

5345

DRILLING REPORT

ON THE

EXPO GROUPS 15 AND B

92L/12E, 12W

HEP-EXPO GROUPS 6 AND A

1974

LOCATED

FIFTEEN TO TWENTY-ONE MILES, WEST AND SOUTHWEST
OF PORT HARDY, B.C.
50° 127° NW

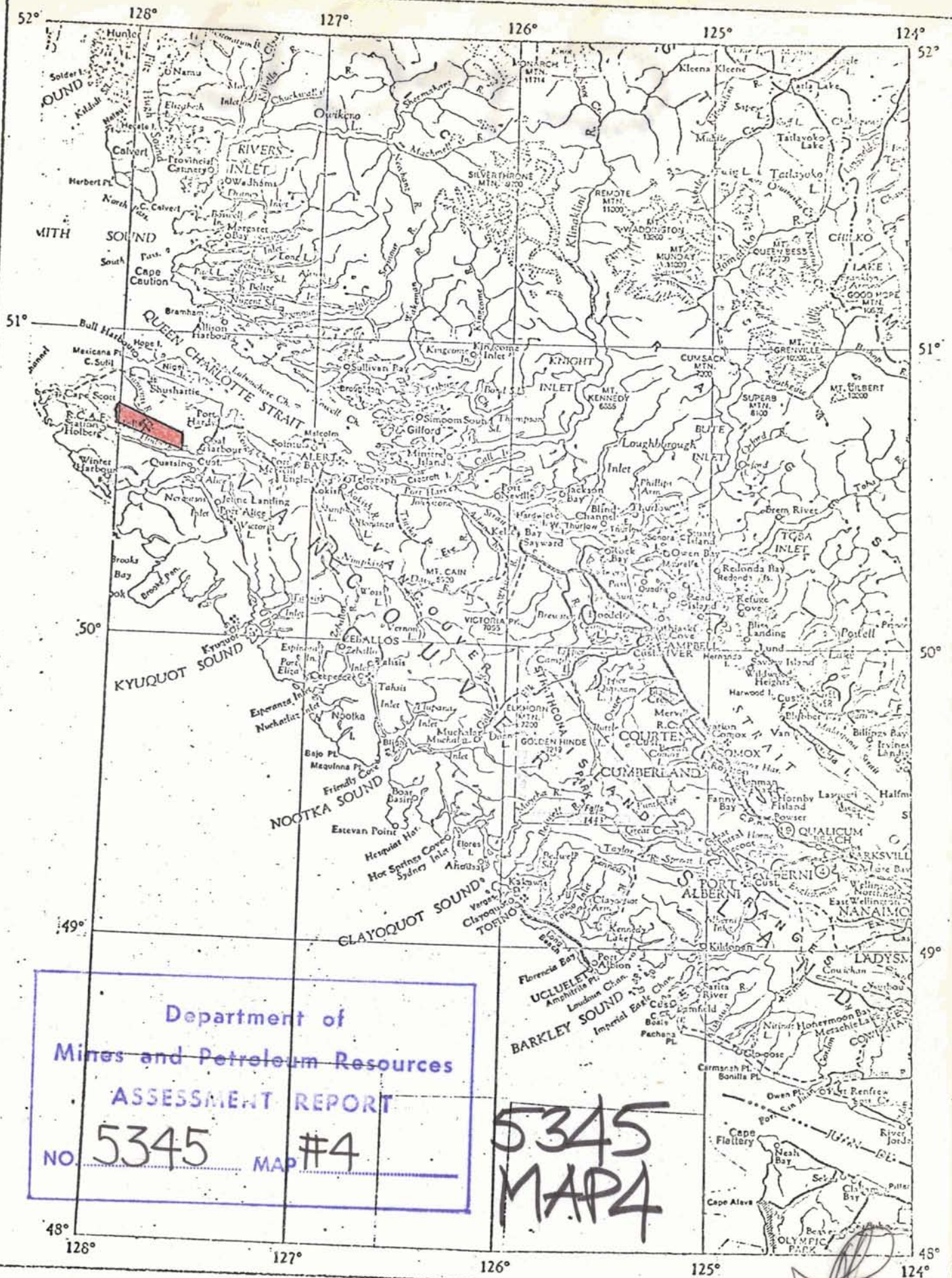
Department of	
Mines and Petroleum Resources	
ASSESSMENT REPORT	
NO. 5345	MAP.....

BY

B. BOWEN, GEOLOGIST

UTAH MINES LTD.





Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 5345 MAP #4

5345
 MAP4

SCALE: 1 INCH = 30 MILES

INDEX MAP

HEP - EXPO GROUPS
 Nanaimo Mining Division

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SUMMARY

In Hushamu Lake area, during the period 18th September to 14th November, 1974, four (4) diamond drill holes were drilled for a total footage of 2,247 feet. Outside of Hushamu Lake area, on Expo No.'s 23, 479 and 487, three (3) drill holes were completed for a total footage of 1,269 feet.

DRILLING REPORT ON THE EXPO GROUPS
15 AND B AND HEP-EXPO GROUPS 6 AND A

- INTRODUCTION -

From 18th September to 14th November, 1974, diamond drilling was done on Expo Groups 15 and B and Hep-Expo Groups 6 and A. The claims upon which diamond drilling was specifically done include Expo No.'s 23, 189, 479 and 487, and Hep No. 59.

Geology and supervision by Utah Mines Ltd. included the following personell: U. Malachowski, F. Gatchalian, Geologists; K. Orleski, D. Fehr, Rene Hackmann, Bruce Broadhurst, Gerry Kroeker, Field Assistants.

Drilling was performed by Connor's Drilling Ltd. The Connors crew consisted of four (4) two (2) man drilling crews, one foreman and one cook.

The above claims are part of a larger block of 847 claims located by Utah Mines Ltd. between 1963 and 1974, along the north side of Holberg Inlet about fifteen to twenty-one miles west and south-west of Port Hardy, near the north end of Vancouver Island.

The Hep-Expo Groups affected by this report cover an area roughly eight (8) miles long by three-quarters (3/4) of a mile wide trending west-northwest in the west central portion of the claim block. The Expo Groups affected cover an area roughly two and one-half (2 1/2) miles square in the northeast corner of the claim block. Within the drill areas, which lie

within the timber licences of Rayonier Logging Company, unlogged areas support mature stands of hemlock, spruce, cedar and balsam. Relief is moderate, ranging from 400 feet to 2,200 feet, but the topography is generally rugged and irregular. The drainage system is highly active, accommodating a high runoff resulting from an approximate 200 inch annual rainfall. Swamps are common and there are some small lakes.

Access to the claims is via the Port Hardy-Holberg road, which leaves the Port Hardy-Port McNeil highway about two (2) miles south of Port Hardy and passes along the south side of Kains and Nahwitti Lakes. Additional access within the claim group is provided by a well developed network of logging roads, most of which belong to Rayonier, and a lesser number to O'Connor Logging Company.

The drill camp was located on Rayonier haul road Branch NE 155, in Expo #242, and was serviced exclusively by road.

DIAMOND DRILLING PROGRAM

Two (2) machines were on the property at all times and were run by four (4) two (2) man crews. Each crew worked a ten (10) hour shift, seven (7) days per week.

A summary of diamond drill holes drilled during the period 18th September to 14th November, 1974 is given below.

<u>HOLE NO.</u>	<u>LOCATED ON CLAIM</u>	<u>ANGLE</u>	<u>BEARING</u>	<u>DEPTH (FEET)</u>
EC 115	Hep # 59	-90°	-----	978' (478)*
EC 116	Hep # 59	-90°	-----	798' (598)*
EC 117	Hep # 59	-90°	-----	558'
EC 118	Hep # 59	-90°	-----	613'
EC 120	Expo # 23	-90°	-----	275'
EC 121	Expo #479	-60°	N 25° E	503'
EC 122	Expo #487	-90°	-----	491'
<u>TOTAL FOOTAGE</u>				3516

* The first figure shown is total depth; the second, in parentheses, is footage drilled during the period September 18th to November 14th.

Diamond drill holes EC-115 to EC-118 are located in the Hushamu Lake area (See Plate 1). Diamond drill holes EC-120, EC-121 and EC-122 are located outside Hushamu Lake area on Expo claim No's 23, 479 and 487 respectively (See Plates 2 and 3). One diamond drill hole, EC-121, located in a logging slash and accessible via O'Connor Branch No. 13 logging road required little site preparation. All other holes were helicopter supported. The helicopter supported holes 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 manoeuvre with safety. Generally, sites measured approximately one hundred (100) feet by one hundred and fifty (150) feet. Every site was further prepared by construction of a platform on which the drill machine was placed and anchored.

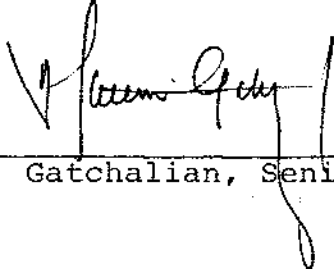
Drilling, generally, encountered fairly good ground conditions, with average core recovery in the 90 to 95+ per cent range. One (1) hole, EC-120, was abandoned before the required depth was reached due to very bad ground conditions (average recovery less than 50 per cent). Core size was dominantly NQ, although BQ and some HQ were also cored.

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 newly constructed 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.

Data accompanying the drilling report consists of complete diamond drill logs for diamond drill holes EC-117, EC-118 and EC-120 to EC-122, in Appendix E**, and also diamond drill hole collar location plans (Plates 1 to 3). Statement of qualifications, statement of cost, diamond drilling contractor's 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 F. Gatchalian. His signature below is to cover all log sheets comprising Appendix E.

** Complete diamond drill logs for EC-115 and EC-116 have been submitted in an earlier assessment report entitled "Geological, Geophysical, and Drilling Report on the Expo Groups 4, 8, 9, 10, 11, 12, 13 and 14; Hep-Expo Groups 2, 3, 5, 6, 7 and A; and Moe-Expo Group 1 located twenty-one miles west and south-west of Port Hardy, B.C.", dated 22nd November, 1974, and submitted 24th November, 1974.


F. Gatchalian, Senior Geologist


B. Bowen, Geologist

APPENDIX A

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

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

1. U. MALACHOWSKI, Geologist for Utah Mines Ltd., Vancouver, British Columbia.
Completed B.Sc. 1969; employed by Texaco Explorations, Calgary, Alberta, from 1969 to 1970; by Kennco Explorations, Vancouver, British Columbia, from 1970 to 1971; and by Utah Mines Ltd., Vancouver, British Columbia, from 1971 to date as a geologist under the supervision of E.G. Rugg, P. Eng, and M.J. Young, P. Eng.

2. F.R. GATCHALIAN, JR., geologist for Utah Mines Ltd., Vancouver, British Columbia, completed B.A. (geology) at Adamson University, Manilla, P.I., in 1950; employed by Atlas Consolidated Mining and Development Company from April to June, 1956 as student-trainee; employed by American Asiatic Oil Corporation from April, 1959 to March, 1963 in the Phillipine Islands as geologist for oil exploration under the supervision of Foutunato Mamacalay; employed by Samar Mining Company Incorporated from March, 1963 to March, 1964 in the Marara project, Davao, P.I. as project geologist under the supervision of G.M. DuBoulay; employed by Central Engineering Company from March, 1964 to November, 1967 in Manila, P.I. as a geologist under the supervision of Pablo Capistrano; employed by Utah Mines Ltd. from January, 1968 to date as a geologist under E.S. Rugg, P. Eng., and M. J. Young, P. Eng.

3. 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, Gibraltar property, 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 M.J. Young, P. Eng.

APPENDIX B

STATEMENT OF COST

STATEMENT OF COST

SALARIES - CORE LOGGING

U. Malachowski	35 days @ \$36.50 per day	\$	1277.50		
F. Gatchalian	30 days @ \$48.46 per day	\$	<u>1453.80</u>		
		\$	2731.30	\$	2731.30

SALARIES - CORE SPLITTING

Miscellaneous

Labor	58 days @ \$19.00 per day	\$	<u>1102.00</u>		
		\$	1102.00	\$	1102.00

GENERATOR

Two (2) months @ \$20.00 per month		\$	<u>40.00</u>		
		\$	40.00	\$	40.00

VEHICLE RENTAL

One 1974 3/4 Ton Pick-up, Ford 2 X 4,					
58 days @ \$15.00 per day		\$	<u>870.00</u>		
		\$	870.00	\$	870.00

CORE BOXES

Total Cost		\$	<u>518.95</u>		
		\$	518.95	\$	518.95

DIAMOND DRILL HOLE SITE PREPARATION

Total Cost		\$	<u>1126.12</u>		
		\$	1126.12	\$	1126.12

RADIO EQUIPMENT

SSB	58 days @ \$1.91 per day	\$	<u>110.78</u>		
		\$	110.78	\$	110.78

CONTRACT DIAMOND DRILLING (CONNORS DRILLING LTD.)

For period 18th September to 14th November inclusive.

(includes complete costs for DDH EC-117 to
EC-122 and partial costs for DDH EC-115 and
EC-116)

\$ 95984.77

Less complete cost for DDH EC-119*

\$ 11739.00

84245.77 \$ 84245.77

HELICOPTER SUPPORT (VANCOUVER ISLAND HELICOPTER)

Total Cost (18th September to 14th November,
1974 inclusive)

\$ 14465.40

\$ 14465.40 \$ 14465.40

REPORT AND MAP PREPARATION

Total cost

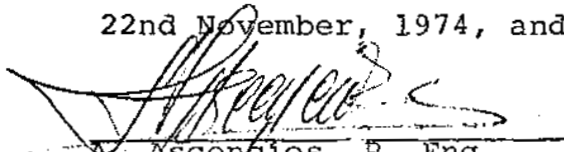
\$ 600.00

\$ 600.00 \$ 600.00

GRAND TOTAL

\$105,810.32

- * Complete cost for DDH EC-119 was previously claimed in an assessment report titled "Geological, Geophysical and Drilling Report on the Expo Groups 4,8,9,10,11,12,13 and 14; Hep-Expo Groups 2,3,5,6,7, and A; and Moe-Expo Group 1 located twenty-one miles west and southwest of Port Hardy, B.C.", dated 22nd November, 1974, and submitted 24th November, 1974.


A. Ascencios, P. Eng.

APPENDIX C

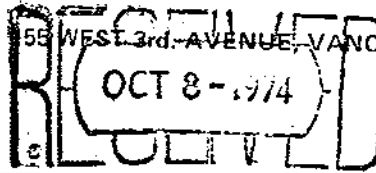
DIAMOND DRILLING INVOICES

A handwritten signature or set of initials, possibly 'S.B.', located in the bottom right corner of the page.



Connors Drilling Ltd.

Subsidiary of
Bow Valley Industries Ltd.



58 WEST 3rd AVENUE, VANCOUVER, B.C. CANADA V5Y 1E8
AREA CODE 604/872 - 1675

Utah Mines Ltd.,
#412-510 West Hastings Street,
Vancouver, B. C. V6B 1L9.

JOB: 1-437
INVOICE NO: 5232
DATE: October 7, 1974

SURFACE DIAMOND DRILLING HOLBERG, B. C. September 16 - 30, 1974.

