vancouver, BC V7M 3K1

Attn: Mr. Stephen Quin, Director

Concerning: Brief Evaluation of Ash Peak Mine Operation
Including Typical Longhole Layouts

REDPATH ENGINEERING INC.

CONSULTING ENGINEERS AND PROJECT MANAGERS
A Member of the J. S. REDPATH GROUP OF COMPANIES

1855 West Baseline Road, Suite 240
Mesa, Arizona 85202
Telephone: 602-345-2611 Telefax: 602-345-2418 Telex: 669447

REDPATH ENGINEERING INC. CONSULTING ENGINEERS PROJECT MANAGERS

1855 WEST BASELINE ROAD, SUITE 240 MESA, ARIZONA 85202
Telephone: 602-345-2611 Telefax: 602-345-2418 Telex: 669447

8 November 1988

Canamin Resources Ltd.
Suite 220, Quayside Plaza
145 Chadwick Court
North Vancouver, BC V7M 3K1

Attention: Mr. Stephen Quin, Director

Dear Mr. Quin:

Attached please find a report on your mining operations at the Ash Peak Mine.

This report is brief but all that could be accomplished for the $2,500 authorized by you. It should be noted that the potential longhole stope which I have laid out is not the final design since no assay plan data was available.

The tentative stoping layouts illustrate the method, the data required and the accuracy necessary for successful longhole stoping of relatively narrow, vein type ore bodies.

I cannot emphasize enough that in order for longhole mining to succeed without undue waste dilution, it is paramount that assay data and excavation outlines be accurately plotted on minimum of 1" = 20' plans and sections. The elevation of backs and sills and the elevation of the assay data is vitally important.

In addition, the specific location of the ore-waste contact is important. This can be determined by regular testhole drilling on the levels and above and below the levels where parallel vein drifts are available for drilling. Each test hole collar must be plotted on an assay plan which indicates the bearing and dip of the hole, and of course the distance along the hole to the ore-waste intercept.

I have contacted Boart Canada in Sudbury and they are interested in a 20,000 foot contract. They would also do the drop raise from the 200 level down to the sill-out below. It is probably a one drill - one driller operation and I think that if they put the right driller on the job he could do the blasting also. They will make a site visit when you or I give them the go-ahead.

This report is brief but I trust it will be helpful in pursuing your plans. I would be glad to continue to assist you in getting your mine up to a regular, consistent production rate. My charge out rate is $107 per hour, however, for extensive layout work or other assignments, lower cost engineers and technicians will be used to the extent possible.

Sincerely,

Neil Pacey.

Neil A. Pacey
Senior Vice President

NAP:mlh

Enclosure

cc: Mr. Les Billingsley, Project Manager

TABLE OF CONTENTS

Section	Description	Page
1.	Introduction	1
2.	Current Operations	2
3.	Longhole Stoping	3
4.	Development Sequence - L. H. Stope 300-01 East	5
5.	Development on Ash Peak (FW) Vein West of Shaft	6
6.	Development of 500 Level West HW Stope	7
7.	Drawings	8

1. INTRODUCTION

In May 1988, Redpath submitted a proposal to Canamin concerning a mine production study for the Ash Peak Mine. On October 27, 1988 Mr. Quin called Mr. Goodell and requested a 3 day study and agreed that Neil Pacey would conduct same for the lump sum price of $2,500.00.

Mr. Pacey made a site visit on November 3, 1988 and subsequently prepared this report.

2. CURRENT OPERATIONS

The mine is currently producing a saleable product at varying rates from mine development and some form of shrinkage stoping, gopher holes, etc.

The mine operators feel that the Ash Peak or FW vein above the 300 Level on the east is regular enough for longhole stoping. The writer has not seen any assay plans and is somewhat concerned since there are no testholes between levels to confirm this theory. However, where open stopes can be viewed, the ore-waste contact appears very regular.

The operators have begun developing a longhole stope on the FW vein east of the shaft.

3. LONGHOLE STOPING

The following is based on a 3 hour underground visit and extensive previous experience in longhole stoping, but without the benefit of assay plans or adequate mine survey data.

3.1 Stopes appear to be reasonably regular, 100 to 150 feet in length by 12 to 30 feet wide (no assay plan data available to confirm this). The specific stope examined has a grade cut-off on FW and a sharp contact with andesite (diabase) on the HW. The andesite will slough if ore is broken right up to it, but the grade is no higher than average along the contact.

3.2 For longhole drilling leave 3 or 4 feet on HW to prevent dilution by andesite. The drill drift, even, should be driven (excavated) ± 1 foot from andesite and drilling ± 2½ feet from the wall of the drift.

3.3 Longhole mining methods require detailed survey of all levels and excavations, accurate plotting of assay values on levels and accurate layout of development slots and longholes.

3.4 Typical longholes are provided herein to illustrate method and emphasize the need for accurate ore and ore-waste definition.

3.5 Preliminary longhole stope evaluation for the 300-01 east FW stope is as follows:

Tonnage:

Width and extent not known below the 200 level.

