GEOLOGICAL & GEOCHEMICAL REPORT

on the

CIGAR PROPERTY

Quartz Claims CIGAR 1-12 Grant Nos. YC63021 to YC63032 Dawson Mining District, Yukon Owner: Gordon G Richards

Claim Sheet No 115O/02 Latitude 63* 03' N Longitude 138* 37' W

> written by Gordon G Richards

work performed July 28 and August 4, 2008 by Gordon Richards

April 24, 2009

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LOCATION AND ACCESS.

The claims are located 70 km south of the Dawson City airport along Scroggie Creek on map sheet 115O/02. See Figures 1 and 2. The property is accessible by fixed-wing aircraft from Dawson City to a 750-meter long north-south airstrip along Scroggie Creek about four km south of the claims. The property is also accessible by ATV from Pelly Farm on the north side of Pelly River, 40 km west of Pelly Crossing. This is a four hour trip over 90 km of the old Dawson Trail to the mouth of Walhalla Creek and then over a 14 km dirt road along the ridge tops east of Scroggie Creek to a placer miner's camp on Scroggie Creek on RUM RUN 13 just north of the airstrip. From here access to the claims can be made by ATV over a placer mining road along Scroggie Creek.

CLAIMS.

The following claims, owned by Gordon Richards, occur on NTS sheet 115O/02 within the Dawson Mining District. New expiry dates are provided on the following table and include work described in this report that has been filed for assessment.

Claim Name	Grant Number	Record Date	Expiry Date
CIGAR 1	YC63021	October 23, 2007	October 23, 2011
CIGAR 2	YC63022	October 23, 2007	October 23, 2011
CIGAR 3	YC63023	October 23, 2007	October 23, 2011
CIGAR 4	YC63024	October 23, 2007	October 23, 2011
CIGAR 5	YC63025	October 23, 2007	October 23, 2011
CIGAR 6	YC63026	October 23, 2007	October 23, 2011
CIGAR 7	YC63027	October 23, 2007	October 23, 2011
CIGAR 8	YC63028	October 23, 2007	October 23, 2011
CIGAR 9	YC63029	October 23, 2007	October 23, 2011
CIGAR 10	YC63030	October 23, 2007	October 23, 2011
CIGAR 11	YC63031	October 23, 2007	October 23, 2011
CIGAR 12	YC63032	October 23, 2007	October 23, 2011

Table 1. Claims list.

HISTORY.

Scroggie and Mariposa Creeks are old placer gold creeks first discovered in 1898 and extensively mined by hand with the aid of steam boilers and points in the early 1900's. Refer to GSC Memoir 97. Two small cuts were mined by tractor, equipped with cable dozer blade in the mid-1950s. Cat mining began in earnest about 1980 as a result of the then high gold prices and has continued uninterrupted until today. The writer mined with partners along Scroggie Creek from two km below the airstrip to a point along Mariposa Creek about four km above its mouth. Although early records have not been thoroughly researched, something like 100,000 ounces raw gold with a fineness of 905 has likely been produced from Mariposa and Scroggie Creeks between the top of Mariposa Creek and a point four-km below the airstrip on Scroggie Creek. This area coincides with the bulk of cabins, shafts and diggings associated with pre dozer-tractor mining.

A granite batholith mapped by H S Bostock in 1935-37 is shown on, to occur north of the airstrip to well north of Walhalla creek with a few screens of Yukon Group metamorphic rocks. Refer to GSC Map 711A, Ogilvie. However recent placer mining shows the metamorphic rocks to be much more extensive along Scroggie Creek. It now appears that a granodiorite plug or stock extends from the centre of the airstrip north about one or two km. A true granite is described by Bostock at the mouth of Walhalla Creek. Only metamorphic rocks have been noted between these two intrusions. Schists and gneisses of the Yukon Group underlie Mariposa Creek and down along Scroggie Creek to the granodiorite stock at the airstrip. A large body of pyroxenite underlies Pyroxene Mountain to the northeast.

During 1988, mining cuts along Scroggie Creek just downstream from Stevens Creek yielded abundant arsenopyrite crystals in the sluice-concentrates over about 300 meters. Although bedrock was examined closely, no source for the arsenopyrite could be found in the mining cuts. In 1990 a black-sand sluice-concentrate, with coarse gold recovered, was sent to Chemex Labs for multi-element analyses to determine other significant metals that might be present in the Scroggie drainage. This concentrate was highly anomalous for several elements including Au, Pd, Pt, Ag, Bi, Pb, W and Sn, which, except for the Pd-Pt are indicative of intrusion-related gold deposit. Common minerals found in sluice concentrates include gold, magnetite, garnet and kyanite.

Over 100 WINE and FISH Quartz Claims were staked in 1987 over the area encompassing the significant placer gold production area described above. Only minor representation work was recorded with a modest gold anomaly described in soils north of upper Mariposa Creek and now covered by the TOL and TOLUAMIDE claims. Quartz veins staked in 1917 are described along Mariposa Creek in this same area (Minfile O-075). Other minfile occurrences, well removed from all the recently staked claims include a Cu-Mo occurrence in upper Scroggie Creek, a U occurrence in upper Stevens Creek and a PGM-Au occurrence over Pyroxenite Mt.

The writer began prospecting the area assisted by Mr. Dave Bennett, in 1999 and staked the RUM RUN 1-20 quartz claims in Sept 1999. The writer returned every year since then except 2007 to conduct geological-geochemical-geophysical exploration surveys with the aid of YMIP grubstake and target evaluation grants.

GEOLOGY.

