

# **EXPLORE B.C. PROGRAM**

#### A DIAMOND DRILLING REPORT

#### ON THE

#### **HUCKLEBERRY PROPERTY**

## OMINECA MINING DIVISION, BRITISH COLUMBIA

NTS 93E/11E LATITUDE 53°41' N LONGITUDE 127°10' W

on behalf of

NEW CANAMIN RESOURCES LTD. 240-171 West Esplanade North Vancouver, B.C. V7M 3K9

GEOLOGICAL SURVEY BRANCH

FILMED

Geoffrey A. Whiton, M.Sc., P.Eng. Project Coordinator

August 12, 1994

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## **INTRODUCTION**

This report covers the drilling of 23 NQ2 and HQ wireline diamond drill holes on the East Zone of the Huckleberry Mountain property. The holes were drilled during the period April 16 - May 31, 1994.

Utilizing 2 Acker drills, a total of 16,843 feet (5,134 meters) of drilling was completed during this phase of the drilling program.

The drilling was directed to the definition of grade boundaries on the north and south sides, expansion of the higher grade mineralization at depth, as well as extension of the Zone to the east.

#### **MINERAL CLAIMS**

During July 1994, New Canamin Resources Ltd., formally abandoned the mineral claims that comprised the Huckleberry property, as provided for under the Mineral Tenure Act. Relocation of the claims as 4 post claims and surveying thereof was carried out by McElhanney Consulting Services Ltd., on behalf of New Canamin.

A list of the new Huckleberry mineral claims comprises Table 1 of this report. As well, a copy of the McElhanney Location Line Survey Map of these claims is contained in the map pocket at the back of this report.

#### **LOCATION AND ACCESS**

The deposit is located on the north side of Tahtsa Reach, approximately 85 km by air southwest of Houston. More specifically, it is located at latitude 53°41' N and longitude 127°10' W, between Sweeney Lake and Tahtsa Reach, on the south slope of Huckleberry Mountain. It is 138 km by road from Houston, with most of the road being good quality forestry access road and only the last 8 km being lower standard access.

## **WORK COMPLETED**

During the period April 16 - May 31, 1994, 23 NQ2 and HQ diamond drill holes were completed on the East Zone. Total drilling completed totalled 16,843 feet (5,134 meters). All the Collar Information on the holes drilled is set out in Table 1 of this report. The holes are all plotted on the East Zone Drill Hole Plan that accompanies this report. The holes have been logged in detail with copies of all the requisite drill logs attached to the

report. The majority of the holes were subject to whole core analysis with a skeletal retention of core for these holes. The remaining holes were sampled by splitting. Sampling of the core occurred in consecutive 10 foot (3.05 meter) sections.

Min En Laboratories, North Vancouver, B.C. conducted the following analyses of the drill core:

Copper Assay
31 Element ICP
Molybdenum Assay (every 10th sample)
Arsenic-Mercury Geochemical Analysis (composite basis)

Copies of the aforementioned analyses are contained in Volume I of this report.

Table 1

RECORD OF CLAIMS STAKED
IN JULY 1994

Claim Name	Tag No.	Tenure No.	Units	Recording Date	Anniversary Date
Ivame	IVO.	140.	Units	Dute	Date
Huckleberry 1	203 501	328 376	20	July 20, 1994	July 19, 1995
Huckleberry 2	203 502	328 377	20	July 20, 1994	July 19, 1995
Huckleberry 3	203 503	328 378	20	July 20, 1994	July 19, 1995
Huckleberry 4	203 504	328 379	20	July 20, 1994	July 19, 1995
Huckleberry 5	203 505	328 380	9	July 20, 2994	July 19, 1995
Huckleberry 6	203 506	328 381	4	July 20, 1994	July 19, 1995
Huckleberry 7	203 507	328 382	2	July 20, 1994	July 19, 1995
Huckleberry 8	203 508	328 383	4	July 20, 1994	July 19, 1995
Huckleberry 9	203 509	328 385	18	July 20, 1994	July 19, 1995
Huckleberry 10	203 510	328 386	4	July 20, 1994	July 19, 1995
Huckleberry 11	203 511	328 394	2	July 20, 1994	July 19, 1995
Huckleberry 12	203 512	328 396	10	July 20, 1994	July 19 1995
White	36302	326 499	20	Jun 20, 1994	June 12, 1995

## **RESULTS**

The 23 drill holes comprise the last data to be entered into the East Zone ore reserve estimate, for feasibility study purposes, with the exception of drill hole Nos. 94-187, 189 which will be entered at a later date. Collar information with respect to these drill holes is contained in Table 2.

