BC Geological Survey
Assessment Report
38566

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Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geochemical, Core Drilling

TOTAL COST: $68,854.35

AUTHOR(S): Andris Kikauka

SIGNATURE(S): A. Kikauka

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):

YEAR OF WORK: 2019

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5758749

PROPERTY NAME: Gibraltar

CLAIM NAME(S) (on which the work was done): Gibralter 1047388, Gibralter West 1047389, Gibralter North 1050895

COMMODITIES SOUGHT: Silica

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 082JSW001

MINING DIVISION: Golden

NTS/BCGS: 082J 5/E 082J.032

LATITUDE: 50 ° 19 ' 50 " LONGITUDE: 115 ° 39 ' 58 " (at centre of work)

OWNER(S):

1) Andris Kikauka

2) Glen Rodgers

MAILING ADDRESS:

4199 Highway 101, Powell R, BC V8A 0C7

PO Box 215, Station Main, Cranbrook BC V1C 4H7

OPERATOR(S) [who paid for the work]:

1) MGX Minerals Inc

2)

MAILING ADDRESS:

303-1080 Howe St, Vancouver, BC V6C 2T1

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

20-35 meter wide by 1,000 meter long band of Middle-Upper Ordovician Mount Wilson Fm orthoquartzite (formerly Wonah Fm) trends NNE to N and dips moderate to steep west. The relatively pure silica unit is fault bound with folded dolomite (weakly mheamorphosed to greenschist facies), minor quartzite in the hangingwall, with minor limonitic phyllite in the footwall. Rock chip sampling of the orthoquartzite returns geochemical analysis values that have an average grade of 99.5 % SiO2

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:

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TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock	53 samples ME-ICP06 Li borate fusionwhole rock	1047388, 1047389, 1050895	14,245.55
Other			
DRILLING (total metres; number of holes, size)			
Core	192 m, 5 drill holes, NQ2 (2" core)	1047388, 1047389	54,608.80
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST:	68,854. 35

NTS 082J 5/E, TRIM 082J.032
LAT. 50 19' 50" N
LONG. 115 39' 42" W

CORE DRILLING, GEOCHEMICAL REPORT ON MINERAL TENURES

MTO tenure numbers 1047388, 1047389, 1050895, 1064686

WORK PERFORM ON 1047388, 1047389, 1050895
GIBRALTAR SILICA
MINERAL OCCURRENCES
CANAL FLATS, B.C.

Golden Mining Division

by

Andris Kikauka, P.Geo.
4199 Highway 101,
Powell River, BC V8A 0C7

Oct 9, 2019

38, 566

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Confirmation

Recorder: KIKAUKA, ANDRIS ARTURS (114051)
Submitter: KIKAUKA, ANDRIS ARTURS (114051)
Recorded: 2019/OCT/09
Effective: 2019/OCT/09
D/E Date: 2019/OCT/09

Confirmation

If you have not yet submitted your report for this work program, your technical work report is due in 90 days. The Exploration and Development Work/Expiry Date Change event number is required with your report submission. **Please attach a copy of this confirmation page to your report.** Contact Mineral Titles Branch for more information.

Event Number: **5758749**

Work Type: Technical Work
Technical Items: Drilling, Geochemical

Work Start Date: 2018/NOV/26
Work Stop Date: 2018/DEC/15
Total Value of Work: $ 68854.35
Mine Permit No:

Summary of the work value:

Title Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date	# of Days For-ward	Area in Ha	Applied Work Value	Sub-mission Fee
1047388	GIBRALTER	2016/OCT/21	2023/NOV/21	2029/NOV/21	2192	41.25	$ 4949.96	$ 0.00
1047389	GIBRALTER WEST	2016/OCT/21	2023/NOV/21	2029/NOV/21	2192	20.62	$ 2474.56	$ 0.00
1050895	GIBRALTER NORTH	2017/MAR/22	2023/NOV/21	2029/NOV/21	2192	20.62	$ 2440.89	$ 0.00
1064686	GIBRALTER EXTENSION	2018/NOV/25	2019/NOV/25	2029/NOV/21	3649	20.62	$ 2882.15	$ 0.00

Financial Summary:

Total applied work value: $ 12747.56

PAC name: Andris Arturs Kikauka
Debited PAC amount: $ 0.0
Credited PAC amount: $ 56,106.79

Total Submission Fees: $ 0.0

Total Paid: **$ 0.0**

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1.0 SUMMARY

The Gibraltar property consists of 4 mineral claims (MTO tenure numbers 1047388, 1047389, 1050895, 1064686) located in the Golden Mining Division. The property is centered at 115 degrees 39' 44" West Longitude and 50 degrees 12' 50" North Latitude. The property is located 27 kilometers northeast of Canal Flats & approximately 95 km northeast of Cranbrook, BC. Geochemical rock chip channel sampling of the North Zone was done at 2 locations (1,320-1,330 meter elevation), near the east contact of the high purity Mt Wilson Fm quartzite (with carbonate -phyllite lithology to the east, Fig 4). North Zone geochemical sampling consisted of 12-15 meter intervals of continuous outcrop from 2 locations, described analysis results listed as follows:

Sample ID	Zone name	MTO claim	Easting	Northing	Elev (m)	Elev (ft)
18G1B-4A	North Zone East Contact	1050895	595370	5576889	1327	4352.6
18G1B-4B	North Zone East Contact	1050895	595373	5576889	1325	4346
18G1B-4C	North Zone East Contact	1050895	595376	5576889	1324	4342.7
18G1B-4D	North Zone East Contact	1050895	595379	5576889	1323	4339.4
18G1B-5A	North Zone East Contact	1050895	595374	5576865	1330	4362.4
18G1B-5B	North Zone East Contact	1050895	595377	5576865	1328	4355.8
18G1B-5C	North Zone East Contact	1050895	595380	5576865	1326	4349.3
18G1B-5D	North Zone East Contact	1050895	595383	5576865	1325	4346
18G1B-5E	North Zone East Contact	1050895	595386	5576865	1323	4339.44

Sample ID	Lithology	Sample type	Bed Strike	Bed Dip	Width (cm)	
18G1B-4A	orthoquartzite	outcrop, base of quartzite slope	5	75 W		300
18G1B-4B	orthoquartzite	outcrop, base of quartzite slope				300
18G1B-4C	orthoquartzite	outcrop, base of quartzite slope				300
18G1B-4D	orthoquartzite	outcrop, base of quartzite slope				300
18G1B-5A	orthoquartzite	outcrop, base of quartzite slope	6	76 W		300
18G1B-5B	orthoquartzite	outcrop, base of quartzite slope				300
18G1B-5C	orthoquartzite	outcrop, base of quartzite slope				300
18G1B-5D	orthoquartzite	outcrop, base of quartzite slope				300
18G1B-5E	orthoquartzite	outcrop, base of quartzite slope				300

Sample ID	% SiO2	% Al2O3	% Fe2O3	% MgO	% CaO	Na2O	K2O	% LOI	% Total	SiO2/Total
18G1B-4A	98.6	0.11	0.04	0.03	0.01	0.04	0.14	0.13	99.21	99.39
18G1B-4B	100	0.19	0.03	0.02	0.02	0.05	0.17	0.11	100.61	99.39
18G1B-4C	99.7	0.18	0.02	0.02	<0.01	0.01	0.13	0.1	100.18	99.52
18G1B-4D	100	0.13	0.02	0.01	0.01	0.04	0.12	0.11	100.46	99.54
18G1B-5A	98.4	0.09	0.04	0.02	0.03	0.04	0.08	0.24	98.97	99.42
18G1B-5B	100	0.11	0.02	0.03	0.06	0.01	0.03	0.17	100.46	99.54
18G1B-5C	98.1	0.11	0.01	0.03	0.06	0.02	0.17	0.19	98.71	99.38
18G1B-5D	98.4	0.09	<0.01	0.02	0.05	0.01	0.05	0.16	98.8	99.59
18G1B-5E	98.4	0.09	0.01	0.02	0.05	0.02	0.08	0.2	98.89	99.51
									average	99.48

Based on the 99.48% SiO2 geochemical analysis results, the North Zone represents a high priority target for future exploration and development. Drilling a fence pattern of angle holes through the steep dipping quartzite of the North Zone is recommended.

Geochemical and drilling fieldwork carried out by MGX Minerals Inc in November-December, 2018 included 192 meters (629.6 feet) of NQ2 diameter (50.6 mm, 2 inch), in five drill holes (30.5-45.7 meter depth) collared from 2 sites at either end of the 30 X 3 m Red Cloud quarry at 1,000 meters elevation (quarry was active in 1967, approximately 700 tonnes quartzite was extracted). 2018 drill holes (at Red Cloud quarry), location, azimuth & dip are listed as follows:

DDH site	DDH no	Easting	Northing	Elevation	Azimuth	Dip	Depth (m)
1	18G 1	595137	5576246	998	345	45	45.7
1	18G 2	595137	5576246	998	270	45	38.1
2	18G 3	595110	5576233	999	20	45	42.7
2	18G 4	595110	5576233	999	290	50	35
2	18G 5	595110	5576233	999		90	30.5
							192

Gibraltar 2018 drilling split core sample geochemical analysis results that average > 99 SiO2% (corrected for Total% values). These intervals are considered to have potential for metallurigical grade silica. Impurities such as Al2O3, CaO, and Fe2O3 increase near the relatively flat lying fault zone that marks the contact with overlying Mt Wilson Fm quartzite and underlying Beaverfoot-Brisco limestone. The flat-lying fault zone at the quartzite-limestone contact was geochemically analyzed (ME-MS41 method) in DDH 18G-1 (at depth 29-32 meters), returning elevated values of tungsten (380 ppm W), cobalt (139.5 ppm Co), and phosphorous (710 ppm P, Fig 10). Also, through the same fault/contact zone, DDH 18G-3 (at depth 29-32 meters) returning elevated values of tungsten (360 ppm W), cobalt (131 ppm Co), and phosphorous (1,260 ppm P, Fig 12). The fault zone does not contain any elevated base or precious metal values.

