REPORT ON ROTARY AND CORE DRILLING

PROGRAM.

<u>RICHFIELD GROUP</u> : Richfield #1, #2, #3, #4, #5, & #6 M.Cs., and the CDF #1, #2, & #3 M.Cs.

Omineca M.D.

Latitude : N 54° 34'; Longitude W 126° 14'.

NTS : 93 L 9W & 9E.

Work Program Carried Out by Cobre Exploration Ltd.

Consultants: Whiting Mining Services International Ltd.

Author: F.B. Whiting, Geological Engineer, Ph.D., P.Eng.

Date of Work : October 5 - 12 1981 and Oct. 26 - 28, 1981.

Date of Report: Oct. 28, 1981.



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Log of DDH 81-1, pages 1-7.

A. INTRODUCTION

Property & Location

The Richfield Group consists of 100 units, comprised of the <u>Richfield #1 - # 6 M.Cs</u>., Record Numbers 1780 (5), 1781 (5), 2050 (9), 2051 (9), 2397 (12), and 3480 (12) respectively, and the <u>CDF #1 - #3 M.Cs</u>., Record Numbers 1727 (4), 1728 (4), and 1729 (4) respectively. This group is situated 11 km north of the settlement of Topley, B.C., in the Omineca M.D., on NTS maps 93 L 9E and 9W, at an elevation of 1000 - 1100 m, at Latitude N 54°34', Long. W 126° 14 '. Access is by a dirt road branching from the Topley - Granisle highway 10 km north of Topley and thence 3 km to the northeast.

History

The showings were discovered in 1927, and work on surface and on two underground levels was carried out in 1927 - 1929. Some surface work was done in 1934-35. In 1954-57 Silver Standard Mines Ltd de-watered the old workings, re-sampled the veins, and did some drilling from surface. In 1975 Canadian Superior Exploration Ltd drilled four surface holes and had an Induced Polarization survey made. In 1979 Cobre Exploration carried out magnetometer, E.M. 16, and Vector Pulse Electromagnetic surveys; in 1980 Cobre Exploration drilled 28 surface holes totalling some 5439 metres. This report covers one hole, # 81-1, drilled in the period Oct.5 - 12, 1981 by the same company.

Economic Potential

Reserves exposed by the two underground levels and indicated by former underground drilling and the 28 holes drilled in 1980 amount to 170,000 - 200,000

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tons grading 4.3 grams of gold per metric ton and 192 grams of silver per metric ton. The ore carried small amounts of lead, zinc, and copper, with some arsenic. The known ore shoots are open at depth, offering the potential for expanding the calculated reserves. Given adequate metal prices, the property could become a small producer in the range of 150 -200 tons per day. The ore is of the volcanogenic type, occurring as beds parallel to the layering of the enclosing acidic pyroclastics, which appear to form a volcanic pile. Other shoots may exist nearby within the pile which could increase the production potential.

Work Summary

The work done between Oct.5 1981 and Oct.28, 1981 consisted of:

Drilling of D.D.H. # 81-1 to a total depth of : <u>197.2 metres</u> Accessory work : Core logging, preparation of plan and cross-section, copying, report-writing. The on-site crew ranged in number from 3 to 5 depending on the work being done.

The hole was drilled on the Richfield #2 M.C.

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B. TECHNICAL DATA & INTERPRETATION

Purpose of the Drilling Programs, & Results

The first drilling, in April of 1980 was directed initially to identify the source of a long, strong conductive anomaly detected in a ground E.M. survey that had been carried out in the fall of 1979. Holes #1-3 found a highly-sheared mixture of andesitic and ultrabasic rocks exhibiting strong conductivity, at the indicated position of the anomaly, and it was concluded that those rocks were the source of the geophysical indications, and were in themselves of no economic significance.

Holes #4 -#8, drilled in May 1980, were designed to test for extensions of the known mineralization exposed in old mine workings a short distance to the east; those down-dip extensions projected <u>beneath</u> the sheared conductive mixed-rock unit, which lies as a cap-rock over the lower, more favorable, and in places mineralized beds. An ore intersection was obtained in Hole 80-4. Holes 80-5,-6, and-7 were drilled to the south on the strike of the "favorable" formation, but found little mineralization, as it appears that the most favorable unit has pinched out there. Hole 80-8 was drilled to fill in between the lowest old underground holes and 80-4, but had to be abandoned short of its objective owing to caving of the walls of the hole.