It should be noted that in the case of drill holes 94-168, 169, 476 feet (145 meters) and 460 feet (140.2 meters) respectively, were drilled prior to April 16. Similarly, for drill holes 94-189, 190 only 344 feet (104.9 meters) and 50 feet (15.2 meters) were completed as at May 31.

An East Zone ore reserve estimate has been generated by mining engineer Gary Raymond, P.Eng., with significant input on geologic interpretation by Alvin Jackson, P.Geol.

The 1994 drilling program was, in part, designed to address two possible sources of bias in the previous data as follows:

- 1) It was suspected that the bedrock surface location was too low because of triconing into the more broken upper rock before coring.
- It was suspected that grades may be biased because of vertical drilling and poor core recovery.

These problems were addressed by drilling mainly angle holes, using larger HQ core for most holes, assaying whole core and coring overburden in some holes.

The in situ reserve estimate from the geological model for the East Zone Deposit, developed by Gary Raymond, is as follows:

Cutoff (% Cu)	Tonnes (millions)	Grade (% Cu)
0.30	107.4	0.490

Table 2

<u>DIAMOND DRILL HOLE COLLAR INFORMATION</u>

Drill Hole	Start	Completion					Length
No.	Date	Date	Northing	Easting	Elevation	Dip/Az	(Ft.)
94-168	April 11	April 22	14563.6	14418.4	1122.9	-60/205	1,198
94-169	April 13	April 16	14270.0	14218.6	1029.1	-60/205	480
94-170	April 16	April 18	14290.2	14153.0	1031.7	-60/205	540
94-171	April 18	April 22	14346.3	14254.0	1041.7	-60/205	959
94-172	April 23	April 28	14616.9	14360.6	1124.5	-60/205	1,150
94-173	April 23	April 26	14246.5	14315.8	1027.5	-55/205	500
94-174	April 27	April 30	14293.0	14308.7	1034.9	-60/205	670
94-175	April 28	May 2	14633.8	14305.1	1129.7	-60/205	1,150
94-176	April 30	May 4	14371.2	14332.6	1053.4	-60/205	960
94-177	May 2	May 6	14420.4	14553.6	1085.5	-70/205	980
94-178			14429.3	14217.8	1052.5	-60/205	1,030
94-179	May 6	May 15	14367.6	14589.5	1077.1	-60/205	1,060
94-180	May 9	May 12	14346.8	14399.6	1053.2	-64.5/205	900
94-181	May 13	May 16	14178.3	14648.6	1032.6	-45/025	272
94-182	May 15	May 20	14459.2	14372.6	1072.4	-60/205	997
94-183	May 17	May 19	14146.9	14707.3	1029.4	-45/025	650
94-184	May 19	May 21	14052.9	14737.9	999.6	-50.5/025	660
94-185	May 20	May 23	14514.5	14253.1	1077.3	-61/205	1,169
94-186	May 21	May 27	14248.6	14464.2	1035.7	-68/205	500
94-187	May 23	May 28	14514.0	14320.3	1084.5	-60/205	1,260
94-188	May 27	May 31	14234.7	14893.0	1048.1	-90/-	177
94-189	May 28	June 5	14498.8	14461.9	1101.8	-67/205	1,105
94-190	May 31	June 3	14220.4	14596.5	1038.9	-90/-	500

<u>Total:</u> 18,867 ft. = 5,750.7 meters.

## **REGIONAL GEOLOGY**

The area is underlain predominantly by Middle Jurassic volcanic and sedimentary rocks of the Hazelton Group, within the Intermontane Tectonic Belt flanking the eastern edge of the Coast Crystalline Belt. The Hazelton Group is unconformably overlain in several areas by successor basin deposits of Late Jurassic Bowser Lake sediments and Early Cretaceous Skeena Group turbidites. These are all overlain locally by flat lying Late Cretaceous volcanics of the Kasalka Group, consisting of felsic pyroclastics and flows and later basalt flows. These have all been intruded by numerous small to medium sized stocks and zoned intrusives ranging from Late Cretaceous to Early Tertiary in age. The Late Cretaceous Bulkley intrusives are generally horneblende-biotite granodiorites to quartz monzonites and are economically of most interest due to their associated porphyry copper mineralization. These include the Huckleberry, Whiting Creek, Ox Lake, Coles Creek, and Bergette. Copper-molybdenum mineralization is also associated with the Eocene Nanika intrusives, with the Berg deposit being the only significant occurrence known in the immediate area.