- Assume 120 vertical feet (excluding 200 and 300 sublevel development) x 22 feet wide x 150 feet long and tonnage factor of 13 cubic feet/ton.
- 30,461 + 15% dilution = ± 35,000 tons.

L. H. Drill:

Uphole stot 13 x 65'	=	845'
Upholes 27 rows x 5 x 65'	=	8775'
Uphole fan (west end) 4 x 5 x 60'	=	1200'
Downhole slot 16 x 60'	=	960'
Downholes 27 x 5 x 60'	=	8100'
Total		19,880'

Tons/Foot:

$\frac{35,000}{19,880}$ = 1.76 ton/layout foot.

Powder Factor:

Ammonium Nitrate - probably ± 1.0 lbs/ton.

Note: Low t/ft. and high P.F. but probably necessary due to grizzly ahead of small skip.

Mine Production:

Assume 60 tons per day from mine development, ie. ± 1½ rounds in ore per day.

- Plan for total of 300 tpd ore on a 5 day week.
- Longhole production ~ 240 tpd

Stope Production:

One row upholes and downholes = ± 1,200 tons

- Blast one row per week.
- Require one shift per week to clean, load and blast one ring.
- longhole drilling per week = 1,200 ÷ 1.76 = 682 feet
- Should drill ± 150 to 200 feet per shift
- Drill shifts per week = 682 ÷ 175 = ± 4 shifts

Note: May combine drilling and blasting with one crew for both.

Stope Life:

35,000 ÷ 240 = 146 days

146 ÷ 5 = 30 weeks

Approximately 7 months

4. DEVELOPMENT SEQUENCE - L.H. STOPE 300-01 EAST

4.1 Develop sublevel above 300 Level

- raise up in shaft pillar
- subdrift east to extent of ore or to 150 feet from shaft pillar
- test hole walls
- slash to within 3 feet of waste on HW and to ore outline of FW
- survey level accurately and plot on 20 scale
- plot up assay plan of level

4.2 Slash to ore Outlines on 200 Level

- HW to 1 foot inside waste
- FW to 2-1/2 feet outside ore grade outline
- survey level accurately
- plot up assay plan of level

4.3 Drive slot raise on 200 Level -70 feet of 5'x5'

4.4 Do longhole layouts including drop raise

4.5 Move in longhole driller on 200 Level

4.6 Drive extraction drift and draw points on 300 Level - up to sub (requires design layout)

4.7 Drill and blast on continuous basis

- Objective: Provide 240 tpd for production.

5. DEVELOPMENT ON ASH PEAK (FW) VEIN WEST OF SHAFT

5.1 200 Level - drift on FW contact to west side of shaft

- connect with escape raise
- test hole to HW for definition

5.2 300 Level - test hole program from 300 Level west (HW Vein) drift

- Drill sludge holes (longholes with G.D. 93 and extension steel) up to determine lower limit of ore below 200 level. (FW ore zone).

5.3 100 Level - ramp down and subdrift on FW of west FW zone

- ramp down on layout (elevation TBD)
- drift on FW contact
- test hole for HW

5.4 Do stope planning from assay and test hole data

5.5 Develop stope according to layout with assay data control

6. DEVELOPMENT OF 500 LEVEL WEST HW STOPE

6.1 Test hole on 400 level to determine number of tons and grade of ore that can be extracted from FW of existing open stope.