FOOTAGE FEE

D. D. Hole #	EC-115	405' - 500' - 95'	@\$13.75	\$1,306.25	
		500' - 978' - 478'	15.15	7,241.70	
	EC-116	178' - 500' - 322'	13.75	4,427.50	
		500' - 800' - 300'	15.15	4,545.00	
	EC-117	0' - 35' - 35'	12.50	437.50	
		35' - 43' - 8'	13.75	110.00	
	74-1	0' - 54' - 54'	12.50	675.00	
		<u>1292'</u>			\$18,742.95

MEALS SERVED YOUR PERSONNEL

Sept. 16 - 30/74 (Copy attached) - 74 Meals @ \$3.00 222.00

TRACTOR RENTAL - Sept. 16-30/74

1/2 Month - 1/2 x 1,600.00	\$800.00	
5% Tax	<u>40.00</u>	840.00

RECEIVED
 OCT 8 - 1974

Utah Mines Ltd.,

DATE OCTOBER 7, 1974

INVOICE NO. 5232

JOB: 1-437

PAGE 2

FIELD COST WORK		Drill #	Walking		Drill Hrs.	Remarks	
Date	Shift		Time	Man Hrs.			
Sept. 17/74	Day	1		2	1	Mixing Mud.	
Sept. 17/74	Night	1		2	1	Mixing Mud.	
Sept. 18/74	Day	1		2	1	Mixing Mud.	
Sept. 19/74	Day	1		2	1	Mixing Mud.	
Sept. 22/74	Day	1		2	1	Mixing Mud.	
Sept. 25/74	Day	1		38	10	Pull rods & tear down.	
Sept. 26/74	Day	1		40	10	Work on new set-up.	
Sept. 27/74	Day	1		40	10	Work on new set-up.	
Sept. 28/74	Day	1		40	10	Completed set-up.	
Sept. 29/74	Day	1		40	10	Moving with chopper.	
Sept. 30/74	Day	1		28	8	Completed move.	
Sept. 30/74	Night	1		10	5	Casing to 43'.	
Sept. 30/74	Night	1		2	1	Mixing Mud.	
Sept. 16/74	Day	2		2	1	Mixing Mud.	
Sept. 16/74	Night	2		2	1	Mixing Mud.	
Sept. 17/74	Day	2		2	1	Mixing Mud.	
Sept. 17/74	Night	2		2	1	Mixing Mud.	
Sept. 18/74	Day	2		2	1	Mixing Mud.	
Sept. 18/74	Night	2		2	1	Mixing Mud.	
Sept. 19/74	Day	2		2	1	Mixing Mud.	
Sept. 19/74	Night	2		2	1	Mixing Mud.	
Sept. 20/74	Day	2		28	10	Pull casing & tear down.	
Sept. 21/74	Day	2		36	10	Tear down, etc.	
Sept. 22/74	Day	2	8	40	10	Work on next set-up.	
Sept. 23/74	Day	2		40	10	Getting camp ready to move.	
Sept. 24/74	Day	2		40	10	Chopper Delay,	
Sept. 25/74	Day	2	4	40	10	Moving with Chopper.	
Sept. 26/74	Day	2	4	40	10	Building set-up.	
Sept. 27/74	Day	2	4	40	10	Building set-up.	
Sept. 28/74	Day	2	4	40	10	Moving with chopper.	
Sept. 29/74	Day	2	4	40	10	Setting up.	
Sept. 30/74	Day	2	4	2	1	Mixing Mud.	
Sept. 30/74	Day	2		20	5	Complete Setting up.	
				32	670	183	
CREDIT 2-Moves					-32		
					638		
TOTAL WALKING TIME		32	@\$10.00	\$	320.00		
TOTAL MAN HOURS		638	11.00		7,018.00		
TOTAL DRILL HOURS		183	9.00		1,647.00		8,985.00

FREIGHT CHARGES ON MUD

Route of the Haidas - Inv.# 159523 (Copy attached)	\$588.97	611.22
Thiessen Equipment - Inv.# 15035 (Copy attached)	22.25	\$29,401.17

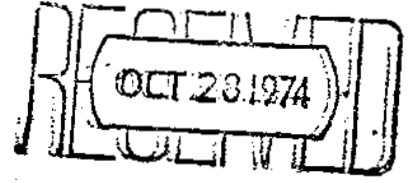


205-1201 West Pender Street, Vancouver, B. C.
~~155 WEST PENDER STREET VANCOUVER, B.C. CANADA V6E 2V2~~
 AREA CODE 604 272 0157
 V6E 2V2 Canada

Utah Mines Ltd.
1050 West Pender Street
Vancouver, B. C.

JOB: 1-437
 INVOICE NO: 5262
 DATE: 25 October 1974

SURFACE DIAMOND DRILLING
 HOLBERG, B. C.
October 1 - 15, 1974



<u>FOOTAGE FEE</u>							
D. D. Hole	No.	74-1	54' - 500'	446' @	13.75	\$6,132.50	
			500' - 516'	16' @	15.15	242.40	
		74-2	0' - 60'	60' @	12.50	750.00	
		--	60' - 141'	81' @	13.75	1,113.75	
		EC-117	43' - 500'	457' @	13.75	6,283.75	
		--	500' - 558'	58' @	15.15	878.70	
		EC-118	0' - 20'	20' @	12.50	250.00	
			20' - 32'	12' @	13.75	165.00	\$15,816.10
				<u>1150'</u>			

MEALS SERVED YOUR PERSONNEL

October 1-15, 1974 (Copy attached) 69 meals @ 3.00 207.00

TRACTOR RENTAL - Oct. 1-15-74

1/2 month - 1/2 x 1600.00 \$800.00
 5% Tax 40.00 840.00

--2



Connors Drilling Ltd.

Subsidiary of
Bow Valley Industries Ltd.

205-1201 West Pender Street
Vancouver, B. C. V6E 2V2 Canada 683-2222

XX

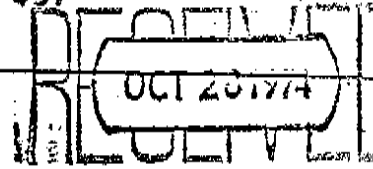
Area Code 604/872-1675
XXXXXXXXXXXXXXXXXXXX

Utah Mines Ltd.

DATE October 25, 1974

INVOICE NO. 5262

JOB: 1-437



Page two

FIELD COST WORK

Date	Shift	Drill#	Man Hrs	Drill Hrs.	Remarks
Oct 1/74	Day	1	2	1	Ream Casing 36'-3
Oct 1/74	Night	1	2	1	Mixing Mud
Oct 2/74	Night	1	2	1	Mixing Mud
Oct 3/74	Night	1	2	1	Mixing Mud
Oct 4/74	Day	1	2	1	Mixing Mud
Oct 4/74	Night	1	2	1	Mixing Mud
Oct 5/74	Day	1	4	2	Mixing Mud
Oct 5/74	Night	1	2	1	Mixing Mud
Oct 6/74	Day	1	30	10	Mixing Mud
Oct 7/74	Day	1	40	10	Tear down to move
Oct 8/74	Day	1	24	6	Clearing next set
Oct 9/74	Day	1	40	10	Clearing next set
Oct 10/74	Day	1	40	10	Waiting for choppe
Oct 11/74	Day	1	40	10	Moving with choppe
Oct 15/74	Day	1	8	4	Assembling drill
Oct 1/74	Day	2	6	3	Ream Casing 20'-30
Oct 1/74	Day	2	2	1	Ream & Case 0'-70
Oct 1/74	Night	2	2	1	Mixing Mud
Oct 1/74	Night	2	10	3	Mixing Mud
Oct 2/74	Day	2	2	1	Ream Casing 71-93
Oct 2/74	Night	2	2	1	Mixing Mud
Oct 3/74	Day	2	4	2	Mixing Mud
Oct 3/74	Day	2	2	1	Ream Rods to 200
Oct 3/74	Night	2	2	1	Mixing Mud
Oct 4/74	Day	2	2	1	Mixing Mud
Oct 4/74	Night	2	2	1	Mixing Mud
Oct 5/74	Day	2	36	9	Mixing Mud
Oct 6/74	Day	2	40	10	Tear Down
Oct 7/74	Day	2	52	13	Tear Down for Move
Oct 8/74	Day	2	40	10	Moving camp
Oct 9/74	Day	2	40	10	Building setup
Oct 10/74	Day	2	30	10	Weather delay
Oct 11/74	Day	2	10	3	Moving with choppe
Oct 11/74	Day	2	2	1	Laying Host Line
Oct 12/74	Night	2	2	1	Mixing Mud
Oct 13/74	Day	2	12	6	Mixing Mud
Oct 13/74	Night	2	16	8	Reducing Hole to B
Oct 14/74	Day	2	10	5	Wait for helicopter
Oct 14/74	Day	2	10	5	for BQ Parts
			376	180	Wait for helicopter
			32		Ream BW Casing
			344		

Credit 2 moves

[Signature]

SI-0700



Connors Drilling Ltd.

Subsidiary of
Bow Valley Industries Ltd.

205-1201 West Pender Street
Vancouver, B. C. V6E 2V2 Canada 683-2222
~~25 West 1201 Avenue Vancouver B.C. V6E 2V2~~
~~Area Code 604 282-1078 x~~

• Utah Mines Ltd.

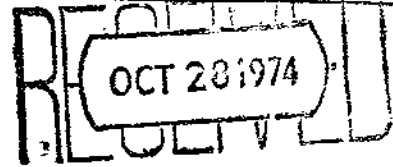
To

• DATE 25 October 1974

• INVOICE NO. 5262

• JOB: 1-437

Page three



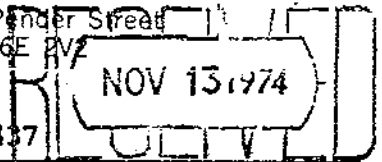
TOTAL MAN HOURS	544	@	11.00	5984.00
TOTAL DRILL HOUR	180	@	9.00	<u>1620.00</u>

7604.00

24,467.10



Suite 205 - 1201 West Pender Street
Vancouver, B.C. V6E 2V7



JOB: 1-437

Utah Mines Ltd.,
1050 West Pender Street,
Vancouver, B. C.

INVOICE NO: 5329
DATE: November 11, 1974

SURFACE DIAMOND DRILLING
HOLBERG, B. C.
October 16 - 31, 1974.

Mr. G. Atchalian
Checked this
Nov. 26/74
Small charges
see other copy
\$10,731.95

<u>FOOTAGE FEE</u>					
D.D. Hole #	EC-118	32' - 500' - 468'	@\$13.75		\$6,435.00
		500' - 613' - 113'	15.15		1,711.95
	-121	0' - 32' - 32'	12.50		400.00
		32' - 68' - 36'	13.75		495.00
	74-2	141' - 208' - 67'	12.50		837.50
		208' - 213' - 5'	@ Field Cost		
		213' - 275' - 62'	13.75		852.50
		<u>783'</u>			

MEALS SERVED YOUR PERSONNEL

Oct. 16-31/74 (Copy attached) 107 @\$3.00 **321.00**

TRACTOR RENTAL - Oct. 16-31/74

1/2 Month 1/2 x \$1,600.00 = \$800.00
5% Tax 40.00 **840.00**

NOV 13 1974

Utah Mines Ltd.

DATE: November 11, 1974

To

INVOICE NO. 5329
 JOB: 1-437

PAGE 2

FIELD COST WORK

Date	Shift	Drill #	Walking Time	Man Hrs.	Drill Hrs.	Remarks
Oct. 16/74	Day	1	0	8	4	Ream casing to 42'.
Oct. 16/74	Day	1	0	2	1	Mixing Mud
Oct. 16/74	Night	1	0	2	1	Mixing Mud
Oct. 17/74	Night	1	0	2	1	"
Oct. 18/74	Day	1	0	2	1	"
Oct. 18/74	Night	1	0	2	1	"
Oct. 19/74	Day	1	0	2	1	"
Oct. 19/74	Night	1	0	2	1	"
Oct. 20/74	Day	1	0	2	1	"
Oct. 20/74	Night	1	0	2	1	"
Oct. 21/74	Day	1	0	2	1	"
Oct. 21/74	Night	1	0	2	1	"
Oct. 22/74	Day	1	0	2	1	"
Oct. 22/74	Night	1	0	2	1	"
Oct. 23/74	Day	1	0	2	1	"
Oct. 23/74	Night	1	0	2	1	"
Oct. 24/74	Day	1	0	2	1	"
Oct. 24/74	Day	1	0	8	4	Moving to EC-121
Oct. 25/74	Day	1	0	37	10	Tear down drill
Oct. 26/74	Day	1	0	30	10	Building setup
Oct. 27/74	Day	1	0	33	11	Moving drill with helicopter
Oct. 28/74	Day	1	4	20	10	Complete setting up
Oct. 29/74	Day	1	4	2	1	Mixing Mud
Oct. 30/74	Day	1	4	0	0	
Oct. 31/74	Day	1	4	2	1	Mixing Mud
Oct. 16/74	Day	2	4	0	0	
Oct. 17/74	Day	2	2	0	0	
Oct. 17/74	Night	2	2	2	1	Mixing Mud
Oct. 17/74	Night	2	0	2	1	Pull out casing
Oct. 18/74	Day	2	2	2	1	Mixing Mud
Oct. 18/74	Day	2	0	18	9	Ream NW Casing
Oct. 18/74	Night	2	2	2	1	Mixing Mud
Oct. 18/74	Night	2	0	18	9	Install NW casing
Oct. 19/74	Day	2	2	4	2	Mixing Mud
Oct. 19/74	Day	2	0	6	3	Sand in hole
Oct. 19/74	Night	2	2	2	1	Mixing Mud
Oct. 20/74	Day	2	2	20	10	Ream casing
Oct. 20/74	Night	2	2	2	1	Mixing Mud
Oct. 21/74	Day	2	4	0	0	
Oct. 22/74	Day	2	4	24	0	Wait for helicopter
Oct. 23/74	Day	2	2	12	6	Ream 230'-275'

NOV 13 1974

• Utah Mines Ltd.
 To
 •
 •

• DATE November 11, 1974
 • INVOICE NO. 5329
 • JOB: 1-437
 •

PAGE 3

FIELD COST WORK CON'T:

Date	Shift	Drill #	Walking Time	Man Hrs.	Drill Hrs.	Remarks
Oct. 23/74	Night	2	2	20	10	Pull rods & ream casing, sand in hole
Oct. 24/74	Day	2	4	40	10	Work on stuck rods
Oct. 25/75	Day	2	2	20	10	Reaming sand in hole
Oct. 25/74	Night	2	2	20	10	Reaming casing
Oct. 26/74	Day	2	4	40	10	Hole stopped, pull casing
Oct. 27/74	Day	2	0	40	10	Tear down drill
Oct. 28/74	Day	2	0	30	10	Moving
Oct. 29/74	Day	2	8	40	10	Build next setup.
Oct. 30/74	Day	2	8	40	10	Cutting next setup.
Oct. 31/74	Day	2	8	40	10	Moving with helicopter
			<u>84</u>	<u>616</u>	<u>212</u>	
				<u>-16</u>		
				<u>600</u>		

CREDIT 1 MOVE

TOTAL TRAVEL TIME	84	@\$10.00	\$ 840.00	
TOTAL MAN HOURS	600	11.00	6,600.00	
TOTAL DRILL HOURS	212	9.00	<u>1,908.00</u>	9,348.00

SUPPLIES LOST IN HOLE # 74-2

3- pieces HQ 10' Drill Rods	@\$70.50	\$ 211.50	
1- NW Casing Shoe # J42W-225		170.35	
1- Only Sub HQ Rod to NW casing		55.00	
7- pieces NQ 10' Drill Rods	49.50	346.50	
1- NQ 5' Outer Barrel		42.40	
1- NQ 5' Inner Tube		33.55	
1- NQ Core Bit # N6L-5135		427.23	
		<u>\$1,286.53</u>	
5% Tax		64.33	1,350.86

ADJUSTMENTS TO PRIOR INVOICES

Work Sheets attached			<u>354.75</u>
			<u>\$22,946.56</u>

Connors Drilling Ltd.

