6531

DRILLING REPORT

ON THE

EXPO GROUPS 2,4,5,6,7 and 8

NANAIMO MINING DIVISION

SEPTEMBER TO OCTOBER, 1977

LOCATED

24 to 34 kilometers

West and Southwest

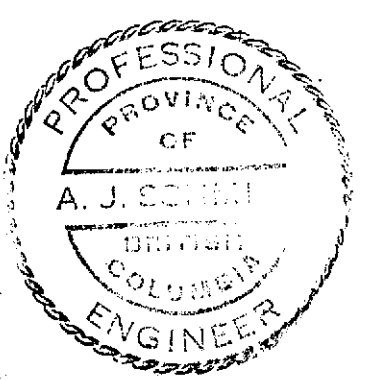
of Port Hardy, B.C.

50°127° NW

By

B. Bowen, Project Geologist

Utah Mines Ltd.



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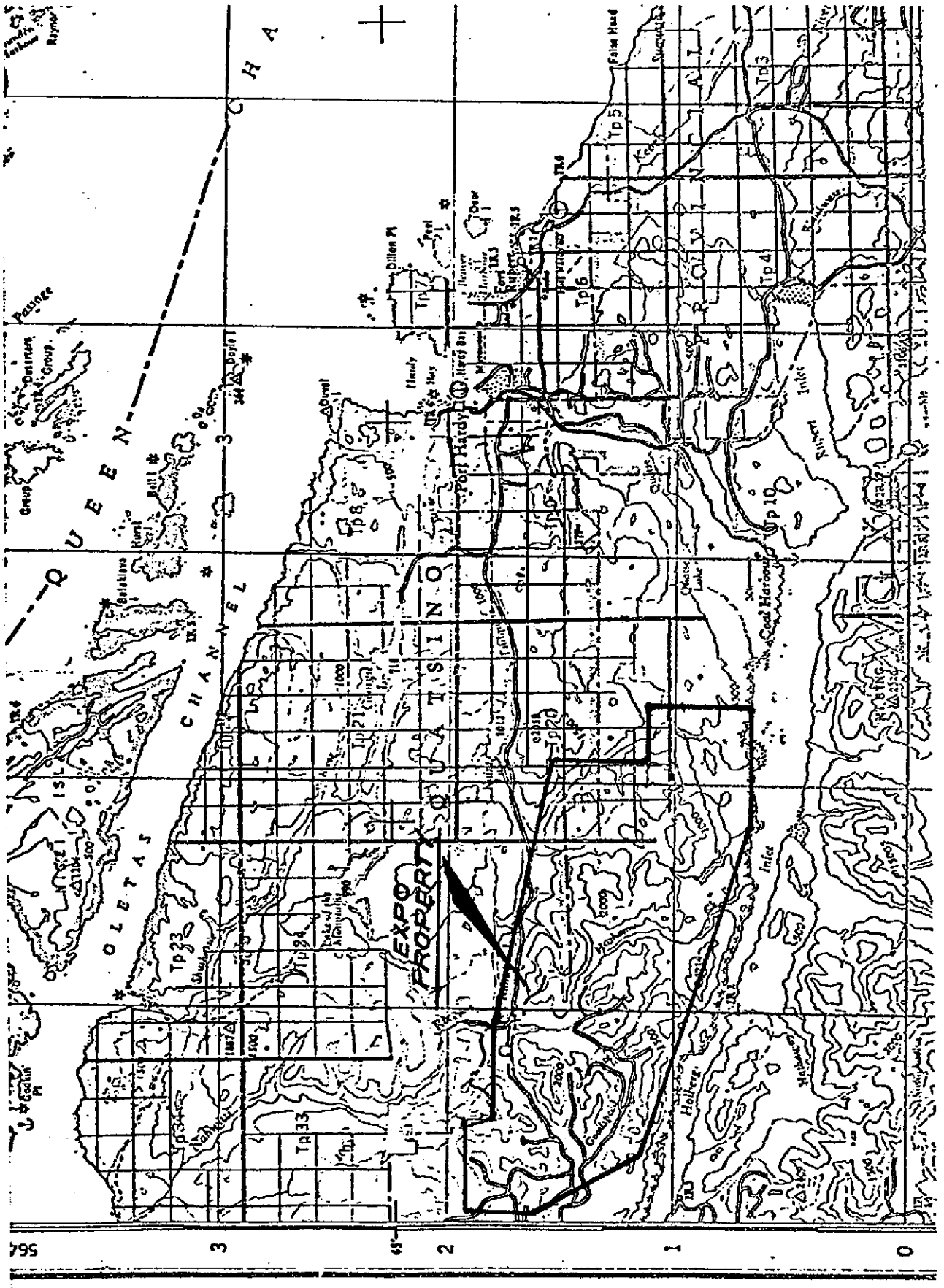
ILLUSTRATIONS (MAP POCKET)



INDEX MAP

EXPO CLAIMS

1: 250,000

DRILL REPORT ON THE
EXPO GROUPS 2,4,5,6,7 and 8

From 26th August to 16th October, 1977, diamond drilling was done on Expo Groups 2,4,5,6,7 and 8. The claims upon which drilling was specifically done include Expo Nos. 259, 261 and 283 and Hep Nos. 54, 59 and 100.

Geology and supervision by Utah Mines included the following personnel: B.Bowen and G.Norman, geologists, and B.Lawrence and G.Butler, field assistants.

Drilling was performed by D.W. Coates Enterprises Ltd. The drilling crew consisted of two 2-man drilling crews, with one man acting as a runner-foreman. Camp facilities and a cook were supplied by the drilling contractor. Accomodation for one of Utah's men was available at the drill camp; the remainder found accomodation at the Pioneer Inn in Port Hardy, B.C.

The Expo Groups affected by this report cover an area roughly 23 kilometers long by five kilometers wide trending west to northwest. Five holes were drilled in the Hushamu Lake area and one hole was drilled in the Expo No. 2 area about 7.5 kilometers west-northwest. Within the Hushamu Lake valley, local relief is considerable and topography rugged. Hills bordering the valley rise from approximately 300 meters at lake level to 600 meters, over a distance of 300 horizontal meters. In the Expo No. 2 area, local relief ranges from about 300 meters to 500 meters, and topography is somewhat less rugged. In both areas, slopes are heavily forested with mature stands of hemlock, spruce, cedar and balsam and undergrowth is heavy.

Access to the Hushamu drill area is via 11 kilometers of Rayonier Branch Road NE main, which leaves the Port Hardy-Holberg road approximately eight kilometers northeast of Holberg. The drill camp was located on Expo No. 219, and was serviced exclusively by road.

DIAMOND DRILLING PROGRAM

One Longyear "38" drill was used and was equipped to drill NQ core size. Each crew worked a ten hour shift, seven days per week. A Bell 206B helicopter was used for drill moves.

All holes were helicopter supported and four required the services of a professional faller to clear sites. The sites were kept as small as possible, but large enough to allow the helicopter to maneuvre with safety. Generally, sites measured approximately 30 meters by 45 meters. Sites were further prepared by construction of a platform on which the drill machine was placed and anchored.

Drilling, generally, encountered moderate to good ground conditions, with average core recovery approximately 85 percent. Poor ground conditions were encountered in the upper portion of EC-128, which penetrated a major fault zone from 46 feet (top of bedrock) to 279 feet.

Core was logged by a Utah geologist, then split in half, with half of the core sent for analyses via Pacific Western

Airlines air freight to Chemex Labs Ltd., Vancouver. The remaining half of the split core was placed in storage in the core storage and logging facility located on Expo No. 258. Every box of core was labelled with the diamond drill hole number and the footage contained in the box.

A summary of diamond drill holes drilled during the period 8th September to 14th October, 1977, is given below:

Hole Number	Coords. (feet) N	E	Approx. Elev.	Angle	Azimuth	Total Depth
EC-125	249,800	228,200	912'	-90		567'
EC-126	249,200	230,200	1584'	-90		426.5'
EC-127	245,000	236,650	1017'	-60	180	446'
EC-128	244,000	236,514	1063'	-60	180	734'
EC-129	242,640	239,650	837'	-60	180	262'
EC-130	257,400	212,200	1609'	-60	000	536'

2971.5

Data accompanying the drilling report consists of complete diamond drill logs for diamond drill holes EC-125 to EC-130 in Appendix E, and also diamond drill hole collar location plans (Plates 1-3). Statement of qualifications, statement of cost, contractors' invoices, and a copy of the drilling contract are given in Appendices A, B, C and D respectively.

Diamond drill core logs submitted in Appendix E were done by B. Bowen and G. Norman. Their respective signatures below are to cover all log sheets comprising Appendix E.

B. K. Bowen — G. Norman

B. Bowen, Project Geologist — G. Norman, Geologist

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. J. SCHMIDT

APPENDIX A

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

The field work for the report was done by the following persons whose qualifications are outlined below:

1. B. Bowen, Geologist for Utah Mines Ltd., Vancouver, British Columbia.
   Completed B.A.Sc. at the University of British Columbia in 1970; worked as a student during the summer field seasons with Cominco Ltd. in 1967 and 1968, and with Wayland S. Read, Consulting Geologist, Vancouver, British Columbia in 1969; employed as a field geologist Gibralter, May 1970 to October 1970 by Placer Development Ltd.; employed as a field geologist, Alice Springs, N.T., Australia, from March 1971 to December 1971 by Central Pacific Minerals, N.L.; employed as mine geologist, Tungsten, Northwest Territories, Canada from May 1972 to March, 1974 by Canada Tungsten Mining Corporation; employed by Utah Mines Ltd. from March 1974 to date as a geologist under the supervision of A.J. Schmidt, P.Eng. and M.J. Young, P.Eng.

2. G. Norman, Geologist, Utah Mines Ltd., Vancouver, British Columbia.
   Completed B.Sc. (Honors Geology) at the University of Alberta in 1973; employed by Imperial Oil during the 1972 field season as an assistant geologist; employed by Canadian Superior Ltd. from May 1973 to October 1973 as a field geologist; employed by Kaiser Resources Ltd. from November 1973 to December 1974 as a field geologist; employed by Utah Mines Ltd. from April 1975 to September 1975 and from January 1976 to date as a geologist under A.J. Schmidt, P.Eng.

APPENDIX B

STATEMENT OF COSTS

STATEMENT OF COSTS

SALARIES

B. Bowen	45 days @ $63.46/day	$ 2,855.70	
B. Lawrence	5 days @ $26.92/day	134.60	
G. Butler	41 days @ $26.92/day	1,103.72	
G. Norman	15 days @ $55.00/day	825.00	
	TOTAL	$ 4,919.02	$ 4,919.02

VEHICLE RENTAL

One 1977 3/4 Ton Pick-up 4x4			
	52 days @ $17.90/day	$ 930.80	$ 930.80

GENERATOR RENTAL

One Honda portable generator			
	3 days @ $5.00/day	$ 15.00	$ 15.00

RADIO RENTAL

One SSB-60 radio telephone			
	35 days @ $2.75/day	$ 96.25	$ 96.25

UTAH MOBILIZATION-DEMOBILIZATION

Total Cost		$ 401.60	$ 401.60

UTAH ACCOMODATION, PORT HARDY, B.C.

	49 man days @ $25.00/man day	$ 1,225.00	$ 1,225.00

MISCELLANEOUS HARDWARE

Total Cost		$ 132.75	$ 132.75

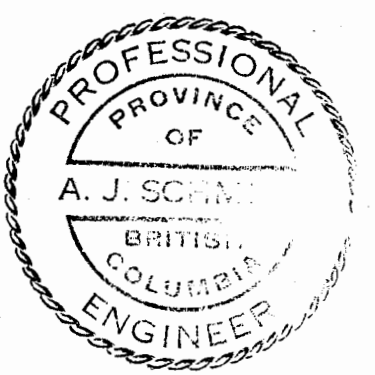
MAINTENANCE AND TIRES		
Total Cost	$ 66.73	$ 66.73
GAS		
Total Cost	$ 150.50	$ 150.50
DIAMOND DRILLING		
Total Cost	$71,349.85	$71,349.85
VANCOUVER ISLAND HELICOPTER		
Total Cost	$14,112.00	$14,112.00
OKANAGAN HELICOPTER		
Total Cost	$ 258.33	$ 258.33
CLEARING OF DIAMOND DRILL SITES		
Three sites @ $325/site	$ 975.00	$ 975.00
CLEARING OF ACCESS TRAIL		
Total Cost	$ 190.00	$ 190.00
REPORT COST		
Total Cost	$ 450.00	$ 450.00
GRAND TOTAL		$95,272.83

Average cost per foot for diamond drilling (used for cost distribution purposes):

equals $\frac{\text{Grand Total}}{\text{Total Footage}}$

equals $\frac{\$95,272.83}{2972 \text{ feet}}$

equals $32.05 per foot



A. Schmidt

A.J. Schmidt
District Geologist

Vancouver, B.C.
November 15, 1977

APPENDIX C

CONTRACTORS INVOICES

INVOICE

D.W. COATES ENTERPRISES LTD.

2560 A SIMPSON ROAD
RICHMOND, B.C.
V6X 2P9

INVOICE NO.: 1186
JOB NO.: 305
DATE: Sept.21/77

Utah Mines Ltd.
Suite 1600, 1050 W. Pender St.
Vancouver, B. C. V6E 3S7

017-29-9

RECEIVED
SEP 23 1977
UTAH MINES LTD.
EXPLORATION DEPT.

RE: Holber Area Drilling

PERIOD: September 9 - 15, 1977

Drilling Detail	✓	$ 8,895.20
Transportation	✓	4,408.25
Moving Setting Up & Tearing Down	✓	1,197.00
Travelling Time	✓	110.25
Camp	✓	55.00
		$14,665.70

OK/AM
Exp°

UTAH MINES LTD. -- EXPLORATION DEPT.					
DISTRIBUTION					
Location	Major	Minor	Act.	Exp.	Amount
0 0		A97 0	0440	0	14,665 70
0 0		0	0	0	
0 0		0	0	0	
0 0		0	0	0	
0 0		0	0	0	
Date Received			Invoice Amount		14,665 70
Ext. & Prices			Discount		
Approved by			Amount Payable		
			Check No.		

INVOICE

D.W. COATES ENTERPRISES LTD.

2560 A SIMPSON ROAD
RICHMOND, B.C.
V6X 2P9

INVOICE NO.: 1197
JOB NO.: 305
DATE: Oct. 6/77

Utah Mines Ltd.
Suite 1600 - 1050 W. Pender St.
Vancouver, B. C. V6E 2S7

RECEIVED
OCT 11 1977
UTAH MINES LTD.
EXPLORATION DEPT.

