093L/15
Big Onion

~~Bowk~~ NTS

821263

VARITECH
RESOURCES LTD.

Trading Symbol VSE: VAR

Suite 401, 325 Howe Street, Vancouver, B.C. V6C 1Z7 • (604) 685-9700 • Fax: (604) 685-9744

ARC
RESOURCE
GROUP

24 September, 1991

NEWS RELEASE

Drilling Hits More Supergene Copper on the Big'O Property

Varitech Resources Ltd. (VAR.V) is pleased to announce that recent drilling on the Big'O Property near Smithers, B.C. has intersected more supergene copper mineralization. Eight drill holes totalling 5,500 feet have been completed to date as part of the two phase 1991 drill program to re-evaluate the Big'O Copper Deposit.

Drill holes BO-91-5 to 8 have successfully defined a thick, moderate grade supergene copper zone in the South Zone of the Big Onion Copper Deposit, as follows:

Drill Hole (No.)		Interval (ft.)	Width (ft.)	Copper %
BO-91-5		60-530	450	0.332
	incl.			
	Supergene	60-220	160	0.603
	Hypogene	220-530	310	0.210
BO-91-6		40-340	300	0.234
	incl.			
	Supergene	40-240	200	0.294
	Hypogene	240-340	100	0.113
BO-91-7		40-730	690	0.280
	incl.			
	Supergene	40-290	250	0.370
	Hypogene	290-730	440	0.229
BO-91-8		30-660	630	0.275
		30-180	150	0.296
		180-660	480	0.269

.../2

The abundant supergene copper mineralization in the South zone is a pleasant surprise as the previous operator, Canadian Superior, had indicated the presence of supergene mineralization predominantly in the North and Northwest zones.

Previous drilling of the Big Onion Copper Deposit in the 1970's by Canadian Superior Exploration Company had outlined an estimated geological ore reserve of up to 80-100 million tons grading 0.42% copper and 0.02% molybdenum with unknown gold and silver grades.

Varitech's goal with the Big'O Project is to define an economically attractive, low cost, "leachable" supergene copper deposit amenable to cathode copper SX-EW technology in the order of 50 + million tons grading 0.5% copper or 500 + million pounds of contained copper.

The Phase 1 drilling data is now being compiled and limited metallurgical testing is underway to evaluate the leachability of the supergene copper zones. Discussions have been initiated with a number of interested parties to finance an expanded Phase 2 metallurgical and drilling program shortly.

ON BEHALF OF THE BOARD OF DIRECTORS

VARITECH RESOURCES LTD.

Brad Cooke

Bradford J. Cooke
President

→ JOHN K
P

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12 September, 1991

RECEIVED
SEP 16 1991

Mr. Alex Davidson
Minnova Inc.
311 Water St., 3rd Floor
Vancouver, B.C. V6B 1R8

Dear Mr. Davidson:

RE: DRILLING RESULTS ON THE BIG ONION COPPER PROJECT

I thought you might be interested in the preliminary drilling results from Varitech's Big Onion Copper Project near Smithers, B.C., enclosed herein. The Big Onion Property is located only 30 miles from Equity Silver's Sam Goosly mine and 50 miles from Noranda's Bell Copper mine, both of which are scheduled for closure in the next year or so.

Although the Big Onion Copper Deposit has been explored extensively in the past, Varitech is the first company to evaluate it for its leachable cathode copper, SX-EW potential. We are now finding that a substantial portion of the indicated mineral inventory, totalling up to 80-100 million tons grading 0.42% copper, appears to be a thick, enriched, supergene sulphide zone of copper mineralization.

This supergene sulphide zone averages 0.52% copper over 265 feet in drill intercepts from the first four holes, with sections running up to 1% copper over 100 feet in places. Supergene copper mineralization should be amenable to heap, rot or concentrate leaching and low cost SW-EW cathode copper recovery.

Varitech is currently seeking further funding to continue its evaluation of this potentially economic deposit. Should you be interested in reviewing the project data or making a site visit, please give me a call.

Yours truly,

VARITECH RESOURCES LTD.

per: [signature]

Bradford J. Cooke
President
BJC/kb

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RESOURCES LTD.

Trading Symbol VSE: VAR

Suite 401, 325 Howe Street, Vancouver, B.C. V6C 1Z7 • (604) 685-9700 • Fax: (604) 685-9744

ARC RESOURCE GROUP

11 September, 1991

NEWS RELEASE

Drilling Intersects Thick Enriched Supergene Copper Zone on Big'O Property

Varitech Resources Ltd. (VAR.V) is pleased to announce that recent drilling has intersected a thick, enriched, supergene copper zone on the Big'O (Big Onion) Property near Smithers, B.C. The two phase, $300,000, 1991 drill program consists of 15,000 feet of HQ core drilling in about 20 holes to re-evaluate the Big Onion Copper Deposit.

Previous drilling of the Big Onion Copper Deposit in the 1970's by Canadian Superior Exploration Company had outlined an estimated geological ore reserve of up to 80-100 million tons grading 0.42% copper and 0.02% molybdenum with unknown gold and silver grades.

Varitech's goal with the Big'O Project is to define an economically attractive, low cost, "leachable" supergene copper deposit amenable to cathode copper SX-EW technology in the order of 50 + million tons grading 0.5% copper or 500 + million pounds of contained copper.

Drill holes BO-91-1 to 4 of the 1991 Phase 1 drilling program have successfully outlined a thicker and higher grade, supergene copper zone in the North Zone of the Big Onion Copper Deposit, as follows:

Drill Hole (No.)		Interval (ft.)	Width (ft.)	Copper %
BO-91-1		100-650	550	0.338
	incl.			
	supergene	100-460	360	0.355
	hypogene	460-580	120	0.386
		580-650	70	0.168

.../2

BO-91-2		80-420	340	0.609
	incl.			
	supergene	80-270	190	0.782
	hypogene	270-420	150	0.389
		610-700	90	0.212
BO-91-3		120-750	630	0.390
	incl.			
	supergene	120-480	360	0.574
	hypogene	480-750	270	0.144
BO-91-4		20-470	450	0.329
	incl.			
	supergene	20-70	50	0.252
	hypogene	70-150	80	0.317
	supergene	150-250	100	0.534
	hypogene	250-470	220	0.258

The copper mineralization in these four drill holes averages 0.400% copper over 492.5 feet, representing a significant increase in width and tonnage and decrease in stripping ratio at about the same grade as the previously indicated deposit average.

Supergene copper mineralization in the four holes averaged 0.518% copper over 265 feet, indicating the presence of a higher grade (23% higher than the deposit average), near surface, "leachable" copper zone.

This supergene zone should be amenable to solution extraction and electrowinning, a much lower cost, higher profit recovery process compared to standard flotation of copper concentrates.

Although the SX-EW process does not recover gold, silver or molybdenum, these metals returned generally low grade assays from the first four drill holes and are therefore of limited economic interest compared to copper.

The mining economics of the Big'O Copper Project are enhanced significantly by the close proximity of the Big Onion Property to the town of Smithers. The property is accessible by an all-weather road, and Smithers offers all of the necessary infrastructure, including manpower and hydropower.

.../3

Varitech has agreed to pay $4 million and issue 200,000 shares over a four year period in order to earn a 100% interest in the Big Onion property subject to royalties. The Company can also own the project outright as Varitech has a $5 million buyout on the underlying 3% net smelter royalties.

The Big Onion Property is a major new addition to Varitech's portfolio of mineral properties which already includes the TAM copper-gold Property northwest of Mt. Milligan, B.C. and the Lakewater gold-silver Property southwest of Eskay Creek, B.C. A drilling program is now underway on the Lakewater Project and a prospecting program has commenced on the TAM property.

A total of eight drill holes have now been completed in the 1990 Phase I program at the Big'O Project and assays for the next four holes are anticipated within one to two weeks. The Phase 2 drilling program should commence by late September after the Phase I drilling information has been compiled.

ON BEHALF OF THE BOARD OF DIRECTORS

VARITECH RESOURCES LTD.

Brad Cooke

Bradford J. Cooke
President

THE VANCOUVER STOCK EXCHANGE NEITHER APPROVES NOR DISAPPROVES OF THE CONTENTS OF THIS NEWS RELEASE WHICH WAS PREPARED SOLELY AT THE DISCRETION OF MANAGEMENT.

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NEWS RELEASE

April 12, 1991

Big Onion Porphyry Copper Deposit - A Major New Acquisition for Varitech

VANCOUVER, B.C. - Varitech Resources Ltd. is pleased to announce that the Company has entered into an agreement to acquire the Big Onion Property, located 15 kilometres east of Smithers in the Omenica Mining District of north central British Columbia.

The claims encompass the Big Onion porphyry copper deposit on which 55,000 feet of drilling was carried out in 115 drill holes by four different mining companies in the 1960's and 1970's.

Canadian Superior Exploration Company, the last operator to drill the property, estimated a geological reserve for the Big Onion deposit of up to 80-100 million tons grading 0.42% copper and 0.02% molybdenum, with unknown gold and silver grades.

Significant Potential to Expand Known Ore Reserves and Copper Grades

Significant exploration potential exists to expand the known ore reserves. The deposit itself is open to the north, and although faulted at the south end, two large geophysical IP anomalies to the south may indicate a faulted extension to the Big Onion deposit or possibly an entirely new sulfide zone.

The deposit is open at depth. Most of the shallow 300 foot percussion drill holes bottomed in ore grade copper, and many of the deeper drained drill holes bottomed in low grade copper.

More importantly, the copper grades have been significantly underestimated by percussion drilling due to copper minerals being washed out of the cuttings downhole. Canadian Superior estimated that copper grades should be 50% higher or 0.63% copper as shown by five percussion holes twinned by diamond drill holes.

Favorable Economics Indicated by Cathode Copper SX-EX Potential of Large Supergene Zone

Another attractive feature of the Big Onion deposit is the presence of a large, near surface supergene zone, where chalcopyrite and pyrite have been almost completely leached and the copper redeposited in a higher grade zone of chalcocite and covellite. This supergene zone should be amenable to copper leaching and electrowinning, a much lower cost/higher profit recovery process compared to standard floatation of copper concentrates.

.../2

Cathode copper SX-EX technology involves significantly lower capital and operating costs because the ore only requires crushing, leaching and electrowinning, with no grinding or floatation circuits. Some parallels can be drawn here to the low cost heap leaching process in gold mining.

The mining economics are enhanced significantly by the close proximity of the Big Onion Property to the town of Smithers. The property is accessible by an all-weather road, and Smithers offers all of the necessary infrastructure, including manpower and hydropower.

Varitech to Proceed with Major Development Program as Soon as Possible.
Varitech has immediate plans to complete a full review of all historical data on the Big Onion project, in preparation for a major drilling and development program to begin as soon as possible. The Company intends to finance the acquisition and development of the Big Onion forthwith.

Terms of the agreement call for Varitech to pay $4 million and issue 200,000 shares over a four year period, in order to earn a 100% interest in the Big Onion property subject to royalties. The Company can also own the project outright as Varitech has a $5 million buyout on the underlying 3% net smelter royalties.

The Big Onion Property is a major new addition to Varitech's portfolio of mineral properties which already include the TAM copper-gold Property northwest of Mt. Milligan, B.C. and the Lakewater gold-silver Property southwest of Eskay Creek, B.C. Large drilling programs have been proposed on both the TAM and Lakewater projects for 1991.

ON BEHALF OF THE BOARD OF DIRECTORS

VARITECH RESOURCES LTD.

Brad Cooke

Bradford J. Cooke
President

THE VANCOUVER STOCK EXCHANGE NEITHER APPROVES NOR DISAPPROVES OF THE CONTENTS OF THIS NEWS RELEASE WHICH WAS PREPARED SOLELY AT THE DISCRETION OF MANAGEMENT.

REPORT ON

BIG ONION PROPERTY
OMINECA MINING DIVISION
NEAR SMITHERS, B.C.

Latitude: 48°48'N

Longitude: 126°55'W

N.T.S.: 93-L-15W

for

VARITECH RESOURCES LTD.
Suite 401 - 325 Howe Street
Vancouver, B.C. V6C 1Z7

by

Vancouver, B.C.
17 August 1991

Chris J. Sampson, P.Eng.
Consulting Geologist

SAMPSON ENGINEERING INC.
2696 West 11th Avenue
Vancouver, B.C V6K 2L6

1. SUMMARY AND CONCLUSIONS

1.1 The Big Onion property held by Varitech Resources Ltd. is situated 16 kms. east of Smithers in north-central British Columbia, Canada.

1.2 The approximately 53 sq.km. property is underlain by andesites and sediments of the lower Jurassic Hazelton group (Telkwa formation volcanics, Smithers/Ashman formation sediments). These have been intruded by Cretaceous quartz-feldspar-porphyry and quartz-diorite-porphyry bodies, which are associated with a porphyry copper-molybdenum zone of mineralization.

1.3 The property was explored by Noranda, Texas Gulf, Blue Rock (Cyprus Mines) and Canadian Superior (Oil) Exploration during the porphyry-copper exploration boom in B.C. in the 1960s and 1970s.

1.4 From 1964 to 1976, 38,406 ft. of diamond drilling and 16,410 ft. of percussion drilling by the four companies indicated that the Big Onion porphyry-copper-molybdenum system contains a geologic reserve of approximately 66 million tons grading 0.45% Cu, 0.02% MoS_2. This is mostly present in the North zone (which contains an area of supergene enrichment) and the South zone.

1.5 Drilling in the North and South zones is widespaced and shallow (less than 400 ft. in many cases). Presently indicated stripping ratios might permit deepening the proposed 10 year pit to 200 m. (670 ft.) which would require deeper drilling to define reserves as probable and possible.

1.6 Reserves are based on drilling by Noranda, Texas Gulf, Blue Rock (Cyprus) and Canadian Superior. All diamond coring (38,406 ft.) was B.Q. size with poor recovery in programmes before work by Canadian Superior in 1974. Comparison by Can Sup, of diamond core results with percussion results, indicated loss of values in percussion holes, i.e. in place grade could be 20% higher than values obtained from drill programmes.

.../2

1.7 Although cash flow and rate of return projections have not been done in 1991, figures gathered by Min Tec in 1982 indicate that the deposit as then defined was sub economic to marginal, principally because of low grade and small tonnage, but these two parameters could probably both be increased as follows:

1.8 Due to past drilling problems - as outlined in 1.6 - it is probable that enhanced recoveries obtained by drilling with modern, hydraulic machines and HQ diameter core will significantly increase indicated in place grades.

Since several areas of the deposit remain open along strike, further exploratory drilling should increase tonnage. In particular the southwest zone is a prime exploration target which could add substantial tonnage to the Big Onion deposit. Further drilling of the Northeast zone (originally called Northwest by Can Sup) both within presently defined limits and further to the northeast could also substantially increase tonnage.