## **PROPERTY GEOLOGY**

#### **Rock Units**

The claim group is underlain mainly by fragmental andesitic and dacitic volcanics of the Hazelton Group, generally striking east-west and dipping to the south. These have been intruded by at least two small stocks of porphyritic biotite-feldspar granodiorite, with a third intrusive porphyry indicated in one drill hole midway between these two. Copper-molybdenum mineralization is associated with each of these intrusives, with the original Main Zone located towards the west end of the overall system, the East Zone peripheral to and within a small stock in the eastern half of the system, and the recently discovered porphyry in the central area. Several post mineral dikes cut through the area, being mainly lamprophyre and microdiorite. The main stock as defined by drilling is approximately 2,500 feet (762 meters) by 1,200 feet (365.8 meters) in area, elongated northeast-southwest. The eastern stock as currently defined as an elongate body trending east-southeasterly 1,000 feet long (304.8 meters) and up to 300 (91.4 meters) feet wide at the east end where it is still open.

#### **Structure**

Several prominent fault zones have been indicated by previous mapping and drilling, with main directions being NW-SE and NE-SW. The East Zone is bounded on the south side by strong NW-SE faulting and shearing in the east half of the deposit. It is apparently offset and probably downdropped to the west. Most of the shearing and displacement has been post mineral, as indicated by abrupt changes in grade across fault contacts. This is particularly evident across the faulted south contact of the East Zone.

#### **Alteration**

All of the rock units within the area of drilling to date have undergone moderate to intense alteration, with several phases of alteration being indicated. The alteration envelope is elongate in an east-west direction across the property from west of the Main Zone stock to the east side of the property, a distance of four km. The initial alteration event appears to be clay-sericite alteration of the feldspars, overprinted by widespread hornfelsing of the volcanics. This has resulted in the development of biotite, amphibole, chlorite, magnetite, hematite, and pyrite which grades outward into mainly chlorite-epidote-pyrite alteration. The next event was strong potassic alteration indicated by intense biotization and albitization, with amphibole and chlorite in vein selvages and within the groundmass. This stage of alteration is associated with quartz veining and fracturing with chalcopyrite, pyrite, and minor molybdenite in veinlets and as fracture coatings. Magnetite occurs with chalcopyrite in veins with this stage also. Ouartz-sericite-clay alteration is locally strongly developed as an overprint on the potassic zone, resulting in magnetite destruction and bleached haloes around quartz-pyrite veinlets. The last stages of veining resulted in the deposition of zeolites, anhydrite, carbonates, and finally, gypsum within previously developed fractures and veins.

#### **Mineralization**

The Huckleberry system is a relatively high sulfide system, with pyrite being the most abundant sulfide, occurring in fractures, veins, and disseminations. It is commonly up to 3-5%, particularly on the periphery of the deposits, dropping to less than 1% within the strongest copper mineralized areas. The strongest pyrite mineralization appears to be related to the later phyllic quartz-sericite-clay alteration.

The strongest copper mineralization is directly related to the intensity of potassic alteration, represented by biotization and albitization. In the most intensely altered areas biotite content is up to 40-50% of the rock. Most of the chalcopyrite was introduced with the earlier phases of veining and hornfels development. This was associated with quartz-albite-amphibole veins and less in later quartz-chlorite-sericite veins. A later stage of generally wide quartz veins with fine grained molybdenite, chalcopyrite, and pyrite cross cuts the earlier chalcopyrite mineralization. These veins are generally steep dipping, and from 1" - 2" thick (2.5 cm - 5.1 cm).

Virtually all of the copper mineralization occurs as chalcopyrite, with only rare bornite noted. Secondary copper mineralization in the form of malachite is relatively minor, occurring towards the east end of the East Zone, particularly in the upper 50' (15.2 m) of the intrusive. (Holes 83, 87). One occurrence of native copper was noted, also towards the east end in the upper part of Hole 93-80. Molybdenite is generally of minor significance, running from 0.01-0.02% molybdenum overall. Precious metal contents are low, with Ag generally 103 ppm and Au from 50-100 ppb.