Subsidiary of
Bow Valley Industries Ltd.

Suite 205 - 1201 West Pender Street
Vancouver, B.C. V6E 2V2

271

JOB: 1-437

Utah Mines Ltd.,
1600 - 1050 West Pender Street
Vancouver, B. C.

NOV 27 1974

INVOICE NO: 5351
DATE: November 26, 1974

SURFACE DIAMOND DRILLING
HOLBERG, B. C.
November 1 - 15, 1974.

FOOTAGE FEE

D. D. Hole # EC-121	68' - 500' - 432'	@\$13.75	\$5,940.00	
	500' - 503' - 3'	15.15	45.45	
EC-122	0' - 8' - 8'	12.50	100.00	
	8' - 491' - 483'	13.75	6,641.25	\$12,726.70 ✓
	926'			

TRACTOR RENTAL - Nov. 1-15/74

1/2 Month	1/2 x \$1,600.00	\$800.00	
		5% Tax	40.00
			840.00 ✓

FIELD COST WORK

Date	Shift	Drill #	Walking Time	Man Hrs.	Drill Hrs.	Remarks
Nov. 1/74	Day	1	4			
Nov. 1/74	Night	1	4			
Nov. 2/74	Day	1	4			
Nov. 2/74	Night	1	4			
Nov. 3/74	Day	1	4			
Nov. 3/74	Night	1	4			
Nov. 4/74	Day	1	4			
Nov. 4/74	Night	1	4			
Nov. 5/74	Day	1	4			
Nov. 5/74	Night	1	4			
Nov. 5/74	Day	1	4			
Nov. 6/74	Night	1	4			

2

RECORDED
 NOV 27 1974

Utah Mines Ltd.

DATE November 26, 1974

INVOICE NO. 5351
 JOB: 1-437

PAGE 2

FIELD COST WORK CON'T:			Walking			Remarks
Date	Shift	Drill #	Time	Man Hrs.	Drill Hrs.	
Nov. 7/74	Day	1	4 ✓	12 ✓	6 ✓	Tear down. ✓
Nov. 8/74	Day	1	8 ✓	32 ✓	8 ✓	Moving out. ✓
Nov. 1/74	Day	2	0	34 ✓	10 ✓	Moving Hole #122.
Nov. 2/74	Day	2	6 ✓	15 ✓	5 ✓	Completed Move, & set-up.
Nov. 3/74	Day	2	6 ✓	9 ✓	3 ✓	Quick Seal Hole
Nov. 4/74	Day	2	4 ✓	2 ✓	1 ✓	Mixing Mud.
Nov. 4/74	Day	2	0	12 ✓	6 ✓	Install 1800' waterline.
Nov. 4/74	Night	2	4			
Nov. 5/74	Day	2	4			
Nov. 5/74	Night	2	4			
Nov. 6/74	Day	2	4			
Nov. 6/74	Night	2	4			
Nov. 7/74	Day	2	4	8	4 - 4'	Ream out hole.
Nov. 8/74	Day	2	4			
Nov. 8/74	Night	2	4			
Nov. 9/74	Day	2	4			
Nov. 9/74	Night	2	4			
Nov. 10/74	Day	2	4			
Nov. 10/74	Night	2	4			
Nov. 12/74	day	2	4			
Nov. 13/74	Day	2	4			
Nov. 13/74	Night	2	4			
Nov. 14/74	Day	2	8 ✓	32 ✓	8 ✓	Tearing Down.
Nov. 15/74	Day	2	6 ✓	30 ✓	10 ✓	Tear down drill & pull hose line
			<u>150</u>	<u>186</u>	<u>61</u>	
CREDIT 1 - Move				-16		
				<u>170</u>		
TOTAL TRAVEL TIME			150	\$10.00	\$1,500.00	
TOTAL MAN HOURS			170	11.00	1,870.00	
TOTAL DRILL HOURS			61	9.00	549.00	3,919.00

MEALS SERVED YOUR PERSONNEL
 (To be invoiced Nov. 16-30/74)

\$17,485.70



~~155 WEST STREET~~

Suite 205 - 1201 West Pender Street
Vancouver, B.C. V6E 2V2

Utah Mines Ltd.,
1600 - 1050 West Pender Street,
Vancouver, B. C.

Job# 1-437
INVOICE NO: 5355
DATE: December 4, 1974

SURFACE DIAMOND DRILLING
HOLBERG, B. C.
November 16 - 19, 1974

*Mr. G. T. Helian
checked Dec. 10/74*

FIELD COST WORK

Date	Walking Time	Man Hrs.	Drill Hrs.	Remarks
Nov. 16/74	6	30	10	Loading helicopter
Nov. 18/74	0	16	0	Tearing down camp
Nov. 19/74	0	11	0	Finish tearing down camp
	<u>6</u>	<u>57</u>	<u>10</u>	

TOTAL TRAVEL TIME	6 @ \$10.00	\$ 60.00	
TOTAL MAN HOURS	57 @ 11.00	627.00	
TOTAL DRILL HOURS	10 @ 9.00	<u>90.00</u>	777.00

MEALS SERVED YOUR PERSONNELS

Nov. 1 - 15/74	65 Meals	@ \$3.00	195.00
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TRACTOR RENTAL - Nov. 16-30/74

1/2 Month	1/2 x \$1,600.00		
	5% Tax		
		840.00	840.00 ✓ ch

279.78
11 366.65
13.33

CREDIT

Your invoice of Nov. 28/74 (Copy attached)			
Truck Driver Chris Bernhardt			
		(127.76)	
		<u>\$1,684.24</u>	

UTAH MINES LTD.

RECEIVED
DEC 2 - 1974

EXPLORATION DEPARTMENT

SUITE 1600, 1050 W. PENDER STREET • VANCOUVER, B.C., CANADA V6E 3S7
(604) 683-6921

November 28th, 1974

In Account With:

Connors Drilling Co. Ltd.,
205 - 1201 West Pender Street,
Vancouver, B. C. V6E 2V2

RECEIVED
DEC 5 - 1974

Truck Driver Chris Bernhardt

Wages for November 21st, 1974

8	hours	@	\$ 5.05	=	\$ 40.40
4	hours	@	7.57-1/2	=	30.30
4-1/2	hours	@	10.10	=	45.45
<hr/>					
16-1/2	hours Total			\$	116.15
Plus 10% Overhead					11.61
<hr/>					
Total				\$	<u>127.76</u>

Job UTAH

Foreman *N. Mowat*

Period *Nov 1-15/74*

NAME	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
<i>F. Hatcherian (Eng)</i>	D																
	A																
	G																
<i>M. Kroeber</i>	D																
	A																
	G																
<i>1st</i>	D																
	A																
	G																
	D																
	A																
	G																
	D																
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	D																
	A																
	G																

65 meals

W

RECEIVED
 DEC 5 - 1974

[Handwritten signature]

APPENDIX D

DIAMOND DRILLING CONTRACT

A handwritten signature or scribble in the bottom right corner of the page, consisting of several loops and a tail.

DRILLING AGREEMENT

THIS AGREEMENT, entered into this 24th day of
MAY, 19 74 by and between

UTAH MINES LTD., a
corporation, hereinafter referred to as "Owner", and
CONNORS DRILLING LTD.,
155 WEST 3RD AVENUE,
VANCOUVER, B.C., V5Y 1E8

hereinafter referred to as "Contractor",

WITNESSETH:

WHEREAS, Owner desires to have Contractor carry out
a drilling program on certain lands controlled by Owner and
located in

; 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 drilling and/or coring 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 TEN 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 NOT APPLICABLE (\$)
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

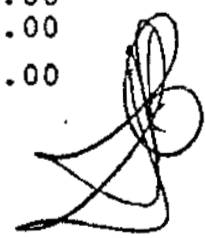
of this agreement.

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:

<u>Insurance Coverage</u>	<u>Minimum Limits</u>	
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 \$100,000.00
Each accident \$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 510 West Hastings Street, Vancouver, B. C.

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 United States post office in an envelope, postage prepaid, and addressed to Contractor at 155 West 3rd Avenue, Vancouver, B. C. V5Y 1E8.

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 R. O. W. [Signature]

Vice President

CONNORS DRILLING LTD.

CONTRACTOR

By [Signature]

SCHEDULE I
WORK PROVISIONS

1. The Contractor will provide equipment, supplies, and crews to operate ^{two} ~~one~~ drilling rigs two (2) shifts per day, including, but not limited to all necessary drilling machinery, bits, associated tools, motor fuels and oils, repair parts, casing rods, core barrels, drilling muds, cement, and all necessary labor and supervision. Contractor shall, at the commencement of work hereunder, at its own expense, transport all such equipment, supplies and personnel to the job site.
2. Holes will be drilled stand BQ, NQ, or HQ 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 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. Holes shall have a minimum depth of 150 feet and a maximum depth of 1,200 feet. Notwithstanding any other provision of this agreement, Owner guarantees that a minimum of 5,000 lineal feet of drilling will be required of Contractor under this agreement.
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 board and lodging for all Contractor's personnel and two (2) to four (4) of the Company's personnel. The Company shall pay the Contractor at the rate of \$3.00 per meal for its personnel.

7. The Contractor will, at its own expense, provide transportation for Contractor's equipment, personnel, and supplies to and from the drill sites and any camp established by Contractor.

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 as follows:

	<u>HQ</u>	<u>HQ</u>	<u>BO</u>
0 - 500 feet	\$17.45	\$13.75	\$12.50 per foot
500 - 1,000 feet	\$20.74	\$15.15	\$13.75 per foot
1,000 - 1,500 feet	\$24.68	\$18.20	\$15.80 per foot

2. Overburden drilling

0 - 100 feet	\$12.50 a foot.
100 - 250 feet	\$15.00 a foot.

Beyond 250 feet, at Field Cost, if the cost of penetration is greater than \$15.00 a foot.

3. Field Cost Defined

"Field Cost" is defined for the purpose of this Agreement as all direct labor, including supervision, at \$11.00 a man hour, drill and equipment (support) rental at \$9.00 per drill rig hour, and the cost of pipe or casing lost, and materials and supplies consumed in the work.

4. Casing, Reaming, Cementing and Mud Circulation operations, in overburden or bedrock, if and when required, shall be at Field Cost.

5. Pipe or Casing Left in Holes

Any Casing, Casing Shoe bits, or pipe left in holes at Owner's request, shall be paid for by owner at the Contractor's Cost, F.O.B. the drill site.

6. Surveying Holes

Any Clinometer survey required by Owner, shall be paid by Owner at a rate equal to the cost of three feet of drilling at the depth where tested.

7. Sludge Samples

The Contractor shall at the Owner's request, collect sludge samples when possible at no cost to Owner. Containers for such samples shall be provided by Owner at no cost to Contractor.

8. Standby Time

Standby time at request of Owner, shall be paid at Field Cost.

9. Travel Time

Should the travel time between drill camp and drill sites exceed one half hour per man, per day, the Company agrees to re-imburse the Contractor for all the travel time at the rate of \$10.00 a man hour.

10. Water

If the source of water supply is a distance greater than 1,500 feet from the drilling site or a vertical lift of over 300 feet, owner shall pay Contractor's actual cost for transporting water in excess of 1,500 feet distance or over lifts in excess of 300 feet.

11. Moving

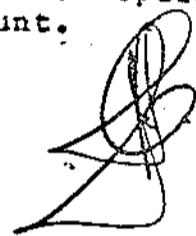
The first 16 man hours incurred in moving between drill sites shall be for the Contractor's Account. Any additional time incurred in moves between drill sites would be for the Company's Account at Field Cost.

12. Mobilization and Demobilization

Contractor, shall at the commencement of operations under this Contract, transport all of its equipment, supplies, and personnel to the truck discharge point, and upon completion of the work under this Contract shall transport all of its equipment, supplies, and personnel from the truck loading point to such other destination as Contractor may choose, for two drilling outfits, associated equipment, operating personnel, a total sum of \$5,000.00.

13. Tractor Rental

The Contractor agrees to provide a tractor to assist in moving and servicing operations at a monthly rental of \$1,600.00. Operator's time at Field Cost Labor Rates, for the Company's Account.

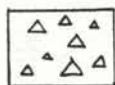


APPENDIX E

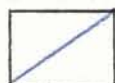
Explanation of symbols used in graphic log (geology) column of the diamond drill log.



Overburden



Fragments



Shears, faults



Quartz vein, veinlet



Sulphides- massive, veinlets, and disseminated Pyrite, if nothing written by graphic log; chalcopyrite always stated.



Magnetite- veinlets, and disseminated. Occasionally specular hematite, but latter always stated.



Zeolite veinlet



Gypsum veinlet



Calcite veinlet

NOTE: Sample Interval column refers to sample number for assay purposes.

HOLE NO. *ES 117*PROJECT: *EXPO*PAGE NO: *1* OF *9*

CASING COLLAR ELEV.:

GROUND ELEV.: *1375*

DATE STARTED:

Sept 30/74

REF. TO CLAIM CORNER:

*HEP 59*COORDINATES: *248,020 N. 230,960 E.*

DATE FINISHED:

*Oct 6/74*SCALE: *1"=10'*INCLINATION: *-90°*

BEARING:

TOTAL DEPTH:

*558*LOGGED BY: *F.R.G.*

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	PROPLILLITIC	ARGILLIC	SERICITIC	SILICIC												
0									<i>92%</i>							
6								<i>0-3 STICK UP</i> <i>3-6 OVERBURDEN</i>								
35								<i>6-35 TRICONED</i>								
40	<i>Strong 20%</i>	<i>Strong ± 45%</i>			<i>Strong</i>			<i>35'-106' Andesite Tuff: Greenish gry mottled w/ dark green sericite, chlorite ± 30% magnetite knots as vague fragments. on slightly silicified, also chloritized and sericitized greenish gry matrix.</i>			<i>100</i>		<i>35'</i>	<i>26651</i>	<i>100</i>	
45					<i>20%</i>			<i>1" pink zeolite val.</i> <i>2" high clay gouge gry qtz. frags. included.</i> <i>1" zeolite vns.</i>			<i>76</i>		<i>40</i>	<i>26652</i>	<i>96</i>	
50					<i>Strong 15-20%</i>			<i>2" steep dip slip. w/ gouge broken qtz. frags. included</i> <i>Fe₃O₄ pods.</i>			<i>104</i>		<i>48</i>	<i>26653</i>		
55					<i>Strong</i>			<i>1" pink zeolite and frags. w/ py. blebs.</i>		<i>2%</i>	<i>86</i>		<i>50</i>	<i>26654</i>		
60	<i>mod. to wk. 10%</i>	<i>Strong - mod.</i>			<i>mod. 10-15%</i>			<i>white & pink zeolite network sl. limy. small amount of gypsum.</i>			<i>100</i>		<i>58</i>	<i>26655</i>	<i>92</i>	
65					<i>WK</i>			<i>1cm. pink zeolite sl. limy.</i>			<i>100</i>		<i>60</i>	<i>26656</i>		
70								<i>2" snaky qtz. vns. speak of exp.</i> <i>Fe₃O₄ sm.</i>			<i>104</i>		<i>62</i>	<i>26657</i>	<i>100</i>	
75								<i>1cm. zeolite pink & white</i>			<i>95</i>		<i>67</i>	<i>26658</i>		
80	<i>WK</i>	<i>WK</i>						<i>hairlike zeolite sms.</i>			<i>100</i>		<i>70</i>	<i>26659</i>	<i>99</i>	
								<i>3" hi clay gouge cementing zeolite frags.</i>			<i>100</i>		<i>76</i>	<i>26660</i>		