RECOMMENDATIONS AND COST ESTIMATES

The following programmes of exploration are recommended:

1. In order to establish whether past diamond and percussion drilling programmes underestimated the grade of the copper-molybdenum mineralization, 8 HQ diameter vertical holes should be drilled - 4 in the North zone, and 4 in the South zone. The holes should "twin" earlier holes, i.e. be drilled as closely as possible to previous diamond and percussion holes. Of particular interest would be sites such as 76-8, 75-56 and 75-29, 75-38 where results from a modern HQ hole can be compared with earlier results from both a percussion and a BQ diamond hole.

   These 8 HQ holes would be deeper than earlier holes (averaging 180 m., or 600 ft.), i.e. approximately 5000 ft. (1600 m.) of drilling would establish whether the grade of the Big Onion was underestimated in earlier drilling.

2. To expand tonnage of the deposit a further 3000 m. (10,000 ft.) of exploratory drilling should be carried out. The targets in order of priority:

a) Southwest zone: Four 1976 percussion holes indicated copper mineralization on the north flank of the quartz-diorite-porphyry. Rock geochemistry indicated anomalous copper and molybdenite values in bedrock exposures in this area. There are also various geophysical targets and extensive quartz sericite alteration in this location. Topography in the area is not too steep and would permit pit development with favourable stripping ratios. In addition a pit developed on this zone might eventually join with one on the South zone.

b) The Northeast target: This could be extended by drilling to the northeast where the zone runs over a pass at the headwaters of Astlais Creek. The Northeast zone is not rated as high an exploration target as the Southwest zone due to proximity of Astlais Mountain which would confine a pit and apparent narrow width of the zone.

c) The faulted southern extension: The area southwest of the South zone where Texas Gulf located an IP anomaly could be explored by two short (100 m.) angled holes.

3. At the time of much of the original drilling, gold was at $35 U.S. per oz. and was not of much interest. Some of the Calc Alkaline porphyry-copper deposits in British Columbia, such as Bell Copper and Island Copper carry gold values which contribute to profitability and thus core should be assayed for gold - at least in the 8 initial holes to establish if gold is present in greater than background amounts.

4. Metallurgical tests should be run on drill core samples to establish whether oxide copper is present (particularly in the supergene mineralization in the North zone) and recovery and grade of concentrate that could be produced from the various zones.

Cost estimates are as follows:

BUDGET (for a 2 month project)

Diamond drilling (15,000 ft.)	$240,000.00
Wages and field costs	30,000.00
Equipment rental: Truck	2,500.00
Table saw & blades	2,900.00
Transportation	2,000.00
Fuel	800.00
Field equipment	3,000.00
Analyses (1500 samples x 24.75)	40,000.00
Metallurgical studies/reports	25,000.00*
Communications	500.00
Rent, food	2,400,00
Data mgmt. (Geocom)	10,000.00*
Drafting, reproduction	1,000.00
Management and miscellaneous (10%)	36,000.00
TOTAL:	$396,000.00

* approximate / estimate

SAMPSON ENGINEERING INC.
2696 West 11th Avenue
Vancouver BC V6K 2L6

3. INTRODUCTION

Varitech Resources' Big Onion porphyry-copper prospect is situated on and around the Astlais Mountain 16 kilometres east of Smithers, B.C. The property name derives from resemblances of the local topography to a partly sheaved onion.

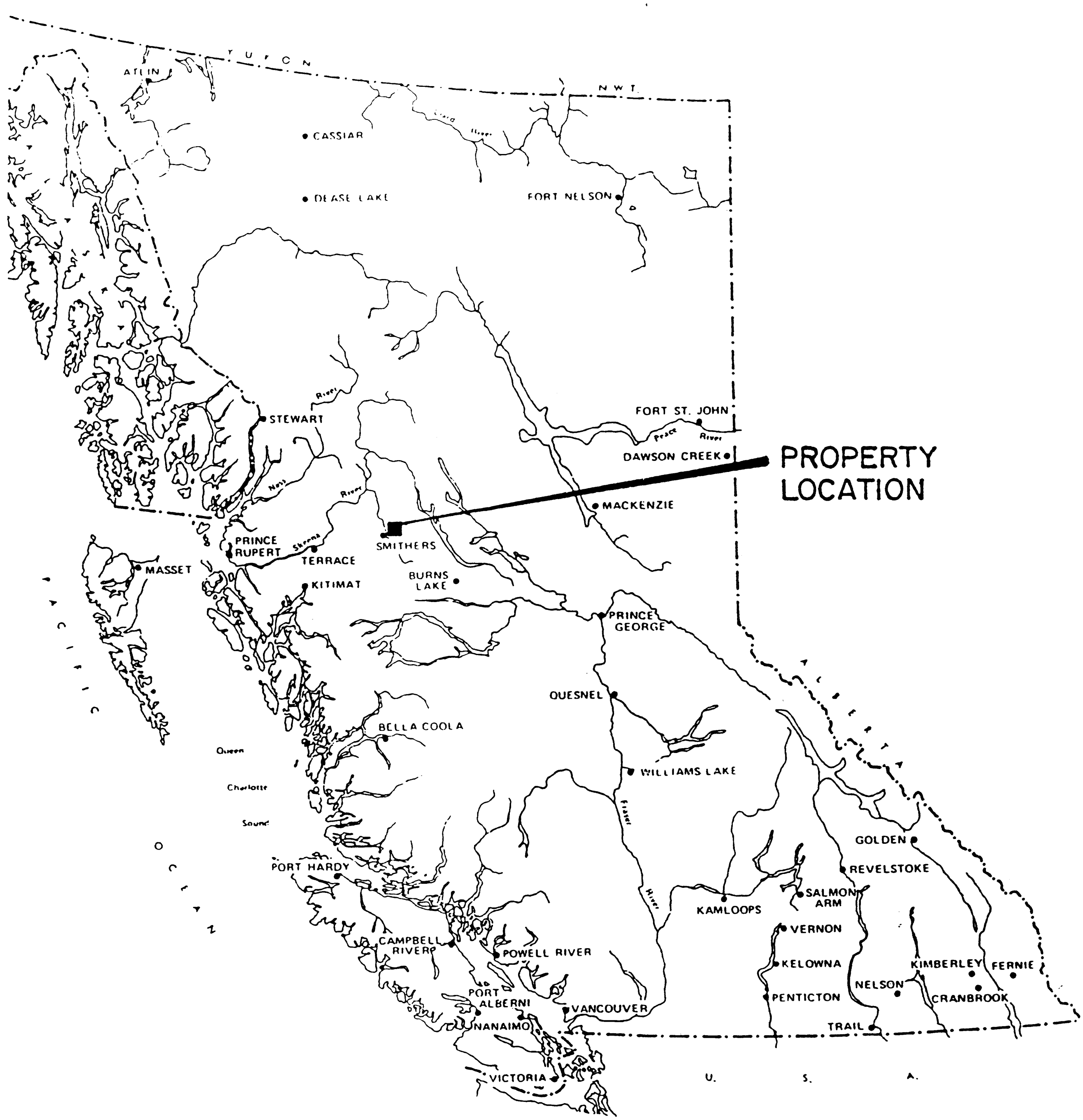
The property was the subject of several exploration programmes during the porphyry-copper boom in British Columbia in the 1960s and 1970. Due to its location close to Smithers and ease of access, it has been the subject of many geological tours and is well known to the mining exploration community in British Columbia.

This report is therefore based on results of work programmes carried out by Noranda Exploration and Texas Gulf in the 1960s, and by Blue Rock (Cyprus Mines) and Canadian Superior Exploration in the 1970s, published maps and reports from the Geological Survey of Canada and B.C. Department of Mines, and also on visits to the property made by the author in the mid 1970s and more recently in August 1991.

4. PROPERTY, LOCATION, AND ACCESS

The Big Onion property covers an area of approximately 53 square kilometres surrounding and including Astlais Mountain, 16 kilometres east of Smithers, B.C. (latitude 54°48'N, longitude 126°55'W, NTS 93-L-15W).

The topography varies from gently rolling to flat lying country containing some swampy areas in the southern and western parts of the claim group to steep to precipitous terrain comprising Astlais Mountain and other peaks in the nothern and eastern parts of the property. Thus the lowest elevation is on Ganokwa Creek on the west side of the claim group 820 m. (2700 ft.) and the terrain rises to the east side of the property where Astlais Mountain represents the highest elevation at 1840 m. (6041 ft.). The main areas of mineralization are situated between 900 m. and 1520 m. (3000 to 5000 ft.). Much of the area that has been explored todate is covered by stands of timber as the treeline is at 1460 m. (4,800 foot) elevation.



PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
CHRIS J. SAMPSON

Chris J. Sampson
AUG. 17/91

VARITECH RESOURCES LTD.	
BIG ONION PROJECT	
LOCATION MAP	
N.T.S. 93L-15W	OMINECA M.D., B.C.
0 100 200 400 KM.	
Scale 1 : 8,000,000	Date : August 1991
Drawn by : C.S.	Figure No. : 1

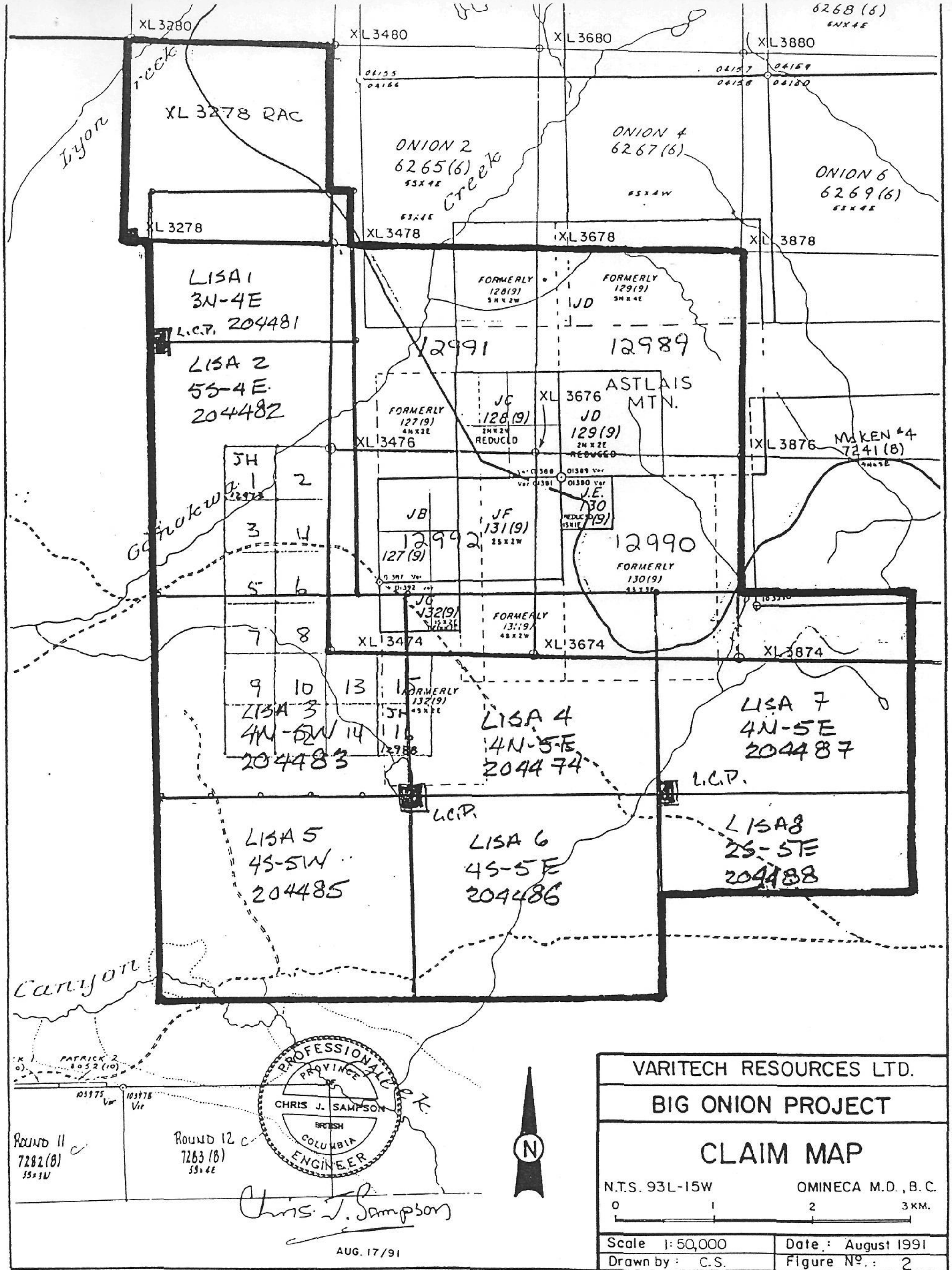
CHONG

Access to the property is easily gained by the Babine Lake road out of Smithers, an all weather two-wheel drive road, which runs across the centre of the claim group. From this road a series of four-wheel drive roads provide access to all locations drilled todate.