"The large granitic body exposed on either side of Scroggie and Walhalla Creeks is a coarse white granite near the junction of these creeks but, farther south and east, is more nearly a granodiorite and carries large pink feldspar crystals. Along its southern contact is a zone composed mainly of hornblende and pink feldspar. The body contains numerous xenoliths of the Yukon Group and innumerable pegmatitic intrusions that, in places, make up fully 30 percent of the volume of the rock." H.S. Bostock, 1942, Map 711A, OGILVIE. Mr. Jim Ryan and others of the Geological Survey of Canada have recently remapped some of the batholith and adjacent areas throughout the Stewart Map Sheet. Based on initial mapping of part of the batholith, Mr. Ryan describes the batholith as a composite intrusive complex with many phases often with diffuse contacts with country rock (personal communication). Recent mapping by the writer has shown the granite at the mouth of Walhalla Creek and the granodiorite at the airstrip and north from there to be separated by Yukon Group schists and gneisses intruded by pegmatite dykes. The area described in this report lies between the two intrusions within gneisses of the Yukon Group.

A large poorly defined body of pegmatite occurs northwest of the airstrip within the granite batholith. This may be a single large body or more likely an area of intense dyking. It measures three by four km as defined by chips in soil pits, float in creeks, boulders on hillsides

and a few outcrops. Dykes of pegmatite can be seen cutting granodiorite outcrop near camp and along adjacent Scroggie Creek. Pegmatite is typically comprised of 20 - 30 percent quartz, 50 percent Kspar, 20 percent plagioclase and <5 percent biotite plus muscovite. Miarolytic cavities are present but rare. Pegmatite can also be seen as narrow dykes within the country rocks at numerous locations. Pale buff-colored aplite is occasionally seen within the batholith as outcrop and float particularly northeast of camp.

Country rock to the composite batholith includes schists and gneisses of the Yukon Group. Float and outcrop of metamorphic rocks along Scroggie and Mariposa Creeks display a wide variety of textures. Most common by far are quartz-feldspar-hornblende gneisses of highly variable grain size and texture containing garnet of quite variable size and content. Kyanite, common in placer gold concentrates, is seen in float along most of Scroggie Creek as subround disc-shaped boulders of kyanite-muscovite \pm garnet, \pm magnetite \pm staurolite (?) gneiss. Float of pegmatite, granite and chlorite and biotite rich gneisses is also common.

Outcrops in placer cuts and access roads to the cuts are a fairly uniform hornblendequartz -feldspar gneiss. Two to seven percent pyrite is present in over half the exposed rock as coarse-grained disseminations and much less commonly fine-grained streaks and shears veins. Chalcopyrite was noted in some samples as disseminations.

The Scroggie Creek drainage in the area of this report is described as unglaciated (Duk-Rodkin 1999, G.S.C. O.F.3694). Mr. Lionel Jackson of the G.S.C. suggested that older glacial periods of greater than one my bp could have affected the area. During a placer test in the late 1980s of a bench immediately above the southwest corner of RUM RUN 59 (now lapsed), the writer examined material that looked like till. It is curious that oxidation of sulfides is absent or only shallowly developed at best on the property whereas elsewhere in unglaciated terrain it is deeply developed. The Casino porphyry Cu-Mo deposit, 25 km south is deeply leached, in places to over 100 meters. Loess is present on hillsides as was seen in two pits dug in 2001.

PREVIOUS WORK.

No previous work is known to have occurred on the area of the CIGAR claims. Work described in previous assessment reports south of the CIGAR claims on the RUM RUN claims mapped a north trending fault along Scroggie Creek. This fault is a target for gold mineralization as it projects onto the CIGAR claims. One sample of fault gauge just south of the claims returned gold grades of one ppm Au over a couple of metres.





CURRENT WORK.

G Richards traveled to the claims by fixed-wing aircraft from Dawson on July 24 and departed on August 6, 2008. While working on the claims he obtained room and board at the placer mining camp of Mr. Z Bdrman. Richards commuted to the claims from the camp by ATV rented from Mr. Bdrman.

Work in 2008 was designed to map two mining cuts that had recently uncovered bedrock and collect samples from mineralized outcrop. A line of soil samples was also collected for MMI analyses along the base of slope to the west of the sampled mining cuts to evaluate possible continuation of mineralization exposed in the cuts. Refer to Figures 3 and 4.

Rock samples were made of 5 to 10 rock chips small enough to fit into a standard gusseted kraft sample bag. GPS readings were recorded for each sample location. A hand specimen was collected and numbered by felt pen from each rock sample site for future examination. Twenty two rock samples were collected. All samples were sent to Acme Analytical Laboratories in Vancouver for analysis using their 1DX analyses on a 15 gram sample pulp. Results are in an Appendix.

The soil line was run by hip chain along base of slope as shown on Figure 3 with one GPS station recorded for location control. Sample interval was 100 m but had to be varied due to deep humus material and frozen ground. Pits were dug by shovel to a depth of 30 cm in order to expose the soil profile for sampling. The profile was scraped clean with a plastic scoop to remove any metal effect from the digging shovel. A continuous strip of soil was collected by plastic scoop from 15 to 25 cm depth below the top of true soil. Samples with excessively deep organic material were avoided. Samples were placed in a pre-numbered ziplock baggie. An appropriately numbered survey ribbon was hung on nearby vegetation. Samples were kept cool until they were shipped to SGS Minerals Services in Toronto for analyses. In their lab, samples are not dried or prepared in any way. The MMI process includes analyses of a 50-g sample. Proprietary multi-component extractants are used. Elemental contents are determined by ICP/MS in the ppb, ppm and % ranges. Several element packages are available. For the present survey, method code MMI-M5, the exploration suite, which includes 41 elements was selected. Results are in an Appendix.