Holberg Area Drilling

PERIOD: September 16 - 30, 1977

Drilling Detail	$20,453.70
Overburden	2,123.20
Reaming Casing & Hole Stabilization	3,711.07
Drilling with Mud	3,242.50
Moving, Setting Up & Tearing Down	2,913.75
Water Supply	346.50
Travelling Time	883.75
Standby	304.00
Core Boxes	268.80
Board & Lodgings	379.50
	$34,626.77

UTAH MINES LTD. -- EXPLORATION DEPT.

DISTRIBUTION

Location	Major	Minor	Act.	Exp.	Amount
00		A97 0	0	40	34,283.27
00		0	0	0	
00		0	0	0	
00		0	0	0	
00		0	0	0	

Date Received	Invoice Amount	34,283.27
Ext. & Prices	Discount	
Approved by	Amount Payable	
	Check No.	

D.W. COATES ENTERPRISES LTD.

2560 A SIMPSON ROAD
RICHMOND, B.C.
V6X 2P9

INVOICE NO.: 1201
JOB NO.: 305
DATE: Oct. 18/77

EXPO 017-299-9

Utah Mines Ltd.
Suite 1600 - 1050 W. Pender St.
Vancouver, B. C. V6E 2S7

RE: Holberg Area Drilling

PERIOD: October 1 - 15, 1977

Drilling Detail	✓	$14,673.30
Transportation	✓	2,880.50
Moving, Setting Up & Tearing Down	✓	2,504.25
Water Supply	✓	189.00
Drilling with Mud	✓	947.08
Travelling Time	✓	460.25
Standby	✓	510.00
Board & Lodgings	✓	236.50
		$22,400.88

OK/ASS

UTAH MINES LTD. EXPLORATION DEPT.
EXPO DISTRIBUTION

Location	Major	Minor	Act.	Exp.	Amount
00		A97 0	0	0	22,400.88
00		0	0	0	
00		0	0	0	
00		0	0	0	
00		0	0	0	
Date Received		Invoice Amount			22,400.88
Ext. & Prices		Discount			
Approved by		Amount Payable			
		Check No.			

RECEIVED
OCT 20 1977
UTAH MINES LTD.
EXPLORATION DEPT.

VANCOUVER ISLAND HELICOPTERS LTD.

P.O. BOX 2095 SIDNEY, BRITISH COLUMBIA V8L 3S6 TELEPHONE 656-3987

59

DATE OCT. 31, 1977

In Account With

UTAH MINES LTD.

SUITE 1600 - 1050 WEST PENDER STREET

VANCOUVER, B.C.

REFERENCE INVOICES #9102, 9107, 9110, 9113, 9115, 9119, 9123.

FLYING SERVICE FOR MONTH OF SEPT. 11-27, 1977 19____

AS PER ATTACHED FLIGHT INVOICES.

HELICOPTER TYPE BELL 206B REG. No. C.F. LIL

BASE OF OPERATION PORT HARDY, B.C.

BALANCE FORWARD		
16.6 HOURS	@ $ 290.00 PER HR.	$
16.6 HOURS V.I.H. FUEL	@ $ 25.00 PER HR.	
____ HOURS	@ $ ____ PER HR.	
____ HOURS V.I.H. FUEL	@ $ ____ PER HR.	
MINIMUM CHARGES (IF APPLICABLE)		
CREW EXPENSES		
ADDITIONAL CHARGES ____		
TOTAL CHARGES		$ 5,229.00

ISLAND BUSINESS FORMS

TERMS: 30 DAYS NET

Interest at 1½% per month (18 per cent per annum) charged on overdue accounts.

This company complies with the CODE OF ETHICS of the Helicopter Association of America.

VANCOUVER ISLAND HELICOPTERS LTD.

P.O. BOX 2095 SIDNEY, BRITISH COLUMBIA V8L 3S6 TELEPHONE 656-3987

S10

DATE NOV. 21, 1977

In Account With

UTAH MINES LTD.

1600-1050 W. PENDER STREET

VANCOUVER, B.C.

RECEIVED
NOV 23 1977
UTAH MINES LTD.
EXPLORATION DEPT.

REFERENCE INVOICES #9128, 9135, 9137, 9140, 9142, 9145, 9148, 9149

FLYING SERVICE FOR MONTH OF SEPT 30, OCT 4-13, 1977 19____

AS PER ATTACHED FLIGHT INVOICES.

HELICOPTER TYPE BELL 206B REG. No. C.F. LIL

BASE OF OPERATION PORT HARDY, B.C.

BALANCE FORWARD		
28.2 HOURS	@ $ 290.00 PER HR.	$
28.2 HOURS V.I.H. FUEL	@ $ 25.00 PER HR.	
_____ HOURS	@ $_____ PER HR.	DK/188
_____ HOURS V.I.H. FUEL	@ $_____ PER HR.	EXP
MINIMUM CHARGES (IF APPLICABLE)		
CREW EXPENSES		
ADDITIONAL CHARGES _____		
TOTAL CHARGES		$ 8,883.00

ISLAND BUSINESS FORMS

TERMS: 30 DAYS NET

Interest at 1½% per month (18 per cent per annum) charged on overdue accounts.

This company complies with the CODE OF ETHICS of the Helicopter Association of America.

OKANAGAN HELICOPTERS LTD.
HEAD OFFICE:
4391 AGAR DRIVE, INTERNATIONAL AIRPORT SOUTH
VANCOUVER, B.C. V7B 1A5
TEL. (604) 278-5502 TELEX: 04-508883

049-70-0

ACCOUNT NUMBER: 8 5 0 2 7 206621

FLIGHT DATE	DAY	MONTH	YEAR	INVOICE DATE	TYPE OF FLYING
	29	08	77	SEP 21 1977	

BASE NO.	BASE	AIRCRAFT TYPE	CONTRACT NUMBER	FLIGHT LOCATION	FLIGHT LOCATION NUMBER
136	PORT McNEILL	206B	0136	NAHLOUTTI	058

UTAH MINES LTD
SUITE 1600 - 1050 W. PENDER
VANCOUVER B.C
V6E 2S7

TYPE OF CONTRACT - X			PILOT 1	PILOT 1 NO.
HOURLY	DAILY MINIMUM 1 TO 29 DAYS	30 DAYS OR MORE	BARRATT	6684
PID. CLASS NO.	AIRCRAFT CALL SIGN		PILOT 2	PILOT 2 NO.
03	FCJD			
ENG. NAME #1				
ENG. NAME #2				

PURCHASE ORDER NO.	NO. OF PASSENGERS	FREIGHT LBS.

OCT 4 1977
UTAH MINES LTD.
EXPLORATION DEPT.

RECEIVED
SEP 21 1977
UTAH MINES LTD.
VANCOUVER, B.C.

OPERATION	TAKE-OFF	LAND	FLYING TIME
Port Hardy to Holberg (Nahwitti) + return			5
" " " " " "			4

INTEREST OF

PRINT NAME OF PERSON AUTHORIZED TO SIGN

TO L.O.	I/SUB.	EXTRA CHARGES OR ADJUSTMENTS	AMOUNT	NON REV. HRS.
	1	substitute for 76B		

REV. HRS. 9

TARIFF ZONE CODE 111

	TOTAL HOURS		9
TARIFF			AMOUNT
260	–	234	00
OUR FUEL 21 GALS. @ 1 12		23	52
OUR FUEL GALS. @			
OUR FUEL GALS. @			
OUR OIL .9 HRS. @ 90			81
EXTRA CHARGES OR ADJUSTMENTS			
TOTAL $		258	33

THE CARRIAGE OF PASSENGERS, BAGGAGE AND CARGO BY OKANAGAN HELICOPTERS LTD. IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF LIABILITY SET FORTH IN ITS TARIFF. (E.G. LIABILITY FOR LOSS OR DAMAGE TO CARGO IS LIMITED TO 10 CENTS/LB. UNLESS OTHERWISE AGREED.) A COPY OF THE TARIFF IS ON FILE WITH THE CTA AND IS AVAILABLE FOR EXAMINATION AT THE OFFICE OF OKANAGAN HELICOPTERS LTD.

SIGNED FOR CHARTERER BY: B. L. Bruce

SIGNED FOR CARRIER BY: P. Barratt

INVOICE

New Vendor

Oct. 8/77

CLEARING TRAIL SLASH

Rate $20.00/hr. - To be paid for time-from. time. he leaves home in Holberg until he arrives home after job is complete.

SEND CHEQUE TO: Raimo Hakala

Address Box 156
Holberg

Phone 288-3286.

Total hours.

Travel Time: 55 min
Hours Worked: 8 hour 25 min
Total Time 9 hours 20 min
∴ 9 hrs. 30 min.

Total Payment Due 9.5 x $20.00/hr x. $190.00

Raimo Hakala

George Norman.

Pat Please send cheque out as soon as possible.
Thankyou.

OK/ASS

Expo.

November 4/77

GENERATOR RENTAL INVOICE

1 HONDA GENERATOR

3 DAYS @ $5.00 PER DAY = $15.00

SEND PAYMENT TO:

DAVE MORGAN
C/O COAL HARBOUR GENERAL STORE
COAL HARBOUR, B.C.

A. Schmidt

APPROVED

B. Bower

EXPO PROJECT

APPENDIX D

DIAMOND DRILLING CONTRACT

re: EXPO 924/12
Drilling Agreements.

AGREEMENT

THIS AGREEMENT, entered into this 26th day of August, 1977 by and between UTAH MINES LTD., a corporation, hereinafter referred to as "Owner", and

D. W. Coates Enterprises Ltd.

hereinafter referred to as "Contractor",

WITNESSETH:

WHEREAS, Owner desires to have Contractor carry out a diamond drilling program on certain lands controlled by Owner and located in British Columbia, specifically on the HEP-EXPO claim group on the north end of Vancouver Island, west of Port Hardy, B. C.

; and

WHEREAS, Contractor is desirous of performing such drilling program for Owner and is fully equipped and capable to perform such work;

NOW THEREFORE, in consideration of the covenants and conditions hereinafter set forth, Owner and Contractor mutually agree as follows:

1. WORK TO BE PERFORMED: Contractor agrees to perform fully and completely all diamond drilling work requested by Owner to be done by Contractor on the abovementioned lands, such performance by Contractor to be in strict conformance with the terms and provisions of this agreement and specifically in conformance with those provisions set forth on Schedule I attached hereto and by this reference incorporated herein.

All work to be performed by Contractor hereunder shall be done at such times, such locations and in such manner as requested by Owner, subject, however, to the specific provisions set forth in Schedule I hereto.

701007

It is understood that Owner may employ other contractors to perform work, including drilling, upon the subject property and Contractor shall conduct its operations so as to best cooperate with such other contractors, if so requested by Owner.

2. WORKMEN AND EQUIPMENT: Contractor agrees to furnish and maintain in first class operating condition the equipment, machinery, tools, and supplies specified in Schedule I hereto, or necessary to perform the work as set forth in said Schedule I hereto, and all labor, including superintendence, and all other things whatsoever required or convenient to properly perform the work specified in this agreement and within the time herein required. Owner may require Contractor to discharge from the performance of this contract any employee deemed to be in any way objectionable by Owner. No equipment furnished by Contractor hereunder for use in the performance of this agreement shall, without the prior consent of Owner, be removed from the site of the work until such time as the performance of this contract shall be completed by Contractor.

3. COMMENCEMENT AND PROGRESS OF WORK: Unless otherwise specified in Schedule I herein, Contractor shall, within seven days after being notified by Owner to start work, commence work in the field at such locations as Owner may designate and shall thereafter continue diligently in the performance of the work at such rate of progress and at such locations as may be required by Owner and shall fully complete said work to the satisfaction of Owner.

4. NO REPRESENTATIONS TO CONTRACTOR: It is understood that Contractor has satisfied itself as to the nature and location of the work, the character of the soil, rock, or other materials to be encountered, the character, kind and quantity of equipment needed for the prosecution of the work, and the conditions under which the work is to be performed and Owner has made no

representations to Contractor concerning the conditions to be encountered in the performance of the work. No verbal agreement or statement shall affect or modify any of the terms or provisions of this contract and no change, amendment, or modification of the terms or conditions of this contract shall be valid unless reduced to writing and signed by Owner and Contractor.

5. LIENS AND CLAIMS: Contractor shall discharge at once all liens, claims, stop notices, or attachments which may be filed or levied in connection with the work done by Contractor under this agreement and shall pay all taxes levied upon Contractor, its employees, equipment, property, or operations and Contractor shall hold Owner, Owner's property, and the lands upon which the work called for in this contract is being performed harmless therefrom. Contractor shall pay promptly and in full the claims of all persons, firms, or corporations performing labor upon or furnishing equipment, materials, supplies, or power used in the performance of or contributing to the work described in this agreement.

Upon completion of work under this agreement, Contractor, if required by Owner, shall deliver to the Owner a complete release of all claims for taxes, liens, claims, stop notices, or attachments arising out of this agreement or receipts in full in lieu thereof and if required in either case, an affidavit that, to Contractor's knowledge, such releases or receipts include all labor and material for which a lien, claim, stop notice, or attachment could be filed.

6. LIABILITY FOR INJURIES AND PROPERTY DAMAGE: Contractor shall save harmless Owner, Owner's property, and the lands upon which the work called for in this agreement is being performed from all liability for injury to or death of persons and for damage to property in any way arising out of Contractor's performance under this agreement.

7. PATENT RIGHTS: Contractor shall save harmless Owner, Owner's property, and the lands upon which the work called for in this agreement is being performed from any claim, damage or expense arising out of any action or proceeding for the infringement or alleged infringement of any patent arising out of Contractor's performance under this agreement.

8. PAYMENT: In consideration of the covenants of the Contractor herein set forth and the full and prompt performance of this agreement by Contractor, Owner agrees to pay to Contractor and Contractor agrees to receive and accept as full compensation for Contractor's performance of this agreement, and also for any loss or damage to Contractor arising out of this agreement or from action of the elements or from unforeseen difficulties or obstructions which may be encountered in the performance of the contract, and for all risks of every description to Contractor in connection with the work, those sums set forth in Schedule II attached hereto and by this reference incorporated herein.

An estimate will be made by Owner once each calendar month during the term of this agreement of the amount of work completed by Contractor during the preceding calendar month and Owner will, on or before the last day of each calendar month, pay to Contractor the amounts due under the terms of Schedule II hereto for such work completed by Contractor during said preceding month. The estimates and calculations made by Owner as to the amount of work done by Contractor hereunder shall be final and binding upon Contractor and shall conclusively establish the amount of work done by Contractor hereunder.