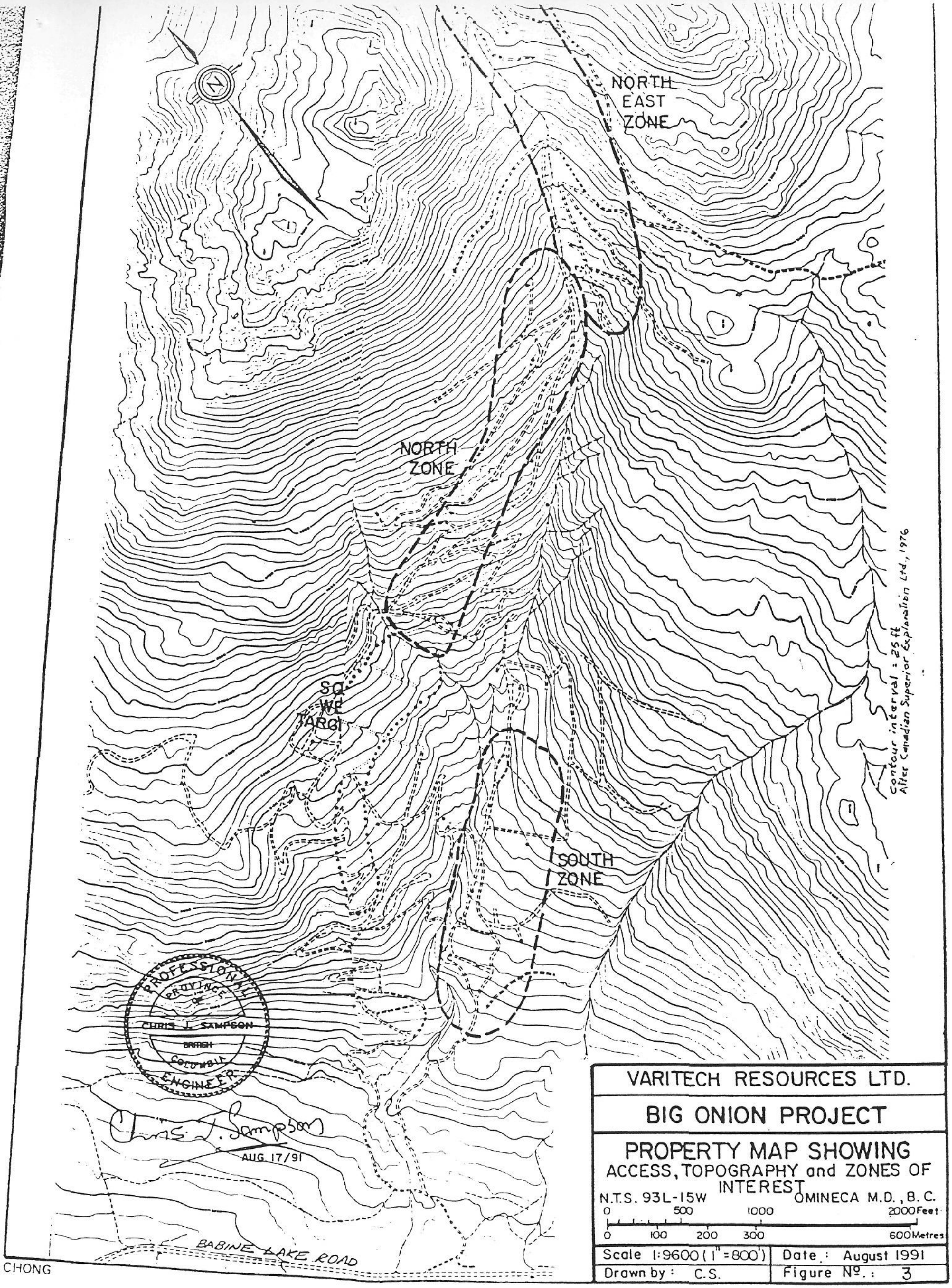
The claims currently held by Varitech Resources Ltd. under option agreements with Mindoro Corp./Sawyer and Associates and the Hemelspecks are listed as follows and shown on the claim map (figure 2).

OMINECA MINING DIVISION:

Claim Name	Record #	# of Units	Expiry Date
JA	126	9	Sept. 8/93
JB	127	8	Sept. 18/93
JC	128	10	Sept. 18/93
JD	129	20	Sept. 18/93
JE	130	12	Sept. 18/93
JF	131	8	Sept. 18/93
JG	132	8	Sept. 18/93
JH 1-16	12973-12988	1	Feb. 16/92
XL3676 (RAC)	12989	16	Feb. 16/92
XL3674 (RAC)	12990	16	Feb. 16/92
XL3476 (RAC)	12991	16	Feb. 16/92
XL3474 (RAC)	12992	16	Feb. 16/92
XL3278 (RAC)	13223	16	Apr. 16/92
LISA 1		12	Apr. 14/92
LISA 2		20	Apr. 14/92
LISA 3		20	Apr. 14/92
LISA 4		20	Apr. 14/92
LISA 5		20	Apr. 14/92
LISA 6		20	Apr. 14/92
LISA 7		20	Apr. 14/92
LISA 8		10	Apr. 14/92


VARITECH RESOURCES LTD.
BIG ONION PROJECT
CLAIM MAP
N.T.S. 93L-15W
OMINECA M.D., B.C.
0 1 2 3 KM.
Scale 1:50,000
Date: August 1991
Drawn by: C.S.
Figure No.: 2
XL 3280
XL 3480
XL 3680
XL 3880
6268 (6)
XL 3278 RAC
ONION 2
6265 (6)
ONION 4
6267 (6)
ONION 6
6269 (6)
Lyon Creek
Creek
L 3278
XL 3478
XL 3678
XL 3878
LISA 1
3N-4E
204481
L.C.P.
LISA 2
5S-4E
204482
12991
12989
ASTLAIS MTN.
XL 3676
JC
128 (9)
REDUCED
JD
129 (9)
REDUCED
FORMERLY
127 (9)
FORMERLY
128 (9)
FORMERLY
129 (9)
XL 3476
XL 3876
McKEN #4
7241 (8)
JH
JB
12992
127 (9)
JF
131 (9)
J.E.
130 (9)
12990
FORMERLY
130 (9)
Gonokwa
JG
132 (9)
FORMERLY
131 (9)
XL 3474
XL 3674
XL 3874
FORMERLY
132 (9)
LISA 3
4N-5W
204483
LISA 4
4N-5E
204474
LISA 7
4N-5E
204487
L.C.P.
LISA 5
4S-5W
204485
LISA 6
4S-5E
204486
LISA 8
2S-5E
204488
Canyon
Creek
PATRICK 2
8052 (10)
ROUND 11
7282 (8)
ROUND 12
7283 (8)
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
CHRIS J. SAMPSON
Chris J. Sampson
AUG. 17/91
N

CHONG


NORTH EAST ZONE
NORTH ZONE
SOUTH ZONE
BABINE LAKE ROAD
Contour interval : 25 ft
After Canadian Superior Exploration Ltd., 1976
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
CHRIS J. SAMPSON
AUG. 17/91
VARITECH RESOURCES LTD.
BIG ONION PROJECT
PROPERTY MAP SHOWING
ACCESS, TOPOGRAPHY and ZONES OF INTEREST
N.T.S. 93L-15W
OMINECA M.D., B.C.
0 500 1000 2000 Feet
0 100 200 300 600 Metres
Scale 1:9600 (1" = 800')
Date : August 1991
Drawn by : C.S.
Figure No. : 3

CHONG

5. HISTORY

Copper-molybdenum mineralization was first discovered in the area of Astlais Mountain in 1917 and at least one small adit was driven on the northern flank of what is now known as the South zone in the early 1920s. Further, more extensive workings were subsequently driven in the area of the North zone, but these met with little success and the property was abandoned and remained dormant for some years until it was restaked by Jack Hemelspeck Sr. in the early 1960s.

The 1960s and 1970s saw extensive exploration in British Columbia for porphyry-copper deposits. This lead to doscovery and production of such mines as Lornex, Gibraltar, Island Copper, Endako, etc. Mineralization at the Big Onion was recognized as a porphyry-copper-molybdenum system and the property was subsequently optioned and explored by four major companies, as follows:

In 1964 and 1965, Noranda Exploration held the property. They carried out programmes of mapping, prospecting, some geophysics and limited diamond drilling. The property was held by Texas Gulf Sulphur in 1966 and 1967 who also carried out programmes of geophysics and drilled 3,993 feet of diamond drilling. In 1970-71, the property was held by Blue Rock (Cyprus Mines), who further extended the known areas of mineralization by drilling 24,134 feet of diamond core holes. In April 1974, Canadian Superior Exploration optioned the property and during the period 1974-1976 they carried out programmes of detailed mapping, some geophysics and drilled 10,029 feet of diamond core holes and 16,410 feet of percussion drill holes.

Canadian Superior summarized the results of these work programmes and computed tonnage and grade of the combined mineralized zones in 1977. They concluded that the drill indicated reserve of 65.7 million grading, 0.45% average copper was not viable at that time and did no further active field exploration. In February 1982, they commissioned Mintec Inc. to recalculate the reserves using various different values for copper and moly, but subequently terminated their option on the property.

With renewed interest in porphyry-copper deposits in British Columbia in recent years, Mindoro Corp./Sawyer and Associates optioned the property from the Hemelspecks 10 December 1990. Varitech concluded an agreement with this group 10 April 1991.

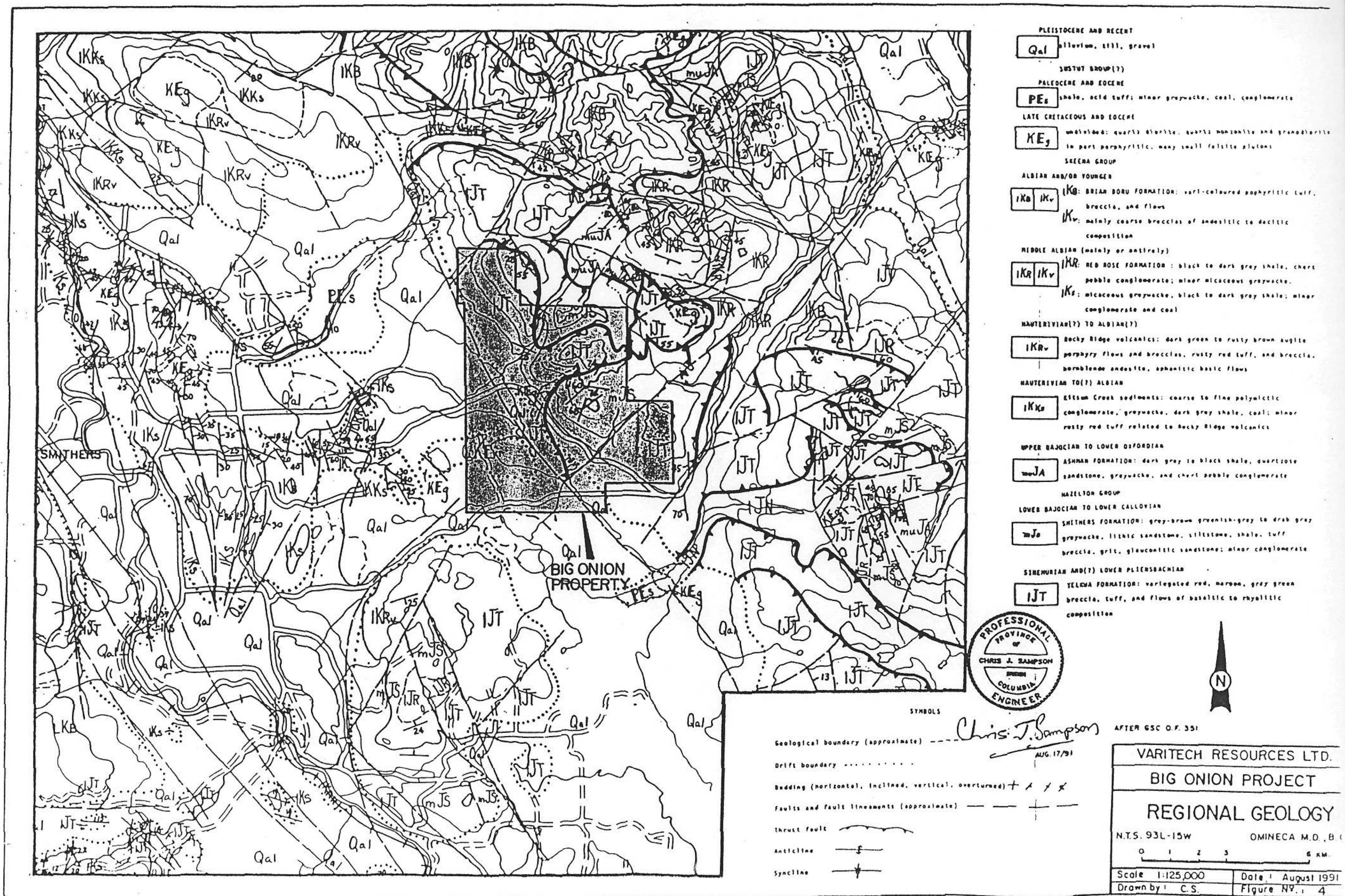
6. REGIONAL GEOLOGY

The geology of the area immediately east of Smithers was mapped on a regional scale by Tipper and Richards (Geological Survey Bulletin 270, 1976) and is shown on GSC map 971A and GSC Open File 351. The geology of this area is also shown in more recent mapping by B.C. Department of Mines Open File 1987-1.

The area is underlain by volcanic and sedimentary rocks of the Jurassic Hazelton group. These rocks were deposited in Lower to Middle Jurassic time in an island arc environment. The oldest rocks in the area consist of the Sinemurian and Lower Pleinsbachian age Telkwa formation volcanics (i.e. lowermost Jurassic age) consisting of variagated red maroon to grey green breccia, tuffs and flows of basaltic to rhyolitic composition. The Telkwa formation is uncomformably overlain by sediments belonging to the lower Bajocian to lower Callovian, Smithers formation which consists of grey-brown to greenish-grey to drab-grey greywacke, lithic sandstone, siltstone, shales, tuffs, breccia, grits, glauconitic sandstone and minor conglomerate.

Subsequent northeast oriented faulting provided the plumbing system along which a wide compositional range of intrusives were emplaced in Cretaceous time.

In summary the copper-molybdenum zones at Astlais Mountain are contained within a fault controlled intrusive complex of Cretaceous age which has intruded volcanic and sedimentary rocks of the lower Jurassic Hazelton group.


SMITHERS
BIG ONION PROPERTY
PLEISTOCENE AND RECENT
Qal alluvium, till, gravel
SUSTUT GROUP(?)
PALEOCENE AND EOCENE
PEs shale, acid tuff; minor greywacke, coal, conglomerate
LATE CRETACEOUS AND EOCENE
KEg undivided: quartz diorite, quartz monzonite and granodiorite in part porphyritic, many small felsite plutons
SKEENA GROUP
ALBIAN AND/OR YOUNGER
lKB lKv
lKB: BRIAN BORU FORMATION: vari-coloured pophyritic tuff, breccia, and flows
lKv: mainly coarse breccias of andesitic to dacitic composition
MIDDLE ALBIAN (mainly or entirely)
lKR lKv
lKR: RED ROSE FORMATION : black to dark grey shale, chert pebble conglomerate; minor micaceous greywacke.
lKs: micaceous greywacke, black to dark grey shale; minor conglomerate and coal
HAUTERIVIAN(?) TO ALBIAN(?)
lKRv Rocky Ridge volcanics: dark green to rusty brown augite porphyry flows and breccias, rusty red tuff, and breccia, hornblende andesite, aphanitic basic flows
HAUTERIVIAN TO(?) ALBIAN
lKKs Kitsun Creek sediments: coarse to fine polymictic conglomerate, greywacke, dark grey shale, coal; minor rusty red tuff related to Rocky Ridge volcanics
UPPER BAJOCIAN TO LOWER OXFORDIAN
muJA ASHMAN FORMATION: dark grey to black shale, quartzose sandstone, greywacke, and chert pebble conglomerate
HAZELTON GROUP
LOWER BAJOCIAN TO LOWER CALLOVIAN
mJs SMITHERS FORMATION: grey-brown greenish-grey to drab grey greywacke, lithic sandstone, siltstone, shale, tuff breccia, grit, glauconitic sandstone; minor conglomerate
SINEMURIAN AND(?) LOWER PLIENSBACHIAN
lJT TELKWA FORMATION: variegated red, maroon, grey green breccia, tuff, and flows of basaltic to rhyolitic composition
PROFESSIONAL
PROVINCE OF
CHRIS J. SAMPSON
BRITISH COLUMBIA
ENGINEER
N
SYMBOLS
Geological boundary (approximate)
Drift boundary
Bedding (horizontal, inclined, vertical, overturned)
Faults and fault lineaments (approximate)
Thrust fault
Anticline
Syncline
Chris J. Sampson
AUG. 17/91
AFTER GSC O.F. 351
VARITECH RESOURCES LTD.
BIG ONION PROJECT
REGIONAL GEOLOGY
N.T.S. 93L-15W
OMINECA M.D., B.C.
0 1 2 3 6 KM.
Scale 1:125,000
Date: August 1991
Drawn by: C.S.
Figure No.: 4

7. PROPERTY GEOLOGY

Canadian Superior Exploration did extensive mapping and rock geochemical sampling on the property at a scale of one inch to quarter mile, using airphotos, an orthophoto base and altimeters to facilitate accurate location of sample sites. Mapping emphasis was on sulphide distribution, alteration zoning and the more significant structural features. The following description of the property geology is based on "Geological and Rock Geochemical Report on the Big Onion Area Claim by G.C. Stock, P.Eng., 5 August 1977".