RESULTS.

Geology and Rock Samples.

Both mining cuts are underlain by medium grained biotite and biotite-hornblende quartzo-feldspathic gneiss. Color index varies from 15 to 60 percent and is generally 40-50 percent. Nineteen samples have elevated copper values of >100 ppm and six samples have copper values of >500 ppm. Elevated Mo of >10 ppm occurs in six samples. No other elements have elevated values of interest. Description of the 22 rock samples is given in Table 2 below. Pyrite content of 2 to 7 % as medium grained dissemination of comparable grain size to the quartz and feldspar grains occurs in many of the samples as noted. Pyrrhotite occurs in G8. Chalcopyrite was observed in several samples as described below. Sulphides are generally fresh and unoxidized even in samples collected at bedrock-overburden interface. Epidote commonly occurs up to one or two percent. Chlorite (actinolite?) occurs in one sample G8 as veinlets. Hornblende, biotite and feldspars are fresh and unaltered.

G1 3m wide. hbd-bio qtz-fspar gns with 5% cg py and ½% epidote.

G2 4m wide. soft decomposed gumbo like hbd-bio qtz-fspar gns. C.I. 60%. 5-7% cg pyrite. Kernels of hard gns. Bio altered to phlogopite along east side. ½ to 1 m wide Kspar peg to SW.

G3 3m wide. Felsic gns. 4% cg py. 3m wide bio diorite dyke begins 5m W of G3.

G4 2m wide. Bio rich gns. 7% cg pyrite. Adjacent to and E of G3.

G5 Bio gns. 3% cg diss py.

G6 3m wide. Decomposed 2% py in bio rich gns.

Note: 160/15-25 E foliation in east side of ditch about 10 m E of G4.

G7 Bio-hbd qtz-fspar gns with 30-60% C.I. Includes 10 cm peg dyke that pinches to zero width.5% mg pyrite.

G8 Bio qtz fspar gns. 1% epidote. 7% pyrrhotite-pyrite. Tr cpy. Rare chlorite (actinolite?) veinlets. C.I 20-30.

G9 Gns with 7% pyrite. C.I. 30.

G10 Gns with 7% pyrite. C.I. 40.

G11 Bio rich gns. C.I. 60-70. 5% pyrrhotite and pyrite. ½% epidote. Tr chl (act?). Near flat lying.

G12 Bio rich gns C.I. 50-70. 7-10% py-pyrhho, locally 15%. Tight folds in otherwise flat lying.

G13 2m wide. Bio gns C.I. 60. 10% sulphide.

G14 Bio rich gns in and around discontinuous peg dykelet 2m by ½ m. 3% py and pyrrho. This whole side of mining cut contains numerous discontinuous peg dykes.

G15 Bio rich gns. 3% py.

G16 fg bio gns.C.I.60. 3-5% py \pm pyrhho. 1% epidote. Attitudes difficult to determine. 20 degree westerly dip.

G17 Bio gns. C.I.40. 5% py-pyrrho.

G18 Bio gns. C.I. 40. 5% py.

G23 Bio gns. C.I. 50. 5% diss py parallel to foliation. Minor cpy. Flat lying.

G24 Bio gns. 4-8% py. Minor cpy.

G25 Bio gns. C.I. 50. 5% diss py, minor cpy. Flat lying.

G26 2-4 cm qtz-bio 'vein'. 2% py.

Table 2. Rock sample descriptions.

MMI Soil Samples.

Results of soil samples show only a moderately anomalous response for copper of 1350 to 5120 ppb Cu, in the first seven of the eight soil samples collected. The first two and the most northerly, G30 and G31, showed the strongest response, of 5120 and 4720 ppb Cu, about 8 times an average background. The background of about 500 ppb Cu is from a range of 390 to 720 ppb Cu. It was established from 11 samples collected elsewhere on the property and reported in the Appendix for samples G38 to G48. The elevated results occur over a strike length of 800 m and form a pattern open to the north and uphill to the west. No outcrops were seen along the soil line.

CONCLUSIONS.

Biotite and biotite-hornblende quartz feldspar gneisses exposed in two recent placer mining cuts have a colour index of about 50 with a range of 15 to 70. Rock texture is fairly uniform across the cuts. Pyrite and lesser pyrrhotite occur in almost all samples and outcrop examined as medium to coarse grained disseminations and lesser fine grained zones up to 15% locally but in general as 2 to 7 %. Grain size is similar to quartz and feldspar grains of the gneiss. Minor disseminated chalcopyrite was noted in several samples and is supported by the moderately anomalous copper values of up to 1425 ppm Cu. Style of mineralization is not easily identifiable with a known deposit type. Original rock may be basic volcanic flows or tuffs. Mineralization could be fringe to more significant style of mineralization.

Soil samples indicate that mineralization could be much more extensive than that indicated in the mining cuts. Overall size of anomalous Cu in soils and rock is one km northerly along Scroggie Creek and open to the north with an unknown east west extent.

RECOMMENDATIONS.

Mining cuts should be mapped and sampled as they become available by placer mining activity. Soil samples should be collected on the hillsides to limit the extent of mineralization and to explore for more significant style of mineralization.

Respectfully submitted,

Gordon G Richards P.Eng.

STATEMENT OF QUALIFICATIONS

I, Gordon G Richards, of 6410 Holly Park Drive, Delta, B.C., Canada do hereby certify that:

- 1. I am a graduate of The University of British Columbia (B.A.Sc in Geology 1968, M.A.Sc in Geology 1974)
- 2. I am registered as a Professional Engineer in the Province of British Columbia.
- 3. I have practiced my profession since 1968.
- 4. This report is based on my fieldwork during July 28 and August 4, 2008 and literature cited.