9. BOND: Contractor shall furnish a surety bond in form satisfactory to Owner, with a surety approved by Owner, in the amount of - waived - ($ -) guaranteeing the faithful performance of this agreement by Contractor and the payment by Contractor of the claims of all persons, firms or corporations performing labor upon or furnishing materials, equipment, supplies or power used in the performance

of this agreement.

No work shall be commenced under this contract until the required bond is produced and submitted to Owner. Should any surety upon the said bond become unacceptable to Owner for any reason at any time, Contractor will promptly furnish such additional surety, sureties, or security as Owner may request.

10. TERM OF CONTRACT: Unless the provisions of Schedule I shall specify a different length of time during which Contractor shall be bound to perform under the terms of this agreement, Contractor shall be obligated to perform for Owner under the provisions of this contract upon the lands hereinabove described, all drilling work requested by Owner to be performed by Contractor during a period of one (1) year from and after the date of this agreement, provided, however, that Owner may, at any time after the completion of the minimum amount of drilling work guaranteed to Contractor under the provisions set forth in Schedule I, terminate this agreement by giving notice of such termination to Contractor.

11. INSURANCE: Contractor shall obtain and carry during the period of this agreement at Contractor's sole cost the following insurance coverage:

Insurance Coverage	Minimum Limits	
Bodily Injury Liability including Contractual Liability and Completed Operations	Each person	$100,000.00
	Each occurrence	$300,000.00
Property Damage Liability including Contractual and Completed Operations	Each occurrence	$100,000.00
	Aggregate	$100,000.00
Automobile: (Including owned and non-owned automobiles)		
Bodily Injury	Each person	$100,000.00
	Each occurrence	$300,000.00
Property Damage	Each accident	$100,000.00

Workmen's Compensation and Employer's Liability	Full Statutory Compliance Each person Each accident	 $100,000.00 $300,000.00

No work under this contract shall be started until certificates of insurance conforming with the above minimum requirements are obtained and submitted to the Owner. Insurance companies must be satisfactory to Owner, and policies must provide that ten (10) days' written notice be given to Owner prior to cancellation or annulment.

12. COMPLIANCE WITH THE LAW: Contractor and its employees shall at all times observe and comply with all statutes, ordinances, and regulations of any nation, state, province, municipality or other governmental authority or agency having jurisdiction over the place where the work hereunder is being carried on.

13. PERMITS: Contractor shall obtain all permits and licences necessary for the performance of this contract and shall give all necessary notices and pay all fees required by governmental agencies or by other authorities in connection with the performance of this contract.

14. SUPERINTENDENT: The Contractor shall have a competent superintendent, satisfactory to Owner, on the work at all times with authority to act for Contractor. The superintendent shall not be changed except with the consent of Owner unless the superintendent ceases to be in the employ of the Contractor.

15. CONTRACTOR NOT AGENT OF OWNER: In the execution of the work to be performed hereunder, Contractor shall operate as an independent contractor and not as an agent or employee of Owner. Contractor shall hold Owner harmless from any liability which may arise by reason of any action or representation of Contractor, its agents, or employees.

16. NOTICE AND PLACE OF PAYMENT: All notices to be given to Owner by Contractor hereunder shall be delivered to

Owner's office at 1600 - 1050 West Pender Street, Vancouver, British Columbia. Any notice to be given by Owner to Contractor hereunder may be given by delivering such notice personally to Contractor's superintendent at the job site or, at Owner's option, such notice may be given by depositing said notice in any Canadian or United States post office in an envelope, postage prepaid, and addressed to Contractor at 2560A Simpson Road, Richmond, B. C. Such notice to Contractor shall be deemed to have been given either upon its delivery to Contractor's superintendent or by deposit in said post office as the case may be.

All moneys payable to Contractor hereunder shall be payable at Owner's office in Vancouver, B. C. or at Owner's option may be mailed to Contractor in the manner hereinabove prescribed for the giving of notice to Contractor.

17. ASSIGNMENT: Contractor will not, without the previous written consent of Owner, assign this agreement nor subcontract any part or portion of the work to be performed hereunder to any other party.

18. PROTECTION OF INFORMATION: No information whatsoever regarding the conduct, records, or results of any work performed by Contractor under this agreement shall be given or discussed by Contractor or any of Contractor's agents or employees in any manner to or with any party other than the Owner without the prior written consent of Owner.

19. SUCCESSORS: This agreement and each and every provision hereof shall inure to the benefit of and be binding upon the parties hereto and their successors and assigns.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the date hereinabove set forth.

UTAH MINES LTD.
OWNER
By
EXPLOR MANAGER

D. W. COATES ENTERPRISES LTD.
CONTRACTOR
By

SCHEDULE I

WORK PROVISIONS

1. The work is to consist of NQ core drilling on the Company's property near Holberg, B. C.. The Contractor will supply equipment and crews to operate one drilling rig, two 10 hour shifts per day on the drill rig, seven days a week.

Drilling will commence after camp is established, by Contractor, on or about September 7th, 1977.

2. Holes will be drilled with NQ wireline. In all instances, reasonable care shall be exercised to obtain the recovery of as high a percentage of core as the formation being drilled will reasonably permit. All such core shall be properly identified in correct order and placed in core boxes provided by Owner. Contractor shall furnish a log of each hole drilled, showing location and depth drilled and/or a daily record sheet with holes drilled and footage noted. Said record is to be signed by the driller and the company representative and will be used in computing payment for work done.

3. The location, depth and angle of each hole to be drilled by Contractor shall be specified by the Owner. Maximum depth of any hole shall be around 750 feet.

Notwithstanding any other provision of this agreement, Owner guarantees that a minimum of 2000 feet of drilling will be required of Contractor, under this agreement, but total footage may be extended beyond that amount by mutual consent.

4. The Owner shall check the angle and direction of each hole in order to assure that the hole is being started at the required angle and in the required direction. The Contractor assumes no responsibility for any deviation that may occur in a hole beyond the collar. The measurement of all holes shall be taken from the top of casing, or standpipe, as the case may be, which shall be kept as close to the original contour of the ground as circumstances will permit.

5. Should cavities or loose and caving materials, or other adverse conditions be encountered, so that in the opinion of the Owner and Contractor, further drilling in a hole is not practical, the hole may be abandoned, and the Contractor shall be paid at the rates specified in Schedule II attached hereto for the footage actually drilled, provided, however, that the Contractor shall not be paid when said adverse conditions are a direct result of negligence on the part of the Contractor. The Contractor, at the request of the Owner, will replace any driller not achieving satisfactory core recovery.

6. The Contractor shall provide necessary camp facilities such as dining tent, dry tent, pumps and generators. Contractor shall provide sleeping quarters for its crews, at his own expense.

7. The Contractor will provide the transportation necessary to move its equipment and crews on the property, with the exception of air transportation services which, if required, would be supplied by Owner.

8. The Owner shall provide, at its own expense, all rights of way that may be required to enable Contractor to move to and from, and to operate on, the drill sites specified by Owner. Contractor shall be permitted to fell and cut such timber as may be required in the course of the work hereunder

upon the property controlled by Owner, provided, however, that Contractor shall comply with all the terms of Owner's permits allowing such timber cutting. Owner shall save the Contractor harmless from any assessments for stumpage.

9. This agreement and any disputes arising hereunder shall be interpreted and determined in accordance with the laws of the province of British Columbia.

10. During the course of the work, the Contractor agrees at all times, to keep operations free from accumulation of waste material, rubbish and garbage, and upon completion of the work, shall remove all tools, scaffoldings, surplus materials and rubbish, and leave premises in a clean condition. The Contractor shall observe and comply with all applicable Federal and Provincial laws, regulations and orders relating to prevention of forest fires and sanitation.

SCHEDULE II

PAYMENT SCHEDULE

The Owner shall pay the Contractor in Canadian Funds for work completed according to the following schedule:

1. Surface Drilling

The price per foot for core drilling in bedrock, from the surface, shall be:

	Price/foot (NQ)
0 - 500 feet	$15.50 a foot
500 - 1000 feet	$16.10 a foot

2. Overburden Drilling

From 0 to 50 feet at $15.50 a foot; from 50 to 100 feet at $17.25 a foot; beyond 100 feet at Field Cost.

3. Field Cost Defined

Field Cost is defined for the purpose of this agreement as all direct labour, including supervision, at $15.75 per man hour, drill and tower rental at $12.50 per drill shift hour, pumps at $1.00 per hour, mud mixer (when applicable) at $0.90 per hour, pick-up truck (when applicable) at $6.00 per hour, 4 x 4 truck (when applicable) at $7.00 per hour, coil stove (when applicable) at $0.80 per hour, plus the cost of all down-the-hole tools and supplies lost or consumed on the Field Cost portion of the work, at job site cost plus 15%. Reaming casing shall be done at $0.70 per foot reamed to cover the cost of wear and tear on casing.

4. Casing, reaming, cementing and mud circulation operations, in overburden or in bedrock, if and when required shall be at Field Cost.

5. Pipe or Casing left in hole.

Any casing, casing shoe bits or pipe left in holes at Owner's request shall be paid for by Owner, at cost plus 15%.

6. Standby, dip testing or delay time, or other time during which the Contractor's crews are performing services for the Owner, not otherwise covered herein, shall be charged at:

Labour - (maximum 8 hours/shift) - $15.00 per man hou
Drill & Equipment (maximum 8 hours shift) - $ 8.00 per hour

7. Travel Time

Travel time between camp and drill site in excess of one half hour per man per shift, shall be for the Owner's account, at Field Cost Labour rates.

8. Water

The laying, maintaining and removing of waterlines would be performed on a Field Cost basis.

9. Any move of equipment and crews requiring air transportation will be at Field Cost. The Owner will supply a helicopter to aid in moving between holes, hauling supplies etc. at no cost to the contractor.

10. Mud and Additives

If ever required to help penetrate the overburden and/or aid in core recovery, would be supplied at cost on job site plus 10%. Time spent mixing mud and stabilizing the hole would be charged on a Field Cost basis.

11. Service Vehicles

Contractor will supply four wheel drive vehicles for service vehicles for its crews, at no cost to Owner except for travel time.

12. Camp

Contractor will provide board and room for Contractor's crew at no cost to Owner. Board will be supplied to Owner's personnel at the rate of $5.50 per meal. Fixing up and tearing down camp will be performed on a field cost basis. Owner will allow Contractor to use any existing tent frames.

13. Mobilization and Demobilization

For equipment and crews from Contractor's base of operations to truck discharge point, and from truck loading point return, a lump sum of $2,800.00. The movement of men, equipment and supplies from truck discharge point to first drill site and from last drill site to truck loading point shall be at Field Cost. No charge will be made for drills or pumps when moving between holes, mobbing or demobbing.

14. Core Boxes

Contractor will supply core boxes, if requested, at $4.20 per box, lids at $1.50 each.

15. Additional Drilling

The Contractor agrees that should the Owner request additional drilling, beyond the minimum 2000 feet, that such drilling, up to a total footage of 5000 feet, will be done at the same rates as detailed above in Schedule II.

16. Radio Communications

The Owner will provide adequate radio services.

HOLE NO. EC-125
COLLAR ELEV: 912'
GROUND ELEV.: 910'
COORDINATES: 249,800 N. 228,200 E.
INCLINATION: -90° BEARING: —
PROJECT: EXPO
DATE STARTED: Sept 11, 1977
DATE FINISHED: Sept 14, 1977
TOTAL DEPTH: 567'
PAGE NO: 1 OF 9
REF. TO CLAIM CORNER:
SCALE: 1" = 10'
LOGGED BY: BKB.

AVE CORE REC'Y / HOLE 88.9 %.

COMMENTS:

DESCRIPTIVE GEOLOGY

STICK-UP 0-2'

OVERBURDEN 2'-88'

ALTERED BONANZA VOLCANICS 88-132.5

Med. to dk. grn in colour, silicified (hornfels'd), v hd. & dense, texture obscured, except locally, poss. remnant tuff frags. obs'd. Chl-(clay) ass'd w/ carbonate veining. Also chl after remnant mafic frags. Carb. veing wk-mod. minor Hz veing. NW vlts and Hr. mod-Hr., locally well developed s/w. Also NM diss'd. Sulphides v. minor, Py + Tr. Cpy, as fract. coating and diss'd. Total sulphide <.5%.

3' Sh. broken core. fault.

1 x ½"

2 x ½" w/Ep + Tr Py

ass'd chl-(clay) w/c alt'n.

SECTION	ALTERATION: SILICIF.	ALTERATION: EPIDOTE	ALTERATION: CARB'N	ALTERATION: PROPYL'N	FRACTURING	MINERAL	GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
60													
70													
80									88			88	
90					Mod. Sh. broken S/W	NM - Minor Py - Trace Cpy		1.5	99	46	NWL	67601 100	48
100									104	78			
110								1.5	114	67		67602 110	71
120								1.5		86		67603 120	76

HOLE NO. EC-125 | PROJECT: | PAGE NO: 2 OF 9

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

COMMENTS: \ Zeol. vn.