HOLE NO. EC 117PROJECT: EXPOPAGE NO: 2 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.: 1375DATE STARTED: Sept 30/74

REF. TO CLAIM CORNER:

COORDINATES: 248,020N. 230,960 E.DATE FINISHED: Oct 6/74SCALE: 1"=10'INCLINATION: -90°

BEARING:

TOTAL DEPTH: 558

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTIMATED
	PROPYLITIC	ARGILLIC	SERICITIC	SILICIC											
80							75'-106' Andesite Tuff: Cont.								
80							4' zone consists of qtz and zeolite frags. & vns. up to 1cm. on clayey chloritic matrix. Fault(?)			81	100		80		
90							1" gougy fract.			86	100		26656	100	
90							zeolite network 1cm to 1" ± 15% as tight ves. some gypsum?			91	104		90		
100										92			26657	98	
100										97			26657		
110							intense white & pink zeolite vngs.			95			100		
110							106-558 Andesite; Andesite Tuff and Lapilli Tuff.			103			26658	95	
110							This entire section is darker colour than the above section, caused by the increase of Fe ₃ O ₄ . It's an intervening section as follows:			106			26658		
120							Andesite: dark grey to greenish, fine grained and non to wk. patches of dark shades, no mottling, dense and massive, wk. zeolite vns. mod. mag.			106			26659		
120							Andesite Tuff: is similar to section 75-106' mottled w/ dark shades, largely sericite and chlorite. zeolite common. Fe ₃ O ₄ wk.			106			26659		
120							Lapilli Tuff: as Andesite Tuff, mottling and dark patches greater than 32mm. Fe ₃ O ₄ as knots & vngs.			106			26660	101	
130							The entire section is pyritized			106			26660		
130							188'-142' ± 20% zeolite vns. w/ py. sm. & contains small amounts of csp.			106			26661	99	
140										106			26661		

HOLE NO. EC-117

PROJECT: EXPO

PAGE NO: 3 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.: 1375

DATE STARTED: Sept 30/74

REF. TO CLAIM CORNER:

COORDINATES: 248,020

N. 230,960 E.

DATE FINISHED: Oct 6/74

SCALE: 1" = 10'

INCLINATION: -90°

BEARING:

TOTAL DEPTH: 550

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED
	PROPYLLITIC	ARGILLIC	SERICITIC	SILIC												
140							Zeolite network.									
							106'-118' <u>Lapilli Tuff.</u> Darker patches largely Fe ₃ O ₄ , minor chlorite & sericite									
							1" black gouge on wk. slip.									
							± 70% Zeolite vns. largely pink.									
							1cm. pink zeolite									
							hairlike zeolite sm.									
							4" smoky qtz. vn. clayey boundary.									
							1" gry qtz.									
							2 cm. white limy zeolite									
							118-172 Fine Gr. Andesite slightly tuffaceous - wk mottling sericite & chlorite.									
							fragmental zone w/ black gouge cement, frags are qtz. & zeolite									
							172-225 Andesite Tuff & <u>Fault Breccia</u> :									
							at 170'-283' fragmental section largely pink zeolite frags, few qtz. broken inlets of same obvious on a black gougy cement. The gouge is chloritic & sericitic. Zeolite frags about 45%; qtz ± 10%. Grounded py. common. indicating post-mineral fault.									
							1" gougy slip hi-chlorite.									
							yellow streak on fract. epidote(?)									
200																

Moderate ~ 15% WK, MIC, MK, Mt. Py.

strong Mod. Mod. strong py.

20%

3-4%

NGWL

[Signature]

HOLE NO. L-117PROJECT: EXPPAGE NO: 4 OF 9

CASING COLLAR ELEV.: _____

GROUND ELEV.: 1375DATE STARTED: Sept 30/74

REF. TO CLAIM CORNER: _____

COORDINATES: 248,020N. 230,960 E.DATE FINISHED: Oct 6/74SCALE: 1"=10'INCLINATION: -90

BEARING: _____

TOTAL DEPTH: 558

LOGGED BY: _____

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	PROPYLITIC	ARGILLIC	SERICITIC	SILICIC												
200																
205							occasional yellow streak epidote.	825' - 232' Fine grained Andesite; Dense & massive. & Fault Bx. (?)			94		200	26668	97	
210							largely frags. of zeolite + Qtz. vns. broken-up. as well as sulfide ground. very friable zone.				100		210	26669	92	
215							Qtz. sm.				83		216	26669	92	
220							py-xnl.	232' - 309' Lapilli Tuff & Breccia Fault(?): waxy sericite getting prominent may include chlorite & saussurite(?)			96		220	26670	94	
225							hairlike white & pink zeolite. minor gypsum.				39		227	26671	93	
230							Blk. clay gouge cementing zeolite frags. & some anhydrite.				93		230	26671	93	
235							mag. vnl.				91		232.5	26671	93	
240							1" zeolite va.				100		238	26672	95	
245							1" clay gouge				94		243	26672	95	
250							1" epidote sm.				92		248	26673	95	
255							mainly black gouge				92		257	26673	95	
260							Knots of Fe ₃ O ₄				113		256	26673	102	
											100		260	26673	102	

HOLE NO. *EC 117*PROJECT: *EXPO*PAGE NO: *5* OF *9*

CASING COLLAR ELEV.:

GROUND ELEV.: *1375*

DATE STARTED:

Sept 30/74

REF. TO CLAIM CORNER:

COORDINATES: *248,000* N. *230,960* E.

DATE FINISHED:

*Oct 6/74*SCALE: *1"=10'*INCLINATION: *-90°*

BEARING:

TOTAL DEPTH:

558

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	PROPYLITIC	ARGILLIC	SERICITIC	SILICIC											
260							1cm. pink vuggy Zeolite.			261	100		260		
							232'-309' Lapilli Tuff & Breccia; Cont.		3%	265	100		26674	93	
270							largely clay gouge; some crushed zeolite & qtz. frags. Breccia looking zone, very friable.			271	85		270		
							6" gouge brecciated wall			276	100		26675	98	
280							mainly black clay gouge. hairlike zeolite		4%	281	100		280		
							1" pink zeolite v. lot. w/ some vugs.		5%	286	95		26676	97	
290							Fe ₂ O ₃ sms.			292	95		290		
							1/2 chloritic-blk. clay gouge			298	87		26677	92	
300							3" qtz. v. py. ecp. minor hairline fract. healed w/ white zeolite. some gypsum?			303	96		300		
							Py. sm.			308	100		26678	97	
310							wt. zeolite & py. sm. Fe ₃ O ₄ patch.		3%	313	98		310		
							3' zeolite network ~ 30% in 3' zone.			318	100		26679	97	
320							4' crushed Andesite on black clay gouge cement; zeol. frags. ~ 30%			718	96		720		

HOLE NO. E-117

PROJECT: EXP

PAGE NO: 6 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.: 1375

DATE STARTED:

Sept 30/74

REF. TO CLAIM CORNER:

COORDINATES: 248,020 N. 230,960 E.

DATE FINISHED:

Oct 6/74

SCALE: 1"=10'

INCLINATION: -90°

BEARING:

TOTAL DEPTH:

558

LOGGED BY: F.R.G.

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	PROPYLITIC	ARGILLIC	SERICITIC	SILICIC											
320							309'-328' : <u>Fine Grained Andesite</u> : slightly Tuffaceous. Contd.								
						black clay gouge. 1" Qtz. in. cap specks wk. gougy slip		2-3	323	96		320			
									327	98		26680	77		
330						very weak zeolite linings on tight fract. sl. limy.				3/0		330			
									338			26681	61		
340						2" wk. gougy slip 2.5" smoky grey qtz. clayey wall 1" gouge w/ zeolite frags.	338'-468' : <u>Andesite Tuff & Lapilli Tuff</u> : Dark mottling of dark shades varies from 5mm to more than 32mm.... Fe ₃ O ₄ more than the above section.	4%	343	122		340			
						py. sm.			348	100		26682	100		
350						2 cm. tight smoky qtz. py. cap.			353	100		350			
						1" qtz. zeolite on wall			358	100		26683	100		
360						py. sm.			362	100		360			
						knots & veins Fe ₃ O ₄			367	90		26684	79		
370						hairlike white zeolite ~ 5%			368	80		26685	79		
						Fe ₃ O ₄ + v.lets.			373	74		370			
380									378	98		26686	96		
									378	100		26687			

HOLE NO. EC 117PROJECT: EXPLPAGE NO: 7 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.: 1375DATE STARTED: Sept 30/74

REF. TO CLAIM CORNER:

COORDINATES: 248,020 N. 230,960 E.DATE FINISHED: Oct 6/74SCALE: 1"=10'INCLINATION: -90°

BEARING:

TOTAL DEPTH: 558LOGGED BY: F.R.G.

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED
	PROPYLLITIC	ARGILLIC	SERICITIC	SILICIC												
380								338'-408': <u>Andesite Tuff and Lapilli Tuff; Contd.</u>						380		
							wk. and tight white zeolite ~ 5%				383	100		386	100	
											388	104		390	100	
390											393	96		390		
							1" zeolite w/ pg. on vugs.				393	100		387	100	
							2" gougy slip				398	100		386		
							2" pink zeolite				403	100		400		
							2.5" smoky qtz. w/ cap specks.				403	100		388		
							Qtz. vns. 2" + 2cm. respect. yellow epidote at walls.				408	100		392	100	
410	5%	wk to void	~ 5%	Weak to moderate	Weak		1" gougy slip	408'-446': <u>Andesite (fine gr.) to slightly Tufaceous And.</u>			413	100		410		
							Fe ₃ O ₄ sm.	contains more or less 10% ser. chl. mottling in fine gr. andesitic matrix.			418	100		388		
420							hi-olg wk slip				423	100		380		
							pg. vnl.	at 403'-446': <u>Zeolite vnings almost void... but minor on tight fract. ~ 1% at this section. Fe₃O₄ increases to ~ 5-7%</u>			428	100		392	98	
430							Fe ₃ O ₄ sms.				438	96		430		
							1cm. zeolite.				438	100		386		
							py. vnl.				438	100		392	98	
440											438	100		380		

HOLE NO. E-117

PROJECT: EXP

PAGE NO: 8 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.: 1375

DATE STARTED: Sept 30/74

REF. TO CLAIM CORNER:

COORDINATES: 248,020 N. 230,960 E.

DATE FINISHED: Oct 6/74

SCALE: 1"=10'

INCLINATION: -90°

BEARING:

TOTAL DEPTH: 558

LOGGED BY: F.R.G.

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	PROPHYLLITIC	ARGILLIC	SERICITIC	SILICIC											
440							408'-446' Fine Gr. Andesite & Slightly Tuffaceous And. Contd.				100		440		
							very weak zeolite vns. ~ 5% Fe ₃ O ₄ vnlts.				102		# 26692	100	
450							446'-493' Andesite Tuff and Lapilli Tuff: as section 338'-468'				98		# 26693	99	
							very friable zone characterized by pinkish + white zeolite frags some qtz in a cement of black clay gouge.				100		# 26693	99	
460							Fe ₃ O ₄ sm. very intense zeolite network ~ 40% Black clay gouge w/ zeolite & Qtz frags. 40% zeolite network				98		# 26693	99	
							* 446'-493' : very intense zeolite network ~ 40-50% in core.				100		# 26694	101	
470							1' black clay gouge				105		# 26695	98	
							py. vnlts. 50% zeolite network				96		26695	98	
480							2" smoky qtz. vnl. cop. 1cm. py. wk zeolite vns. ~ 5% some Fe ₃ O ₄ vnlts.				94		26696	98	
490							493'-558' : Andesite & or slightly Tuffaceous Andesite: small amount of sericite as mottling or blebs.				100		26697	98	
500											100		26697	98	

5% Nil
5 to 10%
Wk. to void ~ 2%
Very strong

3%

N G W L

[Signature]

SECTION	ALTERATION				MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED
	TROPYLITIC	ARGILLIC	SERPENTINIC	SILICIC										
500												500		
						<i>largely black clay gouge. some zeol frags.</i>								
						<i>2' intense Zedite ~ 30%</i>								
						<i>2" smoky qtz. vn.</i>								
510						<i>1" gougy slip.</i>								
						<i>2" Qtz. vns.</i>								
						<i>med. strong fault.</i>								
						<i>1" Qtz. vn.</i>								
						<i>1" gouge</i>								
						<i>py. vnet.</i>								
530						<i>Fe₃O₄ vnet.</i>								
						<i>4" Qtz.</i>								
						<i>2" smoky qtz.</i>								
540						<i>Fe₃O₄ Knots.</i>								
						<i>py in Qtz. vn.</i>								
550						<i>1' very friable zone; fault gouge(?)</i>								
558														

493'-558' : Andesite for slightly Tuffaceous Andesite! contd.

** 493-558' : Zedite vns. decrease considerably... about 5-10% only for 2 per foot... few exceed 1cm. in thickness... but local network present... Sulfide also poor. Fe₃O₄ ~ 2-3%.*

END OF HOLE 558'



HOLE NO. EC 3

PROJECT: EXPO

PAGE NO: 1 OF 11

CASING COLLAR ELEV.:

GROUND ELEV.: 475'

DATE STARTED: OCT. 12, 1974

REF. TO CLAIM CORNER: HEP 59

COORDINATES: 248,430

N. 230,660 E.

DATE FINISHED: OCT. 24, 1974

SCALE: 1" = 10'

INCLINATION: 90°

BEARING:

TOTAL DEPTH: 613'

LOGGED BY: F.R.G.

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Argillic	Propylitic	Sericitic	Silicic												
0								no casing left	94%							
10								0-2'3" Stick-up Casing above ground 2'-3"-22' Overburden								
20																
22								22'-123' : <u>ANDESITE</u> : Med. grey - greenish grey, weakly mottled w/ chlorite, sericite & sub- Δ darker shades (Fe_2O_4), and some brownish blobs of probably biotite. Contains vnlts & disse. $Fe_2O_4 \sim 3\%$, laced w/ white zeolite. The first 60' is rusty obviously from py. Cap is weak.		23 90 25 50 27 95 29 65 30 50 31 40		22'	65			
30								hairlike - 1mm. white & pinkish zeolite vnlts.								
40								py - 1mm. 1 cm. Fe_2O_4 blob.				13		26702	33	
50								1" gauge, wk. slip. cm. white zeolite vnlts. 1" smoky qtz. w/ py.		2%				26703	74	
60														26704	95	

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Argillitic	Propylitic	Sericitic	Silice											
60	* < 5%														
65						sl. limy narrow & tight zeolite	22'-123' <u>ANDESITE</u> : sl. tuffaceous! cont.			86			60		
70						1cm. Zeolite				90			26705	92	
75						hairline py. within zeolite vns.				90					
80						1.5 cm. zeolite				115			70		
85						1cm. zeolite vns.				70					
90						1" pinkish & white zeolite	103'-123' zeolite vnlts. is moderate about 3 vnlts per foot, size from hairlike to 1" generally on tight fract.			96			26706	93	
95						1cm. smoky qtz. py. cap.				100			80		
100						6' zone zeolite stockwork ~ 70% in the core.				100			26707	100	
105						fairly good, chocolate brown (biotite?) shades.				100			90		
110							* 112'-128' Brownish shade probably "biotite" occur here ... ± 5%. Fe ₃ O ₄ patches is included.			100			26708	98	
115										94			26709	100	
120										100			26710	100	

10%

NQ WL

HOLE NO. EC-118

PROJECT: EXPO

PAGE NO: 3 OF 11

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY: F.R.G.