6.2 Do longhole layout to determine mining plan.
- Must survey 400 Level and 500 Level.

6.3 Extend shaft to below 500 Level.

6.4 Muck waste out of stope from those draw points necessary to pull all ore to be blasted.

6.5 Drill longhole rings, recording ore-waste intercepts.

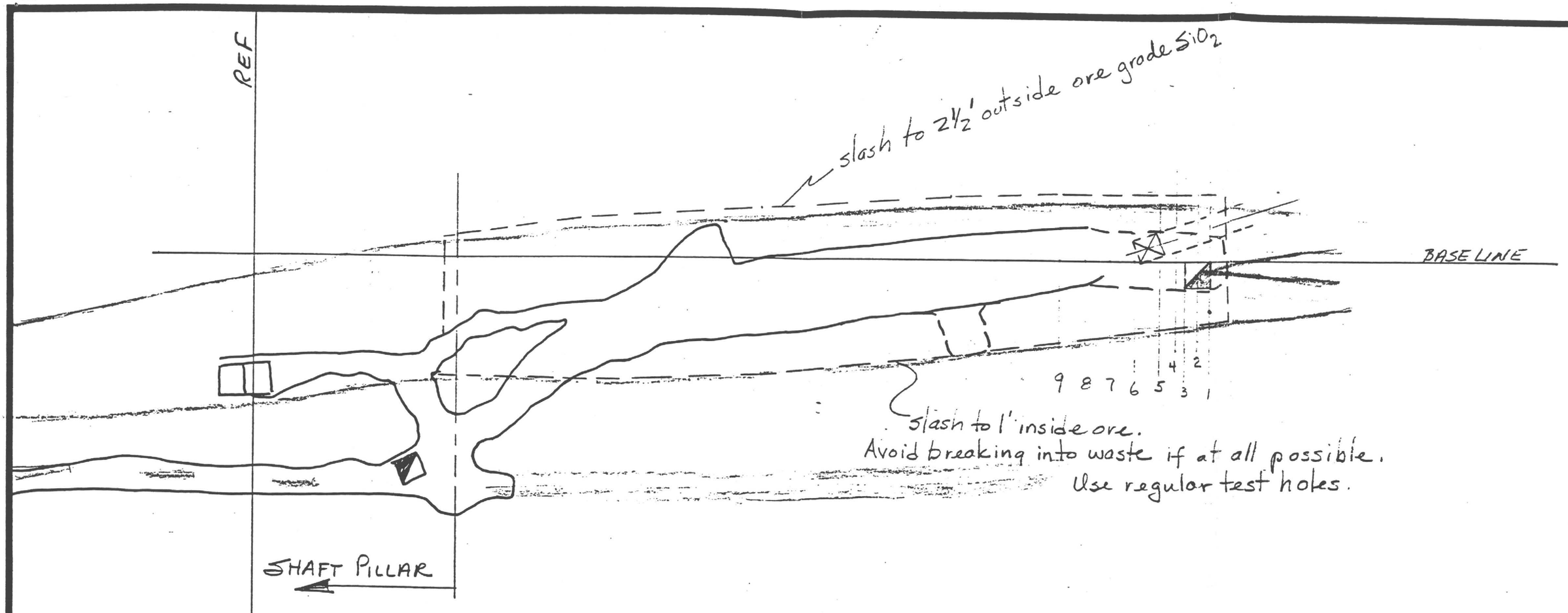
6.6 Blast according to a carefully planned blasting pattern.

6.7 Muck on 500 Level to cut off grade.

7. DRAWINGS

Name	Number
100 Level	239-000-01
200 Level	239-000-02
300 Level	239-000-03
Ore Intercept @ ±4333	239-000-04
L.H. Longitudinal Section	239-001-05
Typical L.H. Sections	239-001-06
Uphole Slot	239-001-07
Downhole Slot	239-001-08

106925



ASSUME: SILL @ 4320 EL.
ORE @ 4324 EL.

PLAN VIEW from BLOWN AFM 1"=40'

REDPATH ENGINEERING INC.
1745 South Alma School Road
Suite 275
Mesa, Arizona 85202
Telephone: 602-345-2611
Telex: 668447

DRAWN BY	DATE 1-78	CLIENT: CANAMINT RESOURCES LTD
CHECKED BY	DATE	
ENGR	DATE	TITLE: ASH PEAK MINE 200 LEVEL
PROJ ENGR	DATE	
APPROVED BY	DATE	
APPROVED BY	DATE	SCALE: 1"=20'
APPROVED BY	DATE	DRAWING NO: 239-000-02
APPROVED BY	DATE	REVISION

106825

85 LEVEL?

STOPE MINED & BACKFILLED

ORE @ 4312

4400 EL.

REF.

100 LEVEL

4390

4333

AP-12

200 LEVEL.

Set Up @ ORE ASSUMED AT 4324 EL.

12 11 10 9 8 7 6 5 4 3 2 1

4300 EL.

SLOT RAISE

4260 Est. back of Sub.

?

?

STOPE EAST #1 - 150' LONG.

300 LEVEL

4220

SHAFT PILLAR

REDPATH ENGINEERING INC.
1745 South Alma School Road
Suite 270
Mesa, Arizona 85202
Telephone: 602-345-2911
Telex: 668447

DRAWN

CANAMIN RESOURCES LTD

TITLE
ASH PEAK MINE
L.H. LONGITUDINAL SEC.

SCALE 1" = 20'

DRAWING NO 239-001-05

106825

4412 (True)

SLOT RAISE

?

guess

BASELINE

Longhole
Section 1

Stopped out.

SLOT RAISE

?

?

NOT FOR DRILLING.
SURVEYS & ORE OUTLINES
UNCONFIRMED

guess

BASELINE

Longhole
Section 6

?

?

guess

BASELINE

Longhole
Section 9

4412 EL.
(on 70° INCLINED PLANE)

NOTE: UPHOLES ARE DUMPED ahead at 70° - Swing angles must be calculated from INCLINED Plane Tables.

Set Up at 4324

4300 EL.

4260 - Est. back of sub.

REDPATH ENGINEERING INC.
1745 South Alma School Road
Suite 270
Mesa, Arizona 85202
Telephone: 602-345-2611
Telex: 669447

DRAWN BY	DATE	CLIENT	CANAMIN RESOURCES LTD
CHECKED BY	DATE		
APPROVED BY	DATE	TITLE	ASH PEAK MINE TYPICAL L.H. SECTIONS.
SCALE		DRAWING NO	239-001-06
1" = 20'			