Outcrop is variably distributed throughout the property. It varies from approximately 90% exposure of the bedrock on the northern and eastern sides of the property, particularly on Astlais Mountain, to 1-5% exposure in the swampy areas in the southernmost part of the claim group.

7.1 Lithology

The oldest rocks observed on the property are green and maroon flows and tuffs of the early Jurassic Telkwa formation (the oldest member of the Hazelton group). The lowest unit as seen in outcrop commonly contains porphyritic horneblende and plagioclase phenocrysts in an andesitic matrix and is apparently mostly andesite flows. Locally, within these andesite flows, specifically on Astlais Creek, there are several limey beds which together with a minor red to maroon silt and sandstone sequence further east, indicate that this unit is part of the Babine shelf-facies (Tipper & Richards 1976).

The uppermost unit of the Telkwa formation is characteristically an extremely fine grained hematitic tuff often containing angular feldspar fragments and phenocrysts. Locally, some aggomeritic flows are apparently intercalated with the fine grained tuffs. These agglomerates are characterized by a hematized matrix suspending angular to subrounded fragments of chloritized green andesite, hematized red tuff, feldspar and quartz. These rocks were not found in outcrop and were observed only in drill core. Locally some thin beds of limestone have been observed indicating a submarine environment.

The sedimentary units exposed on the property consist mostly of weakly metamorphosed dark grey to black shaley mud stone with intercalated grey wacke, felspathic to quartzose sandstone and minor chert pebble conglomerate.

Locally, there are layers containing significant amounts of euhedral pyrite. Although many fossil localities were observed throughout the unit, no fossil study was undertaken by Canadian Superior in order to divide the unit into the Smithers formation (uppermost division of the Hazelton group) and the Ashman (lowermost formation of the overlying upper Oxfordian to Kimmerigian Bowser Lake group).

Since the sediments of the Smithers/Ashman group are distal to the zone of mineralization, they were not mapped in detail as part of the Canadian Superior's exploration programme. L'Orsa's 1967 sedimentary description are quoted as follows:

a) Arenaceous sediments: Greywackes, sandstone, minor arkose and conglomerates with tuffs and minor interbedded argillite are included in the sequence which marks the bottom of the sedimentary division of the Hazelton group.

b) Argillite and shale. These rocks are black in colour, very thin bedded in part and contain fossils and some coal.

To the north of Lion Creek in the northern part of the property, these rocks show a significantly higher grade of metamorphism accompanied by more intense folding. They are low grade schists with pyrrhotite and some muscovite. These rocks could be part of the Red Rose formation (part of the Skeena group of early Cretaceous age) or maybe simply metamorphosed equivalents of the Ashman and Smithers formation.

The oldest intrusive rocks observed on the property are the Quartz Feldspar Porphyry units localized along the strong shear zone paralleling Astlais Creek which appear to have been intruded at the subvolcanic (hypabyssal) level and were the probable source of the welded ash flow units and rhyolitic flows which are exposed at the southern end of the property. QFP is believed to be of Cretaceous age and occurs as numerous dikes and intrusive bodies that crosscut both the volcanic and sedimentary rocks on the Big Onion property.

The copper-molybdenum mineralization which also parallels the Astlais Creek fault system is concentrated mainly in the Quartz Feldspar Porphyry. The Quartz Feldspar Porphyry is characterized by quartz and common relict feldspar phenocrysts set in an aphanitic ground mass of quartz and feldspar.

The QFP is in turn intruded by a plagioclase porphyritic unit of dioritic to quartz monzonitic composition (the Quartz Diorite Poprhyry). This unit could be the result of discrete intrusions of small igneous bodies along planes of structural weakness or may represent apophyses emanating from a deep seated intrusive mass of stock to batholithic dimensions. It forms the core of the intusive complex, and consists of well developed plagioclase phenocrysts, irregular horneblende clumps and rare fine grained biotite, set in a fine grained ground mass of quartz and plagioclase.

A number of what are probably Tertiary age dikes also occur on the property. The largest - the Quartz Monzonite Porphyry - strikes approximately north/south and cuts off the southern end of the mineralized zone. It consists of fine grained plagioclase laths, conspicuous medium grained biotite flakes, and irregular quartz set in an aphanitic potassium feldspar matrix.

A smaller Horneblende Porphyry dike also believed to be of Tertiary age is located at the northern end of the property. It consists of medium grained euhedral to idiomorphic grains of horneblende, relict rounded to subrounded grains of plagioclase and very fine irregular grains of quartz set in an aphanitic plagioclase ground mass.

7.2 Structure

The dominant structure on the property is a NE trending NW dipping shear zone, which parallels Astlais Creek and has been called the Astlais Creek fault system. It is believed to have controlled both emplacement of the intrusives and related copper molybdenum mineralization.

The Astlais Creek fault system is parallel with and may be related to the McKendrick break which is a prominent NE/SW striking regional structure exposed to the southeast of the property.

Other prominent structures on the property consist of a series of tranverse north-northwest trending faults. These faults divide the North from the South zones in the centre of the property and provide the location for the Tertiary Quartz-Monzonite-Porphyry dike which cuts off the copper-molybdenum minealization to the southwest. These cross faults are probably also responsible for the abrupt change of strike of the copper-molybdenum mineralized zone at the northern end of the property (known as "Northwest zone" by Canadian Superior but actually North East).

7.3 Alteration

Canadian Superior carefully mapped hydrothermal alteration as seen in outcrop and drill core. They produced an alteration map of the property (figure 6) which shows that the area of copper mineralization is completely enveloped by the quartz-sericite alteration assemblage (potassium alteration). This quartz-sericite alteration is in turn surrounded by an extensive area of propylitic alteration which gives way to relatively fresh rocks at or near the limits of the pyrite halo surrounding the copper-molybdenum mineralizatin.

Quartz-sericite alteration within the Quartz-Feldspar-Porphyry unit varies in intensity from extreme in which the QFP can only be recognized by the existence of remnant quartzeyes to moderate where occasional relict plagioclase phenocrysts can be discerned. Fine grained sericite is ubiquitous within the quartz-sericite alteration zone. Quartz stockworks are locally developed and less commonly pervasively silicified zones are present. The quartz-sericite alteration assemblage is largely confined to the quartz-feldspar-porphyry with only minor areas of this type of alteration observed within the other rock types.

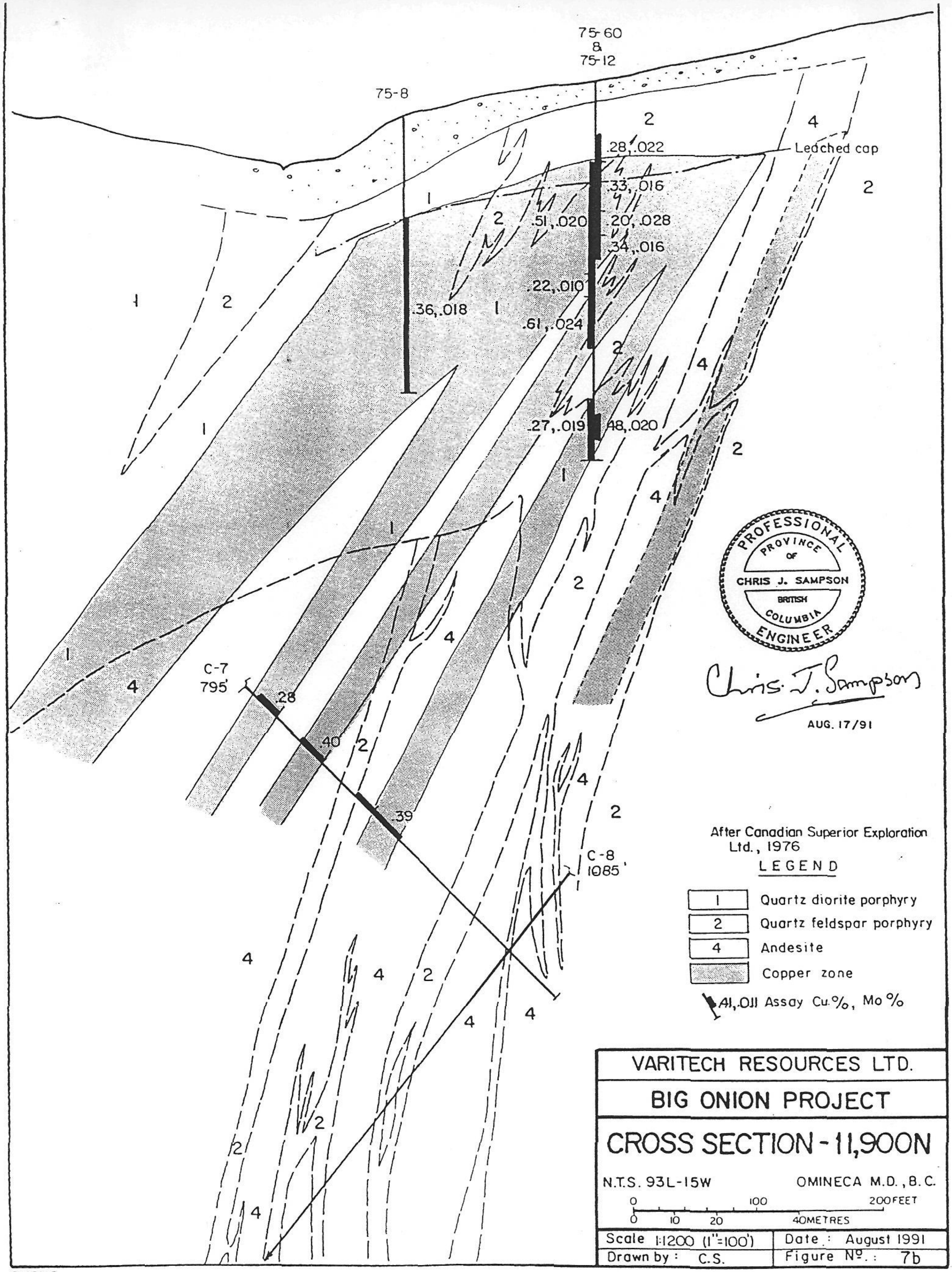
Propylitic alteration is developed extensively around the zone of potassium alteration. It is best developed within the margins of the andesite flows and is characterized by presence of epidote, calcite, chlorite and weak sericitization of plagioclase. Within the Quartz-Feldspar-Porphyry unit the propylitic assemblage is characterized by calcite and saussauritization of the feldspars. The Quartz Diorite unit is propylitized throughout with horneblende altering to chlorite, accompanied by weak sericitization of the plagioclase and some associated calcite.

Sporadically within the quartz-sericite assemblage secondary biotite alteration has been observed. This alteration is apparently confined to envelopes along fractures and it is not sufficiently continuous to permit mapping areas of secondary biotite as a separate alteration zone.

7.4 Mineralization

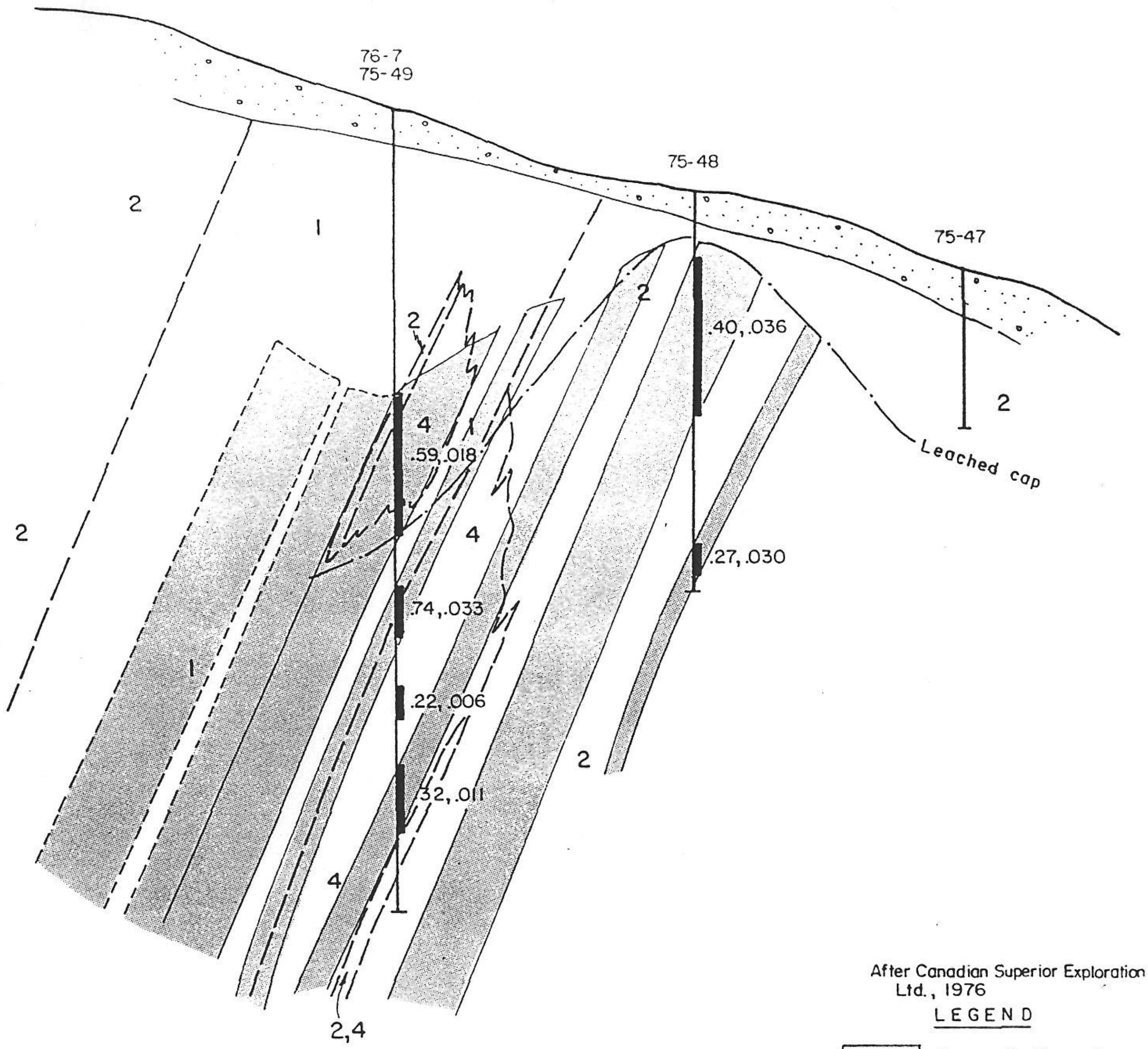
Copper with subordinate molybdenum mineralization is localized within the steep northwesterly dipping shears that parallel Astlais Creek. Original hypogene mineralization consisted of chalcopyrite and molybdenite. The mineralization is mostly confined within the Quartz-Feldspar-Porphyry with relatively minor amounts crosscutting the narrower Quartz-Diorite-Porphyry dikes, margins of the andesite flows and the margins of the main Quartz-Diorite-Porphyry mass.