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Argillic	Propylitic	Sericitic	Silicic											
120							22-123; <u>ANDESITE</u> : sl. buffaceous, cont.			120	100		120		
129										129	100				
126							123-134: <u>ANDESITE</u> : fine gr. and med. gry.; as above obviously no mottling --- texture is aphanitic. Fe ₃ O ₄ ~ 3-5%			126	85		26711	97	
128										128	100				
130										130	100				
133										133	96		26712	97	
138							134-216' <u>LAPILLI TUFF</u> : The matrix is as 123-134', contains dark shades of chlorite, minor sericite & blotches of Fe ₃ O ₄ . Brown mottling biotite is present; Fe ₃ O ₄ voids better than previous section: ± 5% or better.			138	98		140		
143										143	94		26713	97	
148									10%	148	98		150		
153										153	100		26714	100	
158							151-166' voids of zeolite increase to ~ 3 per-foot from 1mm to 1cm.			158	105		160		
160							* 148'-189': Dark brown biotite about 5% associated w/ impreg. cop.			160	100		166		
166							166-178': Again Zeolite decrease to 2 vials per foot.			166	94		26715	95	
169.5										169.5	84		170		
174							178-180' prominent brown patches. Biotite(?)			174	100		26716	96	
178							voids & frags of white Zeolite in gouge core. possible fault.			178	100				
180										180	100				

HOLE NO. **EX-118**

PROJECT: **EXPL**

PAGE NO: **4** OF **11**

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY: **F.R.G.**

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED
	Argillic	Prophyllitic	Sericitic	Gilicb											
180	JK	↑	↑	↑	↑					180		18			
						mod. fault w/ gouge & breccia.				183	113				
						1cm. qtz. v. w/in zeolite	163'-181' Fragmental texture is quite prominent; frags up to 1" are angular to sub-rounded... Could be a breccia !!		2%	185.5	96		26717	98	
190						1mm. py.				189	91				
						1" zeolite vns.	134-216- LAPILLI TUFF: Cont.			192	100		26718	96	
						1mm. py.				197	100		26718		
						178'-214' zeolite is about 4 per foot from matrix to 1" thick.				203	88		26719		
200						5' zeolite network	* 189-208 More prominent brown shades, biotite ~ 10% may include Fe ₃ O ₄ .			207	100		26719	97	
						py.	* 208-240 Brown spots diminish ~ 1% only		1%	208	100		26720		
210						WK. zeol. 1 per foot.	216-224: FINE GRAINED TO APLANTIC ANDESITE: As section 123-134'.			213	100		26720	98	
						2" creamy dy gouge				216	106		26721		
						3" fault slip. gougy. w/ rounded py.	225'-279' intense zeolite vns about 50-70% in the rock.			219	70		26721	85	
220						1" Qtz. smoky gry. - trace MoS ₂				222	80		26721		
							* 240'-268' Biotite regain 5-10% also prominent Cp. disse. Fe ₃ O ₄ also increase ~ 7%		2%	223	106		26722		
							224'-339': ANDESITE TUFF TO LAPILLI TUFF: Intervening section of Tuff to lap. tuff texture, as describe before			224	70		26722	100	
230										225	94				
										230	100		26722		
										235	100				
240										240	100				

HOLE NO. EC 118

CASING COLLAR ELEV.:

COORDINATES:

INCLINATION:

GROUND ELEV.:

N.

E.

BEARING:

PROJECT:

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH:

PAGE NO: 5 OF 11

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY: F.R.G.

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Argillic	Prophyllitic	Sericitic	Silicic											
240							224'-339' : <u>ANDESITE TUFF & LAP. TUFF</u> : Cont.			240	100		240		
250							1" gouge, hi-chlorite 1cm. smoky qtz. 1.5" slip. wk. gouge			249	96		26723	98	
260							1" gouge 1" qtz. 2" white zeolite Wk. slip minor gouge.			249	100		250		
270							prominent brownish knots & disse. Biotite(?) 2" bk. gouge along zeolite vn.			254	100		26724	100	
280							1mm. py. sm. * 268'-278' : almost complete absence of brown shades in And. Tuff. prob. < 1%			257	100		260		
290							1" white qtz. w/ zeolite envelope * 279'-308' : minor zeolite vings ~ 1 per foot. hair-like to 1cm. thick.			263	100		26725	98	
300							Very wk. zeolite vings ~ 1-2 mm. very tight. * 278'-295' Brown shades re-appear ~ 5% together w/ ccp. disse.			268	94		270		
310							2" chloritic, blk. gouge; fault(?) * 295'-398' Brown shade became weak to negligible ~ 1% or less.			273	98		26726	97	
										278	96		280		
										287	98		26727	98	
										288	100		290		
										297	100		26728	98	
										295	100				
										299	99				

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED
	Argillic	Propylitic	Sericitic	Siliceic											
300							224'-339': <u>ANDESITE TUFF & LAP. TUFF: Cont.</u>		2%	303	93		300		
						1mm. py. 1mm. yellow epidote sm. 2 mm. py. w/in Zeolite				308	96		26729	95	
310						1" gangy slip. along Zeolite vns, on smoky qtz. foot wall.	279'-308' Negligible Zeolite vns. 4-1 vlnets per foot.			313	94		310		
						2 mm. py.	308'-313' ~ 4 Mod. veinings 1mm to 1cm.			318	98		26730	98	
320						1mm. Fe ₂ O ₄ Blob Fe ₂ O ₄				323	100		320		
						1.5' fault, heavy gouge & bxted. wall (incl. zeol. frags.) 1" Qtz on hanging wall.				327	100		26731	95	
330						impreg. ccp.	339'-353': <u>FINE GR. ANDESITE!</u> Fine gr. to aphanitic texture, siliceous medly., and contains v. fine- impreg. ccp.			329	94		330		
						py. sm. ~ 1mm.				334	96		26732	99	
340						fine gr. ccp.				339	100		340		
						1" qtz. w/ epidote disse, w/in bi-ctd. walls.				343	92		26733	95	
350							353'-553': <u>ANDESITE TUFF to Fine Gr ANDESITE!</u> Texture hard to distinguish, very erratic tuff texture.			348	96		350		
										353	98		26724	97	
360										358	93		360		

NQWL

[Handwritten signature]

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE RECY / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% RECY. SAMP. INT.	ESTI-MATED
	Argillic	Prophyllitic	Sericite	Silicic											
360							353'-553' ^{to} ANDESITE TUFF FINE G. ANDESITE: Cont. This section is largely Andesite tuff w/ minor fine gr. equivalents.			93		360			
					cm. zeolite					100		99	26735		
370		NIL	Mod. ~ 5%			1 mm. py. sm.			100			370			
		*	Mod. ~ 10-15%			1" white-pinkish Zeolite.			95		96	26736			
						1/2 fault gouge @ 45° c.a.			96			378			
380	NIL		Mod. ~ 10-15%			2 mm. Py.			19%		96	380			
						1 mm. py.			to		100	383	26737		
						1" zeolite			2%		100	388	26738		
390		WK - Mod				1.5" zeolite	393'-404' very intense zeolite network; about 50-70% vms... sizes range from 1mm. to 1.5" very tight fract.					390			
						1" gouge						393	26738		
						1' hi-dy gouge breccia at foot wall zeol. frags incl., grounded py. also.						398	26739		
400		WK - Mod.				1 mm. py.	404-410' zeolite decrease to 1 ml. per foot. hairlike size.					400			
						1" gougy slip.						403	26739		
												408	26740		
410												412			
												415			
												420			

HOLE NO. **EC**
 CASING COLLAR ELEV.:
 COORDINATES:
 INCLINATION: **-90°**

GROUND ELEV.:
 N. E.
 BEARING:

PROJECT: **EXPO**
 DATE STARTED:
 DATE FINISHED:
 TOTAL DEPTH:

PAGE NO: **8** OF **11**
 REF. TO CLAIM CORNER:
 SCALE:
 LOGGED BY: **F.R.G.**

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED
	Argillic	Propylitic	Sericitic	Siliceic											
420							353'-553': <u>ANDESITE TUFF to Fine G. ANDESITE</u> : Cont.				100		420		
	NIL						2 cm. smoky qtz. w/ py-tr. cop.								
							1 cm. zeol.								
430	*	Mod.	Mod. ~ 10%	Mod. ~ 10%			Py. cop sm.								
	WK.	*					1/2' fault gouge & bxa. zeol. frags.								
							421'-435' Zeol. Vns ~ 2 per foot. 1mm-1cm.								
440	*						Py. sms								
							435'-521' - Stockwork of zeol. ~ 50-70% sized 1mm to 1"								
							2.5" blk. gouge								
450		WK.					1' mod. fault, hi. blk. gouge								
							Very strong fault hi-gouge & bxa. qtz. & zeol. frags.								
							1" gougy slip.								
460		Mod. ~ 10%					2" smoky qtz. tr. MoS ₂ in brownish fnd. Biotite								
							1' fault gouge & bxa. incl. grounded Py.								
							brown shades, Biotite?)								
470							wk. gougy slip.								
							2 cm. smoky qtz.								
480															

* 458'-465' Prominent brown to chocolate color shades should it is biotite, it is ~ 10% as disse. also.

1 to 2%

N Q W L

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Argillic	Prophyllitic	Sericitic	Silicic												
480								Zone of discs & patches brown shales				100		480		
								Boxwork zeolite ~ 70%	353' - 553' : ANDESITE TUFF & FINE Gr. ANDESITE : Cont.			84		26747	90	
490								3' hi-clay gouge incl. broken zeol. frags.				62		490		
								1" wk. slip minor gouge				100		500	.85	
500								1cm. qtz. vns.				100		500		
								very steep 75° mod. fault, 3" gouge				94		510		
510								1cm. qtz. vns. w/ zeol. envelope				88		520		
								3.5" white creamy gouge, wk. slip in Qtz.	521' - 538' : Wk. zeolites vns. about 3 vnlts per foot. size 1mm - 1cm.			100		526	93	
520								1cm. zeol.				84		530		
								clayey wall in 2" smoky qtz. tr. ccp. $M_{0.5}S_2$				101		530		
530								1cm. zeolite				96		540	96	
540														540		

1 to 2 %

WL
N O

HOLE NO. EC

PROJECT: EXPO

PAGE NO: 11 OF 11

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION: 90°

BEARING:

TOTAL DEPTH: 613'

LOGGED BY: FRG

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED
	Argillic	Propylitic	Sericitic	Silicic												
600																
	NIL	WK - NIL	WK	WK - Mod.	WK, Mod.		<p>2.5" smoky qtz. vn.</p> <p>wk. slip.</p> <p>1cm. Zedite. pinkish</p> <p>2" waxy gouge Mod. fault? some epidote w/ the gouge.</p>	553 - 613' : ANDESITE & ANDESITE TUFF; Cont.	100	607	100	NO WL	600	100		
610									100 or less	608	100		26649	100		
613										613	100		613			
								END OF HOLE 613'								

HOLE NO. EC 0

PROJECT: EXPO

PAGE NO: 1 OF 4

CASING COLLAR ELEV.:

GROUND ELEV.: ± 1475'

DATE STARTED: 11 OCT. 1974

REF. TO CLAIM CORNER: EXPO #23

COORDINATES: 257,400

N. 210,460 E.

DATE FINISHED: 26 OCT. 1974

SCALE: 1" = 10'

INCLINATION: 90°

BEARING:

TOTAL DEPTH: 275'

LOGGED BY: F.R.G.

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE RECY / HOLE 49.85%	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% RECY. SAMP. INT.	ESTIMATED	
	Argillic	Propylitic	Sericitic	Silicic												
60							0'-2' stick-up casing above ground			61	40					
							2'-60' Overburden:			65	42					
										67	20			39		
										69	50					
70							Badly crushed core no gouge.			1 to 69						
							hi-creamy gouge in crushed And. Tuff.			69	43					
							2 nd gouge			75	30					
							hi-clay gouge; crushed py.			78	70					
							1" euhedral & grounded py.			81	30					
							1' thick sticky clay gouge			88	100					
							mainly creamy clay gouge... incl. grounded silt.			90	25					
							white calcite sm. (broken)			92	20					
							Fe ₂ O ₄ hairlike sm.			97	15					
							R ² Creamy clay gouge			103	14					
							1.5' greenish chloritic clay gouge.			108	25					
							Calcite sm. 2 mm.			110	25					
										112	25					
										113	20					
										114	40					
										116	20					
										120	22					
							60'-69' LAPILLI TUFF / or VOLC. BX. yellowish green fragmental texture. Contains ang. frags. (?) of waxy green - dark green spots up to 1" (Chlorite) yellowish patches (epidote) on yellowish green tuffaceous groundmass. The groundmass is sl. limy, chloritized, epidotized and non-magnetic. Contains disse. py. and no visible cop.			70	80					
							69-108 ANDESITE TUFF: Light grey mottled w/ darker grey spot areas, light brownish shades and minor green spots in fine gr. slightly tuffaceous matrix. Contains epidote & chlorite in small amount, non-magnetic & slightly limy. Py. mostly grounded by fault. ... Some soft brownish yellow spots maybe pyrophyllite(?).			75	30					
							108-151: LAPILLI TUFF & or VOLC. BXA. Very similar in all respect to section 60-69, but colour is dark to med. green, probably deficient of epidote & more of chlorite. The section is wkly magnetic and some pyrophyllite.			78	70					
										81	30					
										88	100					
										90	25					
										92	20					
										97	15					
										103	14					
										108	25					
										110	25					
										112	25					
										113	20					
										114	40					
										116	20					
										120	22					

HOLE NO. EC

PROJECT: EXPO

PAGE NO: 2 OF 4

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION: 90

BEARING:

TOTAL DEPTH:

LOGGED BY: F.R.C.

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Argillic	Prophyllitic	Sericitic	Siliceic											
120															
							108'-151' LAPILLI TUFF & VOLC. EX. : Cont.								
130							* starting 122-141 calcite enc w/ size 1mm + 1cm. is present at ~ 2 sms./foot.								
140							* 141-148 TRICON DRILLING (NO RECOVERY)								
150							151'-245': ANDESITE TUFF! Very similar in all respect sect. 69-108. sericite may be present in small amounts. 2% or less. also non-magnetic.								
160															
170															
180															

HOLE NO. EC

PROJECT: EXFO

PAGE NO: 3 OF 4

BASSING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION: -90'

BEARING:

TOTAL DEPTH:

LOGGED BY: F.R.G.

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP INT.	ESTIMATED
	Argillic	Propylitic	Sericitic	siliceic												
180																
181							1mm. py.				90					
183							1' clay gouge				50					
187							blebs py. & trace asp.				92			188	78	
191							Calcite sm				73			190		
192											40					
193											10					
195											55					
199										5%	50			190-199	50	
202										to	73			200		
204											15			200-204	36	
206										10%	20			206		
208											0					
210											0					
214.5											0			20		
217											100			214.5		
220											70			217	83	
223											13			220		
228											22			223	16	
230											8			228		
233											7			230		
237											5			233	7	
240														237		

151'-245' : ANDESITE TUFF ; contd.

mainly creamy clay includes chips of And. tuff. ... gouge sl. limy. w/ grounded py.