The quartzite in the drill holes was logged and subsequently split & sampled in 3 meters intervals (assuming that 3 meter bench heights could be applied to open pit excavation). Geochemical analysis of SiO2 content and Al, Ti, B, P, Fe and Ca impurities were of primary interest. Detailed accounts of impurities are listed in Appendix A & C. Generally, the main impurities at Gibraltar are Al2O3, CaO, and Fe2O3, and geochemical analysis values are well below thresholds of concern. Increased CaO content in quartzite correlates with increased LOI suggesting carbonate minerals are present in trace amounts in the quartzite, especially near the lower fault-bound contact of the quartzite.

Geochemical analysis results from 5 drill holes located at Red Cloud quarry are listed as follows:

DDH No.	Azimuth	Dip	Depth (m)	From (m)	To (m)	Interval (m)	SiO2%/ Total%
18G-1	345	45	45.7	6.0	27.0	21.0	99.24
18G-2	270	45	38.1	4.4	30.0	25.6	99.10
18G-3	020	45	42.7	5.8	24.0	18.2	99.11
18G-4	290	50	35.0	6.0	24.0	18.0	98.70
18G-5	vertical	90	30.5	12.0	18.0	6.0	99.20

The mean value of SiO2%/Total% for 5 diamond drill holes analyzed is 99.07%. The zones of >99% SiO2 in the 5 drill holes varies from 6-25.7 meter interval length. The narrower interval of high purity quartzite in DDH 18G-5 (6.0 m) is partly a function of having collared the vertical hole on the site of the old Red Cloud quarry and old workings as well as erosion of the upper part of the quartzite as it appears to thin out to the south. Advancing drilling and access trails immediately north of the Red Cloud quarry is not possible due to cliffs and rockfall hazard. Future development of the property should focus on the North Zone where access can be gained by a ridge east of the showings. The North Zone has excellent potential to develop several million tonnes of >99% SiO2. Al, Ti, B, P, Fe and Ca are considered the main impurities of raw silica. The purity of quartzite on the Gibraltar property is considered suitable for metallurgical grade silica, glass making (including production of fiberglass & ceramics), filler applications such as paints, putty, stucco, other building materials, and/or ferrosilicon production as an end use.

The relatively high >99 % SiO2 content of 6-25.7 meter intervals in DDH 18G-1 to 5, taken along approximately 40 meters strike length of Mt Wilson Formation quartzite in the area of the historic Red Cloud quarry, compares favourably with other silica producers such as Moberly, Hunt and HCJ Properties near Golden, BC. Impurity compounds of interest (Al2O3, MgO, CaO, Fe2O3) approach specifications required for producing ferrosilicon alloy. Based on the range of %SiO2 and impurity values such as MgO, CaO, P2O5, Al2O3, and Fe2O3, it is possible that the Gibraltar quartzite silica is suitable for use as a raw material for ferrosilicon production. Based on favourable geochemical analysis results from rock chip sampling on the North Quartzite Zone (1,320 meters elevation) in 2018, further core drilling, geological mapping, geochemical sampling, and evaluation of commercial applications for Gibraltar silica is warranted. Recommended future fieldwork would consist of 1.5 km access trail (from Kootenay River FSR at 985 meters elevation access to North Zone at 1,320 meters elevation). In order to perform core drilling (using light and portable skid mounted core drill), and geochemical analysis to estimate grade and tonnage of high purity quartzite. Approximate budget of $300K is recommended.

2.0 Introduction

This assessment report describes property history and geological and geochemical fieldwork performed on the Gibraltar Silica mineral occurrences (Nov 26-Dec 15, 2018).

British Columbia has not been a major producer of silica. Some quartz, especially from veins, has been used as a flux in smelter operations. The Gypo quartz vein near Oliver produced about 600,000 tonnes of quartz up to 1968 when the main mining operations ceased. Most of this material was used in the building industry and to produce ferrosilicon. In more recent years a significant amount of production has taken place from the Moberly Mountain and Hunt deposits, in quartzite of the Mount Wilson Formation, near Golden. Silica sand from the Moberly Mountain deposit is sold for a variety of uses. Quarrying was begun in 1980 and the 1984 production was 85,000 to 90.000 tonnes. The Hunt deposit has produced intermittently since 1980 at approximately 30,000 tonnes per year, with much of the product being shipped to a ferrosilicon plant in Wenatchee, Washington. Some of the fines have been used by cement producers in British Columbia and Alberta.

3.0 Location, Access, Infrastructure, & Physiography

The Gibraltar property consists of 4 mineral claims (MTO tenure numbers 1047388, 1047389, 1050895, and 1064686) located in the Golden Mining Division. The property is centered at 115 degrees 39' 44" West Longitude and 50 degrees 12' 50" North Latitude. The property is located 27 kilometers northeast of Canal Flats & approximately 95 kilometers northeast of Cranbrook, BC (at Km 27 road marker).

Road access to the claim block is via Highway 95A north from Cranbrook for 75 kilometers to Canal Flats. The Kootenay River Forest service Road is then traveled for 27 kilometers northeast to the property. Previous work done on the property was performed in the southern (lower elevation) portion of the quartzite unit, and access gained along a trail from the forest service road that starts near Km 26.6. The North Zone at 1,320 meters elevation has no road or trail access, but a route was evaluated that follows the ridge to the southeast with access to Kootenay FSR at 920 meters elevation (Fig 4).

Soil cover is negligible over the high elevation portions of the property. The lower elevation portions of the property exhibits moderate, vegetated slopes with a good 10-30 cm soil profile. Glacial till many meters thick covers the creek gully portions of the property and gradually thins to the ridge crests. Two periods of glaciation are evident with the predominant direction of ice retreat being to the northeast. The property is forested with spruce, pine and fir.

4.0 Property Status

Property status data obtained from MTO website indicates the Gibraltar property is registered 50% to Andris Kikauka (Free Miner Certificate number 114051), and 50% to Glen Rodgers (Free Miner Certificate number 123054).

The Gibraltar claims consists of four (4) mineral tenures (listed below) located within the Golden Mining Division (Figure 2).

Title Number	Claim Name	Owner	Issue Date	Good To Date	Status	Area (ha)
1047388	GIBRALTER	114051 (50%) 123054 (50%)	2016/OCT/21	2023/NOV/21	GOOD	41.2481
1047389	GIBRALTER WEST	114051 (50%) 123054 (50%)	2016/OCT/21	2023/NOV/21	GOOD	20.6205
1050895	GIBRALTER NORTH	114051 (50%) 123054 (50%)	2017/MAR/22	2023/NOV/21	GOOD	20.6209
1064686	GIBRALTER EXTENSION	114051 (50%) 123054 (50%)	2018/NOV/25	2029/NOV/21	GOOD	20.62

The total area of the mineral tenures that comprise the property is 103.15 hectares (254.8 acres). Details of the status of tenure ownership for the Gibraltar Silica property were obtained from the Mineral-Titles-Online (MTO) electronic staking system managed by the Mineral Titles Branch of the Province of British Columbia. This system is based on mineral tenures acquired electronically online using a grid cell selection system. Tenure boundaries are based on lines of latitude and longitude. There is no requirement to mark claim boundaries on the ground as these can be determined with reasonable accuracy using a GPS. The Gibraltar silica claim has not been surveyed.

The mineral tenures comprising the Gibraltar Silica mineral property are shown in Figure 2. The claim map shown in Figure 2 was generated from GIS spatial data downloaded from the Government of BC GeoBC website. These spatial layers are the same as those incorporated into the Mineral-Titles-Online (MTO) electronic staking system that is used to locate and record mineral tenures in British Columbia.

5.0 Area History

Sink holes located east and west of Lussier River, (and Kootenay River FSR near Km marker 8-15) are associated with gypsum/anhydrite deposits that occur in clusters oriented roughly N-S. The gypsum deposits are hosted in Devonian Burnais Formation that outcrops approximately 10-20 km south and southwest of the Gibraltar silica property. Several of these gypsum deposits have been commercially developed to production by Georgia Pacific (Domtar), and Certainteed.