The mineralization is apparently restricted to rehealed shattered and sheared zones that strike approximately 065° and dip 50-70°NW. Enplacement of mineralization in this zone apparently consisted of several pulses of hydrothermal activity over a considerable period of time. At least three mineralizing pulses have been identified:



75-8
75-60 & 75-12
Leached cap
.28,.022
.33,.016
.51,.020
.20,.028
.34,.016
.22,.010
.36,.018
.61,.024
.27,.019
.48,.020
C-7 795'
.28
.40
.39
C-8 1085'
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
CHRIS J. SAMPSON
Chris J. Sampson
AUG. 17/91
After Canadian Superior Exploration Ltd., 1976
LEGEND
1 Quartz diorite porphyry
2 Quartz feldspar porphyry
4 Andesite
Copper zone
.41,.011 Assay Cu.%, Mo %
VARITECH RESOURCES LTD.
BIG ONION PROJECT
CROSS SECTION - 11,900N
N.T.S. 93L-15W
OMINECA M.D., B.C.
0 100 200 FEET
0 10 20 40 METRES
Scale 1:1200 (1"=100')
Date: August 1991
Drawn by: C.S.
Figure No.: 7b

CHONG



After Canadian Superior Exploration Ltd., 1976

LEGEND

1	Quartz diorite porphyry
2	Quartz feldspar porphyry
4	Andesite
	Copper zone

.41,.011 Assay Cu%, Mo %

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PROVINCE OF BRITISH COLUMBIA
CHRIS J. SAMPSON

Chris J. Sampson
AUG. 17/91

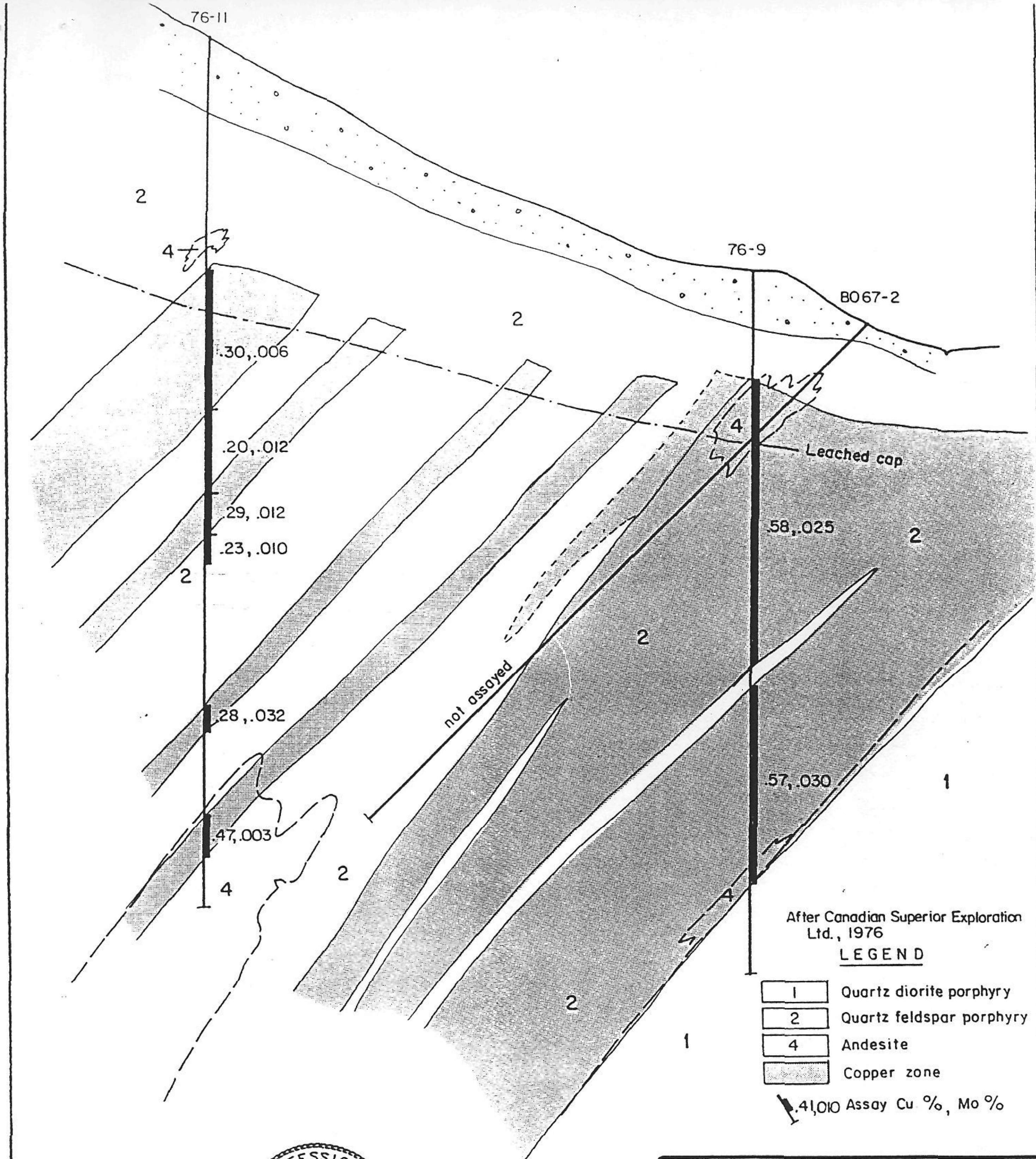
VARITECH RESOURCES LTD.

BIG ONION PROJECT

CROSS SECTION - 12,900N

N.T.S. 93L-15W	OMINECA M.D., B.C.
0 100 200 FEET	0 10 20 40 METRES
Scale 1:1200 (1"=100')	Date: August 1991
Drawn by: C.S.	Figure No.: 7c

CHONG



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AUG.17/91

VARITECH RESOURCES LTD.

BIG ONION PROJECT

CROSS SECTION-14,800N

N.T.S. 93L-15W OMINECA M.D., B.C.

0 100 200 FEET
0 10 20 40 METRES

Scale 1:1200 (1"=100')	Date: August 1991
Drawn by: C.S.	Figure No.: 7d

CHONG

A. Quartz, sericite, pyrite $\pm$ chalcopyrite.

B. Quartz, sericite, chalcopyrite $\pm$ molydenite.

C. Quartz, sericite $\pm$ molybdenite.

Pyrite is ubiquitous within the area drilled todate and locally reaches concentrations of 10% of whole rock. Oxidation of pyrite by surface waters produced sulphuric acid which dissolved chalcopyrite. The copper rich surface waters percolated down the fracture systems and eventually encountered reducing conditions at or near the ground water table which resulted in precipitation of copper from solution, resulting in deposition of chalcocite and covellite in a zone of supergene enriched mineralization which also contains subordinate bornite and rare native copper. Although pyrite in this zone is variably tarnished and coated with supergene mineralization, it does not appear to be the principal depositional site. Chalcopyrite is the favorable site and here with continuation of the secondary processes chalcopyrite is often completely replaced by chalcocite and covellite. In this way supergene enrichment has been largely restricted to the same shear zones that carry the original hypogene mineralization.

Supergene mineralization is encountered throughout the property, but the highest grades and greatest thicknesses are developed within the North zone. The transverse faulting has cut the zone of mineralization into a series of fault bounded blocks. It is believed that the North zone has been down dropped and its area of supergene enrichment thus protected from erosion relative to the South zone which, being uplifted, has had much of its supergene blanket removed.

8. ROCK GEOCHEMISTRY

Canadian Superior Exploration prepared lithogeochemical maps showing distribution of anomalous copper and molybdenum values in outcrops. These anomalous zones showed very close correlation with the zone of copper mineralization derived by projecting drill intersections to a flat "surface" plane. Although the anomalies are locally discontinuous they both indicate the presence of the underlying copper-molybdenum zone. The molybdenum anomaly is the more persistent of the two, and better delineates diamond drill targets, probably because of the lesser mobility of molybdenum compared with copper.

9. GEOPHYSICS

Extensive E.M., I.P. and magnetometer surveys were run on the property by Noranda, Texas Gulf and Blue Rock. By the time Canadian Superior became involved in the property, the extensive drilling and mapping had established location of the principal zones and mineralization and Canadian Superior confined its geophysical activities to an I.P. survey in order to delimit the extent of the pyrite halo. CSE recognized the correlation between magnetite and ore in the south zone and thus ran a magnetometer survey over the property. Most significant results of this were the recognition of the transverse structure dividing the North and South zone and a general delimiting of the Quartz Diorite Porphyry.

10. DRILLING

As shown in the following table, which is taken from Stock's 1977 report, 16,700 m. (54,816 ft.) of diamond and percussion drilling have been completed on the Big Onion property.

TABLE OF DRILLING TO DEC. 31, 1976

Company	Hole Designation	Dates	Diamond Footage	Percussion Footage	Cumulative Footage Total
Noranda	DDH	1964,1965	250	-	250
Texas Gulf	B.O.	1966,1967	3993	-	4,243
Blue Rock (Cyprus Mining)	C-	1970,1971	24,134	-	28,377
Canadian Superior Exploration	74-	1974	1,502	-	29,879

Canadian Superior Exploration	75-	1975	882	13,800	44,561
"	76-	1976	7,645	2,610	54,816
TOTALS			10,029	16,410	

All diamond drilling has todate been BQ size. Early diamond drill programmes, such as those by Texas Gold and Blue Rock apparently encountered significant problems with core recovery, leading to loss of copper values and resulting in lower apparent grade. Canadian Superior apparently solved the core recovery problem but when they compared results from diamond and percussion holes, found that the percussion results were consistently averaging 20% less than those obtained by diamond drilling. It appears likely therefore that the grade of the Big Onion mineralization as computed from drill results is considerably lower than the inplace grade.

11. ORE RESERVE CALCULATIONS

Canadian Superior Exploration in 1977 manually calculated geological reserves based on intersections from all drill programmes to that date. These are shown in tables 1 and 2. The calculations were based on extrapolation of mineralization to 150 m. (500 ft.) depth.

Can Sup noted that due to the shortage of drill hole data there are some areas within the zones of mineralization where there is little or no information, and in these areas projections and inferences have been made according to the geological model. This is particularly true of the northwest zone where drilling is very sparse. Can Sup calculated that the Big Onion as explored to 1977 is approximately 66 million tons. They calculated stripping ratios on four sections as follows:

Section	Stripping Ratio
11,100N	2.25
11,900N	2.28
12,900N	3.13
14,800N	1.71

TABLE I

CANADIAN SUPERIOR EXPLORATION LIMITED
BIG ONION PROJECT
DRILL INDICATED RESERVES

SECTION	AREA OF ORE (Cu)	Cu GRADE x AREA	AREA OF ORE (MoS_2)	MoS_2 GRADE x AREA	HORIZONTAL DISTANCE/10	TONNAGE	AVERAGE Cu	MoS_2 GRADE
10,900	66,528	21,594.87	57,024	1441.24	20	1,330,560	.32	.025
11,100	88,011	33,444.18	88,011	962.08	20	1,760,220	.38	.011
11,300	99,198	40,782.06	99,198	2793.58	20	1,983,960	.41	.028
11,500	84,150	32,031.45	84,150	3208.50	20	1,683,000	.38	.038
11,700	79,596	41,130.54	49,995	1228.78	20	1,591,920	.52	.025
11,900	93,258	37,639.80	80,784	1555.69	20	1,865,160	.40	.019
12,100	83,556	34,787.61	83,556	1606.77	20	1,671,120	.42	.019
12,300	127,215	67,976.37	27,215	4138.80	20	2,544,300	.53	.032
12,500	47,520	18,205.11	35,541	888.53	13	617,760	.38	.025
TOTALS	769,032	327,591.99	705,474	17,823.97	1730	15,048,000	.43	.025
12,700	21,483	8,870.40	21,483	530.14	17.5	375,952	.41	.025
12,900	50,985	24,521.31	50,985	1334.03	40	2,039,400	.48	.026
13,500	68,904	27,486.36	68,904	587.57	70	4,823,280	.40	.008
14,300	76,230	38,115.00	76,230	1067.22	55	4,192,650	.50	.014
14,600	52,173	16,926.03	44,946	1260.97	25	1,304,325	.32	.028
14,800	160,974	81,014.67	160,974	3617.86	20	3,219,480	.50	.022
15,000	191,229	87,336.81	191,229	1807.98	25	4,780,725	.46	.010
15,300	72,567	24,982.65	55,539	357.69	20	1,451,340	.34	.006
15,400	55,143	18,688.23	55,143	372.63	20	1,102,860	.34	.007
TOTALS	749,699	327,941.46	725,433	10,936.09	2925	23,290,012	.44	.015
CUMULATIVE TOTAL	1,518,720	655,533.45	1,430,907	28,760.06	4655	38,338,012	.43	.020