A second program was begun in September, aimed at tracing the ore layer north, south, and down-dip to the west from the intersection in Hole 80-4. Good mineralization of gold and silver, in bedded pyrite-sphalerite-galena-arsenopyrite layers, was encountered in Holes 80-10, 80-11, 80-13, 80-14, 80-22, 80-23, 80-25, and 80-28. Of the other holes, some were step-outs to the south, looking for new mineralized zones beyond the apparent south border of the known shoot, and the others were similarly-intended step-outs to the north. The step-outs to the north found much greater thicknesses of the favorable host pyroclastics, with widespread mineralization. Hole 80-26 cut a 7.5-metre section that had numerous thin sulphide seams throughout, accompanied by intense quartz flooding.

Hole 81-1 was drilled at the site of an earlier hole, # 80-27, that was lost just as it was about to enter the ore-host pyroclastic layer; the hole caved and it proved impossible to continue it in the fall of 1980. In October of 1981 a site was chosen 6.6 m due west of DH 80-27 and hole 81-1 was drilled there. The hole was drilled with a rotary bit to 141.72 m, and was cored with NQ bits to the bottom.

The cuttings and the uppermost cored section disclosed the usual stratigraphic succession seen elsewhere on the property : a mixture of green andesite and some ultrabasic rocks, with a large quantity of soft green chloritized gouge near the bottom. The top contact of the Variegated Unit, a clearly-marked horizon at the top of the pyroclastic formation, characterized by thin alternating beds of red and green lapilli tuffs, was encountered. It proved to be intermixed with thin layers of andesite. Mineralization was scarce, but was composed of thin beds of yellow pyrite, following the layering of the enclosing rocks. There was also a small amount of black finegrained pyrite impregnating a quartz breccia. The total thickness of the acidic pyroclastic unit was 5.59 metres.

Conclusions

It had been hoped that this hole would find a much thicker section of the acidic pyroclastics, that would suggest a build-up of a new volcanic pile to the southwest of the area of earlier drilling. Such did not prove to be the case. The Variegated Unit is present, but thin and containing several beds of andesite. As far as is indicated at present, the main build-up of the pile is towards the north or northwest, beyond DDH 80-26. It is recommended that further drilling be carried out in that direction to look for new ore-bodies in the presumed center of the pile or on its northern flank. Drilling down-dip from DDH 80-28 to extend the known shoots is of course also recommended. As a lower-priority target, further step-outs to the south could be drilled at spacings of 200 - 300 metres, following the host formation, in the hope of discovering a new separate volcanic pile in the southern area of the claim blocks.

Respectfully submitted,

F.B. Whiting, P.Eng.

C. ITEMIZED COST STATEMENT

Item	Dates	Rate	<u>Total \$</u>
Rotary \$ Core Drilling			
J.T.Thomas Drilling Co. Total cost incl. mob/ demob, drilling mud etc.	Oct.5-11 1981	\$ 101.67per metre for 197.2 m.	\$ 20,050.00
Personnel			
F.B.Whiting, geol.engineer supervision & logging & report preparation	Oct.5-12 Oct.26-28 1981.	\$ 275 per da for ll days	ay \$ 3,025.00
Vehicle Rentals			
BowMac Truck rental, Smithers	Oct.5-12		\$ 435.59
Meals , Accomodation, Air Fare			
Taxis to & from airport		\$ 54.00	
Air Fare Vancouver-Smithers return		\$ 235.45	
Motel: Upland Motel room & mea	ls Oct.5-1	1\$ 287.00	
Other meals & groceries	Total	\$ 41.00	\$ 617.45
Xeroxing, map prints			\$ 9.30
& report binders			

TOTAL EXPENDITURES..... \$ 24.137.34

Whiting, P.Eng. F.B.

D. STATEMENT OF QUALIFICATIONS

NAME: WHITING, Francis B., P.Eng.

PROFESSION: Geological Engineer.

EDUCATION: B. App. Sci. in Geological Engineering,

University of British Columbia.

M.Sc. in Geology, McGill University.

Ph.D. in Geology and Economics, Massachusetts Institute of Technology.

PROFESSIONAL ASSOCIATIONS:

Registered Professional Engineer, Province of British Columbia.

Registered Professional Engineer, Yukon Terr. Member, Society of Economic Geologists.