Respectfully submitted,

Gordon G Richards, P.Eng.

STATEMENT OF COSTS Cigar 1-12 Quartz Claims

Wages		
G Richards July 28 and Aug 4, 2008 2 days @ \$800/day		\$ 1600.00
Expenses		
Air North Whs-Dawson-Whs (portion)		361.62
Great River Air Dawson-Scroggie		596.05
Food 2 days @ \$35/day		70.00
Acme Labs		642.41
SGS Labs		502.15
ATV Rental		50.00
Report		
Drafting, writing, typing, reproduction, collating		1200.00
	Total	\$ 5022.23

Appendix

Geochem Results



CERTIFICATE OF ANALYSIS

CIGAR

Dispose of Pulp After 90 days

Dispose of Reject After 90 days

Acme does not accept responsibility for samples left at the laboratory after 90

days without prior written instructions for sample storage or return.

24

Client:

Richards, Gordon

6410 Holly Park Drive Delta BC V4K 4W6 Canada

Submitted By: Receiving Lab: Received: Report Date: Page:

Gordon Richards Canada-Vancouver August 15, 2008 September 17, 2008 1 of 2

VAN08008301.1

CLIENT JOB INFORMATION

Project:

Shipment ID: P.O. Number

DISP-PLP

DISP-RJT

Number of Samples:

SAMPLE DISPOSAL

Method Code	Number of Samples	Code Description	Test Wgt (g)	Report Status
R150	24	Crush, split and pulverize rock to 200 mesh		
1DX15	24	1:1:1 Aqua Regia digestion ICP-MS analysis	15	Completed
DIS-RJT	24	Warehouse handling / Disposition of reject		

ADDITIONAL COMMENTS

1020 Cordova St. East Vancouver BC V6A 4A3 Canada

Phone (604) 253-3158 Fax (604) 253-1716

www.acmelab.com

Invoice To:

Richards, Gordon 6410 Holly Park Drive Delta BC V4K 4W6 Canada

CC:



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of analysis only.



Richards, Gordon

6410 Holly Park Drive Delta BC V4K 4W6 Canada

Project: Report Date:

Page:

September 17, 2008

CIGAR

VAN08008301.1

Acme Labs ACME ANALYTICAL LABORATORIES LTD. 1020 Cordova St. East Vancouver BC V6A 4A3 Canada Phone (604) 253-3158 Fax (604) 253-1716

CERTIFICATE OF ANALYSIS

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2 of 2 Part 1

	Method	WGHT	1DX15																		
	Analyte	Wgt	Мо	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	v	Ca
	Unit	kg	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%							
	MDL	0.01	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.1	0.5	0.1	1	0.1	0.1	0.1	2	0.01
G1 Rock		0.38	10.6	290.9	1.4	54	0.3	6.7	22.0	645	7.53	<0.5	0.2	3.7	0.2	22	<0.1	<0.1	<0.1	138	0.46
G2 Rock		0.38	15.6	884.5	2.1	103	0.5	7.7	42.0	727	10.47	<0.5	0.9	3.3	0.4	34	<0.1	<0.1	<0.1	183	0.59
G3 Rock		0.57	4.7	60.2	9.6	81	0.2	7.0	33.7	1015	7.79	1.7	0.6	3.9	0.5	60	<0.1	<0.1	<0.1	130	6.61
G4 Rock		0.52	21.0	194.8	4.3	112	0.2	10.8	43.3	787	9.22	1.0	1.3	3.1	0.2	28	<0.1	<0.1	<0.1	212	1.08
G5 Rock		0.37	1.1	59.9	2.8	61	0.1	6.6	21.0	504	3.71	<0.5	0.4	2.4	1.5	32	<0.1	<0.1	<0.1	155	0.83
G6 Rock		0.68	26.8	152.9	2.0	91	0.1	7.4	26.6	707	6.46	<0.5	0.8	1.1	0.6	21	<0.1	<0.1	<0.1	169	0.23
G7 Rock		0.39	3.4	163.7	1.7	101	0.1	8.0	31.5	772	7.76	<0.5	0.2	0.6	0.2	16	<0.1	<0.1	<0.1	212	0.28
G8 Rock		0.39	15.3	872.6	2.6	73	0.6	4.4	29.4	526	8.29	<0.5	0.3	1.8	0.2	34	0.1	<0.1	<0.1	126	0.42
G9 Rock		0.38	2.7	1030	1.7	72	0.6	8.2	20.5	538	9.33	<0.5	0.3	1.5	0.8	26	<0.1	<0.1	<0.1	103	0.26
G10 Rock		0.26	1.0	175.3	2.0	61	0.1	4.9	25.6	497	5.22	<0.5	0.3	0.8	0.5	22	<0.1	<0.1	<0.1	120	0.33
G11 Rock		0.25	9.8	521.5	1.4	83	0.4	7.1	42.1	845	10.98	<0.5	0.1	5.8	<0.1	21	<0.1	<0.1	<0.1	204	0.35
G12 Rock		0.38	1.3	353.0	3.1	181	0.3	6.1	28.4	1266	8.79	<0.5	0.5	4.8	0.3	19	<0.1	<0.1	0.1	199	0.28
G13 Rock		0.99	4.4	1425	1.8	122	0.7	13.1	47.7	594	13.13	5.5	2.1	3.2	0.2	36	0.1	0.2	<0.1	132	0.37
G14 Rock		0.57	5.3	680.7	0.9	93	0.3	4.0	15.1	621	6.30	0.6	0.3	1.1	0.2	12	<0.1	<0.1	<0.1	169	0.18
G15 Rock		0.38	1.7	115.5	1.4	100	0.1	27.7	23.6	1078	6.13	<0.5	0.9	0.6	0.7	25	<0.1	<0.1	<0.1	222	0.41
G16 Rock		0.38	5.7	128.7	1.7	74	0.3	6.8	29.0	641	6.87	<0.5	0.8	1.1	0.5	21	<0.1	<0.1	<0.1	195	0.37
G17 Rock		0.25	1.2	188.6	1.8	100	0.1	5.6	20.0	671	4.60	<0.5	1.2	1.8	0.8	33	0.1	<0.1	<0.1	151	0.75
G18 Rock		0.53	2.0	145.3	1.9	75	0.2	4.7	24.9	656	6.08	<0.5	0.4	2.9	0.8	21	<0.1	<0.1	0.1	160	0.37
G7A Rock		0.24	0.4	49.0	30.9	71	<0.1	5.7	14.4	558	2.40	<0.5	0.3	0.9	1.7	30	0.4	<0.1	<0.1	71	1.26
G22 Rock		0.13	0.8	7.9	1.9	15	<0.1	2.2	2.3	136	0.73	0.5	0.3	<0.5	0.3	28	<0.1	<0.1	<0.1	6	0.14
G23 Rock		0.39	18.3	216.4	1.8	55	0.2	3.8	29.4	491	4.85	<0.5	0.3	2.2	0.9	29	<0.1	<0.1	<0.1	114	0.66
G24 Rock		0.27	0.7	354.9	2.1	112	0.1	4.0	15.4	796	5.61	<0.5	0.4	<0.5	0.6	25	<0.1	<0.1	<0.1	186	0.29
G25 Rock		0.37	2.5	317.5	1.8	67	0.2	3.9	22.2	875	5.59	<0.5	0.6	1.8	0.5	51	0.1	<0.1	<0.1	155	0.59
G26 Rock		0.63	0.3	14.1	1.0	30	<0.1	1.2	2.5	273	1.39	<0.5	<0.1	<0.5	<0.1	17	<0.1	<0.1	<0.1	36	0.11