Tricon Drilling (no core)

1' sticky, creamy clay gouge

from 223-248 is mainly sticky clay may include drill mud. ; some creamy gouge obvious. Grounded sulfide ~ 10%

HOLE NO. EC
 CASING COLLAR ELEV.,
 COORDINATES:
 INCLINATION: -90

GROUND ELEV.,
 N. E.
 BEARING:

PROJECT: EXPO
 DATE STARTED:
 DATE FINISHED:
 TOTAL DEPTH: 275'

PAGE NO: 4 OF 4
 REF. TO CLAIM CORNER:
 SCALE:
 LOGGED BY: F.R.G.

SECTION	ALTERATION				MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Argillic	Propylitic	Sericitic	Silice										
240						151'-245' <u>ANDESITE TUFF</u> : Cont.				5%		240		
						Heavy fault gouge includes Q.F.P. frags. & And. Tuff. FAULT etc.				243 20 244 20 245 20		260-4	10	
250						245'-275': <u>Q.F.P. (?)</u> : soft and friable porphyry. grey-green colour -				80		250		
						Gouge mainly in Q.F.P. rock. trace ep. (?)						255	93	
						1' cly sm. Pheros: ~ 15% unihedral creamy white feldspar, almost entirely kaolinized, Quartz ~ 5% rounded-sub-rounded 1-3 mm & minor dark green possibly chloritized mafics on a ...		4-5%				260		
260						Co ₃ sm. Matrix: Greenish grey fine gr. to aphanitic, contains chlorite minor epidote.						265	97	
						largely cly is Q.F.P. Vns. mainly Calcite up to 1 cm. py. as disse; trace ep. (?)						270		
270						1' gouge rock is non-magnetic.						270		
						1" cly sm.						267	98	
275						2" cly sm.						275		

HOLE WAS LOST @ 275' after an attempt of triconing & reaming down to 210' to push down N casing down 275'. Casing can't go farther than 220'. ... Caving & accumulation of sand prevented further drilling. No casing left at hole -

HOLE NO. EC

PROJECT: EXPO

PAGE NO: 1 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.: 850'

DATE STARTED: Oct. 29, 1974

REF. TO CLAIM CORNER: EXPO 479

COORDINATES: 250,000 N. 261,000 E.

DATE FINISHED: Nov. 7, 1974

SCALE: 1" = 10'

INCLINATION: -60° BEARING: N25E

TOTAL DEPTH: 503'

LOGGED BY: F.R.G.

SECTION	ALTERATION			FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE RECY / HOLE		% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% RECY. SAMP. INT.	ESTI-MATED
							97.8%								
						0-1'7" Stick-up Casing above ground 1'7"-22' Overburden									
						22-26' Mix OB & Bedrock.									
						<p>7" band of brownish rock siltstone.</p> <p>Calcite sms.</p> <p>Brownish band 5-10" from Core (hor.)</p> <p>22-42 Cobite v.lets ~ 30% ... 5% graphitic</p> <p>42-57 Calcite ~ 50%</p> <p>birdlike py.</p> <p>Pseudo Bx. from 22-87 bands of brownish siltstone w/ sulfide (size 3mm-2.5") is ± 3 bands / foot</p> <p>2cm. siltstone in blk. shale.</p> <p>1" bl. limy band</p> <p>1" band w/ py.</p> <p>1" Coz</p> <p>1.5" brownish siltstone.</p>	<p>Hi-calcareous Dark grey to 26'-219.5' Black Graphitic shale and Brownish Siltstone:</p> <p>Thinly laminated black to very dark grey, brittle and hi-calcareous graphitic shale intercalated w/ thin (1cm to 2" brownish) siltstone. Both are limy but non-magnetic. Few, extremely limy, greyish band up to 2.5" thick (limestone?) is present. Yellowish epidote rare. mainly in greyish band. Contains calcite (white) v.lets that are concordant & discordant to bedding & banding.</p> <p>Contains py. disse & occasional v.lets. which parallels bedding (stratiforms) up to 10%. Some pyrrhotite in lighter color limy beds. Trace of ccp. w/in pyrrhotite noted. Much of the sulphide (e.g. py.) occurs largely within or near the bands of brownish siltstone.</p>	<p>22</p> <p>26 0</p> <p>28 100</p> <p>32 95</p> <p>37 100</p> <p>40 43</p> <p>40 7%</p> <p>48 90</p> <p>52 100</p> <p>58 91</p> <p>58 100</p>	<p>26</p> <p>26</p> <p>28</p> <p>32</p> <p>37</p> <p>40</p> <p>40</p> <p>48</p> <p>52</p> <p>58</p>	<p>97</p> <p>91</p> <p>92</p> <p>95</p>	<p># 27251</p> <p># 27252</p> <p># 27253</p>	<p>NGWL</p>			

SECTION	ALTERATION	FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE RECY / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% RECY. SAMP. INT.	ESTI-MATED
60				1cm. brown band 7" from horizontal of the core. 3" white Calcite on very steep. 26'-219.5'						60		
				~5" brownish band ~ 2cm. thick w/ps. (f.g.)	HI-CALCAREOUS DARK GRAY TO BLACK GRAPHITIC SHALE & BROWNISH SILTSTONE! Cont.	5%		100		272.54	100	
				2" hi-limy grey band ls.	Banding & bedding of shale is 5 to 10° degrees from horizontal of core. very low to gentle dip. but locally greater than 10°. No hydrothermal alteration ^{was} recognized.		68			272.55		
				1cm. Co ₃		2-3%		93		272.55	98	
				1" Co ₃			78	95		272.56		
				2' Bxa. blk. sh. frags. m. Co ₃ cement on wk fault.			82	100		272.56		
				Co ₃ network. 2.5'; includes white-grey narrow ls. band.			84	100		272.56	100	
				grey hi-limy band ls. (?) 4" 1 cm. thick	From 87'-154' banding of brownish siltstone & greyish (hi-limy) material (ls.?) decrease to ~ 1 per foot. Some larger bands are only indicated on the geology Column.		88			272.57		
				limy band 3" thick 6"			99			272.57	100	
				1cm. brown band. w/ps.		7%	98			272.57		
				2" flat limy band. ls.						272.58		
				wk. slip along Co ₃ sm. 1.5"				100		272.58	100	
				1" brown band w/ps. w/in and big subhedral xtal envelope.			108			272.58		
				limy band 1" fairly flat				100		272.59		
				115'-123 Co ₃ network on hi-carbonaceous shale.; hi clay blk. gouge 118'-127' w/ grounded ps.		2%	118	98		272.59	99	

SECTION	ALTERATION	FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
120				blk. gouge. hi-graphitic shale on contact Co ₂ network if faulted. vn. Co ₂ ~ 60% 1st Zeolite vailets, some Co ₂	26'-219.5' <u>HI-CALCAREOUS DARK GRAY TO BLACK GRAPHITIC SHALE & BROWNISH SILTSTONE!</u>	2%		98		120		
130		Mod		hi-graphitic gouge. Blk. frags. inclusion. 1.5" volc. hi. obl. & stanny. (dikelet) 1cm. Calcite vn. & vils. at 130'-139' Co ₂ vns ~ 5 vailets / foot v/size 1mm-1cm.	* 123'-127.5' Lt. grey section non-limy aphanitic <u>ANDESITE?</u> Contains py. vailets (hairlike), no obvious lamination and aphanitic texture; sparse Co ₂ snc. & Zeolite. An 1" inclusion in the aphanitic rock may indicate forcefull dyke. The contact of dyke is discordant to bedding so it is not a sill. A vailet of py. & pyr. at etc.	4%	124	80		27260	94	
140				dip 20° from Hor. 70° from C.A. in blk sh. & 1cm 1st. band.		2%	127	100		27261	100	
150				Brownish & grey (hi. lime) laminations, occasionally followed by py. ~ 25°-40° dip.		to	137	100		27262	99	
160		WK.		1" brown siltstone ~ 50° dip. w/ py. (local) 3mm. brownish siltstone. 5° dip. contains py.	154'-219': Banding less frequent than above section, about 1 per foot / or xil per foot. size < 1 cm. thick ---	1%	142	98		27263	101	
170				1" slip, hi-graphitic shale. lamination of black shale & 1st. dips ~ 5-10° from Hor. of core ± 20°-25° true dip siltstone strata ~ 1cm. thick 5° flat dip w/ the horizontal. some Calcite w/in. ± 1/foot bands. Band siltstone. 7° dip.		3%	148	100	N O W L	27264	96	
180							155	106		27265	98	
							158	97				
							165.5	97				
							167	96				
							174	100				

SECTION	ALTERATION			FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
180						26'-219.5': Hi-CALCAREOUS VERY DARK GRAY TO BLACK GRAPHITIC SHALE & BROWNISH SILTSTONE.		3% 5%	181 185	100 92		188 27266	97	
190				30%		189.5-197: Greenish grey APHANITE; chlorite inlets & patches present. Py & pyrth. w/ cop. (trace) present. Yellowish spots epidote(?) in small amounts. Trace of greenish colour (actinolite?) needle like struct. This rock is non-laminated, non-limy, non-magnetic, laced w/ white zeolite & some calcite. v. v. green spots present.			188 193	100 100		190 27267	100	
200						197-219: Banding of brownish siltstone disappear, however lots of white Co ₂ (calcite) sms. transect along bedding & cross cuts bedding plane - The black shale appear more calcareous and matrix poorly sorted; The rock colour became lighter than graphitic rock above (because of Co ₂ ⁺). sulfide very wk, or trace mainly on bedding planes. Lamination is marked by aligned white Co ₂ grains. This section could be a shaly "LIMESTONE".		2.5%	198 200 203	100 93 100		200 27268	98	
210									208	100		210 27269	100	
220						219.5 - 231.5' FELDSPAR - QUARTZ - PORPHYRY: DIKE			214 218	100 100		214 27270	100	
230						Lt. grey, f. - med. gr. porphyritic rock. Phenos: ~ 50% feldspar, white & yellowish, rectangular, 3-4 mm. partly kaolinized; ~ 5% quartz rounded - sub rounded smoky - white - grey - j ~ 5% black mafics		Nil	224 226 228 230	100 50 95		224 27271	89	
240						Greyish, fine-aphanitic Groundmass. Contains small amounts of chloritized mafic. Rock is fresh & barren. white zeolite vms & Co ₂ sparse.		2.5%	230 236	86 96		230 27271	91	

HOLE NO. EC

PROJECT: EXPO

PAGE NO: 5 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION: -60°

BEARING:

TOTAL DEPTH:

LOGGED BY: F.R.C.

SECTION	ALTERATION			FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
240						231.5' - 285': <u>LIMESTONE</u> ; (Pseudo-Bxa) Black lst. Weed w/ CO_2 (Calcite) grains & stringers which appears blk frags (lst) on a matrix of Calcite. Calcite also occurs as frags. in black lst. within the lst. py. as disse & irreg. v.lets present in small amounts. No hydrothermal attn. noted.	2.5	242	96		240			
250					Aligned white Calcite bands in blk. lst. bedding ~ 30° blk. ls. frags? in Calcite matrix. blk. lst. frags? on Calcite cement. Calcite network & frags in blk. lst.			248	95		250	95		
260					bedding(?) 30° hairlike py.		255	96		260	97			
270				WEAK	blk. ls. frags. on white Calcite cement. 5° bedding		1%	97		270	99			
280					blk. lst. frags. in hi. calcareous cement. Trace of py	285' - 309' <u>BLACK - DARK GRY. LIMESTONE</u> ; This section is massive w/ minor Calcite stringers. Occasion py. smts ... No bedding is observed. No hydrothermal attns. noted. Bed probably flat (?)		265		270	99			
290					Black - Dark Gry massive lst. structureless.			273	101		270	98		
300								278	96		270	98		
								100		270	100			
								N1		270	99			
								to		270	99			
								4.5		270	99			
								%		270	98			

SECTION	ALTERATION			COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	PROPHYLLITIC	FRACTURING	MINERAL GEOLOGY									
300				minor calcite inlets. trace of py.	285'-309' BLACK-DARK GRAY LIMESTONE: Cont.		302	98		300		
				etc. gradational			306	100		27278	99	
310							313	99		310		
					307'-353.5' LIMESTONE (PSEUDO-BXA): very similar in all respect w/ section 291.5'-285'... Some kink foldings in hi-calcite zone present... Gneissoid struct. in places. This text. is defined in the log as aligned, elongated frags of blk ls. on a calcite groundmass.. (e.g.)		313	98		27279	98	
320				gneissoid text.			324	98		320		
				traces of py.			324	100	15%	27280	99	
330				gneissoid texture			334	100	to	330		
							334	Nil		27281	99	
340							344	99		340		
				py. (1mm) sm.			344	99		27282	99	
				prominent kink folds.			344	98		350		
350				sharp cont. @ 80° from Core (hor); chloritized & skarnified.			354	98		350		
				py. pyrr. disse.	353.5 - 356' Med. Gry. Porphyritic DIORITE(?) Phenos: 10% mafics; 2-3% feldspar on med. gry., hard & dense groundmass. sl. sil & prophyllitized. Disse. PY. PYRR.		354	100	1-2%	27283	99	
360				wollastonite(?) at etc. 75-80° etc.						360		



limy blk. frags, some py.

med gry. matrix (largely Calcite.)



HOLE NO. EC-

PROJECT: EXFO

PAGE NO: 7 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE: 1" = 10'

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY: F.R.C.

SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE RECY / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% RECY. SAMP. INT.	ESTI-MATED
360							356'-411': BLACK-DARK GRAY LIMESTONE: very similar to section 285-309'!				100		360		
						white calcite				364	100		272-84	100	
370										368			272-85		
						trace py.			2.5		99		272-85	99	
380						fairly massive black-dark gy lst. no observable attitude maybe flat from core horizontal.			to	378			380		
						tr. py.			Nil		100		272-86	99	
390										386			272-87		
											99		272-88		
400										396			272-89	100	
						py. sm. (1mm)					100		400		
						contact. gradational				406	100		272-88	100	
410							411-470.5': GNEISSOID LOOKING BLACK-DARK GRAY LIMESTONE: Similar to section 309'-353.5'			411	86		410		
						Gneissoid struct./or pseudo ls. Bx. ... white calcite cement tr. py.			.5	414			272-89	96	
420									to		99		420		

N Q WL

SECTION	ALTERATION			MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTIMATED
	Skarn	FRACTURING	MINERAL										
420													
					411-470.5' <u>GNEISSOID LOOKING BLACK-DARK GRAY Limestone!</u> Cont.			99			420		
				Trace py.				98			272-90	97	
430											430		
											272-91	99	
440					fairly massive gneissoid Lst. Pseub. Bx. section in places.			100			440		
											272-92	99	
450											450		
											272-93	100	
460											460		
					1' Bxted Lst.						272-94	100	
					~ 40° from hor. laminated Lst.						470		
					1" sphalerite sm. grains conform w/ lamination... red-brown garnet present. sharp str. marked by "skarn."						272-95	100	
					1/2' blk. Lst.						470		
					Brownish patches (rect.) biotite(?) & some garnet.						272-95	100	
480					470.5'-485' <u>ANDESITE</u> : Lt. green - fine-med. grained hard and dense... sl. - med. chloritized, epidotized and pyritized ~ (1-2%); white non-limy volets (Zeolite/ qtz.) present. Non-sl. limy & non-magnetic. Relation to Lst. is discordant to bedding. A. dyke? Contains disse. py. & some pyrth.							480	
											272-95	100	
											480		

Weak

10%

NQWL

HOLE NO. EC-

PROJECT: EXPO

PAGE NO: 9 OF 9

BASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH: 505'

LOGGED BY: F.R.G.