#### Geophysics

Previous ground geophysical coverage consisted of dipole-dipole I.P at line spacing of 800'-1000' (243.8 meters - 304.8 meters) This was completed by Kennco in 1963 and

1970, with an A spacing of 200' (61 meters) and n = 1-4. These surveys outlined the overall sulfide system very well, with the strong pyrite mineralization defining a halo of higher chargeability around the Main Zone stock, and extending eastwards over the East Zone for a total distance of 4000 meters. The anomaly is widest across the East Zone, being up to 1000 meters across. The high chargeability reflects the overall high pyrite content as well as the strong chalcopyrite mineralization which lies central to the system. The I.P. survey over the Main Zone defines the pyrite halo around the stock, with the main copper mineralization lying between the stock and the pyritic halo within an area of lower chargeability. This may reflect a slightly deeper level of erosion or exposure over the Main Zone as compared to the East Zone.

During 1993 an airborne geophysical survey was competed by Aerodat at 200 m line spacing over the property and the area to the north to Whiting Creek. This survey outlined several features of interest. The East Zone is highlighted by a partially coincident strong magnetic low which correlates very well with the mineralization defined to date. Another magnetic low is situated within the south end of the Main Zone. The magnetic lows appear to represent zones of magnetite destruction associated with the later phase of quartz-sericite-clay alteration. The eastern half of the East Zone magnetic low is underlain by the altered porphyry.

#### **HUCKLEBERRY PROJECT**

## COST STATEMENT FOR THE PERIOD APRIL 16 - MAY 31, 1994

Costs reported herein have been prepared by New Canamin Resources Ltd. and are set out below. Additional costs incurred during the period April 16 - May 31, 1994 are indicated on the attached Supplementary Information section of the Application for Payment form.

## **Diamond Drilling**

J.T. Thomas Diamond Drilling Ltd., of Smithers, B.C. was the drilling contractor under a contract with a direct cost of \$18.00 per foot of NQ2 wireline drilling and \$20.70 per foot for HQ of wireline drilling.

A D-6D bulldozer and a 225 excavator were supplied by J.T. Thomas at a rate of \$75.00/hour and \$110.00/hour respectively, in support of two Acker Drills which operated during the period

Total cost for diamond drilling, bulldozer and excavation operation, drill fluids, etc.:

\$576,482

#### **Assaying**

Assaying, ICP and geochemical analysis of drill core samples were carried out by Min En Laboratories. 1,523 samples were assayed for copper and a 31 element ICP. In addition 152 samples were assayed for molybdenum. Geochemical analysis for arsenic and mercury was carried out on a composite basis.

Total cost of assaying @ \$1.78/foot:

\$27,099

#### Food and Accommodation

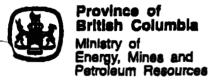
Food and accommodation were charged to New Canamin by J.T. Thomas at the rate of \$55.00 per manday for each person in camp not employed by J.T. Thomas.

Total cost for meals and accommodation:

\$13,117

**Total Cost for this Statement:** 

<u>\$616.698</u>





Grant No. 94/95 M-14

# EXPLORE BC PROGRAM APPLICATION FOR PAYMENT FORM

Please type or print

Company (please print)

 Please submit completed form, two copies of the final technical report, and complete cost statement to:

Mailing address: Manager, EXPLORE BC PROGRAM

Ministry of Energy, Mines and Petroleum Resources

5th Floor, 1810 Blanshard Street

Victoria, B.C. V8V IX	<i>"</i> 4
Date of Application  August 12/94  Note: A	ll stated costs, etc. are applicable or only the period April 16-May 31/9
riagast 12/ JF	, , ,
Applicant: NEW CANAMIN RESOUR	RCES LTD.
Address: 240-171 West Espla	anade
City: North VancouverProvince:	B.C. Poetal Code: V7M 3K9
Mailing Address (if different from above)	
Name:	
Address:	
City: Province:	Postal Code:
I/We Geoffrey A. Whiton	hereby
apply for payment of a grant under the EXPLORE above to be true and accurate.	
Eoffrey T. Whiton	Geoffrey A'. Whiton
Signature of Applicage or Signing Officer	Name (plome print)
Project Coordinator	Huckleberry
Title/Occupation (please print)	Project Name (please print)
New Canamin Resources Ltd.	August 12, 1994

Date

EXPENDITURES (N.B. Please provide actual all-inclusive costs, including salaries and wages, equipment and machinery rental, supplies, services, transportation and accommodation directly attributable to the field program.)