EXPERIENCE:

- Pre-graduate experience in Geology with Geological Survey of Canada and International Mining Corporation.
- One and One-half years Field Geologist for Hedley Mascot Gold Mines, Placer Development, and New Jersey Zinc Explorations, in B.C.
- Three years as Mine Geologist, Missouri, for St. Joseph Lead Co.

Six years as Chief Geologist, Aguilar Mine, for Compania Minera Aguilar, S.A., Argentina.

Seven years as Exploration Chief in Argentina for Compania Minera Aguilar S.A.

Five years as Exploration Manager, later General Manager, for Arrow Inter-America Corporation, in western and eastern Canada.

Three years as Regional Manager for Western North America for Brascan Resources Limited.

Four years as Consulting Geologist, as President of Whiting Mining Services International Ltd.

Active experience in Canada, U.S.A., Mexico, Honduras, Brazil, Chile, Peru, Argentina, Australia, Bolivia.



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• • • • + + glacial drift overlying andesite ×× basic (and ultrabasic ?) rocks fragmental tuffaceous rocks variably altered to ankerite & dolomite ± quartz 1.1 argillite ۲ v andesite (middle and footwall) ≈ gouge brecci a layering or banding sulfide mineralization silicification and/or quartz stringers > bleaching mineralized horizon .76m/262/10.92/ sample width (metres)/Au(oz t)/Ag(oz t)/ 4.96/3.35 Pb (%)/Zn (%) sampled portion of drill hole +

COBRE EXPLORATION LTD. RICHFIELD PROPERTY Omineca M.D. SECTION 81-1 To 80-21 SCALE I:500 (metres) Min-Ex Services Ltd. WHITING MINING SERVICES INT'L

DRILL HOLE RE	CORD	PROPERTY: RICHFIELD M.D.: DMINECA	LOCATIO	N:66m.	WEST	OF DH. BO	.27 1	
Commenced :	0 <u>ct.</u>	81. Completed : Oct. 181. Core Size :	NQ		I:	nit. Brg.:	VERT.	Ini
Collar Coor Dip/Dir. Te	ds: : sts:	N: <u>4465.75</u> E.: <u>4821.55</u> . Collar Elev.: <u>0.40 m</u> Nil. <u>Goller</u> of:	80-27:=	Logg	ed by	: <u>F.whitin</u>	<u>'</u> g [HOLE
Core	m. To	Description	.Sample	From	г	m. Length	/ st. oz.Au	-1 <u>oz</u>
0.0	48.8	OVERBURDEN						
		0.0-13.7 m: Baulders & sand						
		13.7 - 28.9 m: Sand, occasional thin builder layers						
		28.9 - 48.8 m : Clay, """.						
<u>48.8</u>		UPPER ANDESITE						
		48.8 - 104.8 : Normal andesite moderately mognetic; some						
		parts slightly taley, parts darker (ultrabasic?)				and the second	and the second secon	and the second s
		1048 - 131.0 : Mixed normal green andesite a massive						
	<u>`</u>	reddish type gives red drilling mud.					~-	
		131.0 - 1411 : Mainly green anderite . Some porphystic						7 5
		structure - white feld spor laths in medium aveca						
		matrix.				a the second s	an ing te se an distance	(5); ¹⁷ , at the later [-144]
				1				
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DRILL HOLE RECORD	PROPERTY: RICHFIELD M.D.:	LOCATIO	DN:				
Commenced : Collar Coords: : Dip/Dir. Tests:	. Completed : . Core Size : N: E.: . Collar Elev.:	m.	Logg	In ed by	nit. Brg. : <u>Fowh</u> u	:	Init HOLE
Core	Description	Sample	-[From		m. Length	/ st. oz.Au	
	Na Coring Began.						
	141.72 - 142.33 m: Broken rock passibly partly control-in boulders - green andesite, also 2 fragments of next note						
142.33 145.90	HARD MASSIVE ANDESITE: Dark aver fundaluli						
	with faint dark phanocayets in dark green matrix. M	odprately 1	regretic:				
	Robester - hand Sprinkled with white spits of migulan						
	shapper a sijes some round - give weak efforwarrowce in acid - so partly componente. Boch is cut by several 1-mu						
	Kins of similar white afferviewing material, C.A. 0°-415°. Rock shows the it is the contract of the contract o						
	chloritic. White veins are about 3 quarty, 3 carbonate.						
	Contract with next unit is sharp - a solid end squeezed against Gr	an Gouge					