5.1 Property History

Industrial mineral exploration targets were investigated on the Gibraltar property in 2017 by MGX Minerals Inc. The main target includes a moderately dipping, 15-40 meter wide Ordovician age high purity quartzite bed exposed over a strike length of approximately 420 meters. Fieldwork carried out in 2017 consisted of geological mapping (approximately 10 hectares), geochemical sampling (7 rock chip samples submitted for whole rock geochemical analysis, ALS code ICP06), and GPS surveying quartzite outcroppings (adjacent to Gibraltar Quartzite Formation). A total of 7 rock chip quartzite samples (ID numbers 15GIBR-1 to 15GIBR-7) were taken from the base of the Main Zone. Whole rock geochemical analysis is summarized as follows:

Sample ID	Zone name	MTO claim	Easting NAD 83	Northing NAD 83	Elev (m)	Elev (ft)	Bed Strike	Bed Dip
17GIBR-1	Main Zone Lower Contact	1047389	595080	5576201	1020	3345.6	29	47 W
17GIBR-2	Main Zone Lower Contact	1047388	595155	5576301	1039	3407.9	30	47 w
17GIBR-3	Main Zone Lower Contact	1047388	595172	5576322	1044	3424.3	31	45 w
17GIBR-4	Main Zone Lower Contact	1047388	595195	5576339	1049	3440.7		
17GIBR-5	Main Zone Lower Contact	1047388	595208	5576364	1060	3476.8	30	50 W
17GIBR-6	Main Zone Lower Contact	1047388	595211	5576396	1083	3552.4	32	50 W
17GIBR-7	Main Zone Lower Contact	1047388	595231	5576428	1100	3608		

Sample ID	Lithology	Sample type, slope described	Bed Strike	Bed Dip	Width (cm)
17GIBR-1	quartzite	outcrop, base of steep slope	29	47 W	300
17GIBR-2	quartzite	outcrop, base of steep slope	30	47 W	300
17GIBR-3	quartzite	outcrop, base of steep slope	31	45 W	300
17GIBR-4	quartzite, barite	outcrop, base of steep slope			300
17GIBR-5	quartzite	outcrop, base of steep slope	30	50 W	300
17GIBR-6	quartzite	outcrop, base of steep slope	32	50 W	300
17GIBR-7	quartzite	outcrop, base of steep slope			300

Sample ID	% SiO2	% Al2O3	% Fe2O3	% MgO	% CaO	Na2O	K2O	% LOI	% Total	SiO2/Total
17GIBR-1	99.8	0.24	0.39	0.1	0.04	0.02	0.07	0.28	100.97	98.84
17GIBR-2	100	0.16	0.32	0.11	0.26	0.02	0.06	0.51	101.46	98.56
17GIBR-3	98.1	0.25	0.4	0.09	0.39	0.02	0.11	0.56	99.96	98.14
17GIBR-4	88.5	0.08	0.34	0.02	0.07	<0.01	0.03	0.27	99.68	88.78
17GIBR-5	98.7	0.33	0.52	0.04	0.01	0.01	0.12	0.11	99.89	99.23
17GIBR-6	99	0.06	0.4	0.01	0.02	0.02	0.01	0.15	99.76	98.91
17GIBR-7	99	0.3	0.41	0.03	0.03	0.02	0.1	0.18	100.09	98.75

Based on sum of SiO2%/Total% values, the mean value of the SiO2%/Total% for 6 out of 7 rock chip samples analyzed is 98.8%.

6.0 Geological Setting

The Gibraltar property is located in the foreland thrust zone of the Hughes Range of the Rocky Mountains. It covers a sedimentary clastic-carbonate rock package located near the confluence of Kootenay and White River. Sedimentary rocks generally have a north-northwest strike, but locally a north-northeast strike is prominent. Minor folding was noted in the carbonate sequence immediately adjacent to quartzite unit.

Two westerly dipping thrust faults (Hay, Carter, 1988) are believed to run north-south close to the eastern edge of the Gibraltar property. These faults are thought to have served as a locus for a number of small Cretaceous monzonitic intrusions which begin at Wildhorse Creek and diminish

in size to the north, terminating with the small quartz monzonite intrusion located on the northeast edge of the Gibraltar claims.

The following table lists the formations and gives a brief lithological:
Description

Age	Formation Name	Lithology	Thickness
Pleistocene		Glacial till (2 events), travertine, conglomerate	1-10 m
Mid Devonian	**Duh** Harrogate	Limestone	40-110 m
Mid Devonian	**Db** Burnais	Limestone, gypsum, anhydrite	150-400 m
Silurian-Ordovician	**Osb** Beaverfoot Brisco	Limestone, dolomite	450-600 m
Ordovician	**Ow** Gibraltar	Quartzite, sandstone	0-300 m
Ordovician	**Og** Glenogle	Shale, limestone, siltstone	0-640 m
Cambrian	**Com** McKay	Limestone, shale, conglomerate	0-1,200 m
Cambrian	**Cmuj** Jubilee	Cherty dolomite, limestone	450-600 m
Middle Proterozoic	**MPrPS** Purcell Supergroup	Undivided sedimentary rocks	1,000-2,000 m

Formations recognized on the Gibraltar property are (in order of oldest to youngest / west to east):

Nicol Creek Formation
Found on the eastern slope of upper Diorite Creek, the distinctive amygdaloidal basalt of the Nicol Creek Formation (also correlated with the lower Gateway Formation by G.B. Leech, 1959) comprises the western most lithological unit mapped on the Gibraltar property. It is composed chiefly of green andesitic lava, green-black amygdaloidal basalt, green-grey-purple siltstone, sandstone and mudstone. Amygdules are commonly 0.5-1.0 cm in diameter, filled with quartz and carbonate. Nicol Creek basalt frequently exhibits vesicles and sub-surface flow structures.

Sheppard Formation
Mapped as a distinct formation (Hoy, T. and Carter, G. 1988), the Sheppard Formation sits above the Nicol Creek basalt to the west and its upper contact with the Jubilee Dolomites forming a north-south trending ridge. It is locally composed of thinly bedded conglomerate at its base with dolomitic quartzite through the section to the upper contact.

Jubilee Formation
The Jubilee Formation consists of massive-thick bedded dolostone, is generally grey in colour, and weathers to white-grey. Chemically it consists of more than 95% dolomite. It ranges in thickness of between 450 and 600m thick and is divided into upper and lower units. The Lower Jubilee dolomite is distinguishable from the Upper Jubilee dolomite by its well-bedded, laminated character. Except for occasional beds of mottled, partially dolomitized limestone, it

is composed chiefly of fine grained light-dark grey dolomites that occur in well defined beds from 15 cm to 1.2 m thick. Black, brown or white chert is found in small quantities throughout many beds in the form of irregular blebs and lenses, and occasionally as more abundant irregular lace-like intergrowths parallel to bedding. The Upper Jubilee dolomite is characterized by an absence of regular bedding. Where stratification is evident, beds are very thick, commonly up to 6 m and are difficult to identify. The Upper Jubilee consists mostly of fine-grained light-grey crystalline dolomite. Occasionally beds are fragmental containing fragments of dolomite less than 1 cm in diameter in a matrix of fine-grained crystalline dolomite. Most beds contain granular chert in the form of irregular masses, honey-comb structures and lenses. The chert in places resembles silicified corals. It is normally white but can also be pink or reddish-brown.

Mckay Formation

The Mckay Formation ranges in age from Upper Cambrian to Ordovician and comprises a thick succession of alternating thinly bedded limestones, limey shales and limey argillites with occasional massive limestone and cherty dolomite sub-units. Many of the limestone beds are intraformational conglomerates with oval shaped fragments of dense fine-grained limestone in a matrix of fine-grained limestone which is occasionally dolomitic and/or ferrugenous. Cherty nodules and lenses are common near the top of the McKay Formation. Ripple marks and mud cracks are common. The weathered colour is commonly light-grey but reddish-brown where ferrugenous. The McKay Formation usually weathers recessively. It reaches maximum thickness of 1200 meters.

Gibraltar Mt Wilson Formation Quartzite

No fossils have been found in this formation but from its stratigraphic position it is known to be middle-upper Ordovician in age. It consists of massive beds of white sedimentary quartzite and a few brownish -white beds. The quartzite is a compact, medium grained rock which usually contains about 98% well rounded quartz grains. The brownish-white beds are medium to coarse grained and are less pure in composition. Gibraltar has a whitish weathering colour which makes it distinctive and useful as a marker bed. Occasionally where small amounts of hematite are present as fracture coating, the Mt Wilson Fm quartzite unit is typically coated in a distinct, jet black lichen, contrasting the snow white colour of the quartzite. A slight difference in grain size is the only way to distinguish bedding. Coarser grained beds weather more readily. Possible cross-bedding is occasionally seen. The Mt Wilson Formation is known to thin southward, but thickens near In the Brisco Range it is reported to be over 300m thick, in the Stanford Range it is known only to be at most 120m thick. On the subject property, the formation reaches about 50 meters in maximum thickness, to 15 meters minimum thickness The next nearest known outcropping of Gibraltar Formation to the Gibraltar property is at Gibraltar Rock on the Kootenay River east of Canal Flats, but outcrop is sparse. The actual contact between the Glenogle and the Gibraltar is always concordant, however the Gibraltar rests in different places on different age zones of Glenogle, implying either post Glenogle erosion or irregular Glenogle deposition.

Beaverfoot-Brisco Formation

This formation is known from fossil evidence to be Ordovician to Silurian in age. It consists chiefly of thin-medium bedded light-grey dolomites and blue-grey limestones. Near the top, the rocks are mostly limestones with minor black-shaley interbeds. Occasional sub-units are nodular

and appear mottled on weathered surface. These nodules formed from selective dolomitization of the primary limestone. Minor chert nodules and lenses are present. The formation weathers light-grey and can be distinguished from the Jubilee dolomites by its well bedded character, presence of fossils and scarcity of laminations. It reaches thicknesses of up to 600 meters.