AVE CORE REC'Y / HOLE

ALTERATION: SILICIFICATION | SERICITE | CLAY | CHL / EP. | FRACTURING | MINERAL | GEOLOGY

SECTION

DESCRIPTIVE GEOLOGY

SECTION	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
120	ALTERED BONANZA VOLCANICS - CONT'D.		121	86	NWW	120	
	Perv. sil'n continues, rock v. hd. blk-mod pale grn sericite after mafics, locally as ff. and patchy. Dk. grn. colour due to sil. diss'd Mt.	L.5	127	77		67601	84
130	½" 2×½" MH. HW contact obs'd @ 30° CA.					130	
	ALTERED INTRUSIVE 132.5 - 136.5			96		67605	97
	Texture obscure, appears granular, M/10-15% mafics (Bi?) alt'd to chl-ser. ½" H. sh. w/carb. ¼" M/carb. MH.	Tr.	137			140	
140	ALTERED BONANZA VOLCANICS 136.5 - 163			98		67606	96
	3" Chl'd sh. w/carb-ser. Throughout section on this page; 10-12 MH vn and ff. per ff. mainly @ 30-40°.	Tr.	147			150	
150	¼" MH cut by ½" Py-Ser (?) - pale grn. envelopes. 152-154 Chl'd sh. w/carb. 2-3% Py.			92		67607	76
	½" carb-zeol.	Tr.	157			160	
	157-161 Sh. sh-ing, chl'd and broken core. Fault.		161	38			
160	½" M/MH-(Ep)					67608	79
	ALTERED INTRUSIVE 163 - 330° (?)			84		170	
	Sl-ser ± feld. vnlt. mid above. Granularity M to distinct. Decrease in perv. sil'n. Ser dom in grn. Chl-(Ser) after mafics 20%. Sulphides remain low, L.5%, diss'd and assoc'd w/ MH vn and ff. Sh. MH diss'd 10-15%. MH vning persists 6- to 1/ff., also locally Stw ff.	L.5	169				
170	½" MH cut by Py-Ser (?) ff. Carb vning ⅛-1" ¾ Carb w/1" Chl envel.	L.5	177	80		67609	83
				90		180	

HOLE NO. EC-125 | PROJECT: | PAGE NO: 3 OF 9

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: CHL/EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
180								DESCRIPTIVE GEOLOGY						180	
								ALTERED INTRUSIVE CONT'D.						67610	
												90			80
										1.5	187			190	
190														67611	
								4" w/Ep-MM-(Py-Gp) Minor Qtz veins				58			70
										1.5	197			200	
200								Past 197, Sil'd. again. Sel. remains Sil. 197-200 Mod sh-veg. Irreg carb-qtz veins. Sl. Chl'd.						67612	
								w/MM Also past 197, increase in Qtz. veining. to Wk-Mod.				99			96
										1.5	207			210	
210								3/8" w/Py-MM-Ep.						67613	
												88			89
										1.5	217			220	
220								½" w/MM-Ep.						67614	
												90			89
								½" Py w/Ep.		1.5	227			230	
230														67615	
					Sl. S/H.	Trace MM.		Past 230, intense MM s/w as Vn & H. Tr. Gp v.f. gr'd diss'd. Carb-Qtz vning 30-35° CA.					87			85
								½" Qtz cut by ⅛" Py-Ep. Also MM-Chl w/Ap=.		1.5	237			240	
240												80			

HOLE NO. EC-125 | PROJECT: | PAGE NO: 4 OF 9

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: TR/LIA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: CHL/EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
								DESCRIPTIVE GEOLOGY							
240								ALTERED INTRUSIVE - CONT'D.						240	
								1' fg. w/ bx'd w/ chl-Py.						67615	
								Minor Cpy v.fg'd diss'd.		1.5	247	80		250	83
250								1/8" w/ AH - (Cpy)						67617	
								1/2" w/ Py.							
								3" bx'd carb vn.				90			
								251-259. Mod. sh-ing w/ local bx'g. Carb + Py vning.		1.5	257			260	87
260								1/2" w/ MH (Ep)						67618	
								Sh. MH s/w continues throughout.							
										1.3	267	79		270	84
270								1" aggregate Py.						67619	
								1/8" Py in Py-Cpy-MH and flesh to orange sericite (2° kspar?)							
								1/2" w/ MH - Py - Ep.							
								1/2" w/ MH - Py - Ep ± (TR Cpy)				97			
								276-282 Mod sh-ing & bx'g throughout.		1.5	277			280	94
								Irreg. carb. veining in sheared zone.						67620	
280															
								Past sh. zone, sil'd in part v.fg (MH), but mostly pervasive.				88			
										Tr.	287			290	89
								1/8" w/ MH + Kspar envd.						67621	
290															
								w/ Py - (Cpy)				92			
										Tr.	297				97
												75		300	
300								1" Py - MH - Chl cut by 1/8" Py - Chl MH.							

NQ/HC

HOLE NO. EC-125 | PROJECT: | PAGE NO: 5 OF 9

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BLB.

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CHLORITE	ALTERATION: EPIDOTE	FRACTURING	MINERAL	GEOLOGY	COMMENTS: / DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
300								AVE CORE REC'Y / HOLE					300	
								300-313 Lt. stg-ing w/ perv. chl. and carb vlt.					67622	
								ALTERED INTRUSIVE - CONT'D.	1.5	307	75		310	77
310								2" w/ kspar - Ep - Mt.					67623	
									Tr.	317	83		320	84
								3/4" Mt.					67624	
320								320-330. Grad'l decrease in perv. silica, increase in sericite, texture vague, but locally lapilli frags (?) relicd. (?) altered Bonanza volcanics. Also increase in zeol. vning mod. stk., decrease in Mt. vning.					330	85
								2" w/ Ep-Mt and calc. Ep.	1.5	327	86		67625	
								½" zeol. w/ Py.					340	87
330								½" w/ Mt-Ep.						
								2" Bx'd w/ Lt. chl.	Tr.	337	84		67626	
								Minor fault.					350	96
340														
									Tr.	347	95		67627	
													360	96
350									Tr.	357	97			
								355-57 Ft. white zeol. vning @ 50° CA.			95			
360														

NAHILL

HOLE NO. EC-125 | PROJECT: | PAGE NO: 6 OF 9

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB

ALTERATION: SILICA | SERICITE | CLAY | CHL/EP. | FRACTURING | MINERAL | GEOLOGY

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

ALTERED BONANZA VOLCS (?) - CONT'D.

w/MM - Py.

Heavy MM intensities in bx. frags.

½" MM-Chl.

½" felsic dikelet.

2"½" w/MM.

375.5 - 376.5 str. silica + chl'e Faint. Ass'd MM + Py½ vning. MM s/w persists, but not as strong.

Hybridized sections above and below dike.

375.5 - 378.5

½" Py.

QUARTZ FELDSPAR PORPHYRY - MONZONITE.

1½ eyes noted. Mod zeol vning. Minor qtz vning. Matrix chl'd. Fsparis wk alg-ser. Py diss'd 2%.

ALTERED BONANZA VOLCS 378.5 - 436

> White zeol. vhs. @ 50°.

½" w/MM.

Py as ff.

376.5 - 387. Py½ vning w/ MM - (Py) mod - str. @ 20-30° ca. and irregular. Ass'd w/ hybridized. intr. intermixed with chl'd volc. fx. Also intsg Py vning. Past 387, MM ff. s/w prominent again.

Silica alt'n mainly as vhs, v. little pervasive up to 400. Past 400, perv. sil'n increases, but vhs remain mod. Hybridized sections occur down to REP contact @ 436.

415-417 2' str'd w/ minor chl. gouge py'd.

SECTION	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
360				NQWL	360	
	Tr.	367	95		67628	94
370					370	
	Tr.	377	92		67629	94
380					380	
	.5	387	99		67630	97
390					390	
	1.5	397	91		67631	92
400					400	
	1.5	407	94		67632	93
410					410	
	1.5	417	92		67633	92
420			92		420	

HOLE NO. EC-125 | PROJECT: | PAGE NO: 7 OF 9

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: CHL/EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
420								AVE CORE REC'Y / HOLE	ALTERED BONANZA VOLCANICS - cont'd.					420	
								½" w/ pink (hd.) min. flooding on w/e	Section down to 436 is hybridized as BV.	.5	427	92		67634	93
430								½"	? pos. kspar or zeol.					430	
								2" zone intg. Sil. vning w/ kspar Contact @ 45°	hd pink mineral.			95		67635	96
									QUARTZ FELDSPAR PORPHYRY (MONZ.) 436-537	1.5	437			440	
440								½" w/ Ep.	Lt. grey-wh gm. porphyritic text. clear. Mode: rounded quartz phenos, opaque, 10-20%, 4 mm; Stubby subhedral kspar phenos, 2-4 mm, 40-50%, mafics (Hbld + Bi) 10-15% remainder aphanitic gm. Minor Py. Mafics chl'd, lac. gm. w/ perv. chl., but o/w, rel. fresh. Text. weak - mod generally regular 40-70° CA. White zeol vns common, minor Qtz, calc. locally, perv. Sil. ass'd w/ pink zeol after kspar. Much of py located in mafic sites.	1.5	447	98	NQ WL	N/S	99
450								½" w/ Chl-Ep.		1.5	457	100		N/S	100
460										1.5	467	99		N/S	98
470								6" Bx'd + Sil-Chl. gouge. 2" white zeol.	Minor Py-Cpy in broken Qtz in FW. of fault.	1.5	477	95		67636	96
480									476.5-478.5 Mod bx'd + gouge. Minor fault. Sil. Text. intg + 1% disst'd Py adj w/e.			98		480	

Wk. Mod, intg @ 40-75°

Minor Py - Trace Cpy

HOLE NO. EC-125 | PROJECT: | PAGE NO: 8 OF 9

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL/EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
480									QUARTZ FELDSPAR PORPHYRY - CONT'D						480	
								1" bx'd.	White vn material wk-mod. eff., mostly carb, but post. some zeol.		∠.5	487	98		485	98
490								1" w/Ep-carb.			∠.5	497	100		490	99
500								1"			∠.5	507	96		500	97
510								1" bx'd.	Irreg aplitic veining throughout.		∠.5	517	98		510	97
520											∠.5	527	94		520	92
530								1' str. bx'd + chl. gouge.	Fault.		∠.5	537	97		530	99
540									After fault, propylitic alt'n make increase w/ overall colour of rock med-dk. grn due to perv. chl. in grn. Also str. epidotization of fspars. Many fspars pink (secondary silica?)				94		540	

HOLE NO. EC-125 | PROJECT: | PAGE NO: 9 OF 9

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL/EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
540									QUARTZ FELDSPAR PORPHYRY (MONZ).						540	
					Str. irreg	Py		Str. irreg pink sed. veining over 1'.			1.5	547	94	NQWL	N/S	94
550								1" calc.							550	
								6" Str. chl. Str.	Minor fault.							
								6" brx'd + broken core.	Minor fault.		1.5	557	93		N/S	93
560															560	
								- vuggy carb along Str.			1.5	567	93		63539 567	93
570									E.O.H. @ 567'							

HOLE NO. EC-126 | PROJECT: Expo | PAGE NO: 1 OF 8

COLLAR ELEV: 1583.5 | GROUND ELEV.: 1580' | DATE STARTED: SEPT 16/1977 | REF. TO CLAIM CORNER:

COORDINATES: 240, 200 N. 230 200 E. | DATE FINISHED: SEPT 17, 1977 | SCALE: 1" = 10'

INCLINATION: - 90° | BEARING: — | TOTAL DEPTH: 426.5' | LOGGED BY: BKB.

AVE CORE REC'Y / HOLE 84.1 %

COMMENTS:

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: UNALTERED	FRACTURING	MINERAL	GEOLOGY	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	SAMPLE #	% REC'Y.
0								STICK-UP 0-4'							
								OVERBURDEN 4'-20'							
20								TRI-CONE 20-25'					20		
								No core recovered.		25			25		1
								BONANZA VOLCANICS 25'-329.5					30	67640	57
								Med. dk. grey, poly. aph'd vol tx (?). Primary texture obliterated. Mainly pervasive Mt-(Ser-Chl) w/ str. Mt vning and ff., and also Mt aggregate, blotchy, w/chlorite, up to 1-2 cm across. Minor Mt and zeol. vning.	1		57				
								Blotches Mt-Chl.		34					
								2 x 3/8" w/ Py-Chl.	A/2		84		40	67641	73
								Py ff.							
								1" w/ Py-Chl.							
								2' str. bx'd and Py-Chl. gouge. Fault.		41.5					
								Oxidized ff's down to 45.5	A						
50								½" w/ Py-Cpy			50		50	67642	65
								50-54 Str. bx'd and Py-Chl. gouge. Fault.		53.5					
								½"	2½		100		60	67643	83
60								TT No. 52 diss'd.		58	79				

Stong, irregular — Mt — Py

HOLE NO. EC-126 | PROJECT: | PAGE NO: 2 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

ALTERATION: SILICA | SERICITE | CLAY | CHL-EPD. | FRACTURING | MINERAL | GEOLOGY

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

BONANZA VOLCANICS - CONT'D

60-80: Grad'l change from above to less intensely fractured, more massive textured rock. Perv. sil. decrease to nil, chl more perv., lesser sericite. Decrease MS veining, decrease total sulphides. Py + Cpy diss'd; Py as ff. Minor Qtz veining.

74-77 Blotchy Py to 1cm.

Past 90, slight increase in narrow Qtz vnlts, ¼", wk-mod. Also much diss'd MS, locally > 10%. Py-(Cpy) as dty ff. Also MS dty ff.

Locally, fine diss'd Cpy abundant, but generally spotty.

104.5-107. Mod Sil. & 3° CA. Minor gouge.

Fine MoS2 flakes.

3/8" white Zeol.

NAPIA

SECTION	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	SAMPLE #	% REC'Y.
60		62	79		60		
	2					67644	75
70		67	68		70		
	4	77	50			67645	51
80					80		
	2½	85	52			67646	69
90					90		
	2	96	85			67647	85
100					100		
	2½	105.5	94			67648	91
110					110		
	2½	116	87			67649	91
120			98		120		

HOLE NO. EC-126 | PROJECT: | PAGE NO: 3 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: RWB

ALTERATION: SILICIFICATION | SERICITIZATION | CLAY | CHL - EP.

FRACTURING | MINERAL | GEOLOGY

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

SECTION	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
120				NQWL	120	
			98		67650	97
130	2½	126			130	
			95		67651	79
140	2½	136			140	
			54		67652	65
150	2½	147			150	
			92		67653	91
160	1	157			160	
			89		67654	88
170	1	167			170	
			84		67655	86
180	1½	177			180	
			92			

FRACTURING: Mod - Str, 1"-3", plus Subsp 0-30°

MINERAL: Mt - Py - Gyp - Tr Mal

BONANZA VOLCANICS - CONT'D:

121-131' ½-1" bull Qtz vn, parallel CA, with gouge along contacts. Chl-clay alt'n of W/R.

@ 126 - Remnant tuffaceous texture noted.

Past 135, rock v. hd, sil'd, sim. to section from 25-60, except Mt fr. not as intense. Narrow Qtz vns as past 80'. Bx still signif Mt diss'd 5-10%.

@ 136 - Remnant lapilli texture noted.

2° 2" strongly broken Core. — Minor fault.

2° 8" bx'd + sh. broken core. — @ 150 Flesh col'd envel. on white zeol. vn. Kspar?

150 - 158 Mod. sh-ing w/ associated white zeol. veining @ 0-20° CA.

w/ pink Kspar (?) envel. — pink mineral harder than knife.

Past 170, zeol. fr. and vns common, Qtz. vns minor w/o same alt'n assemblage. (Qtz - Ser - Mt)

HOLE NO. EC-126 | PROJECT: | PAGE NO: 4 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BLB.

ALTERATION: SILICA | SERICITE | CLAY | CHL-EP. | FRACTURING | MINERAL | GEOLOGY

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

ALTERED BONANZA VOLCANICS - CONT'D.

1/2" w/ Chl.

Str. zeol. vning, irregular, ass'd w/ Sh-ing.

4" Qtz vn, w/ pale grn Ser - Chl - Py.

