

18-#191-#6784

GEOLOGICAL, PROSPECTING, DRILLING REPORT

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MS CLAIM	(REC.	NO.	544-	(3))
SMITHERS,	<u>B.C.</u>	, OMI	INECA	M.D.
MAPSHEET	93L 1	5E La	at. 5	40471
		L	ong.	126 43

for:

PETRA GEM EXPLORATION OF CANADA LTD.

by:

BARRY PRICE, M.Sc. March 22, 1978



SUMMARY

1977 EUP During the period June 18 - August 8, 1978, the M.S. claim was prospected by the writer and K. Coswan. From October 27 to November 2, 1978 mapping, trail cutting, and 25 feet (8 meters) of packsack diamond drilling was done in three short holes. The drilling tested a contorted unit of limestone in which clots and disseminations of galena and sphalerite occur. The mineralization occurs along a 200 foot (60 m) section of the canyon of Canyon (Carr) creek, 20 miles due east of Smithers, B.C. Additional disseminated sphalerite is present in limy tuffs thought to underlie the limestone and in felsic agglomerate farther up the canyon. Prospecting revealed additional outcrops of the agglomerate adjacent to the limestone. Rock types are considered significant in that they resemble those seen elsewhere in producing volcanogenic "stratiform" massive sulphide deposits. Further mapping and sampling is recommended.

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GEOLOGICAL REPORT - M.S. CLAIM

INTRODUCTION AND HISTORY:

During the summer of 1977 an exploration program for volcanogenic massive sulphide deposits was initiated in the Smithers area. This area was chosen for the following reasons:

- 1) Numerous sulphide deposits of known or suspected volcanogenic origin are present in the area.
- 2) Some of the known deposits are significant in economic potential, for example the Sam Goosly deposit currently being developed for production by Granby Mining and Graenges Ltd. This deposit contains 43.5 million tons grading 2.78 oz./ton silver, 0.33% copper and 0.026 oz./ ton gold.
- 3) A broad area near Smithers is underlain by favorable stratigraphic units, i.e. the "Babine Shelf facies" of the Telkwa Formation of the Hazelton Group.
- 4) The writer has examined several of the more important prospects in the project area.

During the period 1968-1972, the "Ascot" group of claims was explored by Texas Gulf Ltd. from the two base camps. Work included reconnaissance and detailed soil geochemistry, airborne magnetic surveys and airborne and ground E.M. surveys. On the basis of the geophysical surveys, three diamond drill holes were completed, one of which intersected weak, disseminated mineralization of sphalerite and galena identified as "stratiform" in nature and sedimentary in origin.

The mineralization had been staked as early as 1952, although only a few small pits were dug on one of the showings, exposing a narrow lead-zinc-barite zone.

The claims were dropped by Texas Gulf in 1977 and one area, covering some of the more significant mineralization was restaked by Kevin Coswan, Smithers, B.C. in March 1977. The property was inspected by the writer in June 1977; during this inspection the potential for volcanogenic stratiform massive sulphides was recognized and additional zinc showings were found. The property was immediately optioned by Petra Gem Exploration (the writer's company) and during the 1977 exploration season, additional geological mapping, sampling, and packsack diamond drilling was done on the M.S. claim, and a pack trail was cut to the lowermost showing. A new claim of 16 units (Byron) was staked to cover disseminated mineralization seen in DDH-1, Texas Gulf's original drill-hole.

LOCATION AND ACCESS: (figures 1, 2)

The project area is located 20 miles due east of Smithers, B.C. at the headwaters of Canyon Creek, between Mt. McKendrick and Dome Mountain. Although a cat road was built across the property in 1968, the road is in need of repair, and access is 4 miles by foot from the Babine Lake highway at Burnt Cabin junction, or by helicopter 10 minutes from Smithers. The area lies between elevations 4000 and 5000 feet with low relief - low wooded hills and open, marshy meadows. A short section of the creek canyon is relatively steep. Till cover is extensive in most of the area, but outcrop is present on hillsides and in creek-banks.

CLAIMS:

The most important showings are covered by the M.S. and Byron claims shown on figure 3. The M.S. claim, record no 544 (3) is held by Petra Gem by option from owner Kevin Coswan. The Byron claim, record no. 698 (8) is owned by the writer for Petra Gem, but is partially covered by the perimeter clause for the M.S. claim. In February 2, additional claims were staked by the writer: MS 2 (6 units) adjacent to the MS claim and BYRON 2 (16 units) between MS and Byron claims.