Burnais Formation
The Burnais is a recent name for the thick succession of bedded gypsum/anhydrite and interbedded fossiliferous limestones that occur between Wardner and Invermere. The Burnais is composed mainly of well bedded, laminated dark-grey-black gypsum which was laid down as an evaporitic deposit within an inter-tidal basin. Thicknesses of over 600 ft (183 m) have been recorded for the gypsum beds. Occasional interbeds and lenses of black fetid cherty limestone are found within the gypsum unit. The Burnais commonly weathers recessively and is exposed only when faulted up or when shielded from erosion by more resistant strata. The Burnais gypsum usually averages 85%-90% gypsum and the depth of hydration (the original anhydrite beds after thousands of years of contact with near surface waters were turned into gypsum) usually ranges from 12 to 30 meters. Salt (NaC1) is usually present as sporadic and irregular patches. The presenae of sinkholes at surface is a reliable indicator of gypsum below in the Lussier River valley. Gypsite, which is a sulphate efflorescence or caliche, also indicates underlying gypsum. The black, nodular limestone that is also grouped with the Burnais is occasionally fossiliferous.

Harrogate Formation
This formation underlies the far north-east corner of the map area. It consists of thin-medium bedded purple-grey-black limestone which weathers light-grey. The limestone is occasionally nodular, fossiliferous, fetid and shaley in appearance due to interbeds of calcareous shale. Large scale folding is absent from the area although some minor folds were observed associated with bedding plane slip or as drag folding due to faulting. The general bedding attitude of all the formations are to strike about 340° and to dip 40° - 50° east. Foliation is strong in places and generally strikes north and dips 50° - 70° east. Foliation becomes more pronounced in argillaceous or silty rock. All formational contacts are known to be conformable with the exception of the Sheppard/Jubilee contact, and possibly also the Glenogle/Gibraltar contact. The Lussier River Fault (Hoy, To and Carter, Go) is thought to pass just east of the map area. Industrial Mineral potential inclndes the Gibraltar Quartzite (Main Zone located in centre of Gubraltar property), that may be of economic interest as source of silica for glass making, ferrosilicon, and other high purity silica end uses.

7.0 Deposit Types

The Gibraltar silica property has potential to host a high purity quartzite type silica deposit similar to the other quartzite deposits of the Mount Wilson Formation in SE British Columbia. The Mount Wilson Formation hosts silica producers such as Moberly (Van Heemskirk), Hunt and HCJ Properties near Golden, BC. The Mount Wilson Formation is formerly known as the Wonah Formation. The Mount Wilson (Gibraltar) Formation is a quartzite deposit type that rests unconformably on carbonates & argillaceous siltstone (minor limonite) to the east, and is capped to the west by dolomite & calcareous sediments (sandy dolomite).

The best sources of silica raw materials in British Columbia are probably quartzite units (vs quartz vein and/or pegmatite), due to high purity, and large potential size of the quartzite deposits (Foye,1987). Quartzite units are resistant to weathering and form prominent outcrop. Bedding is inconspicuous, but can usually be distinguished by variations in grain size between beds. The Gibraltar quartzite consists of snow white coloured, high purity silica that contains >99.0% SiO2 and < 1.0% impurities such as Al2O3, Fe2O3, CaO, MgO, Na2O, K2O.

8.0 2018 Fieldwork Drilling & Geochemical

8.1 Methods & Procedures

Rock sample were taken from surface outcrop at 1,320 meters elevation (North Zone), using a rock hammer and chisel. Approximately 0.76-1.38 kgs of acorn sized broken rock chips were collected (avoiding contamination by vegetation and contact with metallic objects such as rock hammers), placed in marked poly ore bags, and shipped to ALS Minerals Ltd. Rock chip sample and geological mapping station locations were described and located by Garmin 60Cx portable GPS receivers.

A total of 43 split core samples were taken across 3 meter intervals (and incidental samples across 1.5 to 3.2 meters), from a total of 192 meters drilled in 5 holes from 30.5 to 45.7 meters depth located on the Gibraltar Red Cloud quarry at 1,000 meters elevation. Each split core sample averaged approximately 4.2 kgs total weight, and range from 2.7 to 7.92 kgs. Care was taken to avoid contamination from material outside the interval length (e.g. sample cross-contamination), and cultural sources (e.g. steel tools). Sample material was taken by using screw vice core splitter, and placed in marked poly ore bags at 3 metre intervals and shipped to ALS Minerals, North Vancouver. Unused split core was placed back in core boxes in oriented position, and core is stored according to MEM guidelines for exploration. Core storage is located 5 km northeast of Fort Steele (Lat 49.676303 N, Long -115.64657 W).

Three samples of standard and blank material were geochemically analyzed to support data verification. Analysis values of standards and blanks were repeatable. ALS lab also does repeat quality control analysis to cross check their results.

Rock samples were analyzed by ALS Minerals, North Vancouver, BC, using Prep 31: a special zirconia (tungsten carbide) ring pulverization disc was used (ALS code PUL-33) versus chrome steel pulverization disc, in order to minimize iron contamination, and finished using whole rock analysis fused bead lithium borate fusion method (ME-ICP-06). ALS Minerals crushed better than 70% passing a 2 mm screen split and pulverized rock chip samples. A split of 250 grams is pulverized to better than 85% passing a 75 micron screen. Pulzerizing ring used was iron free carbide (ALS code PUL-33) to prevent Fe contamination rom regular stainless steel pulverizing ring. The sample pulp (0.2 grams) is analyzed using ALS Minerals ME-ICP-06 Li borate flux major oxide whole rock geochemical analytical methods, and OA-GRA05 Loss of Ignition (Appendix B). One out of five split core samples (total of 44 split core samples) were subjected to specific gravity of solid core (ALS code OA-GRA09), and reported as gm/cubic cm. Specific gravity was obtained to estimate mass for quartzite.

8.2 ROCK CHIP SAMPLE GEOCHEMISTRY

Geochemical rock chip channel sampling of the North Zone was done at 2 locations (1,320-1,330 meter elevation), near the east contact of the high purity Mt Wilson Fm quartzite (with carbonate-phyllite lithology to the east, Fig 4). The North Zone geochemical sampling consisted of 12 and 15 meter interval continuous samples of outcrop from 2 locations as described with the analysis results are listed as follows:

Sample ID	Zone name	MTO claim	Easting	Northing	Elev (m)	Elev (ft)
18G1B-4A	North Zone East Contact	1050895	595370	5576889	1327	4352.6
18G1B-4B	North Zone East Contact	1050895	595373	5576889	1325	4346
18G1B-4C	North Zone East Contact	1050895	595376	5576889	1324	4342.7
18G1B-4D	North Zone East Contact	1050895	595379	5576889	1323	4339.4
18G1B-5A	North Zone East Contact	1050895	595374	5576865	1330	4362.4
18G1B-5B	North Zone East Contact	1050895	595377	5576865	1328	4355.8
18G1B-5C	North Zone East Contact	1050895	595380	5576865	1326	4349.3
18G1B-5D	North Zone East Contact	1050895	595383	5576865	1325	4346
18G1B-5E	North Zone East Contact	1050895	595386	5576865	1323	4339.44

Sample ID	Lithology	Sample type	Bed Strike	Bed Dip	Width (cm)
18G1B-4A	orthoquartzite	outcrop, base of quartzite slope	5	75 W	300
18G1B-4B	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-4C	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-4D	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-5A	orthoquartzite	outcrop, base of quartzite slope	6	76 W	300
18G1B-5B	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-5C	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-5D	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-5E	orthoquartzite	outcrop, base of quartzite slope			300

Sample ID	% SiO2	% Al2O3	% Fe2O3	% MgO	% CaO	Na2O	K2O	% LOI	% Total	SiO2/Total
18G1B-4A	98.6	0.21	0.04	0.03	0.01	0.04	0.14	0.13	99.21	99.39
18G1B-4B	100	0.13	0.03	0.02	0.02	0.05	0.17	0.11	100.61	99.39
18G1B-4C	99.7	0.18	0.02	0.02	<0.01	0.01	0.13	0.1	100.18	99.52
18G1B-4D	100	0.13	0.02	0.01	0.01	0.04	0.12	0.11	100.46	99.54
18G1B-5A	98.4	0.09	0.04	0.02	0.03	0.04	0.08	0.24	98.97	99.42
18G1B-5B	100	0.11	0.02	0.03	0.05	0.01	0.03	0.17	100.46	99.54
18G1B-5C	98.1	0.11	0.01	0.03	0.06	0.02	0.17	0.19	98.71	99.38
18G1B-5D	98.4	0.09	<0.01	0.02	0.05	0.01	0.05	0.16	98.8	99.39
18G1B-5E	98.4	0.09	0.01	0.02	0.05	0.02	0.08	0.2	98.89	99.51
									average	99.48

Based on the 99.48% SiO2 geochemical analysis results, the North Zone represents a high priority target for future exploration and development. Drilling a fence pattern of angle holes through the steep dipping quartzite of the North Zone is recommended.