TABLE II

CANADIAN SUPERIOR EXPLORATION LIMITED
BIG ONION PROJECT
PROBABLE RESERVES

Section	Area of ore	Cu Grade x area	Horizontal Distance	Tonnage	Average Cu
10,900	-	-	-	-	-
11,100	20,295	6,370.65	20	405,900	.31
11,300	48,312	18,358.56	20	966,240	.38
11,500	58,311	23,509.53	20	1,166,220	.40
11,700	64,053	27,292.32	20	1,281,060	.43
11,900	8,415	2,187.90	20	168,300	.26
12,100	24,849	11,361.24	20	496,980	.46
12,300	10,296	2,986.84	20	205,920	.29
12,500	9,009	2,612.61	20	117,117	.29
Total	243,540	94,678.65		4,807,737	.39
12,700	-	-	-	-	-
12,900	26,136	8,025.93	17.5	457,380	.31
13,500	47,421	14,573.79	70	3,319,470	.31
14,300	15,741	5,981.58	55	865,755	.38
14,600	54,252	23,256.09	25	1,356,300	.43
14,800	4,059	2,475.99	20	81,180	.61
15,000	52,173	21,666.15	25	1,304,325	.42
15,300	69,102	26,258.76	20	1,382,040	.38
15,400	80,982	30,057.39	20	1,343,925	.37
Total	349,866	132,295.68		10,110,375	.38
Cumulative Total	593,406	226,974.33		14,918,112	.38
16,300 N'	82,665	39,674.40	80	6,613,200	.48
17,000 N'	97,614	38,209.00	45	1,719,405	.39
17,200 N'	88,011	33,742.20	25	2,200.275	.38
17,500 N'	76,626	41,825.50	25	1,915,650	.55
Totals	344,916	153,451.10		12,448,530	.44
Total Reserve	2,457,042	1,035,958.80		65,704,654	.42

TABLE III. INCREMENTAL PIT RESERVES @ 0.25 COPPER EQUIVALENT CUTOFF

PIT	TONS	T-Cu	MoS_2	EQUIV.	S.R.
0 - $1.20	60523	.2920	.0187	.4099	1.61
$1.20 - $1.35	5108	.2456	.0172	.3516	3.32
$1.35 - $1.50	7723	.2645	.0132	.3480	4.75
$1.50 - $1.65	2738	.2451	.0131	.3244	5.24

TABLE IV. TOTAL PIT RESERVES AT 0.25 COPPER EQUIVALENT CUTOFF

PIT	TONS	T-Cu	MoS_2	EQUIV.	S.R.
$1.20	60523	.2920	.0187	.4099	1.61
$1.35	65631	.2884	.0186	.4053	1.75
$1.50	73354	.2859	.0180	.3993	2.06
$1.65	76092	.2844	.0179	.3966	2.18

These ratios were based on an assumed pitslope of 50° and 150 m. (500 ft.) mining depth. These stripping ratios indicate that mining would probably be economic to greater than the estimated 500 foot depth. Recommendations were made to drill deeper holes in future programmes to test continuity of mineralization to 180 m. - 210 m. (600-700 ft.) depth.

In 1982 Can Sup commissioned Mintec Inc. to calculate reserves, pit design, and cash flow, etc. Tables 3-5 show incremental pit reserves at 0.25 copper equivalent cutoff and ultimate pit reserves from multiple copper equivalent cutoff rates. In particular in Table 5 at a cutoff grade of 0.25% copper equivalent, the Mintec study indicates 76 million tons grading 0.397% copper equivalent at a stripping ratio of 2.18.

12. EXPLORATION TARGETS

Canadian Superior Oil Exploration identified four targets for further exploration on the Big Onion property as follows:

A. The South West Target

An area of weak mineralization was located on the north flank of the main Quartz-Diorite-Porphyry body by Blue Rock's angle drill holes. CSE further defined the target with rock geochemistry, mapping favorable alteration and supergene mineralization and drilling five percussion holes. They anticipated that diamond drilling (which was not subsequently carried out) would outline a zone of approximately 0.35% copper with subordinate molybdenite.

B. The North East Target

The reserve of 12 million tons grading 0.42% copper computed for the North East zone is based on wide spaced drilling of 13 holes. The zone remains open to the northeast and further drilling should be done both within the area of the presently defined mineralization and further to the north.

C. The Faulted Southern Tail

IP surveys by Texas Gulf Sulphur located an IP anomaly south and southwest of the main copper zone (the South Zone). Subsequent drilling by Blue Rock encountered only pyritic carbonaceous sediments. Canadian Superior theorized that the anomaly probably represents the faulted southern tail of the Big Onion deposit. The spacial relationship between the single drill hole and the IP anomaly were not clear. CSE proposed to further explore this zone.

D. The Area between Sections 12,700N and 12,900N

This also requires further exploration. The target is indicated by mineralization intersected in percussion hole 75-45 and further supported by surface Cu, Mo rock geochemical results and intense sericite alteration. Canadian Superior calculated a high stripping ratio of 3.13 on section 12,900N. Thus it is of prime importance to explore this area and possibly reduce the stripping ratio.

13. REFERENCES

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Stock, G.C. Big Onion Summary of Exploration to 1977 for Canadian Superior Exploration, unp.

Stock, G.C. Geoloigical ck Geochemical Report on the Big Onion area claims, August 5, 1 Canadian Superior Exploration Limited, unpublished.

Tipper, H.W. and RichaA. Jurassic Stratigraphy and History of North Central British Columbiaical Survey Bulletin 270-1976. Geological Survey of Canada Open Fileithers".

14. CERTIFICATE

I, Christopher J. Sampson, of 2696 West 11th Avenue, Vancouver, B.C. V6K 2L6, hereby certify that:

1. I am a graduate (1966) of the Royal School of Mines, London University, England with a Bachelor of Science degree (Honours) in Economic Geology.

2. I have practised my profession of mining exploration for the past 25 years in Canada, Europe, United States and Central America. For the past 15 years I have been based in British Columbia.

3. I am a consulting geologist. I am a registered member in good standing of the Association of Professional Engineers of British Columbia.

4. I have not written other reports on the Big Onion claims, nor on other properties within 10 kms of the Big Onion claims.

5. The present report is based on visits to the property in the 1970s and August 1991, and study of published and unpublished reports.

6. I have not received, nor do I expect to receive, any interest, direct or indirect, in the properties or securities of Varitech Resources Ltd. or those of its associated companies.

7. Varitech Resources Ltd. and its affiliates are hereby authorized to use this report in, or in conjunction with, any prospectus or statement of material facts.

8. I have no interest in any other propery or company holding property within 10 kilometres of Big Onion claims.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — CHRIS J. SAMPSON

Chris J. Sampson

Vancouver, B.C.
17 August 1991

Christopher J. Sampson, P.Eng.
Consultant Geologist

SAMPSON ENGINEERING INC.
2696 West 11th Avenue
Vancouver BC V6K 2L6

APPENDIX 1

SUMMARY OF DIAMOND DRILL HOLE RESULTS:
(AFTER STOCK G. 1977)

NORANDA EXPLORATION: 1964, 1965

TEXAS GULF SULPHUR CO.: 1966, 1967

BLUE ROCK MINING CORPORATION (CYPRUS): 1970, 1971

CANADIAN SUPERIOR EXPLORATION: 1974, 1975, 1976

BIG ONION PROJECT

DIAMOND DRILL HOLE SUMMARIES

NORANDA EXPLORATION (1964-1965)
(ASSAY INTERVALS ≥ 20 Feet @ 0.25% Cu)

DRILL HOLE	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL ft.	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)	Az/Di
DDH-1	11160 N	9550 E	17	50	-	-	-	-	-	-	-	Vertica
DDH-2	10915 N	9975 E	52	200	52	150	98	.028	-	-	-	0°/45°
			total	250								

TEXAS GULF SULPHUR CO. (1966-1967)

DRILL HOLE	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL ft.	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)	Az/Di
BO-66-1			114	236	-	-	-	-	-	-	-	305°/6
BO-66-2	11915 N	10495 E	34	405	-	-	-	-	-	-	-	325°/4
BO-66-3	16485 N	9465 E	50	795	-	-	-	-	-	-	-	348°/4
BO-66-4	15785 N	9450 E	55	641	-	-	-	-	-	-	-	340°/4
BO-66-5	11315 N	9685 E	54	646	-	-	-	-	-	-	-	335°/4
BO 67-1	13405 N	9665 E	25	764		no assays: visual estimate			0.01 Cu,	0.02 Mo		348°/4
BO-67-2	14740 N	9760 E	20	506		no assays: visual estimate			0.05 Cu,	0,01 Mo		340°/4
			total	3993								

BLUE ROCK MINING CORPORATION LTD. (CYPRUS) (1970-71)

DRILL HOLE	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL ft.	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)	Az/Di
C-1	10530 N	9430 E	17	1350	780	880	100	.47	-	-	-	100°/45
					880	920	40	.28	-	-	-	
					980	1010	30	.43	-	-	-	
					1010	1040	30	.23	-	-	-	
					1040	1080	40	.32	-	-	-	
					1080	1110	30	.21	-	-	-	
					1110	1130	20	.44	-	-	-	
C-2	11530 N	8520 E	14	1616	800	830	30	.23	-	-	-	110°/45
					860	910	50	.41	-	-	-	
C-3	11350 N	9715 E	60	968	-	-	-	-	-	-	-	290°/80
C-4			52	102	-	-	-	-	-	-	-	150°/45

BIG ONION PROJECT

DIAMOND DRILL HOLE SUMMARIES

BLUE ROCK MINING CORPORATION LTD. (CYPRUS) (1970-71)
(ASSAY INTERVALS ≥ 20 Feet @ 0.25% Cu)

DRILL HOLE	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL ft.	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)	Az/I
C-5	11755 N	9990 E	40	737	90	450	360	.59	.010(Mo)	-	-	300°/6
					450	480	30	.20	.007(Mo)	-	-	
					480	560	80	.43	.014(Mo)	-	-	
C-6	12490 N	10010 E	100	752	110	150	40	.60	-	-	-	305°/6
					520	540	20	.20	-	-	-	
					540	570	30	.34	-	-	-	
C-7	12030 N	9500 E	40	1148	70	100	30	.34	-	-	-	160°/4
					550	570	20	.47	-	-	-	
					610	650	40	.32	-	-	-	
					650	720	70	.43	-	-	-	
					810	830	20	.28	-	-	-	
					860	880	20	.40	-	-	-	
					920	940	20	.21	-	-	-	
					940	970	30	.39	-	-	-	
C-8	12110 N	10810 E	28	2000	-	-	-	-	-	-	-	305°/4
C-9	11825 N	8530 E	50	850	-	-	-	-	-	-	-	150°/4
C-10	11015 N	9370 E	18	1207	-	-	-	-	-	-	-	142°/8
C-11	12820 N	8880 E	70	826	70	90	20	.67	-	-	-	150°/6
					130	170	40	.29	-	-	-	
C-12	15300 N	9700 E	85	1246	85	110	25	.49	-	-	-	119°/4
					520	560	40	.22	-	-	-	
					560	580	20	.25	-	-	-	
					640	700	60	.42	-	-	-	
					700	720	20	.19	-	-	-	
					720	800	80	.42	-	-	-	
					830	850	20	.30	-	-	-	
					880	900	20	.36	-	-	-	

BIG ONION PROJECT

DIAMOND DRILL HOLE SUMMARIES

BLUE ROCK MINING CORPORATION LTD. (Continued)
(ASSAY INTERVALS ≥ 20 Feet @ 0.25% Cu)

DRILL HOLE	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL ft.	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)	Az/I
C-13	15090 N	8925 E	140	1516	270	290	20	.34	-	-	-	133°/5
					390	420	30	.18	-	-	-	
					420	440	20	.78	-	-	-	
					1000	1020	20	.48	-	-	-	
					1020	1060	40	.23	-	-	-	
					1100	1120	20	.27	-	-	-	
					1380	1430	50	.38(?)	-	-	-	
C-14	16415 N	8640 E	62	1079	290	320	30	.22	-	-	-	109°/5
					320	360	40	.35	-	-	-	
					500	660	160	.36	-	-	-	
					660	680	20	.23	-	-	-	
					720	740	20	1.02(?)	-	-	-	
C-15	15750 N	9105 E	54	1059	610	810	200	.48(?)	-	-	-	107°/5
C-16	13420 N	8995 E	52	1026	380	430	50	.37	-	-	-	145°/4
					670	720	50	.21	-	-	-	
					720	780	60	.31	-	-	-	
					800	820	20	.30	-	-	-	
C-17	14275 N	9065 E	121	1257	670	700	30	.23	-	-	-	127°/5
					700	760	60	.25	-	-	-	
					760	780	20	.21	-	-	-	
					780	820	40	.29	-	-	-	
					820	860	40	.22	-	-	-	
					910	950	40	.21	-	-	-	
					950	980	30	.45	-	-	-	
C-18	10710 N	9130 E	35	1398	-	-	-	-	-	-	-	340°/8
C-19	12750 N	11130 E	11	1116	-	-	-	-	-	-	-	Vertic
C-20	10325 N	9910 E	36	1186	-	-	-	-	-	-	-	85°/50
C-24			70	607	-	-	-	-	-	-	-	103°/4
C-27	15750 N	9105 E	59	1088	260	280	20	.82	-	-	-	80°/70
					700	760	60	.37	-	-	-	
			total	24,134								

BIG ONION PROJECT

DIAMOND DRILL HOLE SUMMARIES

CANADIAN SUPERIOR EXPLORATION (1974-75)
(ASSAY INTERVALS ≥ 20 Feet @ 0.25% Cu)

DRILL HOLE	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL ft.	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)	Az/D
74-1	11500 N	10050 E	25	498	40	210	170	.49	.039+	-	-	Ver
74-2	11240 N	10180 E	23	405	40	110	70	.49	.015	-	-	"
					250	300	50	.48	.012	-	-	"
74-3	11685 N	10310 E	21	301	-	-	-	-	-	-	-	"
74-4	11160 N	10025 E	21	298	30	50	20	.40	.076	-	-	"
					110	140	30	.23	.028	-	-	"
					140	170	30	.37	.010	-	-	"
					210	240	30	.37	.010	-	-	"
					240	270	30	.19	.005	-	-	"
					270	290	20	.45	.010*	-	-	"
			total	1502								
75-58	15030 N	9700 E	23	300	80	100	20	.26	.018	-	-	"
					100	300	200	.61	.013*	-	-	"
75-59	13480 N	9510 E	13	300	30	300	270	.38	.009*	-	-	"
75-60	11880 N	10125 E	16	282	40	60	20	.23	.022	-	-	"
					60	100	40	.33	.016	-	-	"
					100	120	20	.20	.028	-	-	"
					120	140	20	.34	.016	-	-	"
					260	282	22	.48	.020*	-	-	"
			total	882								

(*) Hole ends in ≥ 20 feet of grading ≥ 0.25% Cu.