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FIGURE 2

Claim Sketch - CANYON CREEK - DOME MTN.



GEOLOGY:

The project area lies entirely within the Hazelton Group, a volcanic-sedimentary sequence of middle to upper Jurassic age. The rocks in the area are believed to be the "Babine Shelf" facies of the Telkwa Formation, the areal extent of which is shown in fiture 4. This "shelf" is described by Tipper and Richards (1977) as follows:

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"Between Bulkley River and Babine Lake, predominant subaqueous and subaerial pyroclastic rocks are intercalated with marine sediments and intravolcanic non-marine sediments..... "In the Dome Mountain area, two volcanic members may be present. A lower assemblage comprises interbedded red, maroon, purple, grey, and green tuff and breccia, with interbeds of shale and greywacke. Discontinuous limestone beds and lenses, in places with a pelecypod and ammonite fauna, are common. This unit is overlain by about 100m. of black shale, separating it from a second volcanic member, estimated to be 900m. thick of mainly green aquagene tuff, breccia, and flows at the base, grading upward into a mainly subaerial assemblage of reddish colored lapilli tuff and fine to medium-grained (basaltic to rhyolitic) breccia and flows. "The transition zone between the Howson subaerial facies to the

west, and the Babine shelf facies is a broad (5 km.) arcuate belt with limestone reef and reefoid bodies, marine sediments with shell coquinas, and minor aquagene tuff inter-fingered with the prominent reddish colored volcanics typical of the subaerial facies."

PROPERTY GEOLOGY:

Peatfield (1968) recognized three members in the Hazelton group and regarded the bulk of the rocks exposed on the property to belong to the Middle (mainly sedimentary)division.

Structure:

Rock units trend roughly north-easterly across the property, but, according to detailed mapping done by Peatfield, all units are tightly folded with axes trending northwest. Minor folds indicate plunge of 25 degrees toward azimuth 120 degrees. Although



FIGURE 3

Facies Map - Telkwa Formation, showing 'Babine Shelf' area.

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isoclinal folding is hypothesized for the Middle division, the more massive volcanic divisions to the north and south are less strongly folded. North-easterly trending faults and shears apparently post date folding. Richards (1977) indicates that argillaceous units in the Hazelton Group have acted as planes of decollement for thrusts.

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Intrusions:

Small stocks and dykes of dioritic composition are mapped by Peatfield, as well as two sills which appear to have been folded with the sediments. The smaller "plug" east of the M.S. claim is thought by Peatfield to represent a volcanic neck. Two major dykes of basaltic-gabbroic composition cross the canyon above the M.S. showing. The material is dark, fine-grained and is magnetic.

Mineralization:

Three types of mineralization are present in the claims:

- Disseminations and irregular patches of sphalerite and galena in limestones, (M.S. showing).
- 2) Disseminated galena, sphalerite, pyrite and occasionally chalcopyrite in rhyolitic or dacitic tuffs. (Byron showing).
- 3) Massive pyrite near the contact of massive rhyolite and graphitic argillite, with galena and sphalerite in associated quartz veins or silicified rhyolite (Camp showing).

<u>Type 1</u> - Sphalerite and galena in limestones occur in exposures approximately 1500 feet northeast of the main camp on M.S. claim. The limestone unit outcrops for 200 feet along the creek bank, and although strongly contorted, appears to dip generally southward. Sheared blocks of amygdaloidal andesite are included. The limestone is recrystallized, and the galena and sphalerite, because of their fine-grained disseminated texture and light color (sphalerite) are difficult to see. Samples 19888 and 19892 assayed 0.885% and 1.62% zinc. respectively from large bags taken as "grab" samples.



1977 WORK PROGRAM:

A) Prospecting

During several visits to the property during the summer of 1977, the writer and K. Coswan, property owner, conducted prospecting over the M.S. claim. The prospecting resulted in the discovery of felsic breccia on the east side of the creek approximately 600 feet (180 m) northeast of camp. In addition, the limestone unit was traced northward from the canyon and was seen in the first major tributary in the canyon 3000 feet (900 m) north of camp. Disseminated pyrite in rhyolitic rocks is present in a number of outcrops along the cat road 1800 m northeast of camp (now covered by Byron 2 M.C.). During prospecting, soil samples AS-77-45 to 32S were taken along the road and along the canyon as shown on the accompanying map.