8.3 2018 CORE DRILLING & GEOCHEMICAL ANALYSIS

Geochemical and drilling fieldwork carried out by MGX Minerals Inc in November-December, 2018 included 192 meters (629.6 feet) of NQ2 diameter (50.6 mm, 2 inch), in five drill holes (30.5-45.7 meter depth) collared from 2 sites at either end of the 30 X 3 m Red Cloud quarry at 1,000 meters elevation (quarry was active in 1967, approximately 700 tonnes quartzite was extracted). 2018 drill holes (at Red Cloud quarry), location, azimuth & dip are listed as follows:

DDH site	DDH no	Easting	Northing	Elevation	Azimuth	Dip	Depth (m)
1	18G 1	595137	5576246	998	345	45	45.7
1	18G 2	595137	5576246	998	270	45	38.1
2	18G 3	595110	5576233	999	20	45	42.7
2	18G 4	595110	5576233	999	290	50	35
2	18G 5	595110	5576233	999		90	30.5
							192

Gibraltar 2018 drilling split core sample geochemical analysis results that average > 99 SiO2% (corrected for Total% values). These intervals are considered to have poteritial for metallurigical grade silica. Impurities such as Al2O3, CaO, and Fe2O3 increase near the relatively flat lying fault zone that marks the contact with overlying Mt Wilson Fm quartzite and underlying Beaverfoot-Brisco limestone. The flat-lying fault zone at the quartzite-limestone contact was geochemically analyzed (ME-MS41 method) in DDH 18G-1 from 29-32 meters returning elevated values of tungsten (380 ppm W), cobalt (139.5 ppm Co), and phosphorous (710 ppm P, Fig 10). Also, through the same fault zone, DDH 18G-3 from 29-32 meters returning elevated values of tungsten (360 ppm W), cobalt (131 ppm Co), and phosphorous (1,260 ppm P, Fig 12). The fault zone does not contain any elevated base or precious metal values.

Geochemical analysis results from 5 drill holes located at Red Cloud quarry are listed as follows:

DDH No.	Azimuth	Dip	Depth (m)	From (m)	To (m)	Interval (m)	SiO2%/ Total%
18G-1	345	45	45.7	6.0	27.0	21.0	99.24
18G-2	270	45	38.1	4.4	30.0	25.6	99.10
18G-3	020	45	42.7	5.8	24.0	18.2	99.11
18G-4	290	50	35.0	6.0	24.0	18.0	98.70
18G-5	vertical	90	30.5	12.0	18.0	6.0	99.20

The mean value of SiO2%/Total% for 5 diamond drill holes analyzed is 99.07%. The zones of >99% SiO2 in the 5 drill holes varies from 6-25.7 meter interval length. The narrower interval of high purity quartzite in DDH 18G-5 (6.0 m) is partly a function of having collared the vertical

hole on the site of the old Red Cloud quarry and old workings as well as erosion of the upper part of the quartzite as it appears to thin out to the south.

The quartzite in the drill holes was logged and subsequently split & sampled in 3 meters intervals (assuming that 3 meter bench heights could be applied to open pit excavation). Geochemical analysis of SiO2 content and Al, Ti, B, P, Fe and Ca impurities were of primary interest. Detailed accounts of impurities are listed in Appendix A & C. Generally the main impurities at Gibraltar are Al2O3, CaO, and Fe2O3, and geochemical analysis values are well below thresholds of concern. Increased CaO content in quartzite correlates with increased LOI suggesting carbonate minerals are present in trace amounts in the quartzite, especially near the lower fault-bound contact of the quartzite.

9.0 Discussion of Results

The Red Cloud quarry appears to contain a near surface resource of high purity (>99% SiO2) quartzite that covers an area of 40 X 25 meters, to a depth of 20 meters (approximately 20,000 cubic meters). Advancing drill and access trails immediately north of the Red Cloud quarry is not possible due to cliffs and rockfall hazard. Future development of the property should focus on the North Zone where access can be gained by a ridge east of the showings. The North Zone has excellent potential to develop several million tonnes of >99% SiO2. Al, Ti, B, P, Fe and Ca are considered the main impurities of raw silica. The purity of quartzite on the Gibraltar property is considered suitable for metallurgical grade silica, glass making (including production of fiberglass & ceramics), filler applications such as paints, putty, stucco, other building materials, and/or ferrosilicon production as an end use.

The relatively high >99 % SiO2 content of 6-25.7 meter intervals in DDH 18G-1 to 5, taken along approximately 40 meters strike length of Mt Wilson Formation quartzite in the area of the historic Red Cloud quarry, compares favourably with other silica producers such as Moberly, Hunt and HCJ Properties near Golden, BC. Impurity compounds of interest (Al2O3, MgO, CaO, Fe2O3) approach specifications required for producing ferrosilicon alloy. Based on the range of %SiO2 and impurity values such as MgO, CaO, P2O5, Al2O3, and Fe2O3, it is possible that the Gibraltar quartzite silica is suitable for use as a raw material for ferrosilicon production. Based on favourable geochemical analysis results from rock chip sampling on the North Quartzite Zone (1,320 meters elevation) in 2018, further core drilling, geological mapping, geochemical sampling, and evaluation of commercial applications for Gibraltar silica is warranted. Recommended future fieldwork would consist of 1.5 km access trail (from Kootenay River FSR at 925 meters elevation access to North Zone at 1,320 meters elevation). In order to perform core drilling (using light and portable skid mounted core drill), and geochemical analysis to estimate grade and tonnage of high purity quartzite. Approximate budget of $300K is recommended.

The Gibraltar quartzite (equivalent to Mount Wilson Formation) located on MTO claim Gibraltar 1 (tenure 1038058), covers an area of approximately 850 X 50 m. Further mapping, sampling and exploration core drilling at 50 meter spacing (flat and shallow angle drill holes at base of quartzite exposure), can establish continuity of grade of the Gibraltar quartzite. There appears to

be relatively good continuity of SiO2 grades from 7 rock chip samples taken along strike of the Gibraltar quartzite. One rock sample (# 17GIBR-4) contained 10.15% BaO and this sample contains semi-massive barite with noticeably higher specific gravity. The SiO2 range for Gibraltar quartzite (excluding rock sample # 17GIBR-4) = 98.1-100%, arithmetic average = 99.1% SiO2, average value %SiO2 / %total= 98.75% SiO2). The prominent topography of the quartzite unit would allow quarry development, and open pit wall slopes with favourable bench height and width of berms.

The calc-silicate located on MTO claim Gibraltar Calc-Silicate (tenure 1039562) is of secondary interest. Further investigation of the porphyritic quartz monzonite intrusive contact zone is warranted.

10.0 Conclusions & Recommendations

The Gibraltar silica property has potential to host quartzite occurrences that are similar to nearby past producers. Reviewing available data, the writer offers the following interpretations & conclusions. The Gibraltar quartzite is a significant silica resource, comparing favourably in size with other deposits in BC such as Moberly Mountain, Hunt, & HCJ silica deposits that are located near Golden. The high purity of the Gibraltar property silica may be favourable for high technology end uses. Core drilling the North Zone and metallurgical testing, in order to test for processing of silica quartz to metallurgical grade silicon, is warranted.

Access to the property is relatively good with a reasonable access road connecting Gibraltar Silica. There is good infrastructure in the form of a well maintained Forest Service Road to CPR rail line in the Canal Flats valley, and major powerline.

Future work on Gibraltar Silica should be focused on defining the extensions of known quartzite formations of primarily the North Zone and float zone. In order to outline exploration and development of Gibraltar property zones of high purity quartzite, geochemical data should be collected and can be used to interpret economics of projected cost vs benefit preliminary economic analysis of mining, mineral processing and marketing. Core drilling, geological mapping, and geochemical sampling is also recommended.

Based on favourable geochemical analysis results from core drilling the Red Cloud quarry site, and rock chip sampling on the North Quartzite Zone (1,320 meters elevation) in 2018, further core drilling, geological mapping, geochemical sampling, and evaluation of commercial applications for Gibraltar silica is warranted. Recommended future fieldwork would consist of 1.5 km access trail (from Kootenay River FSR at 925 meters elevation access to North Zone at 1,320 meters elevation). In order to perform core drilling (using light and portable skid mounted core drill), and geochemical analysis to estimate grade and tonnage of high purity quartzite. Approximate budget of $300K is recommended. When core drilling program is completed, a 43-101 resource estimate could be written for an approximate cost of $40,000.

11.0 References

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CERTIFICATE AND DATE

I, Andris Kikauka, of 4199 Highway, Powell River, BC am a self-employed professional geoscientist. I hereby certify that:

1. I am a graduate of Brock University, St. Catharines, Ont., with an Honours Bachelor of Science Degree in Geological Sciences, 1980.
2. I am a Fellow in good standing with the Geological Association of Canada.
3. I am registered in the Province of British Columbia as a Professional Geoscientist.
4. I have practiced my profession for thirty five years in precious and base metal exploration in the Cordillera of Western Canada, U.S.A., Mexico, Central America, and South America, as well as for three years in uranium exploration in the Canadian Shield.
5. The information, opinions, and recommendations in this report are based on fieldwork carried out in my presence on the subject property during which time a technical evaluation consisting of geochemical sampling, core logging, and geological surveying carried during Nov 26 to December 15, 2018.
6. I have a direct interest in the Gibraltar Property. The recommendations in this report are intended to serve as a guideline, and cannot be used for the purpose of public financing.
7. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
8. This technical work report supports requirements of BCEMPR for Exploration and Development Work/Expiry Date Change.