(+) Hole ends in ≥ 20 feet of rock grading > 0.20% Cu.

CANADIAN SUPERIOR EXPLORATION LIMITED
BIG ONION PROJECT
1976 DIAMOND DRILL SUMMARIES
0.25% Cu Cutoff

DDH NO.	LAT.	DEP.	OVB	LENGTH	FROM	TO	INTERVAL	% Cu	% MoS_2	Az/Dip
76-1	10,880 N	10180 E	20	256	50	170	120	.39	.021	$0^{o}/90^{o}$
76-2	11285 N	9845 E	65	505	110	220	110	.40	.031	-
					240	280	40	.26	.022	-
76-3	11700 N	9850 E	65	529	190	240	50	.48	.017	-
					280	390	110	.45	.012	-
					410	460	50	.37	.017	-
76-5	12300 N	10030 E	80	496	100	240	140	.67	.031	-
					260	370	110	.58	.042	-
					420	440	20	.40	.004	-
76-6	12100 N	9840 E	67	527	70	100	30	.31	.009	-
76-7	12920 N	9295 E	25	502	180	270	90	.59	.018	-
					300	330	30	.74	.003	-
					410	450	40	.32	.011	-
76-8	14245 N	9525 E	25	573	200	540	340	.50	.014	-
76-9	14790 N	9710 E	45	506	80	280	200	.58	.025	-
					300	440	140	.57	.030	-
76-10	14985 N	9500 E		641	110	250	140	.59	.008	-
					480	570	90	.33	.019	-
					590	610	20	.26	.009	-

CANADIAN SUPERIOR EXPLORATION LIMITED
BIG ONION PROJECT
1976 DIAMOND DRILL SUMMARIES
0.25% Cu Cutoff

DDH NO.	LAT.	DEP.	OVB	LENGTH	FROM	TO	INTERVAL	% Cu	% MoS_2	Az/Dip
76-11	14815 N	9315 E	35	626	170	270	100	.30	.006	$0^{o}/90^{o}$
					330	350	20	.29	.012	-
					480	500	20	.28	.020	-
					560	590	30	.47	.003	-
76-12	15400 N	9415 E	35	551	70	120	50	.38	.009	-
					500	520	20	.39	.013	-
76-13	14580 N	9505 E	35	726	130	150	20	.38	.016	-
					230	260	30	.31	.020	-
					370	410	40	.26	.039	-
					430	500	70	.28	.032	-
					520	710	190	.50	.020	-
76-14	15030 N	9890 E	75	506	75	110	35	.34	.012	-
					170	250	80	.34	.004	-
					380	410	30	.39	.003	-
					470	506	36	.37	.005	-
76-15	15420 N	9915 E	35	494	100	210	110	.39	.003	-
					270	310	40	.28	.001	-
TOTAL FOOTAGE				7645						

APPENDIX 2

SUMMARY OF PERCUSSION DRILL HOLE RESULTS
(AFTER STOCK G. 1977)

BIG ONION PROJECT

PERCUSSION DRILL HOLE SUMMARIES

CANADIAN SUPERIOR EXPLORATION (1975)

(ASSAY INTERVALS ≥ 20 Ft. @ 0.25% Cu)

PDH NO.	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL (ft)	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)
75-1	10880 N	10180 E	10	210	20	170	150	.34	.027	T	0.02
75-2	10900 N	10000 E	60	300	60	100	40	.39	.027	T	T
					100	210	110	.21	.022	-	-
					210	270	60	.27	.020	T	T
75-3	11090 N	9840 E	10	300	-	-	-	-	-	-	-
75-4	11075 N	10210 E	30	250	40	250	210	.38*	.010	T	T
75-5	11110 N	10410 E	20	200	30	100	70	.38	.013	T	T
75-6	11480 N	10260 E	10	300	30	60	30	.38	.021	T	T
75-7	11325 N	10030 E	10	300	50	300	250	.44*	.028	T	.06
75-8	11890 N	10000 E	50	220	80	220	140	.36*	.018	T	.02
75-9	12080 N	10070 E	30	110	60	110	50	.44*	.031	NS	NS
75-10	11470 N	10525 E	20	300	-	-	-	-	-	-	-
75-11	11705 N	10105 E	20	240	50	100	50	.61	.068	T	.03
75-12	11880 N	10125 E	20	300	60	150	90	.51*	.020	T	T
					150	170	20	.22	.010	-	-
					170	210	40	.61	.024	T	T
					250	300	50	.27	.019	T	.02
75-13	12080 N	10330 E	20	160	50	110	60	.22	.006	-	-
					110	130	20	.26+	.006	-	-
75-14	12115 N	10180 E	20	200	20	80	60	.51	.039	T	.05
75-15	12310 N	10135 E	50	300	50	80	30	.24	.005	-	-
					80	300	220	.67*	.047	T	.02

(*) Hole ends in ≥ 20 feet of grading ≥ 0.25% Cu.

(+) Hole ends in ≥ 20 feet of rock grading > 0.20% Cu.

BIG ONION PROJECT

PERCUSSION DRILL HOLE SUMMARIES

CANADIAN SUPERIOR EXPLORATION (1975)

(ASSAY INTERVALS ≥ 20 Ft. @ 0.25% Cu)

PDH NO.	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL (ft)	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)
75-35	16640 N	8650 E	10	290	70	140	70	.39*	.004	.005	.02
					140	160	20	.18	.002	-	-
					160	300	140	.38	.006	.005	.02
75-36	16460 N	8870 E	10	300	-	-	-	-	-	-	-
75-37	16505 N	9040 E	10	300	30	300	270	.44*	.029	T	.03
75-38	16620 N	8870 E	10	200	-	-	-	-	-	-	-
75-39	15690 N	10060 E	10	220	110	170	60	.44+	.006	T	.02
75-40	15535 N	10040 E	20	300	70	120	50	.35*	.005	T	.02
					240	300	60	.28	.007	T	.02
75-41	12650 N	10000 E	75	250	-	-	-	-	-	-	-
75-42	12650 N	10230 E	20	250	-	-	-	-	-	-	-
75-43	13020 N	10030 E	120+	Aband.	-	-	-	-	-	-	-
75-44	12440 N	10370 E	20	160	-	-	-	-	-	-	-
75-45	12690 N	9830 E	20	250	70	90	20	.44*	.024	T	.03
					200	250	50	.40	.025	.005	.02
75-46	13025 N	9820 E	20	250	-	-	-	-	-	-	-
75-47	12900 N	9650 E	30	100	-	-	-	-	-	-	-
75-48	12925 N	9480 E	20	250	40	140	100	.40+	.034	T	.03
75-49	12925 N	9290 E	20	250	190	250	60	.54*	.012	T	.03
75-50	13320 N	9430 E	10	250	20	50	30	.43+	.004	.010	.09

(*) Hole ends in ≥ 20 feet of grading ≥ 0.25% Cu.

(+) Hole ends in ≥ 20 feet of rock grading > 0.20% Cu.

BIG ONION PROJECT

PERCUSSION DRILL HOLE SUMMARIES

CANADIAN SUPERIOR EXPLORATION (1975)

(ASSAY INTERVALS $\geq$ 20 Ft. @ 0.25% Cu)

PDH NO.	LAT.	DEP.	O/B (ft)	LENGTH	FROM	TO	INTERVAL (ft)	% Cu	% MoS_2	Au (oz/ton)	Ag (oz/ton)
75-51	14040 N	9720 E	20	130	-	-	-	-	-	-	-
75-52	14440 N	9725 E	20	250	70	140	70	.38+	.005	-	-
					140	170	30	.22	.002	-	-
					190	240	50	.35	.002	T	.02
75-53	14300 N	9840 E	40	250	-	-	-	-	-	-	-
75-54	13850 N	9520 E	20	240	40	60	20	.33*	.070	.005	.02
					60	90	30	.21	.014	-	-
					90	240	150	.40	.008	.005	.02
75-55	13630 N	9320 E	0	200	-	-	-	-	-	-	-
75-56	14240 N	9525 E	10	70	-	-	-	-	-	-	-
75-57	13800 N	9880 E	0	210	-	-	-	-	-	-	-
75-61			20	300	-	-	-	-	-	-	-

Total Percussion Drilling footage in 1975 was 13,800 ft.

(*) Hole ends in 20 feet of grading 0.25% Cu.

(+) Hole ends in 20 feet of rock grading 0.20% Cu.

CANADIAN SUPERIOR EXPLORATION LIMITED
BIG ONION PROJECT
1976 PERCUSSION DRILL SUMMARY
0.25% Cu Cutoff

PDH NO.	LAT.	DEP.	OVB	LENGTH	FROM	TO	INTERVAL	% Cu	% MoS_2	Az/Dip
76-16	10695 N	10215 E	60	300	-	-	-	-	-	0°/90°
76-17	12300 N	9940 E	30	280	100	280	180	.50	.033	-
76-18	12505 N	10130 E	40	280	120	280	160	.31	.025	-
76-19	12300 N	10245 E	20	290	50	100	50	.32	.041	-
					170	190	20	.29	.026	-
					230	290	60	.29	.010	-
76-20	12525 N	8975 E	10	300	-	-	-	-	-	-
76-21	12520 N	9170 E	10	300	250	270	20	.26	.006	-
76-22	12330 N	8955 E	10	260	-	-	-	-	-	-
76-23	12160 N	8975 E	10	300	30	70	40	.26	.021	-
76-24	12155 N	8800 E	10	300	-	-	-	-	-	-
	TOTAL FOOTAGE			2610						

APPENDIX 3

COMPARISON OF DIAMOND AND PERCUSSION DRILLING ASSAY RESULTS (AFTER STOCK G. 1977)

APPENDIX 3

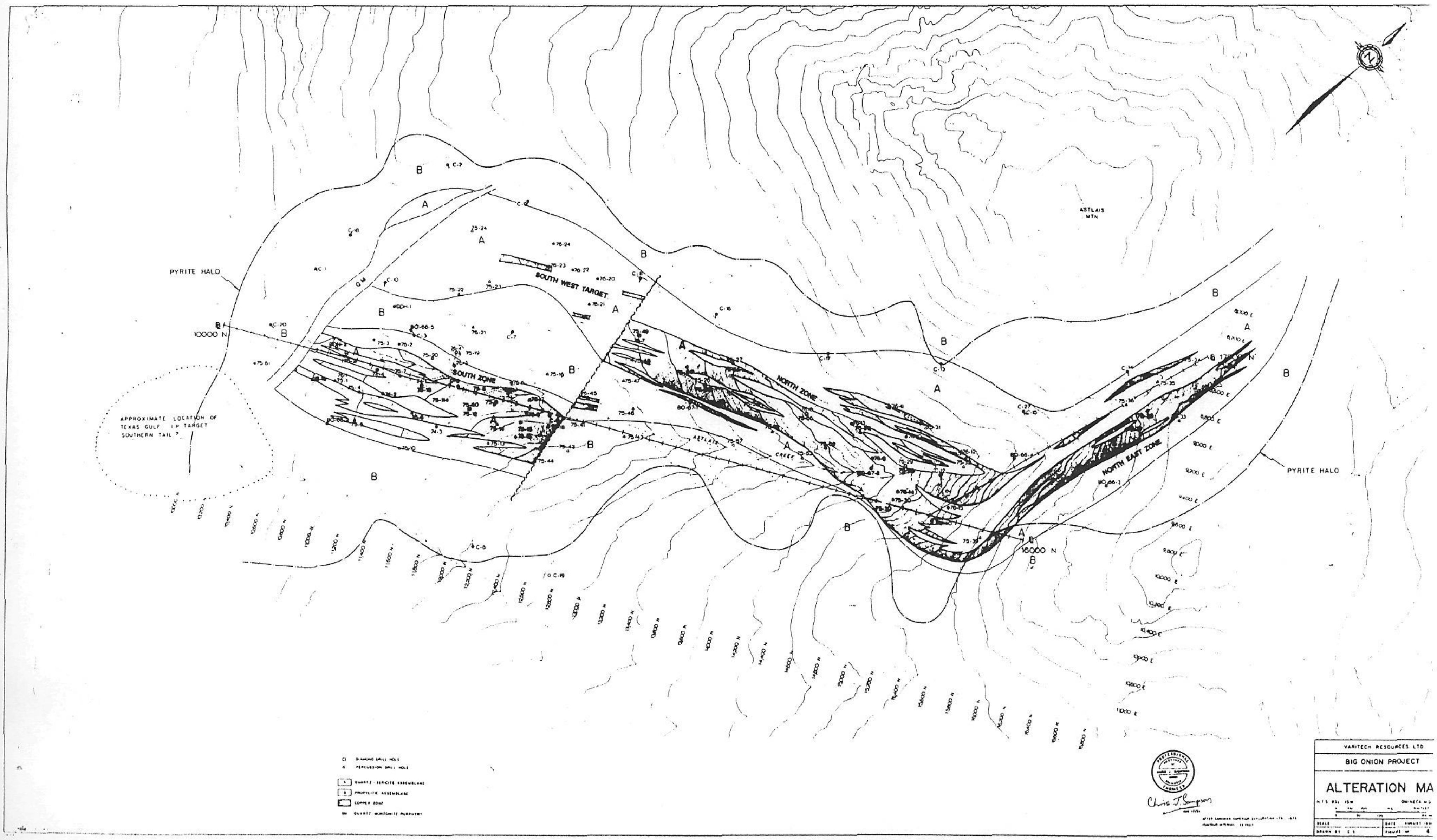
COMPARISON OF PERCUSSION AND DIAMOND DRILL ASSAYS RESULTS ON THE BIG ONION PROPERTY

COMPARISON OF COPPER ASSAYS

	PERCUSSION Assay	% Recovery	DIAMOND Assay	% Recovery	COMPARISON Length	POPULATION	POPULATION EXHIBITING the trend
<0.25% Cu	.14	100	.11	79	867	13	6.5
>0.25% Cu	.31	66	.47	100	895	10	7
Bulk Average	.23	79	.30	100	1762	9	7.5

COMPARISON OF MOLYBDENITE ASSAYS

	PERCUSSION Assay	% Recovery	DIAMOND Assay	% Recovery	COMPARISON Length	POPULATION	POPULATION EXHIBITING the trend
<0.25% Cu	.015	100	.013	87	867	13	7
>0.25% Cu	.027	100	.017	63	895	10	9.5
Bulk Average	.022	100	.015	68	1762	9	7