Richards, Gordon

6410 Holly Park Drive

Part 2

Delta BC V4K 4W6 Canada

Project: Report Date:

September 17, 2008

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CERTIFICATE OF ANALYSIS

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2 of 2

CIGAR

VAN08008301.1

	Method	1DX15																
	Analyte	Р	La	Cr	Mg	Ва	Ті	в	AI	Na	κ	w	Hg	Sc	ті	S	Ga	Se
	Unit	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
	MDL	0.001	1	1	0.01	1	0.001	1	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5
G1 Rock		0.091	2	13	1.96	16	0.240	<1	2.30	0.077	1.53	<0.1	<0.01	6.7	0.2	4.93	6	4.3
G2 Rock		0.079	3	19	2.17	17	0.359	<1	2.86	0.050	1.45	0.1	<0.01	10.3	0.4	5.44	9	7.8
G3 Rock		0.059	4	9	2.96	15	0.003	2	0.65	0.010	0.20	<0.1	<0.01	11.4	<0.1	6.65	2	3.0
G4 Rock		0.105	5	24	3.86	22	0.302	<1	3.63	0.088	2.68	<0.1	<0.01	20.4	0.7	5.64	12	3.6
G5 Rock		0.055	5	10	1.27	84	0.201	<1	1.68	0.133	0.69	<0.1	<0.01	7.0	<0.1	1.33	5	0.7
G6 Rock		0.044	4	16	3.26	22	0.260	<1	3.19	0.058	2.30	<0.1	<0.01	14.7	0.4	4.17	10	2.2
G7 Rock		0.073	2	22	3.30	30	0.285	<1	2.95	0.091	2.15	<0.1	<0.01	23.4	0.4	6.23	10	3.3
G8 Rock		0.091	2	6	2.05	15	0.270	<1	2.46	0.055	1.77	<0.1	<0.01	4.9	0.3	5.49	6	3.3
G9 Rock		0.056	4	10	1.67	18	0.228	<1	2.52	0.053	1.52	<0.1	<0.01	6.8	0.3	5.44	7	6.1
G10 Rock		0.059	4	19	1.58	25	0.219	<1	1.62	0.075	1.14	<0.1	<0.01	9.9	0.3	3.72	6	1.6
G11 Rock		0.085	<1	17	3.10	22	0.352	1	3.35	0.105	2.83	<0.1	<0.01	15.5	0.5	6.81	10	6.1
G12 Rock		0.076	3	22	2.63	42	0.456	<1	3.11	0.074	2.63	<0.1	<0.01	15.4	0.6	3.59	10	4.4
G13 Rock		0.098	3	14	2.22	7	0.394	<1	2.80	0.047	2.34	<0.1	0.05	5.9	0.5	8.85	8	13.7
G14 Rock		0.051	<1	11	2.40	63	0.453	<1	3.03	0.054	2.63	<0.1	<0.01	15.1	0.5	1.90	11	3.5
G15 Rock		0.132	5	80	3.08	42	0.376	<1	3.21	0.084	2.61	<0.1	<0.01	13.2	0.6	2.31	11	1.9
G16 Rock		0.076	3	17	2.49	21	0.276	<1	2.48	0.091	1.93	<0.1	<0.01	15.5	0.5	4.27	9	4.0
G17 Rock		0.069	5	10	1.87	62	0.228	<1	2.37	0.156	1.25	<0.1	<0.01	11.9	0.3	1.46	7	1.1
G18 Rock		0.074	4	14	2.26	24	0.249	<1	2.27	0.074	1.56	<0.1	<0.01	12.4	0.4	3.93	7	3.1
G7A Rock		0.083	8	9	1.14	62	0.073	1	1.66	0.177	0.14	<0.1	<0.01	6.7	<0.1	0.32	5	<0.5
G22 Rock		0.027	3	3	0.15	139	0.028	<1	0.41	0.063	0.17	<0.1	<0.01	0.4	<0.1	<0.05	1	<0.5
G23 Rock		0.047	4	10	1.44	35	0.214	<1	1.94	0.166	1.08	<0.1	<0.01	9.9	0.2	2.47	6	2.8
G24 Rock		0.077	2	16	1.90	106	0.441	<1	2.79	0.075	2.14	<0.1	<0.01	17.2	0.4	1.09	11	2.1
G25 Rock		0.087	3	13	1.77	38	0.318	<1	2.20	0.118	1.58	<0.1	<0.01	12.4	0.3	3.00	7	5.8
G26 Rock		0.025	<1	4	0.46	459	0.157	<1	0.81	0.059	0.61	<0.1	<0.01	3.4	0.1	<0.05	3	<0.5