(a) For the following, the full cost (100% of expenditures) are eligible:

Geological Surveys, Map and Report Preparation and Related Costs					
Geophysical Surveys (line-kliometres)					
Ground		1			
Magnetic	\$	1			
Electromagnetic	\$	Ī			
Induced Polarization	\$				
Radiometric	\$				
Seismic	\$				
Other	\$	<b>!</b>			
Airborne	Ž				
ARBOTTIE .	Š	_ s			
Geochemical Surveys (No. of samples analysed)					
Soil	\$	ľ			
	Š				
Sin Saak	Š				
Rock	•				
Other	\$	-[s			
Orilling					
Surface5,134 = 112.29/m =	<b>\$</b> 576,482				
Underground = =	\$				
Oliteral and a second	\$	_  <b>\$</b>			
Related Technical Surveys					
Sampling/Assaying	\$ 27.000	į			
Petrographic	27,099	1			
Mineralogic	\$	}			
Metallumic	Š	İ			
weraliniAio	\$	_ 			
Preparatory/Physical					
Line/Grid (kilometres)	\$	1			
Trenching (metres)	\$	_]			
Tonami (money)	8	_  <b>\$</b>			
Other Exploration Costs (attach detailed schedules)	<u> </u>				
	5	j			
Food and Accommodation	\$ 13,117				
	\$	_			
	\$	\$			
	<b>616,698</b>				
Total Eligible Expenses	• 010,030				
b) For the following activities only 25% of total costs are eligible:					
Tunneling, Drifting, Other Lateral Excavation, Shaft Sinking					
(25% of total expanses are eligible)	•				
m @ \$ x 25% =	5				
m @ \$, = x 25% =	<u>\$</u>	- _			
	<u>\$</u>	\$			
CATATAL ELIGIBLE EXPENDITURES:	<b>S</b>				

SUPPLEMENTARY INFORMATION: The following information is required in order to help us determine the contribution which mineral exploration activity makes to the economy, and relates to the utilization of B.C. vs outside labour and services. Only figures directly attributable to the funded program should be included (approximate figures acceptable, but please be as accurate as possible).

# (a) Employment, wages and salaries

Туре	No. Employed		No. Person-Days		Salaries/Wages Paid	
	B.C.	Outside	B.C.	Outside	B.C.	Outside
Prospectors						
Linecutters						
Technicians	2		89		10,475	
General Labourers	1		45		4,510	
Drillers/Helpers	9				Included in Thomas invo	J.T. pice
Equipment Operators	1		45		Thomas invo Included in Thomas invo	J.T. pice
Geologists	3		130		17,550	
Geophysicists						•
Geochemists		,				
Engineers						
Supervisory	1		20_		7,000	
Consulting	1		12		4,200	
Secretary	1		32		3,600	
Managerial						
Legai						
Accounting	1		10		3,000	
Cook	1		46		Included in	n J.T. pice
Others (specify)						
lotals .	21		338		50,335	

604 9520381

#### (b) Goods and Services

Description	Expenditure		
	B.C.	Outside	
	\$	8	
Meals, Groceries, etc.			
Camping Supplies, Equipment, etc.	13,117		
Accommodation			
Transportation - Scheduled Air	9,031		
- Air Charter	7,710		
- Vehicle Rentals	3,232		
- Vehicle Operating and Maintenance	3,989		
- Other (specify)			
Equipment Rentals - Trenching, etc.			
- Geophysical, etc.			
- Other (specify)			
Drilling	576,482		
Consultant Services			
Assays and Analyses	27-099		
Communications	1,045		
Other (specify)			
otais	\$ 641.705	\$	

# Impact of Explore BC Grant

(a) Please indicate what leve Explore BC grant.	ol of expansion of your project was att	ributable to receiving	ng an
Explore BC grant.	\$ 80,701.00	12.6	_%
	338 Person-Days of	employment	

(b) Please indicate what you feel to be the main achievement of this Explore BC funded program.

The Explore B.C. Program enabled New Canamin to achieve the threshold tonnage and grade for a new operational copper mine.

Although only representing 12.6% of the total monies spent on exploration at Huckleberry during the period. This portion was critical to the furtherance of the project.