1" w/ Ep.

1/2"

1/4" w/ Py - MM - Grey.

1/4" Qtz w/ pale grn Ser - Py - (Grey)

187 - 197 Mod string of Bx'd as fault is approached @ 197'. Decrease perv sil'n, increase chlorite, sericite and zeol. vning. Also Qtz vning locally.

197 - 208 Strong Bx'd and broken core. Str. chl - MM w/ subrdnl Py cubes. 15° CA. FAULT.

Includes broken Qtz vn material.

215 - 222 Strong carb - zeol vning 15 - 30° CA, ass'd w/ grad'l increase of chl. fwds. fault zone below.

222 - 237 STRONG FAULT ZONE: Strong pervasive Chl w/ heavy wavy and crenulated carb - (zeol) vning. Shear crush zones up to 6".

Fracturing: Mod. — Str. @ 0 - 180 — Intense 20 - 30

Mineral: MM - Py - Chl — Tr. MoS2

Geology: TMAN

% Sulphides	Drilling Interval	% Core Recovered	Core Size	Sample Interval	% Rec'y. Samp. Int.
	182	92		180	
1 1/2				67656	90
		90		190	
1 1/2	197			67657	77
		46		200	
	203			67658	76
1 1/2				210	
		89		67659	86
	213.5			220	
2					
		85		67660	82
	224			230	
1 1/2		82			
	229.5			67661	74
		67		240	
1 1/2	237				
		90			

HOLE NO. EC-126 | PROJECT: | PAGE NO: 5 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE-CLAY	ALTERATION: CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
240								ALTERED BONANZA VOLCANICS - CONT'D.						240	
										L1	247	90		67662	86
250														250	
											254	76		67663	86
								253-268 Str. sh. or shatter zone. Much evidence of dislocation, broken Mt, carb, 2ad and Qtz vlts. Slickensides common. V. str. chl-Mt, poss some clay alt'n locally. Total sulphides decrease, Cpy minor. Carb vning dominant, crenulated. Ep ass'd w/ chl-Mt.		L1		93		260	
260								locally, massive Mt							
								½"-1" w/Ep.			264			67664	91
										L1		90			
270											271			270	
								2" w/Ep-Mt.	273-278 Sh. or shatter zone as per 253-268.						
								Irregular mass Mt w/Ep.	Intervening sections between shear zones as per 25-60, i.e. Qtz-Ser-Mt alt'n assemblage w/ass'd diss'd Cpy.	L1		74		67665	80
280														280	
									284.5-287.5 As per 253-268.		284				
										1		88		67666	82
290								4" Qtz-Ep w/ minor Py-Cpy. -Str. 2ad vning.						290	
								2×½" w/Ep-Mt-Cpy-Py.	294-300 Str. fractured and broken core, but not chloritic assemblage.	L1	294	52		67667	66
300														300	

NPWL

HOLE NO. EC-126 | PROJECT: | PAGE NO: 6 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: SILICIF.	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
300								½" w/Ep.	ALTERED BONANZA VOLCANICS - CONT'D.					300	
								1" zeol. w/ heavy MH.	303-304.5 Fault. Str. Bx'd + chl. gouge. Str zeol-carb.	1½	304.5	52		67668	73
310					Str to intense.			Chl. sh 1'	Post 305. Increase in Bte vning as intrusive contact is approached. MH-Ep-Py-Cpy ass'd.					310	
								½" w/ Ep-MH-Py				90			
								½" w/ MH-(Py-Cpy)			314.5			67669	91
								3×½"		L1				320	
320												91			
								Zeol. vning ½"-1"			325			67670	91
								Sharp contact @ 15°.		2				330	
330									FELDSPAR PORPHYRY 329.5 - 426.5			91			
								332-334 Sh-ing + minor gouge. Minor fault.	Med. greyish grn in colour, med. to c. gr'd, porphyritic in texture. Matr: 40% sub-hedral, 2-4 mm, fspar phens 15% mafics (all chl'd), set in aphanitic, M. grey, s/w siliceous gm. Minor MH diss'd: Trace Py, v.f. gr'd diss'd. Porphyritic aH'd: fspars to epidote and saussurite, mafics all to chlorite. Mod zeol. vning. Core generally solid, fracturing wk.	1.5	335			67671	93
340					Minor	Minor Py		Minor zeol (w/carb) vning @ 20-50°.				95	NQ-HQ	340	
											345.5			N/S	97
										1.5				350	
350												100			
									Post 353. Fract. density now mod, w/ white and pink zeol (w/ minor carb) fr. and vning. Also locally pink zeol. after fspar and locally, fspars mod. alt'd.	1.5	355.5			N/S	98
360												95		360	

HOLE NO. FC-126 | PROJECT: | PAGE NO: 7 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL - EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS: / DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
360								FELDSPAR PORPHYRY - CONT'D.						360	
										1.5	366	95		67672	96
370					— — — Mod 50-60 ∠ incns. —									370	
											376	98		N/S	98
						Minor Py - Tr. Cpy. —				1.5				380	
380										.5	386	97		N/S	98
								Sl. sh'd contact @ 25° CA.		to 1				390	
								FELDSPAR PORPHYRY DIKE 386-411.5							
								Compositionally as above fspar porph., but fewer, f.gr'd, and less crowded, w/ only 20-30% phenos. Matrix 10% AH'd / min'd as above.		.5 to 1	396	100	NWW	67673	97
400					Mod 40°									400	
								6" wide dike @ 50°. — F. gr'd intergrowth of Q & fspar w/ diss'd Ep - AH.		.5 to 1	406	93		N/S	95
410						Minor Py - Tr. Cpy								410	
								¼" zed. on contact @ 25°.							
								FELDSPAR PORPHYRY 411.5 - 426.5		.5 to 1	416.5	98		N/S	98
								As per 329.5 - 426.5							
420												98		420	

HOLE NO. EC-126 | PROJECT: | PAGE NO: 8 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: B.L.S.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EPD.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ES MA
420					- AS BEF	- AS BEF	1/1/1	4" CHL & SH.	DESCRIPTIVE GEOLOGY							
								FELDSPAR PORPHYRY - CONT'D.		1.5	426.5	98		420 / 426	98	

END OF HOLE @ 426.5

HOLE NO. EC-127 | PROJECT: Expo | PAGE NO: 1 OF 4

COLLAR ELEV: 1016.5' | GROUND ELEV.: 1010' | DATE STARTED: SEPT 20, 1977 | REF. TO CLAIM CORNER:

COORDINATES: 245 000 N. 236 650 E. | DATE FINISHED: SEPT 23, 1977 | SCALE: 1" = 10'

INCLINATION: -60° | BEARING: DUE SOUTH | TOTAL DEPTH: 446' | LOGGED BY: BKB.

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: CHL-EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE 83.2%	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
240										STICK-UP 0.75						
										WELDBALDEN 7.5 - 265						
250																
260												263			265	
										BANANZA VOLCANICS: 265 - 290						
270								½" carb-pink zeol.		Primary textures vague, but rock appears tuffaceous. Fg-gr (~1mm), m. to dk. greyish grn in colour. Mod to str. pervas chlorite. Minor pervas. silica (? sec?). Ep locally str. patchy. Minor zeol. & qtz veining. Several short altered AFP (mons) dike intercepts @ 265-268, 272.5-274, 277-284.5, and 287-289. Dike textures vague, pervasive "silicif'n, w/ patchy chl-ep-MH. Py-MH (Cpy) lets'd and str. qtz + pink zeol. veining. No Bio eyes obs'd.	2	268	87		267	67
								272-272.5 V. str. broken core. Fault zone.				272			270	
								Contacts not obs'd.			2	278	60		280	73
								½" QTZ w/ MH-Py (Cpy)				280	100		283	
								Sharp contact @ 30°.		283-284.5 Str. bx'n + gouge. Fault.	4	283.5	71		285	70
												286.5	57		287	
290								Contact vague @ 30°.		QUARTZ FELDSPAR PORPHYRY (MONZ) 290-446.		290	80		290	
								Str. MH veining @ 40-50° Shoulders contact.		Pink zeol. X-cuts and displ MH vns. ½".	1	294	83		293	82
								- pink zeol.		See descrip. QFP next page.		300			300	

HOLE NO. EC-127 | PROJECT: | PAGE NO: 2 OF 4

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: SILICA	SERICITE	CHLY	CHL-EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
300								½" w/Py.	QUARTZ FELDSPAR PORPHYRY - CONT'D.		.5	300			300	
								4" gouge.	Strong perv. sil'd - no QTZ eyes obs'd as yet.		to	304	83		67679	64
								Irreg. Py ∥.			1	309	45		310	
310								Zeol.								
								1" carb vn exhibits	drag into fault. From drag, normal fault.			313.5	78		67683	67
								Contact sharp @ 70°.	313-334 Intense fault gouge w/ str. P-S-Py all'd.		2½				320	
320									MAJOR FAULT				6		67681	51
												323.5			330	
330											3		45		67682	72
								70° CA.	336.5-337.5 Intense gouge. Fault.			334			340	
								50° CA.			3					
340								2" gouge.	Past 337.5, porphyritic texture less vague, QTZ eyes appear and vague FSPR phases visible. Perv. sil'n and str., sel perv enveloping faults & shears. Clotty py-cpy infill, wafers, minor clay after FSPR's adj. fracts. Pink zeol and Py-(Cpy) as acc. ∥.				90			
												344			67683	92
											2½				350	
350												354	93		115	95
								Irreg Py ∥.			2		96		350	
360												360				

ALTERATION: WK - Mod, Irreg. | FRACTURING: All fault gouge? | MINERAL: Py - Tr - Cpy. | NQ HOLE

HOLE NO. EC-127 | PROJECT: | PAGE NO: 3 OF 4

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: CHL-EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS: / DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
360								QUARTZ FELDSPAR PORPHYRY - CONT'D.			360			360	
								363-363.5 Sh. Bx'd & gouge. Strong fault.		2½	366	90		N/S	88
370					Wk. mod. 65 Bl			Tr. MoS2 dissem noted 360-370.						370	
						Tr. (py) · Tr. MoS2		1" gouge.				86		67684	
								6" Bx'd & gouge. Minor fault.		3	376			380	88
												90			
										3	386			N/S	92
390								½" w/ zeol.-Py.						390	
												95			
										3	396			N/S	94
400								8" str. gouge. Fault.						400	
								½ " "				93			
										3	406			67685	95
410								Post 413, texture less vague, re-appearance of the other mafics. Increase in pink zeol. veining decrease in sulphides.						410	
								3" gouge.				98			
										2½	416			N/S	96
								8" gouge. Fault.				94			
420					Mod			Mod-str zeol. veining @ 50°. 4-6 vns/ft.						420	

HOLE NO. EC-127 | PROJECT: | PAGE NO: 4 OF 4

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP INT.	ESTIMATED % Cu.
420								DESCRIPTIVE GEOLOGY						420		
					1-3 in, @ 30-50	Py. (Cpy) - Tr. Mos.		QUARTZ FELDSPAR PORPHYRY - CONT'D.								
								Locally, str. zod. after fspar.		1½	426	94		N/S	94	L.10
430														430		
												95	NWL	67686		
										1½	436				92	L.10
440								¼" w/Py.						440		
										1½		88		N/S	88	L.10
446								Py-H.			446			446		
								END OF HOLE @ 446'								

HOLE NO. EC-128 | PROJECT: EXPO | PAGE NO: 7 OF 13

COLLAR ELEV: 1063' | GROUND ELEV.: 1060' | DATE STARTED: Sept 25, 1977 | REF. TO CLAIM CORNER:

COORDINATES: 244,000 N. 236,514 E. | DATE FINISHED: Oct 2, 1977 | SCALE: 1" = 10'

INCLINATION: -60° | BEARING: DUE SOUTH. | TOTAL DEPTH: 734 | LOGGED BY: G.E.N.

ALTERATION: SILICA | SERICITE | CLAY | CHL-EP

FRACTURING | MINERAL | GEOLOGY

COMMENTS: ——— Zeolite

AVE CORE REC'Y / HOLE 75%.

DESCRIPTIVE GEOLOGY

SECTION	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
0						
10						
20						
30						
40						
					46	
50	3-4	51	60	NQ WL	67687	60
		56	60		56	
60	2					

Over burden +46.0

Quartz Feldspar Porphyry 46-734

46-60 grey f-g v str altered to clay-ser assemblage minor qtz pr as disem and fract fillings. Some remen Kaol plag phenos most primary text. obl.t.

56-66 = 5% recovery strly broken and gouged x

Kaol. plag remen. +fin cub pyrite & pyrochlore

FRACTURING: MOD ST ——>

MINERAL: PY

HOLE NO. EC-128 | PROJECT: EXPO | PAGE NO: 2 OF 13

COLLAR. ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1" = 10'

INCLINATION: −60° | BEARING: 180° Az | TOTAL DEPTH: 734 | LOGGED BY: G.E.N.

ALTERATION: SILICA | SERICITE | CLAY | CHL-EP | FRACTURING | MINERAL | GEOLOGY

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

SECTION	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP INT
60	very poor recovery ∠10% str ground						
	hematite str w/py						
70	limonite on frad.						
80	no observeable contact clay-qtz pebbles py gouge						
	str broken section						
90	grey pathes of ser & py						
	py-clay-gouge, bkn rx						
	blotches grey green ser in sucrosic qtz matrix unit magnetite & dissem						
100	broken rx & gouge						
	minor dissem mag						
	gougy vbx rx						
	ser-mag blotches						
110	zeolith ¼"x1" minor zeolite fr. filling						
	ser pathes after plag and ser-qtz - grid mass fr at 20-40° to axis.						
120							

Contd. QUARTZ FELDSPAR PORPHYRY str altered.