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Part 1

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QUALITY CONTROL REPORT

	Method	WGHT	1DX15																		
	Analyte	Wgt	Мо	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	v	Ca
	Unit	kg	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%							
	MDL	0.01	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.1	0.5	0.1	1	0.1	0.1	0.1	2	0.01
Reference Materials																					
STD DS7	Standard		19.7	112.9	77.5	407	0.9	57.2	9.4	623	2.35	52.4	5.4	69.4	4.4	80	6.4	6.5	5.0	84	0.95
STD DS7	Standard		20.4	111.5	76.2	408	0.9	56.7	9.4	634	2.40	52.8	5.4	65.9	4.5	80	6.3	6.6	5.1	85	0.95
STD DS7	Standard		19.3	119.4	76.3	422	0.9	58.9	10.3	647	2.39	52.4	5.1	129.8	4.5	76	6.4	6.1	5.1	83	0.99
STD DS7	Standard		21.4	112.4	68.2	408	0.9	56.1	9.3	657	2.49	52.3	4.7	57.4	4.2	80	6.2	5.8	4.5	97	1.01
STD DS7	Standard		19.9	107.7	64.0	383	0.8	52.6	9.5	585	2.30	50.2	4.5	93.9	4.0	66	6.0	5.5	4.3	83	0.91
STD DS7	Standard		19.1	111.4	69.3	403	0.9	53.5	9.2	613	2.37	51.2	4.6	65.8	4.2	65	6.5	5.7	4.6	85	0.90
STD DS7 Expected			20.9	109	70.6	411	0.9	56	9.7	627	2.39	48.2	4.9	70	4.4	69	6.4	5.9	4.5	86	0.93
BLK	Blank		<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.01	<0.5	<0.1	<0.5	<0.1	<1	<0.1	<0.1	<0.1	<2	<0.01
BLK	Blank		0.7	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.01	<0.5	<0.1	<0.5	<0.1	<1	<0.1	<0.1	<0.1	<2	<0.01
BLK Blank			<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.01	<0.5	<0.1	<0.5	<0.1	<1	<0.1	<0.1	<0.1	<2	<0.01
Prep Wash																					
G1	Prep Blank	<0.01	0.4	4.5	2.1	48	<0.1	4.4	4.6	578	2.01	<0.5	1.9	2.8	3.3	53	<0.1	<0.1	0.1	40	0.50
G1	Prep Blank	<0.01	0.4	6.3	2.1	51	<0.1	4.6	4.7	573	2.03	<0.5	1.9	3.5	3.4	47	<0.1	<0.1	<0.1	41	0.47



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Part 2

Project: Report Date:

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CIGAR

QUALITY CONTROL REPORT

	Method	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15	1DX15
	Analyte	Р	La	Cr	Mg	Ва	Ti	в	AI	Na	к	w	Hg	Sc	ті	S	Ga	Se
	Unit	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
	MDL	0.001	1	1	0.01	1	0.001	1	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5
Reference Materials																		
STD DS7	Standard	0.075	13	199	1.04	376	0.123	44	1.03	0.091	0.45	3.9	0.22	2.4	4.3	0.18	5	3.7
STD DS7	Standard	0.075	13	200	1.05	377	0.129	42	1.02	0.094	0.46	3.8	0.22	2.7	4.0	0.19	5	3.9
STD DS7	Standard	0.085	12	201	1.05	348	0.118	39	1.01	0.090	0.49	3.8	0.25	2.3	4.7	0.20	5	3.1
STD DS7	Standard	0.084	13	210	1.09	364	0.129	42	1.06	0.098	0.50	3.3	0.21	2.5	4.0	0.20	5	3.5
STD DS7	Standard	0.078	11	165	0.99	342	0.111	7	0.96	0.076	0.42	3.7	0.19	2.4	3.9	0.18	5	3.8
STD DS7	Standard	0.074	12	164	1.03	356	0.108	5	0.94	0.072	0.45	3.9	0.20	2.3	4.1	0.18	4	3.5
STD DS7 Expected		0.08	13	163	1.05	370	0.124	39	0.959	0.073	0.44	3.8	0.2	2.5	4.2	0.21	4.6	3.5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<1	<0.01	<0.001	<0.01	<0.1	<0.01	<0.1	<0.1	<0.05	<1	<0.5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<1	<0.01	<0.001	<0.01	<0.1	<0.01	<0.1	<0.1	<0.05	<1	<0.5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<1	<0.01	<0.001	<0.01	<0.1	<0.01	<0.1	<0.1	<0.05	<1	<0.5
Prep Wash																		
31 Prep Blank		0.079	7	11	0.62	247	0.127	<1	0.99	0.070	0.57	<0.1	<0.01	2.1	0.3	<0.05	5	<0.5
31 Prep Blank		0.083	7	13	0.64	265	0.130	1	0.96	0.052	0.61	0.2	<0.01	2.0	0.3	<0.05	5	<0.5