SECTION	ALTERATION			MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	SKARN	FRACTURING	WEAK										
480		10%			470.5' - 485' <u>ANDESITE!</u> Cont. 1' epidote & chl. & 1 cm. garnet grains. 45° ctc. (sharp) 1/2' Exted 1st & skarn		1-2%	483	100		480		
490					1" Andesitic dykelet. (ctc. sharp)				100		490	100	
					Banding 25-30° from Core (Hor.)								
503					485' - 503' <u>BANDED BLACK-DARK GRAY LIMESTONE!</u> some py.			493		100	272-97	100	
								503			503		

HOLE NO. EC 2

PROJECT: EXPO

PAGE NO: 1 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.: 1450

DATE STARTED: Nov. 2, 1974

REF. TO CLAIM CORNER:

COORDINATES: 248,100 N. 260,000 E.

DATE FINISHED: Nov. 14, 1974

SCALE: 1" = 10'

INCLINATION: -90°

BEARING:

TOTAL DEPTH: 491'

LOGGED BY: F.R.G.

SECTION	ALTERATION		FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED
	Prophyllitic	Silicic											
					0- 2.3" stick-up casing 2.3" - 8' OB.								
10				epidote blbs. 1" creamy dykelet w/ qtz. eyes transsecting bands. ~35° banding. epidote blb.	8'-29': <u>CHERT</u> : Banded; w/ alternating bands of light gry, dark gry, greenish gry & aphanitic - cryptocrystalline chert. Banding 30° to 70° (from core hor.). Contains limy sms on fractures. Some small amounts, py. pyrth. parallel to bands. Hi-siliceous rock & minor epidote			8	100		8		
20	2%			40° banding - w/ py. pyrth 1' gougy slip. parallel to banding. Banding 60°-70° Py & pyrth along bands.	@ 11.5' is 1" Creamy dykelet opposing the chert bands, contains qtz. phenos (~3%) rounded upto 2 mm.; also mafic phenos ~ 1% on aphanitic creamy groundmass.		1 to Nil	13	80		27301	85	
30	>50%			1" gouge w/ epidote. contact sharp.	29'-43.5' <u>BRECCIA</u> : <u>INTRUSIVE(?)</u> Greyish-green fragmental rock; fragments are white + light grey, fine gr. - aphanitic w/ some mafics phenos, angular - subrounded, 2 cm to 1" w/ sharp edges. also some grey cherty frags. The matrix is lt. green also aphanitic & andesitic. Frags. & matrix both siliceous. The matrix also contains rectangular mafic knots upto 3mm. Fe ₃ O ₄ present			18	82		27302		
40	10%			* py & pyrth. replacing for superempole w/ mafics			2%	20	85		27303	99	
50	20%			contact gradual	43.5'-60' <u>LAPILLI TUFF</u> & <u>ANDESITE TUFF</u> : Fraggs are brownish andesite & large mafic (gran) knots upto 1cm. Hard & dense... grading downward to finer frags. Non- to sl. magnetic. minor lime on tight fract. Py. & Pyrth. disse & minor vnlts			23	100		27304		
				frags of brownish and. upto 1" in lt-green matrix. Some biotite(?)				26	100		27305	97	
				finer frags. than above ~ (And. Tuff) sharp Contact.				31	100				
								36	98				
								41	100				
								46	100				
								51	100				
								54	87				
								59	102				
									100				

NOWL

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SECTION	ALTERATION		FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Hydrothermal	Other											
60					60'-64' <u>CHERT</u> : Lt. gry. drk. gry dense & aphanitic chert. Brecciated at contact. Zone. minor sulfide.		2.5	64	100		27306	98	
70				1 cm. pyr. vnl. w/ trace cep. in white band. 15° alternating bands.	64'-77.5' <u>BANDED CHERT</u> : Alternating white, grey + greenish gry chert; hard & dense. Banding is 15°-20° from horizontal. Contains dis-continues vnlts of py. & pyr. ... trace of cep.		17%	68	96		27307	99	
80	10%			Contact sharp sub-parallel to banding.	77.5-82.5' <u>ANDESITE</u> : Lt. green - sl. greyish med. to fine gr. porphyritic rock. Contains rectangular chloritized mafics. Disse py. & pyr. non. - sl. magnetic. non-limy.		29%	73	100		27308	98	
90				sharp etc. ~ 25° Banding dip 75°-80° dip 60° 45°-50° dip.	82.5-96' <u>BANDED CHERT</u> : Very similar to Sect. 64-77.5. Core more harder & brittle. Banding very steep 60°-80°... sulfide mainly pyr.		21%	78	98		27309	100	
100				chattered banded chert. Brecciated Banding obscured by bxtn.; some shows 5° dip.	* 96'-112' Brecciated Phase of Banded Chert. above.			83	100	NCWL	27310	94	
110				etc. & bands ~ 7°	112-115 <u>BANDED CHERT</u> : as 82-96'			88	100		27311	96	
120				Chert band 20°-25°	115-117 <u>PORPHYRITIC ANDESITE</u> : SILL(?) phenos ~ 100% rect. green knots chl. & sericite in fine gr. greenish groundmass. Cont. py & pyr.		2%	93	92		27312		
								98	97				
								105	98				
								112	97				
								117	98				

SECTION	ALTERATION			FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED
	Propylitic													
120				5		117' - 127' : <u>BANDED CHERT</u> : very similar to section 82-96': Banding @ low angle 15-20° from core horizontal. Py. Pyrr. Conforming bands.		27%	122	98		120		
130					1' dc. Breccia volc. & chert frags.				127	100		27312	99	
					sharp contact.	127' - 137' <u>ANDESITE</u> : Lt green fine grained dense rock; relation with chert not clear. Fairly fresh - sl. chloritized. non-sl. magnetic. specks of py. present.		4.5%	132	100		130		
140				10	Py. Pyrr. sm. trace of cop.	137' - 142' <u>CHERT</u> : Cream colour hard & dense aphanitic - cryptocrystalline rock. sulfide mainly pyrrhotite & minor py. & speck of cop. within pyrrhotite. No banding		2%	137	98		27313	99	
					22° bands.	142' - 147' <u>BANDED CHERT</u> : similar section 117-127'			142			140		
150					1' chert Bxa. gray chert frags. on Creamy chert matrix.			1%	148	95		27314	91	
					3' just massive white chert. no banding.	147' - 154' <u>CHERT</u> : No obvious bands. Lt. grey - Creamy colour massive... as 137-142.			150	100		150		
160				5	Banding ~ 20-25° from core (Hor.)	157' - 175' <u>BANDED CHERT</u> : mainly Creamy white & Lt. gray bandings... 1"-1cm. alternating bands. Py. & Pyrr. voids & blobs. parallel banding. Trace cop.			151	100		27315	93	
					etc. Bxa. and. & chert frags. welded on hi-sl. matrix.				156	100		160		
170						175' - 186' <u>LAPILLI TUFF</u> : Brownish w/ dark gray patches (frags) LAPILLI TUFF - ANDESITE TUFF. Fine-med. gr. very hard dense and massive. Brown shades could be biotite; some square & rectangular dark green knots (chloritized mafic) ~ 1%; Non-sl. mag. Some py. disc.		2-3%	161	100		27316	100	
									166	100		170		
									171	97		27317	98	
									176	99		180		

HOLE NO. EC.

PROJECT: EXPO

PAGE NO: 4 OF 9

BASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY: F.R.G.

SECTION	ALTERATION		FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED
	Propylitic	Silicic												
180						175'-186' LAPILLI TUFF: Cont.		1%				180		
						2-3 mm. pyrr. py. vol.				99		186	99	
						frags of ord. tuff & chert. 1.5 etc. zone				98		190	99	
190						186'-206' "BRECCIATED" BANDED CHERT. Fragmental texture consist of lt. gray, dark gray & grey chert welded on creamy hi-silicous matrix. Contains Pg. & Pyrr.		2%		100		191	99	
										100		196	99	
200						2' etc zone marked by breccia - chert & volc. frags.				100		200	98	
						206'-233' LAP. TUFF to TUFF EXA.				96		205	98	
210						Well pronounce fragmental texture.				100		210		
						Brownish patches prominent up to 1" & w/ sharp & angular edges. dark green patches and knots present. Contains largely disse pyrr. & py. & blebs of secondary biotite(?). Trace of ecp.				100		216	100	
220						rounded & sub-rounded qtz, eyes / or frags. up to 1cm. ϕ \pm 5% minor white zeolite vults.		4%		99		220		
						zeolite				100		225	91	
						Contact sharp 45°				30		226		
230						233'-241' "BRECCIATED" BANDED CHERT: banding of lt. gray, dark gray, Creamy white and lt. brown chert. now broken and fragmental. Size 1cm - 2cm. welded on hi-sil. hard cherty matrix. Pg & Pyrr. present				97		230		
						1' non fragmental chert 47° band.				100		231	99	
240								3%		99		236		

HOLE NO. EC

PROJECT: EXFO

PAGE NO: 5 OF 9

BASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY: F.R.G

SECTION	ALTERATION		MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
	Silicic	Propylitic										
240				60-70' bands. pyr. & py. along bands. Tr. cep. 1.5' chert & tuff fragments in etc. zone. Grey bands 10'	233'-241': BRECCIATED BANDED CHERT: Cont.	2%		99		240		
250	10%			etc. gradational. grey chert frags. sharp etc. zeolite vnl. Py. pyrph.	241-244': Mainly ANDESITE TUFF w/ ~ 5 pcs. grey chert frags. 244-246' is 2' mainly grey chert fragments... hard & dense. 2% py. & pyr. banding ~ 10'		246	100		246	99	
260				grey chert frags. sharp etc. zeolite vnl. Py. pyrph.	246-256 ANDESITE TUFF: Wkly. mottled w/ brownish patches biotite(?) & minor green (chlorite) root. knots in fine-med. gr. groundmass. Py. Pyr. ~ 10% as disse & vnlts... Tr. cep.	10%	251	96		250		
270	20%			etc. eyes & frags. Py. pyrph. vnl.	256-264' LAPILLI TUFF: Dark green & brownish w/ prominent fragmental tex. (mainly darker colour than matrix frags), include few ~ 1% grey chert frags.	2%	261	100		260		
280	5%			Py. pyrph. vnlts zeolite vnl.	264-267': Mainly Grey CHERT Fragments. A CHERT BXA, chloritized frags. 267-276': LAPILLI TUFF as 256-264'		265	99		265	99	
290				Pink, brown & gray frags on H. gry chert matrix. hi. chl. Banding 5'	276-280 as 264-267' pinkish & brown chert frags. appearing. Grey chert still common. ~ 3% vnl. frags. included w/ section	2%	271	100		270		
300					280-292' LAPILLI TUFF: As 267-276' w/ Fe ₃ O ₄ as disse ~ 2%. Py. Pyr tr. cep. as disse & vnlts.	5%	275	95		275		
					292-295': CHERT. BXA: PINK-BROWN & GRAY fragments	1%	275	98		275	97	
							280	100		280		
							285	100		285	100	
							290	100		290		
							295	80		295	95	
							297	97		297		

HOLE NO. EC

PROJECT: EXPO

PAGE NO: 6 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION		FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
200	Propylitic silice												
310	5%				<p>5° bands of grey, brown & pink chert.</p> <p>295'-313' <u>CHERT</u>: Banding of grey, pink, brown chert at 5°-7°. Contains py-pyrrh. along bands. Alternating bands from 1cm. to 1.5". <u>RIBBON-LIKE CHERT</u></p> <p>7° Pink-bands.</p> <p>chert & and. frags. on hi-sil. cherty matrix.</p>	21%	293	97	27330	98			
320	20%				<p>Ext'd mar etc.</p> <p>313'-316.5' <u>BRECCIA ZONE</u>: Largely frags. of banded chert & Lap. Tuff welded on hi-sil. cherty matrix. very hard. Alt. chloritization & sericite(?) Py & pyrr. tr. ocp.</p> <p>1' Gray banded chert 5° dip. ± 10% py. pyrr at etc. tr. ocp. 20' band.</p>	5%	308	97	27331	98			
330					<p>frags. of chert.</p> <p>316.5-335 <u>ANDESITE TUFF</u> / or LAP. TUFF: Locally brecciated & locally contains qtz. eyes(?) or frags. pyrrhotitic. & py. Traces of ocp.</p> <p>fine pyrrhotitic Tuff. tr. ocp.</p> <p>Some sil. cherty frags. includes few qtz. eyes(?) etc. parallel to bands.</p>	10%	317	97	27332	99			
340					<p>335'-351' <u>BANDED CHERT</u>: Similar to sect. 295'-313' more of pinkish & brown bands. Contains disse. & v. pyrr. py.</p> <p>Banding range 10°-15° Pinkish & brownish chert</p>	1	322	100	27333	100			
350	NIL				<p>351-351 <u>CHERT BRECCIA</u>. Fragmental phase of Banded chert.</p> <p>351-362 <u>BANDED CHERT</u>: Banding consist of brownish, pinkish and grey (lt. & dark grey) bands from 1cm - 1" thick. Contains small amounts of pyrrh. Greenish shales indicates minor chlorite.</p>		327	100	27334	98			
760	5%				<p>pyrrh. em.</p> <p>banding 5-10°</p>		333	98	27335	100			
							337	100	27336				
							341	100	27337				
							342	85	27338				
							347	100	27339				
							352	87	27340				
							355	100	27341				
							360		27342				

HOLE NO. EC

PROJECT: EXPO

PAGE NO: 7 OF 9

BASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE: 1" = 10'

INCLINATION:

BEARING:

TOTAL DEPTH: 491'

LOGGED BY: F.R.G.

SECTION	ALTERATION			MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED
	Propylitic	FRACTURING	WEAK										
360		10%		5-70 banding etc. slip. Py. Pyrr. vol. 2 min. white Zeolite	351-362 <u>BANDED CHERT!</u> Cont.		21%	360-362	87		360		
370				1' etc. Bx. chert & fr. tuff frags	362-368' <u>ANDESITE TUFF!</u> Dark grey - dark green, fine-mottled w/ dark green shades; chloritized & pyritized. Few white zeolite present. non-mag.		2%	368-370	102		370	94	
380		5		1" gouge	369-383' <u>BRECCIATED CHERT</u> Fragments compose of dark grey, lt. grey, & pinkish aphanitic chert... Some greenish shades suggesting chloritization.		1%	374-379	96		380	92	
390				2' etc. mainly chert & vol. frags. Brownish section hematite(?)	385-404' <u>ANDESITE!</u> Dark green cl. tuffaceous Andesite. Brownish at top portion. Contain Zeolite v.lets ~ 1 per foot. Zeolite slightly limy. Non-wk. magnetic. Py as disse & int. No Cu.			384-389	98		390	100	
400				1 cm. Qtz. w/ brownish shades.			2% 3%	394-399	96 94	NQWL	400	96	
410		10%		1 cm. Zeolite on tight fract. etc. marked by heavy green (chloritization)	404-411' <u>APHANITE (RHYOLITE?)</u> This section is finer grained & lt. grey colour than above. Shows ~ 10% silicification - Sulfide poor			399-404	100		410	100	
420				Gouge slip at Contact. chloritic fault gouge	411-416' <u>APHANITE - CHERT - (BRECCIA)</u> Rhyolitic & grey chert frags. on hi-sil, chloritic matrix.		21%	407-414	100		420	96	
430					416-419.5' <u>BANDED CHERT</u> This section is well crushed, chips mainly chert. No sulfide			414-419	96 90		430		

HOLE NO. EC
 GASSING COLLAR ELEV.,
 COORDINATES:
 INCLINATION:

GROUND ELEV.,
 N. E.
 BEARING:

PROJECT: EXPO
 DATE STARTED:
 DATE FINISHED:
 TOTAL DEPTH:

PAGE NO: 8 OF 9
 REF. TO CLAIM CORNER:
 SCALE:
 LOGGED BY: F.R.G.