PYRITE HALO
SOUTH WEST TARGET
SOUTH ZONE
NORTH ZONE
NORTH EAST ZONE
ASTLAIS MTN
ASTLAIS CREEK
APPROXIMATE LOCATION OF TEXAS GULF I.P. TARGET SOUTHERN TAIL ?
PYRITE HALO
10000 N
16000 N
DIAMOND DRILL HOLE
PERCUSSION DRILL HOLE
QUARTZ - SERICITE ASSEMBLAGE
PROPYLITIC ASSEMBLAGE
COPPER ZONE
QUARTZ MONZONITE PORPHYRY
VARITECH RESOURCES LTD
BIG ONION PROJECT
ALTERATION MA
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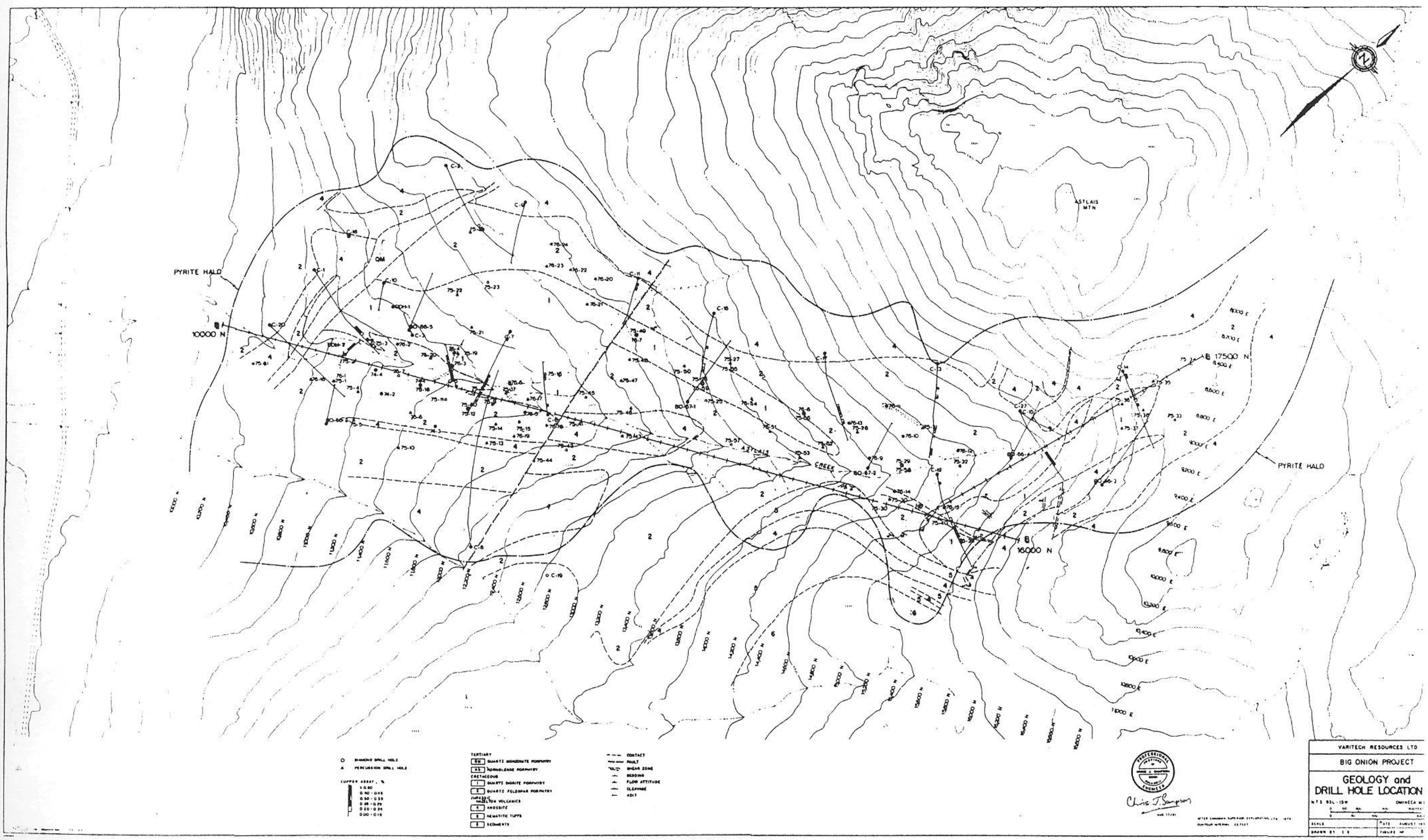

PYRITE HALO
10000 N
ASTLAIS MTN
ASTLAIS CREEK
B 17500 N
16000 N
PYRITE HALO
DIAMOND DRILL HOLE
PERCUSSION DRILL HOLE
COPPER ASSAY, %
TERTIARY
QM QUARTZ MONZONITE PORPHYRY
HB HORNBLENDE PORPHYRY
CRETACEOUS
1 QUARTZ DIORITE PORPHYRY
2 QUARTZ FELDSPAR PORPHYRY
JURASSIC
HAZELTON VOLCANICS
4 ANDESITE
5 HEMATITIC TUFFS
6 SEDIMENTS
CONTACT
FAULT
SHEAR ZONE
BEDDING
FLOW ATTITUDE
CLEAVAGE
ADIT
Chris J. Sampson
VARITECH RESOURCES LTD
BIG ONION PROJECT
GEOLOGY and
DRILL HOLE LOCATION
NTS 93L-15W
SCALE
DRAWN BY
FIGURE

BACON,
DONALDSON
& ASSOCIATES LTD.

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May 3, 1991

File Number: MN1088

VARITECH RESOURCES LTD.
401 - 325 Howe Street
Vancouver, B.C.
V6C 1Z7

Attention: **Mr. B.J. Cooke**
President

Dear Brad,

Re: **Cathode Copper Potential of the Big Onion Deposit**

INTRODUCTION

At your request, I have prepared some projections regarding the economic potential of producing cathode copper from the Big Onion deposit. The analysis of the potential of this deposit is based on the information supplied by you and contained in a summary report regarding the Big Onion project, prepared in 1977 by Mr. Geoff Stock. As the ore reserves and grades have not been finalized and no metallurgical testwork has been performed on the deposit, the analysis is based on available information plus appropriate assumptions.

The mineralogy of the copper is indicated to consist primarily of chalcocite and covellite with minor chalcopyrite and bornite. It has been suggested that up to 80 million tons of this mineralization may exist with a grade of 0.6%. This combination of mineralogy, tonnage and grade has the potential for a very profitable heap leaching operation, using solvent extraction and electrowinning (SX-EW) to produce cathode copper.

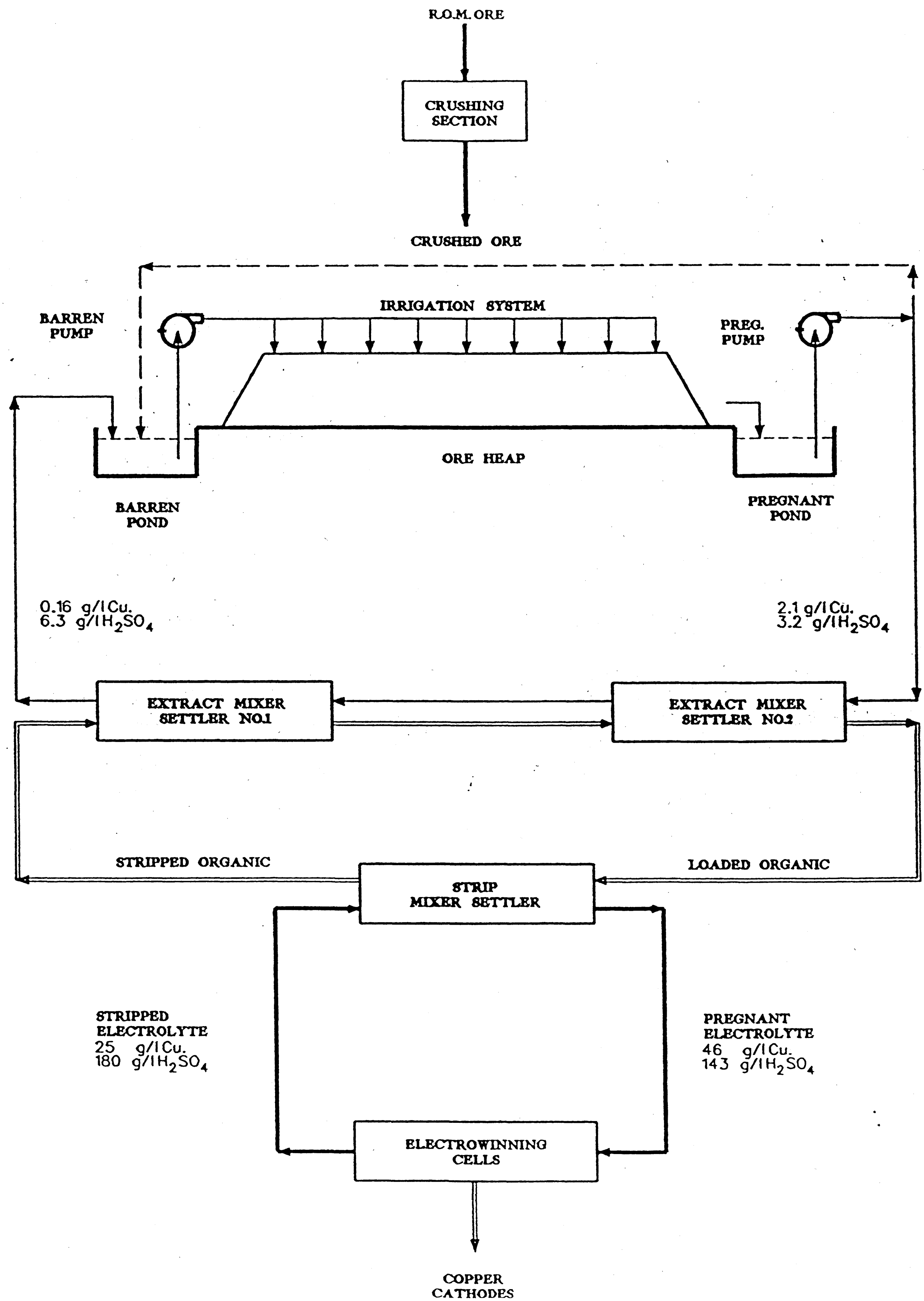
There are several advantages to the use of heap leaching together SX-EW technology. A significant advantage is that the capital cost of an SX-EW plant is much lower than that of a grinding and flotation plant having comparable copper production capability. At the same time, since high purity copper metal is produced rather than copper concentrates which have to be processed by a smelter, payment for the copper is received much sooner and often at a premium of up to 5 cents per pound of copper produced.

PROCESS DESCRIPTION (Figure 1)

Ore which is to be leached is mined and crushed prior to being placed in heaps. While run of mine ore can be leached directly, it has been determined through testwork for a number of deposits that it is generally cost effective to crush the material as fine as 2 cm prior to placing it on the heaps. Crushing the feed increases the rate of copper leaching as well as its ultimate extraction.

The crushed ore is placed in heaps that are in the order of 7 meters high on areas which have been prepared so that the leach solutions drain from the heaps towards central collection areas. Once the heaps have been prepared, a weak sulphuric acid solution is added to the top of the pile through a distribution system. As this acid percolates through the rock, it dissolves the copper minerals. The different copper minerals vary in the rate at which they will leach. Copper carbonates (malachite and azurite) and silicates (chrysocolla) dissolve very rapidly in sulphuric acid. For ores in which these minerals are the principal components, the leaching of a heap can be accomplished in 30 to 60 days. Simple copper sulphides such as covellite and chalcocite must oxidize before they will dissolve. This oxidation is accomplished by dissolved iron in the leach solutions, the iron being regenerated through contact with oxygen in the air. When these minerals are present, the construction of the heaps makes provisions for air circulation to maximize the leaching rate. The time required to achieve the maximum possible copper extraction in this case may be in the order of several months.

HEAP LEACH SX AND ELECTROWINNING



The maximum copper extraction to be achieved by heap leaching varies somewhat depending on the permeability of the rock and the nature of the copper mineralization. Through a combination of crushing the feed to the proper size and constructing the heap efficiently, a copper recovery of 70% should be readily achieved.

After the leach solutions have percolated through the heap they typically contain 0.5 - 2 g/L copper in addition to some impurities such as iron. These "pregnant" solutions are treated by solvent extraction to produce a solution containing very low levels of impurity and in the order of 40 to 50 g/L copper. This concentrated solution becomes the feed to the electrowinning circuit for cathode copper production. The copper sheets are periodically peeled from the stainless steel sheets on which they are plated and are ready for shipment to the end user of the copper.

The process of cathode copper production using heap leaching together with SX-EW technology is comparable to the use of heap leaching for gold production from low grade ores. The simplicity of the overall process for producing final metal with relatively low capital and operating costs makes it highly profitable compared to conventional flotation and smelting technology. There are now in the order of 30 operations using this technology throughout North America. In British Columbia, Gibraltar Mines uses the SX-EW process to recover copper from its low grade waste dumps. The plant operates year round to produce cathode grade copper from what was previously considered waste material. Bell Copper is presently also conducting studies to implement the process for their waste dumps.

ECONOMICS

The potential economic return to be achieved from the implementation of SX-EW technology at the Big Onion project has been determined using the following assumptions:

1. A plant having a rated capacity of 75,000 pounds per day of copper would be constructed. At a 95% availability this plant would produce 71,000 pounds per day, 365 days per year.

2. The capital cost for the installation would be $25 million CAN including preparation of leach pads. Recent advances in the construction of SX-EW plants are tending to reduce the capital cost significantly.

3. The copper grade is 0.6% Cu and the recovery is 70%. On this basis, over a 15 year period, the operation would process 43 million tons of ore.

4. The operating cost for the leaching and copper recovery operations is assumed to be 37 cents per pound of copper produced. Using a mining cost of $2.00 per ton of ore, the overall operating cost becomes 60.8 cents per pound copper produced. No stripping allowance has been made so that stripping is assumed to be a preproduction expense.

5. Cu price = $1.15 CAN per pound.

6. Depreciation = 30% on a declining balance basis.

7. Taxes = 50%.

Using these assumptions, the following returns are projected (all values in $ CAN):

Yearly Gross Revenue = $29.8 Million

Yearly Operating Profit = $14.0 million

DCF (15%) = $42.9 million
(25%) = $27.1 million (over 15 years)
(30%) = $22.5 million

IRR = 27% (based on 100% equity financing)

Payback period (at 15% discount rate) = 6 years.

SUMMARY

The use of SX-EW technology for the recovery of copper from solutions obtained by leaching the Big Onion ore appears to offer an attractive financial return. The mineralogy of the deposit makes it amenable to this process route. Additional development work to provide the data required for a full feasibility study should be undertaken.

Yours truly,

BACON, DONALDSON & ASSOCIATES LTD.

MBeattie

Dr. M. J. V. Beattie, P.Eng.

MJVB:mls

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