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RILL HOLE F	ECORD	PROPERTY: RICHFIELD	<u>M.D.:</u>	LOCATIC	: 17				
Commenced	:	Completed :	Core Size :			Iı	nit. Brg.:	:	.Init
Dip/Dir. 1	ests:	N:E.: (Collar Elev.:	m.	Logg	ed by	:	9	HOLE
ore From	m. To	Description		.Sample	, From	m. To	m. . Length	/ st oz.Au	· /
145.90	146.30	GREEN GOUGE & ANDESITE : Ty	peal material accept						-
		has several I-cm reddish sea	ns; C.A. 45°-50°						
		from 145.90 - 146.10, 146.1	- 146.30 Normal govere:						
		fragments in it are intermediate	between taky dank-green	n					
· · · · · · · · · · · · · · · · · · ·		ultrabasis (moderately magnetic) a	nd normal Upper anderite						
		with anicular structures with center	Note: may have a	run in dis	tance an	station	so that st	at d a	
		145.90, may really be at 14	10.40. Core recorry	mobile 9	0% =				LICEN GO
146.30	147.52	JUMBLE OF ROCK FRAGMENTS	R MUD - CAUNG						
		MATERIAL.							
147.52	147.90	GREEN GOUGE & ANDESITE							
147.90	148.10	DARK BROWN MUD.							
148.10	149.62	VARIEGATED FRAGMENTAL UNI	T: Well-bedded						+
		alternating layers 0.5-5 cm wid	e of red green &						
		white. Abundant fragments up to	2 cm duineten .						
		Core Angle averages 50° (T. 3. =	40°) Lt is paralle	belloi t	vital				-
j e j					-4164 1				

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1999年1月1日日日日には、1999年1月1日、1999年11月、1999年11月

DRILL HOLE RECORD	PROPERTY: RICHFIELD M.D.:	LOCATIO)N:			D	ATE :
Commenced :	Completed : Core Size : _	· · ·		I	nit. Brg.	:	.Ini
Collar Coords: :	N: E.: Collar Elev.:	m.	Logg	ed by	: FBWhitin	Γ	HOLE
Dip/Dir. Tests:					· · · · · · · · · · · · · · · · · · ·	1	
Core	Description	.Sample	From	r To	m. Length	/ st. . oz.Au	, oz
	Continued : Abundant ourbougte in fingmente e throughout						
	bidy of rock - all efferv. in dilute HCI.						1
	Some parts show altoration to epidote color.						
	No distinct mineralization but my have fine black printe						
	in a feur short sections. Recovery 95 %.						1
149.62 152.00	ANDESITE						1
	149.62 - 149.90 : reddish, white purphyritic laths						
	149.90 - 152.00: massure alive - green with abundant						
	cultite seams a spots verillets < Imm wide running						
	at all angles. Recovery 100 %. Fairly strongly may	actic .					
152.00 153.30	MIXED ANDESITE & VARIEGATED FRAGMENTAL :	Traces	of yell	W - Þ4	rite in re	veral plac	es.
	Has occasional red bands 1-5 cm wide, some a	danly - f	regment	1			
	buts, other parts appear to be precisited arean a	andesite	in this	beds	(5-10 cm		T
	Core Angle about 50° (T.D. 40°) but irregular.	Recovery 9	5% 5	lightly	magnetic .		1.
	Some calate blobs up to I cm wide, 3 cm long. Lime	through	that a	t as	much to as	148-10	- 149.6
		1	T	T	I		1