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Additional prospecting is recommended for 1978 to trace the mineralized horizons.

B) Trail cutting

On October 27 and 28, 1977, the writer, D. Price and J. Hilchey, cut approximately 1000 m.of packtrail from the camp on the M.S. Claim to the showings and beyond the major tributary. Four man days were spent on this portion of the job to facilitate moving packsack drills to the showings.

C) Packsack drilling

Mobilization for the drilling job began October 25, 1978 and from October 27 to November 2, 1978 23 feet of packsack drilling in three holes was completed by the writer, D. Price and J. Hilchey. Snow and freezing conditions slowed the project considerably but drilling proved effective in the limestone when water circulation could be maintained. All material drilled was folded and sheared





limestone with fragments of dark, hematitic, amygdaloidal andesite and wisps of buff to greenish volcanic ash (?). Sphalerite and galena in clots and fine specks are scattered throughout the core. Assays are shown on the following page. All core is stored in the company office in Vancouver. The holes were drilled southward, somewhat parallel to foliation, but bedding is very contorted here and cores cross cut some strata. Location of the holes is shown in figure 5.

D) Geology

Mapping done during trail cutting and drilling is shown in figure At the main showing, mineralized limestone is underlain by dark greenish strongly altered tuff, consisting now of chlorite and epidote. In probable fault contact are light green limy volcanic rocks which may be lithic tuffs or welded tuffs. The rocks, now predominantly chlorite and carbonate contain greenish disseminated sphalerite, and are cut by a fault zone containing barite and sphalerite. Approximately 240 meters above the M.S. showing the contact of the limy volcanics and a felsic breccia or "lahar" is The breccia has a fine matrix which contains seen in the canyon. pyrite and occasionally sphalerite. Fragments are dacitic or rhyolitic with guartz eyes and veinlets. Identical breccias occur to the south, presumably stratigraphically above the mineralized limestones. This significant rock type is similar to the breccias seen at many volcanogenic massive sulphide deposits, and major efforts should be made during the 1978 season to map the distribution of this unit.

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1977 DRILLING ASSAYS

HOLE 1		Pb%	Zn%	Ag(oz/T)
78-1-1 1-2	<pre>1 ft. fine-grained limestone. Fine Sphalerite 2 ft. dark amygdaloidal to massive volcanics. Some limy </pre>	0.13	1.46	0.38
	veins	0.01	0.03	0.12
1-3	3½ ft. Grey limestone -some volcanic fragments	0.01	0.03	0.09
HOLE 2				
78-2-1.	ll½ ft. Limestone with fine grey-green sphalerite. Several sections of amygdaloidal volcanics	0.02	1.60	0.35
HOLE 3	5½ ft. mixed limestone and volcanics. Fine grained grey-green sphalerite.	0.03	0.21	0.06

CONCLUSIONS AND RECOMMENDATIONS:

From the material examined to date from the M.S. Claim, the writer concludes that lead-zinc mineralization is of stratiform and volcanogenic origin, and is similar to "distal" type mineralization seen at other volcanogenic deposits. Rock types (i.e. the felsic breccia or agglomerate, and limy volcanics) are favorable; contacts of rhyolitic flows and argillaceous units are known from previous mapping, and dispersed galena and sphalerite are present in a thick dacitic tuff unit north of the M.S. claim (on the BYRON Claim). The writer recommends that mapping and sampling continue on the M.S. and adjacent claims to pinpoint targets worthy of diamond-drill holes.

Barry Price.

BARRY PRICE, M.Sc.

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1702 A,B,C, 2139, 2140, 2141

Tipper, H.W. and Richards, T.A. (1976)

Jurassic stratigraphy and history of north-central British Columbia. GSC Bull. 270, 73p.

Price, B. J. (1972)

Minor Elements in Pyrite. Unpublished M.Sc. thesis. University of British Columbia