60-70 str siliceous rx w/dissem py — 2 — 66 — 10

70-75 str clay ser matrix w/ rehe clay ser plag phenos — 70

75-81 30% sub. - sub euh kaol plag within a sucrosic matrix of qtz-clay with dissem py ∠1% strained-cracked qtz-eyes — 3 — 76 — 28 — 6768

Large fault zone - 82-279

82-85.0 Gouge - clay, py, qtz frag — 82 — 22 — 80

85-95 quartz-feldspar porphyry — 2 — 86 — 92

40% subhedral plag phenos in clay-qtz-ser grndmass, 2-3% qtz-eyes 2% sulphides as dissem py + trace cpy pathes ser-py — 1 — 23

1 — 96 — 72 — 100

1025

2-3 — 68 — 6769 — 66

108 — 110

111-113 str fract w chl matic & kaol. plag siliceous grndmass minor dissem py & mag — 111 — 112 — 55 — 53

113-116 clay-py gouge w/py & fragments altered QFP - clay-ser-py assem — 1

NQ WL

HOLE NO. EC-128 | PROJECT: EXPO | PAGE NO: 3 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1"=10'

INCLINATION: −60° | BEARING: 180° AZ | TOTAL DEPTH: 734' | LOGGED BY: G.E.N.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS: / DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTIMATE % Cu
120								py mag fr fillings shear 6" gouge mag w/minor cpy 1" gouge minor diss mg py str ser alter'n gives mottled text. gouge - py-clay str broken rx same. gouge py + phyllite irreg mag fract filling. 2" gouge crumbly rx py-ser blotches after plag w/remn Kaol'hola 2" gouge & brkn rx 1" gouge. ≈ 3-5% qtz phenos upto 5cm 3" gouge. gouge & crumblu rx. 4" Kaol. gouge w/ str grnd rx frag. 6" white clay gouge								
130					str	py mag	py-cpy	CONT'D - QUARTZ FELDSPAR PORPHYRY LARAE FAULT ZONE CONT'D. 120 - 166 strong sericite alter'n as blotches gives mottled text. gnd mass of ser-qtz py as dissem and fract fillings. minor traces cpy, magnetite as fr fillings.		2	124 128 136	52 100 32		130 6790 140	34	∠0
140										2						
150					str	py mag				1	146 150.5	37 44	NQ WL			
160					str	py				1	158.5	45		160 7691		
170								178 - 180 - pervasive ser gndmass - clay alter plag		2	166 173.5	31 12		170		
180										1-2						

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COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1" : 10'

INCLINATION: -60° | BEARING: 180° Az | TOTAL DEPTH: 734' | LOGGED BY: G.E.N.

ALTERATION: SILICA | SERICITE | CLAY | CHL-EP

FRACTURING | MINERAL | GEOLOGY

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

SECTION	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
180	CONT'D. QUARTZ FELDSPAR PORPHYRY LARGE FAULT ZONE CONT'D.	1 - 2	185	21	NQ WL		
	crumbly rx and gouge		187	38			
	ser-py pathes in ser-qtz groundmass.					190	
190	crumblu rx and gouge.	1		23		67692	31
	ser blotches in ser-clay-groundmass dissem by trace cpy		196				
	2-3" gouge zones py-clay rx frag		199	47		200	
	v-silic. matrix w/ kaol clay						
200	gouge & rubble rx frag-clay-ser. py	1		27			
	1" seam of gouge.		206				
	crumbly very broken rx			46			
210	6" gouge crumbly rx		212				
	210-222 str increase in silica - qtz-ser groundmass w/ ser & ser-py blotches Some dissem. mag Recovery poor	1	216	54			
	rx str fract'd brkn		219	19		220	
	trace cpy		222	25			
220	222-234 very poor recovery - only 6" in box rx frag similar to above section.					67693	7
	gouge and rx frag minor py	21		2			
230			234			230	
	str brkn rx. qtz-ser groundmass & ser blotches & dissem py.		235	30			
	241-251 Broken rx and gouge	21					
240							

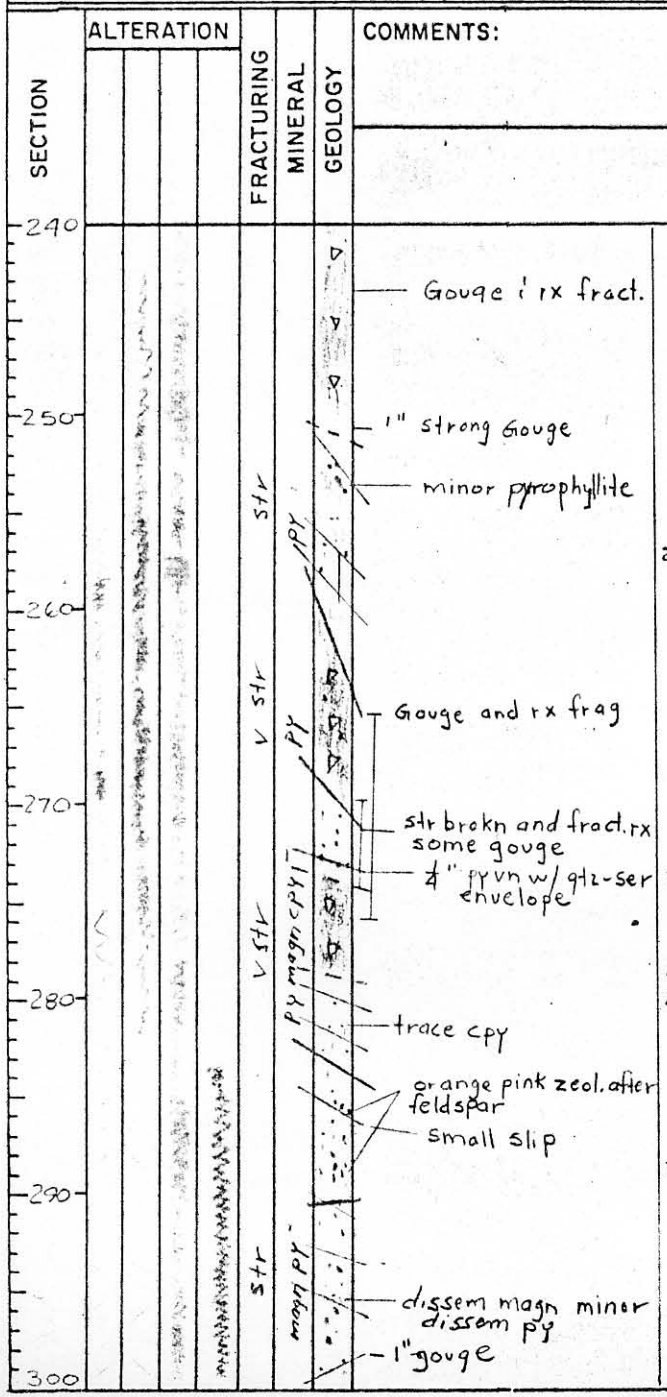
str py - cpy - mag - py - cpy

HOLE NO. EC-128 | PROJECT: EXPO | PAGE NO: 5 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1": 10'

INCLINATION: | BEARING: | TOTAL DEPTH: 734 | LOGGED BY: GEN



AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

CONT'D QUARTZ FELDSPAR PORPHYRY

LARGE FAULT ZONE CONT'D.

251-262 str fract rx, pervasive qtz-ser gndmass w/ ser & ser py blotches trace py

270-274 pervasive qtz-ser gndmass w/ lt green ser? blotches.

274-279 Gouge and Rx frag

279 END OF LARGE FAULT ZONE

279-288 QFP on the footwall of the fault gradually becomes less alter'd Feldspar phenos become more distinct although clay altern is still prevalent chl clots w/ magn & py are common w/ some distinct chl hb laths visible Minor rns of zeolite cut core axis at 45°

288-310 40% Feldspar phenos become a distinct waxy colored clay in a gndmass of qtz-chl py chl clots, dissem magn w/ minor dissem py, qtz rich matrix w/ 1-3% qtz eyes.

% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
1	241	4	NQWL	250	
		33			
	251			67694	20
1-2		18			
	260			260	
1	264	58			
		55			
	270				
2	273	58			
		66			
	279			280	
1	286.5	86		69695	89
		94		290	
1	295.5				

HOLE NO. EC 128 | PROJECT: EXPO | PAGE NO: 6 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1":10'

INCLINATION: −60° | BEARING: 180° Az | TOTAL DEPTH: 734 | LOGGED BY: G.E.N.

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

CONT'D QUARTZ FELDSPAR PORPH.

311- 30-40% Feldspar phenos - relatively fresh minor clay & chl altern, well devel. chl of mafics, some hb x'tl boundaries still visible magn and py or cpy are also found w/chl. some f. dissem py and cpy Rx appears relatively fresh w/ a siliceous gndmass and 3-5% crackled qtz eyes Zeolites(pinkish) appear as fract fillings altern of feldspar and gndmass. Minor qtz - py and py vns magn. as fract fillings and dissem.

SECTION	SILICA	SERICITE	CLAY	EP-CHL	FRACTURING	MINERAL	GEOLOGY
300					mod - str	magn py cpy	3" gouge
							± 0.2" qtz vn w/ py minor cpy
310							pink zeol. altern of matrix
							chl hb lath.
							chl - magn py and or cpy after mafics
320							cpy
							.5" qtz - py cpy vn
					mod		white & pinkish zeol.
330							dissem magn
							fract w/ platey py
							cpy magn frac. filling
340						mod magn py cpy	small slip
							minor clay altern of plag
							± 1" qtz vn w/ py stringers py on fract.
							chl maan blotches
350							zeolite Fr. F. ≈ 5/ft.
							≈ 1% dissem magn minor py / cpy
							magn fr fillings
360							c-py cubes on fract.

% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y.
1	305	99	NQWL	310	
		86		69696	80
2	315.5			320	
		89			
2	326				
		78			
1 - 2	331				
	336	93			
				340	
1 - 2		93		69697	90
	346			350	
1 - 2		97			
	356				

HOLE NO. EC 128 | PROJECT: EXPO | PAGE NO: 7 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1":10'

INCLINATION: -60° | BEARING: 180° | TOTAL DEPTH: 734' | LOGGED BY: GEN

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

CONT'D QUARTZ FELDSPAR PORPHYRY

The rx appears relatively unaltered except for chl-magn alteration of hb and lt dusting of clay on feldspar. clay is well developed in shear zones magn is the dominate sulphide, then py w traces dissem. cpy

360-375 clay altern is mod to str after feldspar hbl → chl magn py

1"gouge

½"gouge rx v soft & crumbly

str clay / mod chl in sheared zones

small shear 6" crumbly some gouge

chl-magn-py after hb

pinkish zeol as hair line Fr.F.

dissem. magn. trace cpy

3 zeol. Fr F/Ft.

magn. vnlt

5-7 zeol. Fr. F./ft.

pinkish zeol. altern of plag

3" gouge - clay - py

gouge zone clay - chl - py

SECTION	SILICH	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y.
360													
					str.	magn py cpy			365	90			
370					mod			2				370	
										87		69698	88
								1-2	379			380	
380					str	magn py cpy				92			
								1-2	386				
390					str mod	magn cpy py				95	NQWL		
								1-2	394.5				
												400	
										94		69699	96
400								1-2	405				
												410	
					mod	magn py				98			
410								1-2	415				
					str	py							
420													

HOLE NO. EC 128 | PROJECT: EXPO | PAGE NO: 8 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1":10'

INCLINATION: -60° | BEARING: 180° | TOTAL DEPTH: 734' | LOGGED BY: GEN.

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

ALTERATION: SILICA | SERICITE | CLAY | CHL-EP

FRACTURING | MINERAL | GEOLOGY

SECTION 420 430 440 450 460 470 480

zeolite alteration of feld.

small slip minor gouge

3 zeol Fr F./Ft

dissem magn

chl magn v. minor ep.

chl magn cpy

1/4" qtz vn w/f seams cpy dissem py

7-10 zeol Fr F/Ft.

hbl>chl-minor ep cpy

small shear

magn cpy Fr F.

3-4 zeol Fr F/Ft.

shear w/qtz

magn. cpy qtz Fr F.

7-10 zeol. Fr F/Ft.

— QUARTZ FELDSPAR PORPHYRY CONT'D

as before

461–466 Str clay altern of feldspar on both sides of shear

% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	SAMPLE INTERVAL	% REC'Y.
	423.5	95		
	427.5	83	430	
1	438	97	67700	9
	441	70	440	
1	451.5	97		
1	461.5	96	460	
1	471	100	67701	8
			470	

CORE SIZE: NQWL

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COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

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INCLINATION: −60° | BEARING: 180° Az | TOTAL DEPTH: 734' | LOGGED BY: GE.N.

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

ALTERATION: SILICA | SERICITE | CLAY | CHL-EP.

FRACTURING | MINERAL | GEOLOGY

SECTION: 480 | 490 | 500 | 510 | 520 | 530 | 540

mod str

mod

mod

mod-st

magn cpy-py

magn cpy-py

magn cpy-py

magn cpy-py

magn cpy Fr. F.

dissem py

7-10 zeol/Fr F/Ft.

¼" qtz vn w/ cpy

1" qtz vn along shear w/ seam magn-cpy

small slip

qtz flooding bleached shear cpy py 3-4 zeol (white) F. F/Ft.

white zeol ≤ 1mm thick F/w dissem py

chl magn cpy ± .

1mm qtz vn w/ magn and fr. cpy Fr w/ ch, py, magn

v f. magn. vn/ts.

dissem magn v. minor dissem. cpy

7-10 pink zeol. Fr F/Ft. ≤ 1mm th.

≤ 1mm magn Fr. F.

QUARTZ FELDSPAR PORPHYRY CONT'D

as before

NQWL

% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
1	481.5	97			
		94		490	
	492				
—		96		67702	96
				500	
	500.5				
1		106			
	512				
		98		520	
∠1	520.5				
	525	107		66703	101
∠1	526	110		530	
		93			
1	536				

HOLE NO. EC 128 | PROJECT: EXPO | PAGE NO: 12 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1" = 10'

INCLINATION: -60° | BEARING: 180° Az | TOTAL DEPTH: 734' | LOGGED BY: GEN

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
660								DESCRIPTIVE GEOLOGY							
670															
680															
690															
700															
710															
720															

QUARTZ FELDSPAR PORPHYRY CONT'D

660 - 680. Mod alter'd feldspar → clay
" clay alter'n of gndmass w some ser
Mafics → chl → ser ±
Mod to Str zeol. Fr F.
Minor qtz w ± py

680 -

690 - 703 Fault Zone.

703 - 734 Patchs of chl (or chl → ser gives. mottled tex.
Blotches also contain magn. and/or py

10-18 zeol Fr F/Ft.
dissem magn w/ some cpy ± py
irreg qtz Fr F.
4-6 zeol Fr F/Ft
1/4" qtz, py vn. - qtz, zeol alter'n away from vn.
hair line magn Fr F.
mod feld → clay
8 zeol Fr F/Ft
4" gouge
v str brkn & Fr fx.
2-3 zeo Fr F/Ft
dissem cpy
chl-ser magn py

% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED
1	666	97
2	674	96
1	689.5	94
1	694.5	93
1	703	32
1	710	98
1-2	713.5	

CORE SIZE: NQ WL

SAMPLE INTERVAL	% REC'Y. SAMP. INT.
670	
67708	95
680	
700	
67709	78
710	
EC-128 710-720	98
720	

HOLE NO. EC-128 | PROJECT: EXPO | PAGE NO: 11 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1":10'

INCLINATION: -60° | BEARING: 180° Az. | TOTAL DEPTH: 734' | LOGGED BY: G.E.N.