SECTION	ALTERATION			MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED
	Propylitic	FRACTURING											
420					419.5-424' Broken core; largely chips consists of grayish banded chert & rhyolitic rock... fresh & barren. Banding is obscure.			423	90		420		
430	5%						21%	428	96		27342	93	
440				6-7° banding	434-437' <u>ANDESITE TUFF</u> : Same as section 385-404; more tuffaceous.		Nil	433	50		27343	67	
450	20%				437-439 <u>BANDED CHERT</u> : mainly, gray, (lt. & dark) brownish & pinkish bands ~ 1cm. to 1" thick. 5-7° from core horizontal.		<1%	442	92		440		
460					439-451 <u>RHYOLITE</u> (?): Fine-gr. to aphanitic, could be non-banded; equivalent of chert? Lt. Gray banded chert.			447	96		27344	97	
470				Banding ~ 8° Obscure banding ~ 15° 1" epidote sn. in rhyolitic rock Banding 20° etc. sharp appear 45°; hi-chl. 2' zone.	451-452.5			452	100		450		
480	10%				452-462.5 As section 439-451; more cherty, but obscurely banded. sparse py. pyr.		.5%	457	100		27345	98	
					462.5-491' <u>PORPHYRY</u> : (Brownish Gray - Lt. gray) @ 462.5-467'; Lt. gray w/ phenos of ~ 10% green rectangular spots, (chl. after mafics), ~ 20% rounded embay quartz upto 1cm. on a lt. gray-fine grained aphanitic groundmass. fresh & sparse sulfide including py. & pyr.		<5%	462	96		460		
				spikes of py. & pyr.				467	100		27346	99	
	5%							470	100		470		
								475	98		27347	99	
								480	100		480		

④ 467-491; Porphyry became Br-gray & dense aphanitic groundmass

[Handwritten signature]

HOLE NO. EC 2PROJECT: EXPOPAGE NO: 9 OF 9

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH: 491'LOGGED BY: F.R.C.

SECTION	ALTERATION			MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP. INT.	ESTI-MATED
480		Prophyllitic											
		5%	W/C										
491				py & pyrri. specks chloritized mafics	462.5 - 491' <u>PORPHYRY</u> . Cont. No copper is obvious.			480	100				
								485	100	NOWL	27348	100	
								491					



LEGEND

SYMBOLS

- Transit Survey, Hubs
- Picket Line, Showing line and station designation
- HEP Claim Boundary Unsurveyed, showing claim number and claim post
- EC-101 Diamond drill hole drilled during period June to September, 1974

EX-101	EX-102	EX-103	EX-104	EX-105	EX-106	EX-107	EX-108	EX-109	EX-110
EX-111	EX-112	EX-113	EX-114	EX-115	EX-116	EX-117	EX-118	EX-119	EX-120
EX-121	EX-122	EX-123	EX-124	EX-125	EX-126	EX-127	EX-128	EX-129	EX-130
EX-131	EX-132	EX-133	EX-134	EX-135	EX-136	EX-137	EX-138	EX-139	EX-140
EX-141	EX-142	EX-143	EX-144	EX-145	EX-146	EX-147	EX-148	EX-149	EX-150
EX-151	EX-152	EX-153	EX-154	EX-155	EX-156	EX-157	EX-158	EX-159	EX-160
EX-161	EX-162	EX-163	EX-164	EX-165	EX-166	EX-167	EX-168	EX-169	EX-170
EX-171	EX-172	EX-173	EX-174	EX-175	EX-176	EX-177	EX-178	EX-179	EX-180
EX-181	EX-182	EX-183	EX-184	EX-185	EX-186	EX-187	EX-188	EX-189	EX-190
EX-191	EX-192	EX-193	EX-194	EX-195	EX-196	EX-197	EX-198	EX-199	EX-200
EX-201	EX-202	EX-203	EX-204	EX-205	EX-206	EX-207	EX-208	EX-209	EX-210
EX-211	EX-212	EX-213	EX-214	EX-215	EX-216	EX-217	EX-218	EX-219	EX-220
EX-221	EX-222	EX-223	EX-224	EX-225	EX-226	EX-227	EX-228	EX-229	EX-230
EX-231	EX-232	EX-233	EX-234	EX-235	EX-236	EX-237	EX-238	EX-239	EX-240
EX-241	EX-242	EX-243	EX-244	EX-245	EX-246	EX-247	EX-248	EX-249	EX-250

TO ACCOMPANY DRILLING REPORT ON HEP-EXPO LOCATED 50° 127'N BY B. BOWEN SEPT. TO NOV., 1974

5345

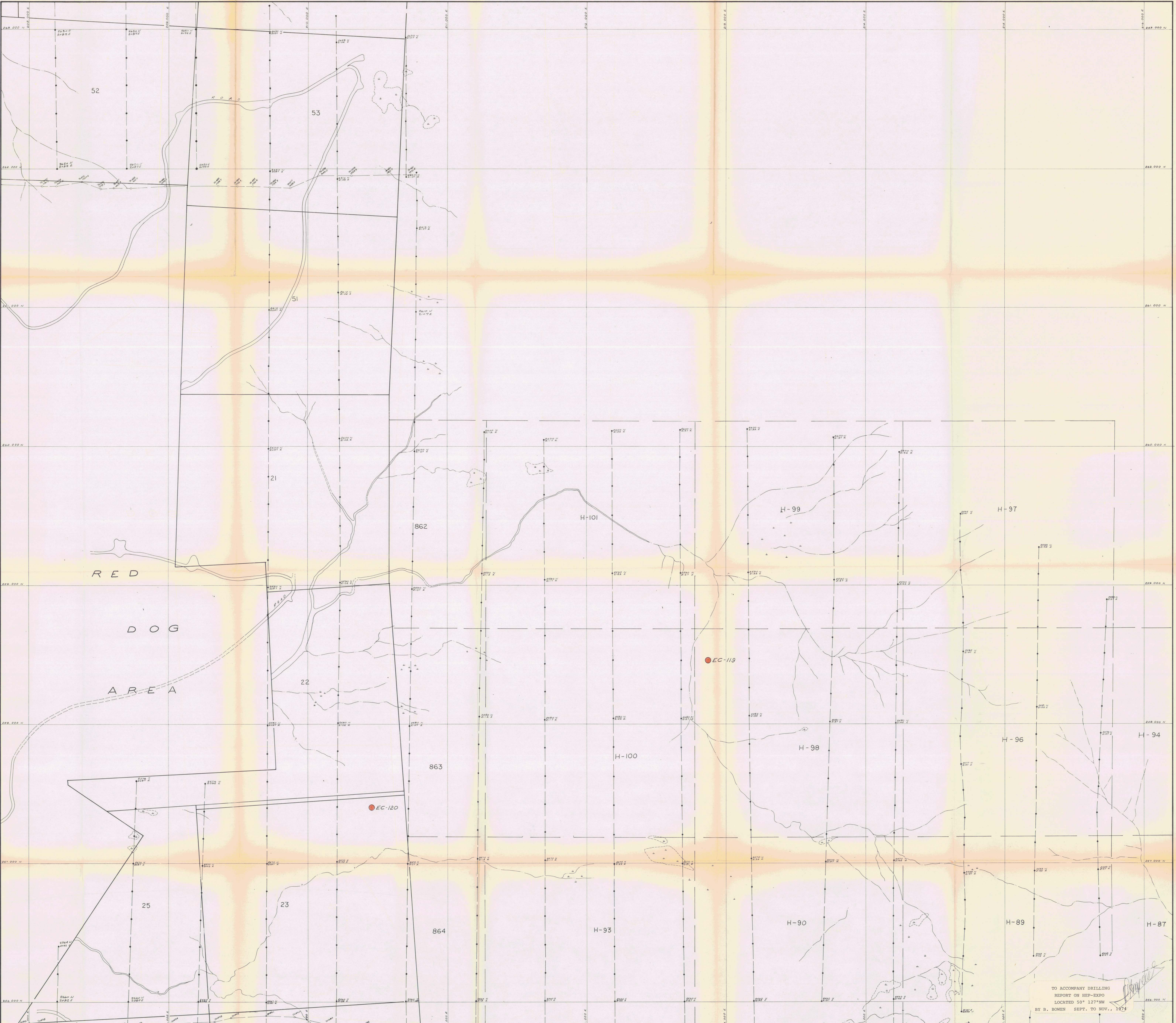
Plate 1

UTAH CONSTRUCTION & MINING CO.
Department of Mineral Exploration & Development
Petroleum Resources

HUSHAMU LAKE AREA
MAP #1 WEST HALF
DIAMOND DRILLING COLLAR LOCATION PLAN
1974

Work by: B. Bowen Date: Nov. 74
Drawn by: L.C. Revised: MAP D-5

Scale in Feet: 0 200 400 600



RED
DOG
AREA

TO ACCOMPANY DRILLING
REPORT ON HEP-EXPO
LOCATED 50° 127' NW
BY B. BOWEN SEPT. TO NOV., 1974

○ EC-120 Diamond drill hole drilled during
period Sept - Oct, 1974
● Red colour denotes drill site cleared
during period Sept - Oct, 1974

A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11
B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	B-11
C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10	C-11
D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	D-9	D-10	D-11
E-1	E-2	E-3	E-4	E-5	E-6	E-7	E-8	E-9	E-10	E-11
F-1	F-2	F-3	F-4	F-5	F-6	F-7	F-8	F-9	F-10	F-11
G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8	G-9	G-10	G-11
H-1	H-2	H-3	H-4	H-5	H-6	H-7	H-8	H-9	H-10	H-11

Department of
Mines and Petroleum Resources
ASSESSMENT AND GENERAL
EXPLORATION & DEVELOPMENT DEPARTMENT
VANCOUVER BRITISH COLUMBIA

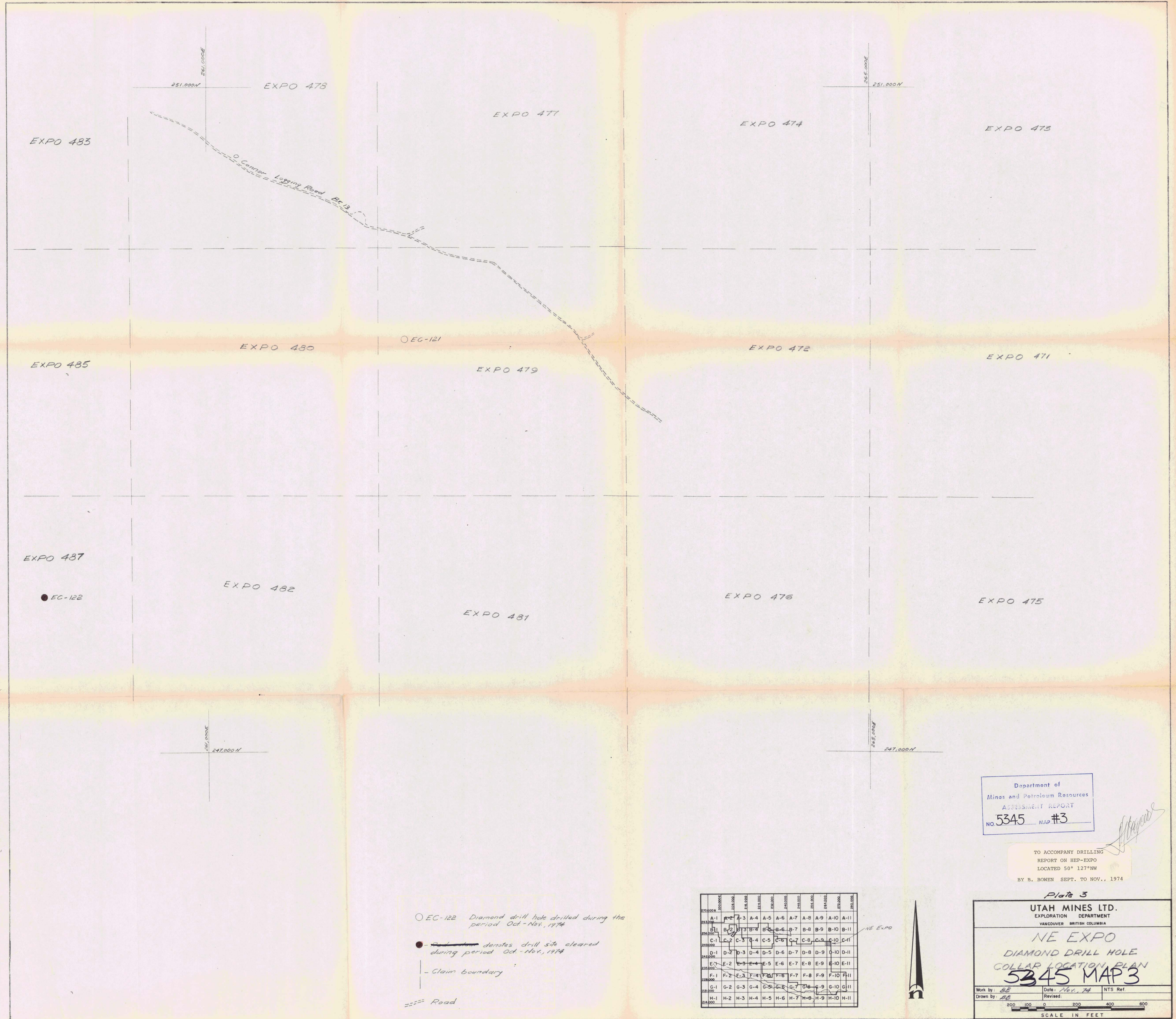
5345 #2

UTAH MINES LTD.
EXPLORATION & DEVELOPMENT DEPARTMENT
VANCOUVER BRITISH COLUMBIA

DIAMOND DRILL HOLE
COLLAR LOCATION PLAN
5345 M2

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

Scale 1" = 400'



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5345 MAP #3

TO ACCOMPANY DRILLING
REPORT ON HEP-EXPO
LOCATED 50° 127° NW
BY B. BOWEN SEPT. TO NOV., 1974

Plate 3

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

NE EXPO
DIAMOND DRILL HOLE
COLLAR LOCATION PLAN
5345 MAP 3

Work by: BB Date: Nov. 74 NTS Ref.
Drawn by: BB Revised: SCALE IN FEET

252,000	251,000	250,000	249,000	248,000	247,000	246,000	245,000	244,000	243,000	242,000	241,000	240,000
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11		
B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	B-11		
C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10	C-11		
D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	D-9	D-10	D-11		
E-1	E-2	E-3	E-4	E-5	E-6	E-7	E-8	E-9	E-10	E-11		
F-1	F-2	F-3	F-4	F-5	F-6	F-7	F-8	F-9	F-10	F-11		
G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8	G-9	G-10	G-11		
H-1	H-2	H-3	H-4	H-5	H-6	H-7	H-8	H-9	H-10	H-11		

○ EC-121 Diamond drill hole drilled during the period Oct.-Nov., 1974

● denotes drill site cleared during period Oct.-Nov., 1974

- Claim boundary

--- Road