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DRILL	HOLE R	ECORD	PROPERTY: RICH FIELD	<u>M.D.:</u>	LOCATIC	N:		<u> </u>		
Comn Coll	nenced Lar Coo	:	$\underbrace{\text{Completed}}_{\text{N:}} : \underbrace{\text{Completed}}_{\text{E_1}} : \underbrace{\text{Completed}}_{\text{E_2}} : \underbrace{\text{Completed}}_{E$	Core Size :	NQ	-	I	nit. Brg.	D	<u>ATE:</u>
Dip/	Dir. T	ests:	· · ·	COIIAI EIEV.:	m.	rođđ	jed by	:_F645hit	ing	HOLI
Core	m. From		Description		"Sample	.From	m. TO	m. Length	/ st.	
	153.30	153.69	MINERALIZATION : Yellow pyriti	e in this seams and	144190	153.30	153.69	0.39	<0.003	
			scattered crystals in mixed	quartz-carbonate and					1	1~
			"BLACK BRECCIA" bands. Tu	isted lumpy texture.					1	+
			May have a second sulphide -	suggestions of dark	mineral					+
			have - could be blackish sph	alerite, Recovery	i 100 %				1	<u>†</u>
			Core Angle 45° 2. Note: 6	pottom contact against	Footwell				<u>†</u>	+
			Andesite is a fault with c.	A. 30° - There for h	Il thickne				<u> </u>	+
			minz. is not exposed.					· · · · · · · · · · · · · · · · · · ·	<u> </u>	╂──
										╉╼╍
	153:69	197.20	FOOTWALL ANDESITE : Green.	with white phenociusta	home	+	$1 + \cdot$	- 11	<u> </u>	<u>+</u>
		END	Traces yellow pyrite in first	50 cm.	///// 44	· / / ~ _	81 5	5-17	<u></u>	+
			Considerably broken . happing sta	nis + 154.3 154.7	15/ 1				<u> </u>	┼──
			156.7 Occasional emilate calar	alteration Al					<u> </u>	╂
			Receivers 100 %. Mag notism	very use L	0.5 cm	quar 13	Secm	3	<u> </u>	┾
			Broken - amigni 160.7 - 111	Roll'I					<u> </u>	<u></u> ∔
ļ lī				- readish of 15	8 9 160-1	, 140.7	┝───╂			╂

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DRILL HOLE RECOR	D PROPERTY: RICHFIELD M.D.:	LOCATION:	DATE:
Commenced :	. Completed : Core	e Size : Init. Brg	.:Ini
Collar Coords:	: N: E.: Collar Elev	v.:m. Logged by: FRWhil	ting HOLE
Dip/Dir. Tests	*		L
Core	Description	.Somple From To Length	/ st. /
	FOOTWALL ANDESITE - Continued.		
	All section 158-164 is much broken;	Some traces pyrite; very four quartz veins.	
	Somawhat booken 164-169.		
	1-cm quartz veins at 168.5, 168.7, 169.0	with some bleaching along walls, traces pyri	<u>itz.</u>
	Reduch 169.9- 170.3 Qtz + blraching 16	9.8-170.0, CA 80°	
	Broken & bleached 172.4-172.8 and 17	4.1- 174.9, with tipces of yellow pyinte	
	Fault breación + red matrix 174.2.176.4 m	17th C.A. 45° Recovery 90-100 %.	
	Raspiel 176.8-177.3. Many iniques.	salate seams 177 - 180 m; also much	
	semi-epidete alteration in patchos & on e	noss-veins. Similar verks & alteration for	rm
	181-186. Extreme silkification & gtz-veining	14 with C.A. 75° at 183.5 184.3 -184.7	at 184.9 and 185
	Qta verio + wall blenching at 187.5 189.	7 190.3	
	Calete vein at 191.15 - 191.6		
	Brken and with rellish const n mid at 15	9.8 and 191.5. des at 192.0.	
	Semi excidate alteration 192.5-194.0. 6	Staven + Bleaching + 192.9.	
	Scattered at a cilcute veinlets & sints 1	throughout 192-197.	
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DRILL HOLE I	RECORD	PROPERTY: RICHFIELD M.D.:	LOCATIO	DN:		•		 \2 miz .
Commenced Collar Coc	: ords: : Tests:	N: Completed : Core Size :	m.	Logo	I red by	nit. Brg.	: ing	Ini
							$\sqrt{-1}$	TOPE
Core Prom	To	Description	.Sample	From	r To	m. Length	/ st. . oz.Au	/
	197.2	F.W. AND. Continued.						•]
	END	Definite agglomentes texture 194.0-194.5 and			<u> </u>			
	· · ·	196.6 - 197.2.						†
	:	All lost 30 n is generally normal porphy inthe and	erite.					+
								+
		HOLE SUMMART		1				+
		Drilled as repeat of DJH 80-27 which was los	r.	1				+
		81-1 found top of Variageted Unit about where.	enpected					+
		Unit is stendard type except has considerable	anteite	-				+
		interbeds. Weak pyrite mineralization frond at bot	ton of	1				+
		Fragmental bads vist above fault contact with Fi	roturell ande	te				+
		lyste shows tendency to form this layers parallel to	halding					+
		Frotwall Anderite is of normal type by soften the	a ward in	the sat				+
		many quests veries of axtorising silicification of						+
		AHONTHAS						┼╧
1 11				 				╂

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