Andris Kikauka, P. Geo.,

A. Kikauka

Oct 9, 2019

ITEMIZED COST STATEMENT-
GIBRALTAR MINERAL TENURES 1047388, 1047389, 1050895, 1064686
FIELDWORK PERFORMED NOV 26-DEC 15, 2018,
WORK PERFORMED ON MINERAL TENURES 1047388, 1047389, 1050895
GOLDEN MINING DIVISION, NTS 82J 5E (TRIM 082J 032)

FIELD CREW:

A. Kikauka (Geologist) 14 days (surveying, mapping, logging core)	**$**	**6,615.00**
G. Rodgers (Geologist) 9 days (logging core, splitting, sampling)		**4,252.50**

FIELD COSTS:

Mob/demob/preparation	**2,010.30**
Meals and accommodations	**2,105.00**
Truck mileage & fuel	**3,085.90**
Equipment and Supplies	**903.25**
Fiorentino Excavating Ltd (drill moves, access trails)	**10,199.10**
Neill's Drilling & Mining (192 m, 629.8 ft NQ2 core drilling, 5 drill holes in quartzite (NOTE: high drill bit wear & slow drill speed). All drilling on MTO tenures 1047388, 1047389)	**33,581.25**
Transport cost moving core boxes, and sample shipments	**1,366.11**
Li Borate Fusion ME-ICP06 ICP AES geochemical analysis (43 split drill core, 9 rock chip samples, total 50 samples + 3 QC/QA rock samples, total=55 samples)	**3,535.94**
Report	**1,200.00**
Total=	**$ 68,854.35**

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To: KIKAUKA, ANDRIS
4199 HIGHWAY 101
POWELL RIVER BC V8A 0C7

Finalized Date: 9-OCT-2019
This copy reported on
10-OCT-2019
Account: KIKAND

APPENDIX A: Geochemical Analysis Certificate

CERTIFICATE VA19254115

Project: GIBRALTAR DDH Split Core Samples

This report is for 46 Drill Core samples submitted to our lab in Vancouver, BC, Canada on 9-OCT-2019.

The following have access to data associated with this certificate:

ANDRIS KIKAUKA

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
DISP-01	Disposal of all sample fractions
LOG-24	Pulp Login - Rcd w/o Barcode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
LOG-22	Sample login - Rcd w/o BarCode
PUL-33	Pulverise in Tungsten Carbide

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
OA-GRA08	Specific Gravity - Bulk Sample	WST-SEQ
ME-ICP06	Whole Rock Package - ICP-AES	ICP-AES
OA-GRA05	Loss on Ignition at 1000C	WST-SEQ
TOT-ICP06	Total Calculation for ICP06	
ME-MS41	Ultra Trace Aqua Regia ICP-MS	

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:

Saa Traxler, General Manager, North Vancouver

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Finalized Date: 9-OCT-2019
Account: KIKAND

Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA19254115

Sample Description	Method / Analyte / Units / LOD	WEI-21 Recvd Wt. kg 0.02	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10	ME-MS41 Be ppm 0.05	ME-MS41 Bi ppm 0.01	ME-MS41 Ca % 0.01	ME-MS41 Cd ppm 0.01	ME-MS41 Ce ppm 0.02	ME-MS41 Co ppm 0.1	ME-MS41 Cr ppm 1	ME-MS41 Cs ppm 0.05
18G1:6-9m		5.78														
18G1:9-12m		5.72														
18G1:12-15m		6.04														
18G1:15-18m		5.58														
18G1:18-21m		5.54														
18G1:21-24m		6.18														
18G1-24-27m		5.40														
18G1-27-29m		5.72														
18G2-4.4-6m		3.60														
18G2-6-9m		6.76														
GIBRALTAR STD-1		0.02														
18G2-43720m		5.86														
18G2-43814m		5.54														
18G2-15-18m		5.70														
18G2-18-21m		5.30														
18G2-21-24m		3.44														
18G2-24-27m		5.66														
18G2-27-30m		3.86														
18G2-30-33m		3.30														
18G3-5.8-9m		4.44														
GIBRALTAR BLANK -1		0.94														
18G3-9-12m		4.64														
18G3-12-15m		7.92														
18G3-15-18m		6.40														
18G3-18-21m		5.36														
18G3-21-24m		4.84														
18G3-24-27m		6.64														
18G3-27-29m		2.70														
18G4-4-6m		3.48														
18G4-6-9m		5.84														
GIBRALTAR STD-2		0.02														
18G4-9-12m		4.54														
18G4-12-15m		6.64														
18G4-15-18m		5.84														
18G4-18-21m		4.96														
18G4-21-24m		5.18														
18G4-24-26.6m		5.02														
18G5-7.5-9m		2.98														
18G5-9.12m		4.18														
18G5-12-15m		5.70														

***** See Appendix Page for comments regarding this certificate *****

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4199 HIGHWAY 101
POWELL RIVER BC V8A 0C7

Finalized Date: 9-OCT-2019
Account: KIKAND

Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA19254115

Sample Description	Method Analyte Units LOD	ME-MS41 Cu ppm 0.2	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01	ME-MS41 Nb ppm 0.05
18G1:6-9m																
18G1:9-12m																
18G1:12-15m																
18G1:15-18m																
18G1:18-21m																
18G1:21-24m																
18G1-24-27m																
18G1-27-29m																
18G2-4.4-6m																
18G2-6-9m																
GIBRALTAR STD-1																
18G2-43720m																
18G2-43814m																
18G2-15-18m																
18G2-18-21m																
18G2-21-24m																
18G2-24-27m																
18G2-27-30m																
18G2-30-33m																
18G3-5.8-9m																
GIBRALTAR BLANK -1																
18G3-9-12m																
18G3-12-15m																
18G3-15-18m																
18G3-18-21m																
18G3-21-24m																
18G3-24-27m																
18G3-27-29m																
18G4-4-6m																
18G4-6-9m																
GIBRALTAR STD-2																
18G4-9-12m																
18G4-12-15m																
18G4-15-18m																
18G4-18-21m																
18G4-21-24m																
18G4-24-26.6m																
18G5-7.5-9m																
18G5-9.12m																
18G5-12-15m																

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Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA19254115

Sample Description	Method / Analyte / Units / LOD	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2	ME-MS41 Ti % 0.005
18G1:6-9m																
18G1:9-12m																
18G1:12-15m																
18G1:15-18m																
18G1:18-21m																
18G1:21-24m																
18G1-24-27m																
18G1-27-29m																
18G2-4.4-6m																
18G2-6-9m																
GIBRALTAR STD-1																
18G2-43720m																
18G2-43814m																
18G2-15-18m																
18G2-18-21m																
18G2-21-24m																
18G2-24-27m																
18G2-27-30m																
18G2-30-33m																
18G3-5.8-9m																
GIBRALTAR BLANK -1																
18G3-9-12m																
18G3-12-15m																
18G3-15-18m																
18G3-18-21m																
18G3-21-24m																
18G3-24-27m																
18G3-27-29m																
18G4-4-6m																
18G4-6-9m																
GIBRALTAR STD-2																
18G4-9-12m																
18G4-12-15m																
18G4-15-18m																
18G4-18-21m																
18G4-21-24m																
18G4-24-26.6m																
18G5-7.5-9m																
18G5-9.12m																
18G5-12-15m																

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CERTIFICATE OF ANALYSIS VA19254115

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	OA-GRA08	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06
	Analyte	Tl	U	V	W	Y	Zn	Zr	S.G.	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	Unity	%	%	%	%	%	%	%
	LOD	0.02	0.05	1	0.05	0.05	2	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
18G1:6-9m										97.5	0.17	0.10	0.13	0.02	0.02	0.07
18G1:9-12m										98.4	0.18	0.03	0.09	0.02	0.01	0.16
18G1:12-15m										100	0.16	0.04	0.20	0.02	0.01	0.11
18G1:15-18m										100	0.12	0.04	0.05	0.01	0.01	0.13
18G1:18-21m									2.65	100	0.34	0.04	0.05	0.04	0.01	0.16
18G1:21-24m										99.2	0.29	0.05	0.09	0.04	0.02	0.15
18G1-24-27m										100	0.20	0.04	0.28	0.03	0.01	0.08
18G1-27-29m										99.5	0.53	0.05	0.18	0.10	0.01	0.22
18G2-4.4-6m										97.9	0.23	0.02	0.11	0.03	0.01	0.13
18G2-6-9m									2.65	97.5	0.27	0.02	0.09	0.03	0.01	0.13
GIBRALTAR STD-1										66.4	10.65	8.41	2.00	1.97	2.33	1.41
18G2-43720m										98.6	0.36	0.03	0.13	0.04	0.02	0.23
18G2-43814m										98.0	0.16	0.03	0.10	0.02	0.02	0.17
18G2-15-18m										100	0.23	0.04	0.31	0.03	0.03	0.18
18G2-18-21m									2.66	97.5	0.19	0.02	0.10	0.02	0.01	0.11
18G2-21-24m										96.6	0.19	0.03	0.65	0.03	<0.01	0.10
18G2-24-27m										99.8	0.18	0.03	0.23	0.03	0.01	0.06
18G2-27-30m										97.5	0.15	0.04	0.09	0.02	<0.01	0.06
18G2-30-33m										86.4	0.73	0.20	4.26	2.13	0.23	0.16
18G3-5.8-9m									2.64	97.7	0.22	0.03	0.23	0.03	0.01	0.09
GIBRALTAR BLANK -1										4.92	0.76	0.38	49.6	3.00	0.02	0.40
18G3-9-12m										97.1	0.33	0.02	0.48	0.06	0.01	0.12
18G3-12-15m										98.0	0.15	0.02	0.19	0.02	0.01	0.10
18G3-15-18m										100	0.19	0.03	0.09	0.02	0.01	0.10
18G3-18-21m									2.65	97.9	0.11	0.04	0.18	0.02	0.01	0.07
18G3-21-24m										97.8	0.13	0.03	0.21	0.02	0.02	0.10
18G3-24-27m										99.7	0.24	0.03	0.30	0.04	0.01	0.10
18G3-27-29m										99.8	0.32	0.03	0.21	0.12	0.01	0.14
18G4-4-6m										98.1	0.47	0.02	0.85	0.06	0.01	0.20
18G4-6-9m									2.63	99.3	0.36	0.03	0.26	0.04	0.01	0.15
GIBRALTAR STD-2										66.4	10.55	8.39	1.98	1.97	2.32	1.40
18G4-9-12m										99.4	0.23	0.03	0.32	0.03	0.01	0.11
18G4-12-15m										99.8	0.16	0.03	0.45	0.03	0.01	0.05
18G4-15-18m										98.6	0.26	0.03	0.22	0.04	0.02	0.10
18G4-18-21m									2.63	98.4	0.34	0.02	0.30	0.05	0.01	0.12
18G4-21-24m										99.9	0.22	0.03	0.24	0.03	0.01	0.08
18G4-24-26.6m										99.0	0.22	0.03	0.70	0.06	0.01	0.09
18G5-7.5-9m										81.3	0.20	0.17	5.81	3.88	0.01	0.10
18G5-9.12m										94.9	0.22	0.08	2.12	0.98	0.01	0.12
18G5-12-15m									2.65	100	0.17	0.03	0.26	0.03	0.01	0.11