APPENDIX I

COST BREAKDOWN



Employee Information

Name	Dates Worked	Rate	Amount Paid or Claimed
B. Price	June 18 July 10 Aug. 8 Oct. 25 - Nov. 2	\$150/day	\$ 1500.00
D. Price	Oct. 26 - Nov. 2	\$50/day + bonus	425.00
J. Hilchey	Oct. 26 - Nov. 2	\$50/day + bonus	425.00
K. Coswan	June 18, July 10	\$50/day	100.00
Rentals			
Powersaw	8 days @ \$5/day		40.00
Truck	2 wks. @ \$157.82/r	no.	78.91
Camp	2 @ \$10/day x 8 da 1 wk. @ \$200/mo	ays	50.00
Transportatio	<u>on</u>		
Airfare	B. Price, Vancouve	er to Pr. George	90.00
Valiconter	Oct 27 Inv #2	aver to Smithers	270.72
nericopcer	Nov. 2 21	1138	203.54
Disbursements	<u>.</u>		06.24
	Groceries		5 47
	Gas & Oil		42.33
	Motel 4 days @ \$2:	2/day	88.00
	Meals 8 mandays @	\$15/day	120.00
	Drill bits 3 @ \$23	3.65 Inv. #265-7-	-7 70.95
Assay <u>s</u>	Invoice No.'s 420	05	156.00
	426	51	35.00
	428	Bi part.	93.40
	434	45	12.25
Freight	Invoice No. GO 10	0763	12.00
	TOTAL		\$4,222.26



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BARRY PRICE, M.Sc.



APPENDIX II

ASSAY DATA



VANGEOCHEM LAB LTD. 1521 PEMBERTON AVE., NORTH VANCOUVER, B.C., CANADA V7P 2S3

TELEPHONE: 988-2172 AREA CODE: 604

• Specialising in Trace Elements Analyses •

Certificate of Geochemical Analyses

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% Mo x 1 6683 = % MoS₂

Petra Gem Exploration Ltd. #200-3540 West 41st Ave., Vancouver, B.C. V6N 3E6 Attention: Report No: 78 72 001 Page 1 of 1 Samples Arrived: March 9,1978. Report Completed: March 14,1978. For Project:__ Analyst: E.T. 5.C. Invodce#1867 Job#78012

Sample Marking	Pb %	Zn %	Ag oz/ton			
Ascot 78-1-1 78-1-2 78-1-3 78-2-1 Ascot 78-3-1	0.13 0.01 0.01 0.02 0.03,	1.46 0.03 0.03 1.60 0.21	0.38 0.12 0.09 0.35 0.06	}	RILL	CORE
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REMARKS:						- Thing

Signed: ____

nd = none detected

ppm =/parts per million

All values are delivered to be correct to the best knowledge of the analyst based on the method and instruments used

1 Troy oz./ton = 34 28 ppm

1 ppm = 0.0001%



1521 PEMBERTON AVE., NORTH VANCOUVER, B.C., CANADA V7P 2S3

988-5211 TELEPHONE SELECT AREA CODE: 604

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Certificate of Geochemical Analyses

Kr. Barry Price	Invoice #	4205	Job # 77-062-1
Attention:	Analyst:		
Vancouver, B. C. ¥6% 326	For Project		
# 200 - 3540 West 41st Avouns,	Report Completed:	Jume 28,	1977
Petra Gea Exploration Ltd.,	Samples Arrived:	June 22,	1977
-IN ACCOUNT WITH-	Report No:	77 01 01	.3 Page 1 of 1

•	Sample Marking	Pb \$	Za ≸	lg oz/ton	Au oz/ton	Ba	
	19885	0.006	0.021	0.029	trace	·····	C77-6, 18-2
	86	0.003	0.022	0.029	trace		C77-6, 18-4
	* 87		1.330			0.013	Ascot, Barite V Zn
	88	0.114	0.885	0.116		·	LST - Zn Stain.
	89	0.013	1.200	0.029			Ascot, Altered Volca
	90	0.115	0.670	trace	trace		Ascot, Hole 1, 0-50'
	91	. 0.010	0.023	0.029			Ascot, Hole 1, Box 5, 105-130 Black phyle
	19892	0.147	1,620	· 0.174			97-6-18 LST #1
	Driftwood # 1	0.003	0.030	0.029			30 E 630° N
1	Driftwood #2	0.003	0.058	0.812			Upper trench RX [*] Acrisitized volcs
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t Troy oz./ton = 34 28 ppm + Mr. K 1 6683 5 MoS, 1 ppm - 0 0001% od i nene detected ppm in parts per million All values are helieved to be correct to the best knowledge of the analyst hased on the method and instruments used.