	ANALYTE	Ag		AI		Aş		Aų		Ba		Bi		Ca		Cd		
	METHOD	MMĮ-N	/15	MMI-N	M 5	MMI-M5	5	MMI-N	1 5	MM	-M5	MMI-M5		MMI-N	M 5	MMI-N	15	
	DETECTIO		1		1		10		0.1		10		1		10		1	
	UNITS	PPB		PPM	1	PPB		PPB		PPB	(PPB		PPM		PPB		
-	G31		34		149	<10			0.7		4590	<1		3	1160		12	
	DUP-G31	I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		
-	G32		6		44	<10			0.3		17200	<1			650		6	
<u> </u>	G33		10		89	<10			0.5		22400	<1			650		3	
ب ب	G34		21		40	<10			0.5		11500	<1			830		6	
1	G35		20		38	<10			0.3		4270	<1			970		8	
-	G36		19		68	<10			0.3		20400	<1			760		3	
	G37		11		140	<10			0.4		12200	<1			470		3	
	G38		30		69		10		1.4		3270	<1			370		8	
	G39		31		118	<10			2.5		8170	<1			420		10	
	G40		22		150	<10			1.1		7390	<1			390		12	
	G41		27		205	<10			1.3		8570	<1			200		3	
	G42		59		217	<10			0.4		7070	<1			260		13	
	G43		45		226	<10			0.7		21100	<1		8	1270		11	
	DUP-G43	I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		
	G44		46		162	<10			0.3		4360	<1			380		4	
	G45		81		162	<10			0.8		9150	<1			650		20	
	G46		121		110	<10			0.7		8570	<1			580		12	
	G47		117		124	<10			0.4		17200		1		270		10	
	G48		24		198	<10			0.3		6560	<1			220		8	
	BLANK	<1		<1		<10		<0.1		<10		<1		<10		<1		
-	G30		27		87	<10			0.7		6030	<1			970		17	
	MMISRM1	l	20		34		10		8.7		170	<1			200		78	

Ce		Co		Cr		Cu		Dy		Er		Eu		Fe		Gd	
MMI-	M5	MMI-N	15	MMI-N	/ 15	MMI-	M5	MMI-N	/15	MMI-I	M5	MMI-I	M5	MMI-N	15	MMI-N	<i>N</i> 5
	5		5		100		10		1		0.5		0.5		1		1
PPB		PPB		PPB		PPB		PPB		PPB		PPB		PPM		PPB	
	1110		464		300		4720		202		115		49.7		81		231
I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.	
	616		60	<100			1350		107		50.5		31.5		22		140
	1530		349	<100			2570		658		349		165		24		758
	296		31	<100			1910		85		43.1		20.4		26		101
	490		29	<100			1720		126		63.3		34.1		38		156
	1440		47	<100			2370		273		151		65.3		28		317
	466		302	<100			440		64		29.6		18.7		27		85
	825		175	<100			620		113		58.4		32.1		89		150
	545		106	<100			390		86		39.5		25.9		84		118
	767		343	<100			720		140		65.6		36.6		133		172
	812		222	<100			400		67		28		20.4		76		89
	520		240	<100			640		164		74.9		36.2		121		171
	543		366	<100			560		151		67.6		44.5		83		215
I.S.		I.S.		I.S.		I.S.		I.S.		1.S.		I.S.		I.S.		I.S.	
	590		114	<100			540		178		77		51.1		54		242
	1300		105	<100			1160		235		105		67.7		51		316
	1660		39	<100			520		119		42.7		41.8		21		212
	1290		41	<100			790		138		58		40.6		28		194
	625		37	<100			340		127		56.8		28		50		145
<5		<5		<100		<10		<1		<0.5		<0.5		<1		<1	
	1260		265	<100			5120		303		160		77		63		364
	41		85	<100			820		6		2.1		2		4		9

La		Li		Mg		Мо		Nb		Nd		Ni		Pb		Pd	
MMI-I	M5	MMI-M5	5	MMI-N	M 5	MMI-M5		MMI-M	15	MMI-	M5	MMI-	M5	MMI-N	// 5	MMI-M5	
\sim	1		5	1	1		5		0.5	1	1	1	5		10		1
PPB		PPB		PPM		PPB		PPB		PPB		PPB	1	PPB	1	PPB	
	271		9	1	292		7		0.9		589		1300		90		2
I.S.		I.S.		I.S.	1	I.S.		I.S.		I.S.		I.S.		I.S.		I.S.	
	213		5		120	<5		<0.5			385		227		30	<1	
	670	<5			161	<5		<0.5			1740		465		70	<1	
	137	<5			184	<5		<0.5			241		631		90	<1	
	168		12		172	<5		<0.5			394		498		20	<1	
	288		12		196	<5		<0.5			745		776		60	<1	
	226	<5			155	<5		<0.5			325		291		100	<1	
120	301	·	7		69	<5			1		515		326		80	<1	
	243	<5			109	<5			0.6		404		209		230	<1	
	367		11		85	<5			0.7		561		255		210	<1	
	441	<5			61	<5			1.5		389		184		250	<1	
	242	<5			82	<5		<0.5			461		260		190	<1	
	329		6		280	<5		<0.5			595		311		180	<1	
I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.		I.S.	
	363	<5			96	<5			0.6		762		182		150	<1	
	803	<5			121	<5		<0.5			1170		230		250	<1	
	1010	<5			121	<5		<0.5			1130		113		390	<1	
	878	<5			65	<5			0.7		915		145		360	<1	
	343	<5			105	<5			0.9		502		273		490	<1	
<1		<5		<1		<5		<0.5		<1		<5		<10		<1	
	483		7		209	<5			0.5		983		1090		110	<1	
	13	<5			94	:	36	<0.5			31		622		330		14