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Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA19254115

Sample Description	Method	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	OA-GRA05	TOT-ICP06
	Analyte	Cr2O3	TiO2	MnO	P2O5	SrO	BaO	LOI	Total
	Units	%	%	%	%	%	%	%	%
	LOD	0.002	0.01	0.01	0.01	0.01	0.01	0.01	0.01
18G1:6-9m		0.008	0.01	<0.01	0.01	<0.01	<0.01	0.20	98.24
18G1:9-12m		0.004	0.01	<0.01	0.01	<0.01	<0.01	0.16	99.07
18G1:12-15m		0.006	0.02	<0.01	0.10	<0.01	<0.01	0.14	100.81
18G1:15-18m		0.007	0.01	<0.01	0.01	<0.01	<0.01	0.04	100.43
18G1:18-21m		0.003	0.02	<0.01	0.01	<0.01	<0.01	0.17	100.84
18G1:21-24m		0.010	0.02	<0.01	0.01	<0.01	<0.01	0.17	100.05
18G1-24-27m		0.007	0.01	<0.01	<0.01	<0.01	<0.01	0.37	101.03
18G1-27-29m		0.010	0.03	<0.01	<0.01	<0.01	<0.01	0.39	101.02
18G2-4.4-6m		0.003	0.02	<0.01	0.01	<0.01	<0.01	0.24	98.70
18G2-6-9m		0.003	0.02	<0.01	<0.01	<0.01	<0.01	0.18	98.25
GIBRALTAR STD-1		0.011	0.43	0.23	0.11	0.02	0.07	4.19	98.23
18G2-43720m		0.005	0.02	<0.01	0.01	<0.01	<0.01	0.20	99.65
18G2-43814m		0.005	0.01	<0.01	<0.01	<0.01	<0.01	0.11	98.63
18G2-15-18m		0.006	0.01	<0.01	0.01	<0.01	<0.01	0.27	101.12
18G2-18-21m		0.004	0.01	<0.01	0.01	<0.01	<0.01	0.09	98.06
18G2-21-24m		0.006	0.02	<0.01	0.01	<0.01	<0.01	0.67	98.31
18G2-24-27m		0.005	0.02	<0.01	0.01	<0.01	<0.01	0.28	100.66
18G2-27-30m		0.006	0.02	<0.01	0.01	<0.01	<0.01	0.19	98.09
18G2-30-33m		0.004	0.03	0.01	0.02	0.01	0.23	5.78	100.19
18G3-5.8-9m		0.005	0.02	<0.01	0.01	<0.01	<0.01	0.15	98.50
GIBRALTAR BLANK -1		0.002	0.06	0.01	0.02	0.03	<0.01	41.4	100.60
18G3-9-12m		0.003	0.01	<0.01	<0.01	<0.01	0.02	0.59	98.74
18G3-12-15m		0.004	0.01	<0.01	<0.01	<0.01	<0.01	0.18	98.68
18G3-15-18m		0.006	0.01	<0.01	0.01	<0.01	<0.01	0.13	100.60
18G3-18-21m		0.010	0.01	<0.01	<0.01	<0.01	<0.01	0.33	98.68
18G3-21-24m		0.006	0.01	<0.01	0.01	<0.01	<0.01	0.23	98.57
18G3-24-27m		0.004	0.01	<0.01	0.01	<0.01	<0.01	0.36	100.80
18G3-27-29m		0.003	0.02	<0.01	0.01	<0.01	<0.01	0.44	101.10
18G4-4-6m		0.002	0.02	<0.01	0.01	<0.01	<0.01	0.84	100.58
18G4-6-9m		0.004	0.02	<0.01	0.01	<0.01	<0.01	0.28	100.46
GIBRALTAR STD-2		0.012	0.43	0.23	0.10	0.02	0.07	4.15	98.02
18G4-9-12m		0.003	0.02	<0.01	0.01	<0.01	<0.01	0.34	100.50
18G4-12-15m		0.006	0.01	<0.01	0.01	<0.01	<0.01	1.31	101.87
18G4-15-18m		0.005	0.01	<0.01	0.01	<0.01	0.17	0.48	99.95
18G4-18-21m		0.004	0.02	<0.01	<0.01	<0.01	<0.01	0.44	99.70
18G4-21-24m		0.007	0.02	<0.01	0.01	<0.01	<0.01	0.22	100.77
18G4-24-26.6m		0.005	0.01	<0.01	<0.01	<0.01	0.01	0.76	100.90
18G5-7.5-9m		0.003	0.02	0.01	0.08	<0.01	0.04	8.69	100.31
18G5-9.12m		0.004	0.02	<0.01	0.01	<0.01	0.01	3.08	101.55
18G5-12-15m		0.004	0.01	<0.01	0.01	<0.01	0.01	0.31	100.95

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Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA19254115

Sample Description	Method / Analyte / Units / LOD	WEI-21 Recvd Wt. kg 0.02	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10	ME-MS41 Be ppm 0.05	ME-MS41 Bi ppm 0.01	ME-MS41 Ca % 0.01	ME-MS41 Cd ppm 0.01	ME-MS41 Ce ppm 0.02	ME-MS41 Co ppm 0.1	ME-MS41 Cr ppm 1	ME-MS41 Cs ppm 0.05
GIBRALTAR BLANK -2		0.96														
18G5-15-18m		7.52														
18G5-18-21m		6.20														
18G5-21-24m		4.76														
18G1-29-32m		5.18	0.08	0.22	6.7	<0.02	<10	90	0.48	0.06	8.51	0.22	27.2	139.5	13	0.16
18G3-29-32m		3.40	0.10	0.21	7.4	<0.02	<10	30	0.38	0.06	6.82	0.18	29.2	131.0	10	0.17

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Sample Description	Method / Analyte / Units / LOD	ME-MS41 Cu ppm 0.2	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01	ME-MS41 Nb ppm 0.05
GIBRALTAR BLANK -2																
18G5-15-18m																
18G5-18-21m																
18G5-21-24m																
18G1-29-32m		11.0	0.93	0.85	<0.05	0.20	0.12	0.010	0.10	16.4	2.7	2.31	136	8.95	0.02	<0.05
18G3-29-32m		11.2	1.00	0.88	<0.05	0.28	0.11	0.011	0.10	16.5	1.8	1.34	126	7.93	0.02	<0.05

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Sample Description	Method / Analyte / Units / LOD	ME-ICP06 Cr2O3 % 0.002	ME-ICP06 TiO2 % 0.01	ME-ICP06 MnO % 0.01	ME-ICP06 P2O5 % 0.01	ME-ICP06 SrO % 0.01	ME-ICP06 BaO % 0.01	OA-GRA05 LOI % 0.01	TOT-ICP06 Total % 0.01
GIBRALTAR BLANK -2		0.004	0.06	0.01	0.01	0.03	<0.01	42.1	101.37
18G5-15-18m		0.006	0.01	<0.01	0.01	<0.01	<0.01	0.18	100.48
18G5-18-21m		0.007	0.02	<0.01	0.01	<0.01	<0.01	0.63	101.43
18G5-21-24m		0.005	0.01	<0.01	0.01	<0.01	<0.01	1.18	99.29
18G1-29-32m									
18G3-29-32m									

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www.alsglobal.com/geochemistry