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

SECTION | ALTERATION: SILICA, SERICITE, CLAY, CHL-EP | FRACTURING | MINERAL | GEOLOGY

600 / 610 / 620 / 630 / 640 / 650 / 660

mod / mod / str / str

magn py cpy — magn py cpy — py magn cpy — magn py cpy — magn py

hair line magn-chl Fr. F.

py Fr F

1" qtz vn. w/ magn cpy py

hair line magn Fr. F.

silicified gouge

½" discont. magn Fr F. hairline th.

patches stkwk qtz altern w/ patch ser after chl

qtz zeol vning

6-8 pinkish zeol. Fr F/Ft.

white zeol Fr. F.

hair line magn Fr F

stkwk ser in sheared areas.

qtz along Fr w/ patches magn

10-14 zeol Fr. F./Ft.

QUARTZ FELDSPAR PORPHYRY CONTD

600-626. mod clay altern of feldspars, some ser develonement in matrix v minor ser alter feldspar. matic → chl magn. ± magn vnlts w/ cpy are common. Mod zeol. Fr F and some qtz vning w/ py, cpy, magn. dissem magn py minor cpy

626-640 Mod clay-ser alter of gndmas. mod clay alter of feldspar.

640-660 Shear Zone str increase clay-ser. altern of gndm. within a sheared zone

% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y.
1	602	102	NQWL	610	
		97		67706	9
1	616			620	
		98			
1-2	626				
		99			
1	636				
		100		640	
2	646			67707	99
		98		650	
1	656				

HOLE NO. EC-128 | PROJECT: EXPO | PAGE NO: 10 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1":10'

INCLINATION: -60° | BEARING: 180° | TOTAL DEPTH: 734' | LOGGED BY: GEN.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ES MA
540					mod.	magn cpy py		DESCRIPTIVE GEOLOGY			541	83				
550					mod.					1		98		550		
560					mod.					1	551	103		66704 560	103	
570					mod.	magn cpy py				2-3	561	103	NQWL			0.
580										1	571	95		580		
590					mod.					1	581.5	96		66705 590	96	0.
600										2	592					0.

c+r qtz flooding w/ ¼" gouge, good cpy

5- zeol Fr F/Ft.

zeol & qtz Fr. F.

½" gouge

⅛ qtz cpy vn.

2-3 zeol. Fr F/Ft.

1.5" zenolith.

f-magn py cpy Fr F

perv. qtz altern w/ py cpy

zeol. & qtz flood.

ser after chl

wk clay altern of feld.

3mm qtz vn w/ py minor cpy

str clay altern alter feld. along Fr.

Hair line magn. trace cpy Fr F.

small slip

dissem magn minor cpy

2mm qtz vn

3-4 zeol F.F/Ft.

1mm qtz magn cpy vnlt

QUARTZ FELDSPAR PORPHYRY CONT'D

as before.

555 - 570 - Stronger clay altern of feldspars w/ zones of pervasive qtz altern. w/ py & cpy dissem magn. cpy dissem. locally sign.

590 - 600 Noticeable develp of ser in matrix and after feldspar

HOLE NO. EC 128 | PROJECT: EXPO | PAGE NO: 13 OF 13

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. 244,000 E. 236,514 | DATE FINISHED: Oct 2, 1977 | SCALE: 1" : 10'

INCLINATION: −60° | BEARING: 180° Az | TOTAL DEPTH: 734' | LOGGED BY: GEN.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS: / DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y.
720					mod	cpy py		QUARTZ FELDSPAR PORPHYRY CONTD			7235	98		720	
							ser pathes w/ cpy.	Rx is more alter'd near end of hole w/ slight increase in cpy		1 - 2		98	NQWL	FC-128 720-730	98
730							dissem cpy ± py.							730	
								End of hole 734'		1-2	734			734	98

HOLE NO. EC-129 | PROJECT: EXPO | PAGE NO: 1 OF 5

COLLAR ELEV: 836.5 | GROUND ELEV.: 835' | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: 242 640 N. 239,650 E. | DATE FINISHED: | SCALE: 1" : 10'

INCLINATION: -60° | BEARING: DUE SOUTH. | TOTAL DEPTH: 262' | LOGGED BY: G.E.N.

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE 76%	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
0															

DESCRIPTIVE GEOLOGY

0-98 OVER BURDEN

10

20

30

40

50

60

HOLE NO. EC-129 | PROJECT: EXPO | PAGE NO: 2 OF 5

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE: 1":10'

INCLINATION: -61.5° | BEARING: 173° | TOTAL DEPTH: 262' | LOGGED BY: GEN.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS: / DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP INT
60															
70															
80															
90															
100						magn - mod.		4mm white zeol Fr. F. magn. Fr F. 21mm magn. rich xenolith. most Fr >60° to core axis magn Fr F. magn dissem. white 1mm zeol. Fr. F.			98			98	
110						magn - mod.		**QUARTZ FELDSPAR PORPHYRY** Very fresh intrusive rx containing 30-40% subhedral feldspar phenos - v slight clay altn in and up to 7mm in size. ≤3% mafics are predom. hb. w partial altern to chl good lath like habits up to 7mm in length 1-2% crackled 1-2mm qtz eyes are present found in a v. siliceous grdmass that is grey brown in color Magn, py, cpy are only visible sulphides appearing as dissem, Fr F and altn after hb. Zeal vning is variable. Rx is mod. Fr. The fresh rx has a brown-grey over all color.		<1	100.5 104 106 109 110 113 120	47 76 63 47 60 25 45	NQWL	67726	59

HOLE NO. EC-129 | PROJECT: EXPO | PAGE NO: 3 OF 5

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIN CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE: 1"; 10'

INCLINATION: -61.5 | BEARING: 173° Az | TOTAL DEPTH: 262' | LOGGED BY: G.E.N.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
120					mod	magn		DESCRIPTIVE GEOLOGY		1	122	58			
								CONT'D. QUARTZ FELDSPAR PORPHYRY			123	50			
								as before.			1266	93			
130					mod	py					132	68		130	
						magn				1				67727	86
								140-154 white zeol Fr F. & flooding between Fr gives rx a lighter color				91		140	
140						py = magn					142				
										1		83			
150											152				
										1		94		160	
160						magn					162.5				
								164- Ep altern increases - appears as Fr F + or - magn or as altern product of hb or feld.		2					
										1		85		67728	87
170											172			170	
										1		88			
					str						176				
											178.5	47			
180															

mgan Fr F. 4-6/Ft.
qtz, zeol, ep. vn.
py vnlts
feld → zeol.
py on fract.
hair line magn Fr F.
specksep
zeol & qtz rims small slip.
hb → chl crackled zone w zeol flooding
zeol flooding between Fract.
Feld → clay+ → ser-
irreg str zeol altern w/ minor dissem py
ep-magn vn.
magn Fr. F.
zeol Fr F.
Feld → clay → chl.
py on Fr
minor slip
ep on Fr qtz-chl-ep vn.
spotty ep altern of feld & hb
ep Fr F.
magn-ep Fr F.
hb → ep+ felds → ep- magn.

NQWL

HOLE NO. EC-129 | PROJECT: EXPO | PAGE NO: 4 OF 5

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE: 1":10'

INCLINATION: -61.5 | BEARING: 173° | TOTAL DEPTH: 262' | LOGGED BY: G. EN

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y.
1	185.5	94	NQ WL		
	189	61		190	
2	195	74		67729	75
		76		200	
2	202	93			
2	212				
	216	42		220	
1-2	226	88		67730	60
		18		230	
1	233				

160 170 180 190 200 210 220 230 240

white zeol Fr F w/min. ep
trace cpy & py
ep on fract.
magn - ep Fr F.
str. fine lu dissem. magn.
qtz minor ep
hair line magn Fr F.
trace cpy
feld → clay → ep.
magn vnlst.
small slip str chl ep some py and irreg gypsum vning
chl magn Fr F & magn Fr F. 6-8/Ft.
dk patches of v.f. dissem py
6-8 magn Fr F/Ft
1" gouge & bx.
dissem py
small slips
str ep-zeol altern
10% magn =
magn Fr F & chl. some py
4" gouge zone

CONT'D QUARTZ FELDSPAR PORPHYRY

as before

216-243 Mod Zeol. altern of plag

HOLE NO. EC-129 | PROJECT: EXPO | PAGE NO: 5 OF 5

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE: 1" : 10'

INCLINATION: -61.5 | BEARING: 173 | TOTAL DEPTH: 262' | LOGGED BY: GEN.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EP	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP INT
240					mod-str	mod-modn		hb → ep Feldspar → zeol. unalter'd hb. dissem magn epchl after hb. and feld → ep feld → zeol ep vn minor dissem py		<1	243.5	83			
250												88		250	
										1	251.5	92	1/4 WL	6773	92
260								END OF HOLE 262'			262			260	

HOLE NO. EE-B3 | PROJECT: EXPO | PAGE NO: 1 OF 8

COLLAR ELEV: 1608.5' | GROUND ELEV.: 1605' | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: 247000 N. 212,200 E. | DATE FINISHED: OCT 11/77 | SCALE: 1" = 10'

INCLINATION: 60° | BEARING: DUE NORTH. | TOTAL DEPTH: 536' | LOGGED BY: BKB.

COMMENTS:

AVE CORE REC'Y / HOLE 91%

DESCRIPTIVE GEOLOGY

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: CHL-EPI.	FRACTURING	MINERAL	GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
60													
70													
80													
90									92			92	
100								5	96	78	NAPW	100	91
110								5	104.5	84		110	72
120								5	110	62		120	90

BONANZA VOLCANICS 92-350

Lt. to m. greyish-grn, aph'd pyroclastic rx. Vol. tx. textures w/ flags > 1" distinct up to 98'. Perv. clay aln'n, mod-str, of flags and interstices. Remnant molds of flags chl'd. Bot 98', mod fragmental texture, vague, w/ m. yulor grnish spots (chl-clay?) to 20%, set in perv. clay-(ser) grn. possibly grnish pots after lapilli flags. Mod-str. Py as vn + fr, also Py v. str. dissem. Str. zeol. veining.

1/8" w/ rod.-Goet. 1/2" w/ Py.

4" bx'n + gouge @ 70.

101.5-110. Several zones of gouge + bx'n up to 6" @ pass. 40° CA. Fault zone.

Str Py veins, 1/8"-1/4" @ 50°. Mod fr. filled, w/ ratio zeol vns : Py vns 70:30.

536

HOLE NO. EC-130 | PROJECT: | PAGE NO: 2 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BLS.

COMMENTS: Pyrophyllite.

AVE CORE REC'Y / HOLE

SECTION	ALTERATION: SILICA	ALTERATION: SERICITE	ALTERATION: CLAY	ALTERATION: CHL-EP.	FRACTURING	MINERAL	GEOLOGY	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y.
120								BONANZA VOLCANICS - CONT'D.					120	
								121.5 - 134.5 Strong FAULT - Intense bx'n + gouge @ 40-50° CA.	5	124	68			48
										129.5	33		130	
								Crushed sulphide (Py)						
									6	134.5	58			75
								1" gouge.					140	
								Post fault, clay alt'd still dominant. Locally, dk grey pebbles, ¼" w/Ser. Also as? sub. alt'd, ser or chl, variable pervasive w/ clay. Textures generally obscure to locally spotted - dk. spots may represent remnant lapilli frags.		145	88			
								3" gouge.	6½					91
								Ser as aff. (w/Py)					150	
								2" reddish - beige bd. @ 60°.			93			
								Brx. clay alt'd. ? Pre-mineral dike., or thin volc. layer.						
								½" w/Ser. (dk. grey col.)		155				
								130-137 Dk grn-grey spots, ½-½", Ser-(chl).						
								2-3" reddish-beige bds. as above.						
								1" carb.	6½					91
								6" gouge.					160	
								134.5 - 162.5 Str. Py aff, hairline to ½", req 60-70, 10 vns/ft. Minor white carb. vning locally x-cutting.			89			
								6" bx'd + gouge.		165				
								162.5 - 166 Fault - Intense gouge + bx'd.	6½					76
								20% 3-5 mm Ser spots.					170	
								remnant lapilli. Text. visible. Frags mainly white, alt'd, w/chl and chl-Ser patches interstitial. Clay still dom. alt'n. Ratio clay - chl - Ser ~ 5:2:1			30			
										174				
								½"	6½					72
								w/carb.			87			
180													180	

Mainly str. reg 60-70°, 10 Fr/ft. — All gouge

HOLE NO. EC-130 | PROJECT: | PAGE NO: 3 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

ALTERATION: SILICA | SERICITE | CLAY | CHL - EP. | FRACTURING | MINERAL | GEOLOGY

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

SECTION	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y.
180	1" w/Tr-Py.			27	NQ/HQ	180	
	BONANZA VOLCANICS - CONT'D.		184.5				
	184.5-200.0 STRONG FAULT ZONE. Sft. sh. brec'd, clay-chl. assemblage w/ cataclastic & bx'd zones. Abundant wavy and crenulated carb. was included. Also abundant chl. slip surfaces. white, wk eff., poss. some sec.	6		92		190	90
	½" w/chl.		194.5				
	191-193. Frags all'd Bonanza 1-3" across. Fault bx. Cse blebs Py. interstitial to frags.	6					93
200	2-½" chl. vns.					200	
	2" w/carb.			93			
	203-205 10 carb vn @ 55°.	6	205				95
	poss. sec. as vn.						
	1" sh. w/carb.					210	
	Bal 205 Appearance of Ser as irreg vn.			76			
	spec MoS2 noted.						
	Py vn. 50-70°.	6	215				96
	Ser as fine HL vn.						
	215-216.5 Sft. clay-chl. fault gouge.					220	
	2" gouge w/ 1" cl. incl. Py included.			95			
	220-231 Sft. shrg, w/ locally bx and minor gouge. -carb. vning sft. Shear zone.	5½	235				95
	2" Carb-chl.					230	
	½" Py-Carb.						
	½" carb. w/chl.			94			
	½" chl.		236				94
	2" gouge.						
240	Carb w/Py.	6		95		240	
	Up to 238, texture is lapilli, w/ alt'd as Bt, clay-chl. Ser ~ 5:2:1. Past 238, rock is M. beige to tan in col., w/ locally 1° bedding; poss. finely bd'd tuff. Clay-Ser pervasive chlorite disappears. Mod Ser as vn. w/ Py (as 3/w).						