Pr		Pt		Rb		Sb		Sc	Sm	۱			Sn	Sr		Та	
MMI-N	M 5	MMI-M5		MMI-M5		MMI-M5	1	MMI-M5	MN	/ -	M5		MMI-M5	MMI-	M5	MMI-M5	
	1		1	$\langle \cdot \rangle$	5	1		5				1	1	``	10	1	1
PPB		PPB		PPB		PPB	j	PPB	PP	В			PPB	PPB		PPB	
	115	<1		2	1	1		286			17	5	<1		3510	<1	
I.S.		I.S.		I.S.		I.S.	ļ	I.S.	I.S				I.S.	I.S.		I.S.	
	74	<1		38	3	<1		57			114	4	<1		3150	<1	
	321	<1		20)	<1		307			570	0	<1		3020		1
	47	<1		8	3	<1		42			74	4	<1		4100	<1	
	74	<1		9	9	<1		42			122	2	<1		2020	<1	
	137	<1		18	3	<1		217			237	7	<1		3020	<1	
	70	<1		17	7	<1		97			7	5	<1		2470	<1	
	110	<1		30)	<1		54			129	9	<1		1340	<1	
	87	<1		37	7	<1		47			99	9	<1		2350	<1	
	122	<1		19	9	<1		93			144	4	<1		1750	<1	
	97	<1		53	3	<1		63			82	2	<1		1080	<1	
	93	<1		58	5	<1		80			130)	<1		1650	<1	
	118	<1		43	3	<1		93			167	7	<1		5830	<1	
I.S.		I.S.		I.S.		I.S.	1	I.S.	I.S				I.S.	I.S.		I.S.	
	157	<1		42	2	<1		78			207	7	<1		1750	<1	
	264	<1		65	5	<1		108			279	9	<1		3390	<1	
	285	<1		25	5	<1		38			203	3	<1		3240	<1	
	223	<1		67	7	<1		63			186	6	<1		2200	<1	
	111	<1		27	7	<1		68			123	3	<1		1460	<1	
<1		<1		<5		<1	3	<5	<1				<1	<10		<1	
	194	<1		<5		<1		274			288	В	<1		3030	<1	
	6		6	172	2	<1		7			8	3	<1		1230	<1	

Tb		Те	Th		Ti		TI	U		W		Y		Yb	
MMI-N	<i>I</i> 5	MMI-M5	MMI-I	M5	MMI-N	/15	MMI-M5	MMI-N	15	MMI-M5		MMI-N	15	MMI-N	/15
10	\ 1	10	Υ.	0.5		3	0.5		1		1	1	5	N	1
PPB	1	PPB	PPB	N.	PPB		PPB	PPB	2	PPB		PPB		PPB	5
	35	<10		86.5		65	<0.5		115		1	1	040		95
I.S.		I.S.	I.S.		I.S.		I.S.	I.S.		I.S.		I.S.		I.S.	
	20	<10		43		24	<0.5		26	<1			553		34
	112	<10		44.3		10	<0:5		77		3	3	990		241
	15	<10		19.2		8	<0.5		47	<1			453		32
	22	<10		12.3		10	<0.5		46	<1			746		47
	47	<10		25.8		7	<0.5		82		1	1	580		121
	12	<10		24		135	<0:5		19	<1			366		21
	21	<10		36.1		293	<0.5		36	<1			690		46
	16	<10		34.2		84	<0.5		20	<1			497		28
	26	<10		45.2		147	<0.5		28	<1			780		49
	13	<10		50.2		890	<0.5		17	<1			343		20
	28	<10		27.1		145	<0.5		23	<1			920		51
	29	<10		26.1		36	<0.5		33	<1			887		46
I.S.		I.S.	I.S.		I.S.		I.S.	I.S.		I.S.		I.S.		I.S.	
	35	<10		24.9		343	<0.5		19	<1		1	000		54
	46	<10		45.2		72	<0.5		42		1	1	250		75
	27	<10		26.1		38	<0.5		17	<1			620		26
	28	<10		46.5		366	<0.5		27	<1			612		46
	22	<10		70.9		476	<0.5		14	<1			676		41
<1		<10	<0.5		<3		<0.5	<1		<1		<5		<1	
	54	<10		55.3		40	<0.5		146		2	1	670		120
	1	<10		26.8		8	<0.5		28	<1			32		1

Zn	Zr								
MMI-M5	MMI-M5								
20) \ 5								
PPB	PPB								
90	0 201								
I.S.	I.S.								
30) 24								
4() 44								
20) 35								
60) 28								
4() 48								
80) 46								
160) 56								
60) 32								
70) 43								
60) 38								
4() 23								
110) 31								
I.S.	I.S.								
80) 24								
30) 39								
4() 20								
140) 26								
60) 31								
<20	<5								
130) 109								
690) 28								