VANGEOCHEM LABILTD, 1521 PEMBERTON AVE., NORTH VANCOUVER, B.C., CANADA - V7P - 283 906-9211 TELEPHONE:XIXXXXXX AREA CODE: 604

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77 72 008 Page 1 -IN ACCOUNT WITHof 1 Report No: Petra Gem Exploration Ltd., Samples Arrived: August 11, 1977 # 200 - 3540 West 41st Avenue, Report Completed: August 17, 1977 Vancouver, B. C. v6n 3e6 For Project: Bar Attention: Analyst: 4301 Job # 77-140-3 Mr. Barry Price Invoice # Cu Ag Sample Marking ppm ppm. 14 1 1.0 Soil 2 58 KAR. 0.8 Soil SIM 3 26 0.8 Soil 4 43 0.8 Soil 88 2.8 8-8-77 Zn close by Soil ASCOT 6 30 1.0 Soil 7 75 1.6 Soil 4700* 26.0* Ī high grd Cu stn (Rock) 2 2900* chip 3th (Rock) 20.0* BAR 1 3 1000* 7.2* Grab (Rock) 4 5.4 (Rock) 350 Grab 20 3.6 LST Grab (Rock) 33 1.4 altered amyg voics ASCOT (Rock) 55 86 1.4 ASCOT Deste Lap Tuff (Rock) 4.8 ASCOT apper Zn becurrence (Rock) Zn Pb סר 100 8-8-71 40 108 215 119-36 2500 Lat 45 202 Alt amogq -43 Ascot 253 580 Ascot 5800 REMARKS: *Samples have been rejeated for analysis and checked O.K.

Signed: ts per million

% Molx 1.6683 = % MoSz I Triby ozlifon = 34.28 ppm 1 ppm = 0.0001% nd = none detected ppm Attivatues are believed to be correct to the best knowledge of the analyst based on the method and instruments used,



VANGEOCHEM LAB LTD. 1521 PEMBERTON AVE., NORTH VANCOUVER, B.C., CANADA V7P 2S3

986-5211 TELEPHONE: 9002700X AREA CODE: 604

ppm y parts per million

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5 Mo x 1 3683 = % MoS,

Petra Gen Exploration Ltd. -# 200 - 3540 West 41st Ave. Vancouver, B. C. V6 Attention: Mr. Barry Price V6N 3E6

3								
Report No:	27	72	005		Page	1	of	4
Samples Arrived	:	Aug	zust.	4.	1977			
Report Complet	ed:	Aue	zust.	9,	1977			

For Project: Ascot Analyst:

Invoice #4281 Job #77 - 124

	Pb	Zn	Ag	ŀ		
Sample Marking	ppm	ppm	ppm			
AS - 77 - 3Rx	42	4 4	1.6	Rock	ROAD	TRAVERSE
AS - 77 - 26Rx	49	178	1.1	[#	#4-	14.
AS - 77 - 1200Bx	20	92	0.9	-		
AS - 77 - 2150Rx	21	138	0.6	H		· .
<u>AS - 77 - 4S</u>	31	224	1.2	.		
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	26	134	0.8	<u></u>		
10	27	150	0.9	-		. •
11	32	177	0.8			_
12	21	85	0.9			
13s	37	334	0.8			
14	35	263	0,8	1511t		Dentre Aper
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AS = 27 = 25S	27	217	1.2	rocky cl	x ±171	
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28	32	163	0.8			
29	27	147	0,8			
30	20	225	0.9			•
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AS - 77 - 325	22	103	0.7	· · ·		
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1 Troy oz./ion = 34 28 ppm 1 ppm = 0.0001% nd = none detected All values are believed to be correct to the East knowledge of the shalyst based on the method and instruments used



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STER

Petra Gem Explorations Ltd. #200 - 3540 West #1 st. Avenue, Vancouver, B C V6N 3E6 Mr. Berry Price

77 72 009 Report No: Page 1 of 1 Samples Arrived: Sept. 7, 1977 Report Completed: Sept. 8, 1977 For Project: ASCOT Analyst: ET.SC. Invoice#4345 Job#770176

Pb Zn Sample Marking ppm mqq 8-8-77-5 70 100 40 108 6 8-8-77-7 215 119 LST Grab 36 2500 **Fock** Altered Amyg. Volco 45 202 ascoti 65 Ascot Dagte lap Tuff 43 253 ** Ascot upper Zn Occur. 580 5800 REMARKS:

Signed:

nd = none detected

N MO X 1 66663 H N MoS, Troy oz. ton = 54.28 ppm All estate elections to be correct to the bast knowledge of the analyst based on the method and instruments used.

1 ppm = 0.0001%

ppm = parts pr