HOLE NO. EC-130 | PROJECT: | PAGE NO: 4 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

COMMENTS:

■ - in graphic log denotes pyrophyllite.

AVE CORE REC'Y / HOLE

ALTERATION: SILICA | SERICITE | CLAY - Kaolin + Rtrpts | CHL - EP.

FRACTURING | MINERAL | GEOLOGY

DESCRIPTIVE GEOLOGY

SECTION	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
240	ALTERED BONANZA VOLCANICS - CONT'D.					240	
	Ser and/or Py as ff. s/w coat. Pyroph pery. and as coat'd. on Ser. 1.5' fault gauge. Post fault, str. zeol. ½" w/Ser. w/chl.	6	246	95	TMSW		95
250	Ser, as well as ff, also is more prevalent as pery. mainly clotty, ass'd w/ Py grain clusters. Ratio clay : Ser now 3:2 at pass 2:2 Moss as rare flakes. 1st appearance of pyrophyllite @ 246. Pery. pyroph 246-248. Post 256 - pyrophyllite, mod - str, interstitial to lapilli frags, which are alt'd to clay - ser. Also interstitial is dk. grn, anhedral grains 10-15%, chlorite or chl-ser.	7	256	95		250	91
260	2 x 1" clay - chl. gouge. 3" zeol. w/ Py - Ser. 2" Py. 1" Py w/zeol.	40	266	84		260	90
270	263-266 Crushed Py vein w/ minor carb. Int. pyroph. adj HW and FW contacts. Minor Cpy as blebs in Py-Ser ff. @ 278.	10	276	101		270	100
280	- Py ff 7-9/ft @ 30-60. Vuggy, after Py? 2 x 1" @ 40. 2" w/Py. ¼" Qtz w/Py. Py-Ser ff 40-50 7/ft. 3½" Py w/Qtz-Ser. - 1" crush Py w/Ser.	Ff 6-5/ft 30-60°, w/ Py-(Ser). Ser. ff. s/w nrl as dev'd. Grad'l alt'n change, but appears generally that ser > kaolin, except locally and pyroph. subsidiary to both - locally after lapilli frags and also as anvel. on ser. - Py vft. Decrease in zeol vning; decrease in fits. Over grad'l change, lapilli text. distinct.	10	286	102		280	99
290			296	97		290	98
300		10		100		300	

Rec'd ff. 5-6 — ff. more irreg s/w — str. irreg s/w — 10-12/ft. — 30-60 — Py - Tr. Cpy — Py - Tr. Moss.

HOLE NO. EC-130 | PROJECT: | PAGE NO: 5 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: JDB.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL-EPD.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
300								2×¼" w/Ser & pyroph envel.	ALTERED BONANZA VOLCANICS - CONT'D.						300	
								½" w/Rh2-Ser.			6	306	100			96
310								2col. w/Py.							310	
								3×¼" @40.	@317 Tr. Gpy diss'd.		6	315.5	91			93
320															320	
											5 to 6	322.5	95			94
330								6" chlg-chl.	Minor fault w/ 1-5' bx'd + broken core on FW.				93		330	
								6" bx'd + gouge. ½" zeol. w/chl. ½" w/zeol.	Minor fault.		5 to 6	333	98		310	97
340											5	343				
								Andesite dikes ¼" w/chl.	as per 350-		6	347	94		350	97
350								chl as ff.	ANDESITE DIKE 350 - 360				100			
								w/chl.	Dk grn m. colour, w/ anhedral plag phenos, 1-2 mm, 3% modal per coat, set in dk grn aphanitic gnd. Gnd str. perv. chl., poss. lesser sericite. Chl'd meshes 5%. Minor Py along ff, and irreg blebs 1-2 mm, also v. f. gr'd diss'd.		21	356				96
360								lower ct. @ 30.					91		360	

HOLE NO. EC-130 | PROJECT: | PAGE NO: 6 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: SILICA	SERICITE	CLAY (Kaolin)	CHL - EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	DESCRIPTIVE GEOLOGY	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
360					Str. 8-10/ft to 4-6 x inreg.	Py				ALTERED SOVANCO VOLCANICS - 360 - 536		363	94	AXIAL	360	
								Py vns @ 4-6 w Ser 8-10/ft.		Perv. alt'n as above dike. Ser-pyroph remain str. possibly lesser kaolin. Textures vague to locally distinct lapilli. VHS: Py, Ser, Zeol. Intense Py.	7					96
370								3" fault bx. healed w/ Py-Zeol.				373.5	97		370	
								1" chl. gouge c/ zeol + Py			10					99
380								- Ser as inreg H.L. ff.		Past 380, HL changes colour from buff-grey to medium greyish-grn. RE-appearance of chlorite.			100		380	
								2" chl. gouge w/ zeol-Py.				383.5				
								Str. pymph. ½" w/ Py.			10					95
390								> locally decrease in Py ff 3-8/ft.					92		390	
								cbtx chl.			8	394				97
400													100		400	
								> Py ff 6-8/ft.		Past 404. Decrease in pyroph to weak to absent.	10	404				100
410								- Decrease Py ff. past 409:		Past 409, lithologic change from mainly lapilli tuff to interbedded alt'd tuffaceous lx w/ finely laminated, 3-5 mm. either ash or pass. argillite. Tuffaceous beds generally massive and a few ft. thick str. perv. clay-Ser. laminated lx. Somewhat hd., brittle & w/ less int. Ser-(clay). Colours lt-dk grey, beige to cream.	8	414	100		410	
								6" Bx 3+ gouge. ½"					95			98
420															420	

HOLE NO. EC-130 | PROJECT: | PAGE NO: 7 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB.

SECTION	ALTERATION: SILICA	SERICITE	CLAY	CHL - EP.	FRACTURING	MINERAL	GEOLOGY	COMMENTS:	DESCRIPTIVE GEOLOGY	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
420					wk-mod.	Py		⅛" bds Py parallel to bedding @ 60.	BONANZA VOLCANICS - CONT'D.					NWNL	420	
									Post 422, mainly tuffaceous & grainy w/ sft. pale clay-(ser) alt'n. Continues to 436, where it is fault bounded w/ texturally similar lithic tuff, but color change to lt.-medium grey. Alt'n change from clay-(ser) to ser-(clay)		6½	425	95			94
430								¼" x ⅛ Alt'n w/ Py-Chl-Ser.							430	
								⅛ Alt'n w/ Py.	@ 432. Appearance of wk-mod Alt'n vlts. Notation in silica alt'n column denotes vlts.		6		91			91
440								Minor gouge & bx'n.							440	
								½" w/ Alt'n.				441.5				
								w/ Alt'n.			5	445.5	90			86
450															450	
													86			
											6	456				91
460															460	
								2" gouge w/ 1" crushed blob Py.					99			
								½" Chl.			5	466				98
470								1" Alt'n w/ zeol-chl-Py.							470	
								1" Py.	Post 472. Colour change to medium grey, rock dense, siliceous. (a°?). Lapilli frags vague to distinct, mostly chl'd, locally ser'd & absent. Alt'n hard ser in gm. Decrease in sulphides as diss'n and ff. Notation in silica alt'n column assumes silica in gm. 20.				96			
								¼" w/ Py.			6	476				98
								zeol. w/ Py.					100			
480															480	

HOLE NO. EC-130 | PROJECT: | PAGE NO: 8 OF 8

COLLAR ELEV: | GROUND ELEV.: | DATE STARTED: | REF. TO CLAIM CORNER:

COORDINATES: N. E. | DATE FINISHED: | SCALE:

INCLINATION: | BEARING: | TOTAL DEPTH: | LOGGED BY: BKB

ALTERATION: SILICA | SERICITE | CLAY | CHL-EP. | FRACTURING | MINERAL | GEOLOGY

COMMENTS:

AVE CORE REC'Y / HOLE

DESCRIPTIVE GEOLOGY

SECTION	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.
480				NQWL	480	
	5	486	100			100
490					490	
	3 to 4	496	100			99
500					500	
	3 to 4	506	98			98
510					510	
	5	516	98			99
520					520	
	5	526	100			99
530					530	
	4	536	98			98

BONANZA VOLCANICS - CONT'D.

1/4" w/Py.

1/4" w/Qtz.

1" Py w/MH-Qtz-(Cpy)

1" Py-w/MH-(Cpy)

1st note of MH-Cpy ~55°a.

Rock color med greyish-grn. Chl'd of lapilli frags prominant. Gen. SMH siliceous.

1/8" Qtz VH-w/Py.

3" zeol. w/chl.

1/4" Py w/MH.

1/2" Py-MH/w/Cpy.

cse blebs Py=MH.

1/2" Py-MH w/Tr. Cpy.

Attitude dikes not known.

Mass noted on Tr w/Py-Ser.

Micro-Ft s/w w/Py-Ser MH.

522-531 Possible alt'd intrusive dike intercepts Contact vague. Alt'd assemblage mainly chlorite, & chl-ser, anhedral, set in sil. grn w/minor ser not dist. bxe. vague textures, but appears shw. (x)line. No Alt'd eyes noted.

531-536 Banding obs'd @ 30° ca. w/ beige and brown colours. 3 finely laminated felds.

END OF HOLE @ 536'.

52
53
51
21
22
25
23
862
863
864
H-101
H-99
H-97
H-100
H-98
H-96
H-94
H-93
H-90
H-89
H-87
EC-119
EC-120
EC-130
R O A D
R E D
D O G
A R E A

LEGEND

EC-120 Diamond drill hole drilled during period Sept - Oct, 1974

EC-130 Diamond drill hole drilled during period Sept - Oct, 1977

H-100 H designates Hep claim. Number only designates Expo claim

	208,000	218,000	228,000	238,000	248,000	258,000	268,000
270,000 N							
268,000	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11
266,000	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	B-11
264,000	C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10	C-11
262,000	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	D-9	D-10	D-11
260,000	E-1	E-2	E-3	E-4	E-5	E-6	E-7	E-8	E-9	E-10	E-11
258,000	F-1	F-2	F-3	F-4	F-5	F-6	F-7	F-8	F-9	F-10	F-11
256,000	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8	G-9	G-10	G-11
254,000	H-1	H-2	H-3	H-4	H-5	H-6	H-7	H-8	H-9	H-10	H-11

TO ACCOMPANY DRILLING REPORT ON THE EXPO GROUPS 2,4,5,6,7 & 8 LOCATED 50° 127° NW

By B. Bowen Aug. to Oct. 77

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. J. SCHMIDT

A. Schmidt Nov 23/77

Plate No 1

UTAH MINES LTD.

MINERAL EXPLORATION & DEVELOPMENT DEPARTMENT

VANCOUVER BRITISH COLUMBIA

MINERAL RESOURCES BRANCH ASSESSMENT REPORT NO. 6531

DIAMOND DRILL HOLE COLLAR LOCATION PLAN

Work by B.B.	Date: Nov., 1974	NTS Ref.	
Drawn by B.B.	Revised Nov., 1977	MAP	of B-3

200 100 0 200 400 600

SCALE IN FEET

HEP 25

HEP 24

HEP 5

HEP 6

HEP 1 Fr.

CREEK

HEPLER

DDH HC-26

DDH HC-25

DDH HC-27

HEP 1

HEP 8

HEP 2

Base Line

HEP 28

HEP 29

HEP 7

DON 7 Fr.

DON 3 Fr.

EXPO 193

HEP 58

HEP 56

HEP 65

HEP 63

HEP 54

EXPO 191

EC-125

EC-126

HEP 57

HEP 59

DON 2 Fr.

HEP 66

HEP 64

HEP 55

LEGEND

EC-125 Diamond drill hole drilled during the period Sept to October, 1977

Transit Survey, Hubs

Picket Line, Showing line and station designation

665 | 678 / 697 | 694 Expo Claim Boundary showing claim number and claim post

DDH Diamond Drill Hole Elev. 653

" " "

MINERAL RESOURCES BRANCH ASSESSMENT REPORT NO. 6531

TO ACCOMPANY DRILLING REPORT ON THE EXPO GROUPS 2,4,5,6,7 & 8 LOCATED 50° 127° NW

By B. Bowen Aug. to Oct. 77

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. J. SCOTT

A. Scott Nov. 27/77

Plate No 2.

UTAH CONSTRUCTION & MINING CO.

MINERAL EXPLORATION & DEVELOPMENT DEPARTMENT

DIAMOND DRILL HOLE COLLAR LOCATION PLAN

Work by: BB | Date: Nov. 1977 | NTS Ref.

Drawn by: BB | Revised: | MAP C-5 of

200 100 0 200 400 600

SCALE IN FEET

EXPO 190
EXPO 237
EXPO 239
EXPO 241
EXPO 243
EXPO 324
EXPO 323
EXPO 326
EXPO 325
EXPO 257
EXPO 258
EXPO 259
EXPO 260
EXPO 262
EXPO 261
EXPO 264
EXPO 263
EXPO 280
EXPO 279
EXPO 282
EXPO 281
EXPO 284
EXPO 283

DON 2 Fr.
DON 4 Fr.
DON 6 Fr.
DON 12 Fr.
DON 13 Fr.
DON 14 Fr.

HUSHAMU LAKE

Core storage and logging structure

EC-123
EC-124
EC-127
EC-128
EC-129

249,000 N
248,000 N
247,000 N
246,000 N
245,000 N
244,000 N
243,000 N
242,000 N

232,000 E
233,000 E
234,000 E
235,000 E
236,000 E
237,000 E
238,000 E
239,000 E
240,000 E

TO ACCOMPANY DRILLING
REPORT ON THE
EXPO GROUPS 2,4,5,6,7 &8
LOCATED 50° 127° NW

By B. Bowen Aug. to Oct. 77

Plate No 3

LEGEND

EC-124 - Diamond drill hole drilled during the period Sept 27 - Oct 31, 1976.

EC-128 - Diamond drill hole drilled during the period Sept 8 - Oct 14, 1977

SYMBOLS

Transit Survey, Hubs

Picket Line, Showing line and station designation

Hep Claim Boundary Unsurveyed, showing claim number and claim post

DDH Diamond Drill Hole Elev. 7153 — Drilled prior to 1976.

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6531

Nov 29 1977

PROFESSIONAL ENGINEER
A. J. SCHMIDT
BRITISH COLUMBIA
ENGINEER

UTAH CONSTRUCTION & MINING CO.
MINERAL EXPLORATION & DEVELOPMENT DEPARTMENT

DIAMOND DRILL HOLE LOCATION PLAN

Work by B.B.	Date: Feb. 1977	NTS Ref.	
Drawn by B.B.	Revised: Nov. 1977	MAP	D-6

200 100 0 200 400 600
SCALE IN FEET