To: **KIKAUKA, ANDRIS**
4199 HIGHWAY 101
POWELL RIVER BC V8A 0C7

Finalized Date: 9-OCT-2019
Account: KIKAND

Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA19254115

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

ME-ICP06	ME-MS41	OA-GRA05	OA-GRA08
TOT-ICP06	WEI-21		

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Finalized Date: 9-OCT-2019
Account: KIKAND

Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA19254115

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	OA-GRA08	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06
	Analyte	Tl	U	V	W	Y	Zn	Zr	S.G.	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	Unity	%	%	%	%	%	%	%
	LOD	0.02	0.05	1	0.05	0.05	2	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
GIBRALTAR BLANK -2										4.52	0.76	0.40	49.7	3.42	0.02	0.34
18G5-15-18m										99.8	0.13	0.03	0.16	0.02	0.02	0.11
18G5-18-21m										100	0.36	0.04	0.16	0.05	0.01	0.14
18G5-21-24m										96.6	0.27	0.04	0.78	0.28	0.02	0.09
18G1-29-32m		0.29	1.94	43	380	11.20	45	8.2	2.68							
18G3-29-32m		0.30	3.42	62	360	15.25	40	11.6								

***** See Appendix Page for comments regarding this certificate *****

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Finalized Date: 9-OCT-2019
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CERTIFICATE OF ANALYSIS VA19254115

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ni	P	Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti
	Units	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	LOD	0.2	10	0.2	0.1	0.001	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005
GIBRALTAR BLANK -2																
18G5-15-18m																
18G5-18-21m																
18G5-21-24m																
18G1-29-32m		29.6	710	10.7	2.7	0.012	1.01	0.85	3.4	0.8	<0.2	105.5	<0.01	0.01	1.7	<0.005
18G3-29-32m		30.6	1260	10.5	3.3	0.012	1.06	1.45	3.2	1.1	<0.2	89.6	<0.01	0.03	2.6	<0.005

***** See Appendix Page for comments regarding this certificate *****

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To: **MGX MINERALS INC**
303-1080 HOWE STREET
VANCOUVER BC V6Z 2T1

Page: 1
Total # Pages: 2 (A - B)
Plus Appendix Pages
Finalized Date: 10-DEC-2018
This copy reported on 11-DEC-2018
Account: MGXMIN

CERTIFICATE VA18305176

Project: GIBRALTAR North Zone Outcrop Rock Chip Samples

This report is for 9 Rock samples submitted to our lab in Vancouver, BC, Canada on 30-NOV-2018.

The following have access to data associated with this certificate:

ANDRIS KIKAUKA	MGX MINERALS	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
DISP-01	Disposal of all sample fractions
PUL-QC	Pulverizing QC Test
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-33	Pulverise in Tungsten Carbide

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-ICP06	Whole Rock Package - ICP-AES	ICP-AES
OA-GRA05	Loss on Ignition at 1000C	WST-SEQ
TOT-ICP06	Total Calculation for ICP06	

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Canada Ltd.
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303-1080 HOWE STREET
VANCOUVER BC V6Z 2T1

Finalized Date: 10-DEC-2018
Account: MGXMIN

Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA18305176

Sample Description	Method	WEI-21	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06	OA-GRA05
	Analyte	Recvd Wt.	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO	P2O5	SrO	BaO	LOI
	Units	kg	%	%	%	%	%	%	%	%	%	%	%	%	%	%
	LOD	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	0.01	0.01	0.01	0.01	0.01	0.01
18G1B-4A		1.12	98.6	0.21	0.04	0.01	0.03	0.04	0.14	0.003	0.01	<0.01	<0.01	<0.01	<0.01	0.13
18G1B-4B		1.14	100.0	0.19	0.03	0.02	0.02	0.05	0.17	0.004	0.01	<0.01	0.01	<0.01	<0.01	0.11
18G1B-4C		1.24	99.7	0.18	0.02	<0.01	0.02	0.01	0.13	0.004	0.02	<0.01	<0.01	<0.01	<0.01	0.10
18G1B-4D		0.96	100.0	0.13	0.02	0.01	0.01	0.04	0.12	0.003	0.01	<0.01	0.01	<0.01	<0.01	0.11
18G1B-5A		0.76	98.4	0.09	0.04	0.03	0.02	0.04	0.08	0.008	0.02	<0.01	<0.01	<0.01	<0.01	0.24
18G1B-5B		1.06	100.0	0.11	0.02	0.06	0.03	0.01	0.03	0.005	0.01	<0.01	0.01	<0.01	<0.01	0.17
18G1B-5C		0.90	98.1	0.11	0.01	0.06	0.03	0.02	0.17	0.007	0.01	<0.01	<0.01	<0.01	<0.01	0.19
18G1B-5D		0.82	98.4	0.09	<0.01	0.05	0.02	0.01	0.05	0.006	0.01	<0.01	<0.01	<0.01	<0.01	0.16
18G1B-5E		1.38	98.4	0.09	0.01	0.05	0.02	0.02	0.08	0.011	0.01	<0.01	<0.01	<0.01	<0.01	0.20

***** See Appendix Page for comments regarding this certificate *****

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Finalized Date: 10-DEC-2018
Account: MGXMIN

Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA18305176

Sample Description	Method Analyte Units LOD	TOT-ICP06 Total % 0.01
18G1B-4A		99.21
18G1B-4B		100.61
18G1B-4C		100.18
18G1B-4D		100.46
18G1B-5A		98.97
18G1B-5B		100.46
18G1B-5C		98.71
18G1B-5D		98.80
18G1B-5E		98.89

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Project: GIBRALTAR

CERTIFICATE OF ANALYSIS VA18305176

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method:				
	CRU-31	DISP-01	LOG-22	ME-ICP06
	OA-GRA05	PUL-33	PUL-QC	SPL-21
	TOT-ICP06	WEI-21		

ALS Minerals

APPENDIX B: Geochemical Analysis Methods

SAMPLE PREPARATION PACKAGE

PREP- 31

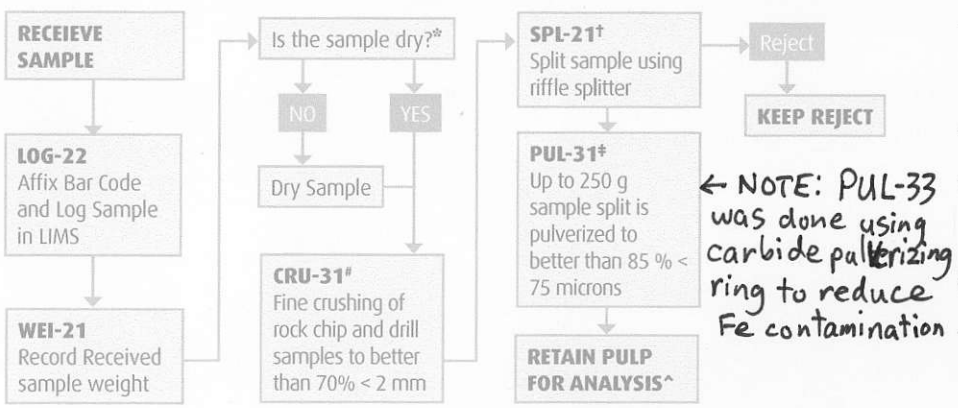
STANDARD SAMPLE PREPARATION: DRY, CRUSH, SPLIT AND PULVERIZE

Sample preparation is the most critical step in the entire laboratory operation. The purpose of preparation is to produce a homogeneous analytical sub-sample that is fully representative of the material submitted to the laboratory.

The sample is logged in the tracking system, weighed, dried and finely crushed to better than 70 % passing a 2 mm (Tyler 9 mesh, US Std. No.10) screen. A split of up to 250 g is taken and pulverized to better than 85 % passing a 75 micron (Tyler 200 mesh, US Std. No. 200) screen. This method is appropriate for rock chip or drill samples.

METHOD CODE	DESCRIPTION
LOG-22	Sample is logged in tracking system and a bar code label is attached.
DRY-21	Drying of excessively wet samples in drying ovens. This is the default drying procedure for most rock chip and drill samples.
CRU-31	Fine crushing of rock chip and drill samples to better than 70% of the sample passing 2 mm.
SPL-21	Split sample using riffle splitter.
PUL-31	A sample split of up to 250 g is pulverized to better than 85% of the sample passing 75 microns.

FLOW CHART - SAMPLE PREPARATION PACKAGE – PREP-31 STANDARD SAMPLE PREPARATION: DRY, CRUSH, SPLIT AND PULVERIZE



*If samples air-dry overnight, no charge to client. If samples are excessively wet, the sample should be dried to a maximum of 120°C. (**DRY-21**)

#QC testing of crushing efficiency is conducted on random samples (**CRU-QC**).

†The sample reject is saved or dumped pending client instructions. Prolonged storage (> 45 days) of rejects will be charged to the client.

‡QC testing of pulverizing efficiency is conducted on random samples (**PUL-QC**).

^Lab splits are required when analyses must be performed at a location different than where samples received.

ALS Minerals

WHOLE ROCK GEOCHEMISTRY

ME- ICP06 and OA- GRA05

ANALYSIS OF MAJOR OXIDES BY ICP- AES

ME- ICP06

SAMPLE DECOMPOSITION

Lithium Metaborate/Lithium Tetraborate ($LiBO_2$ /Li2 B_4 O_7) Fusion* (FUS-LI01)

ANALYTICAL METHOD

Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP-AES)

A prepared sample (0.200 g) is added to lithium metaborate/lithium tetraborate flux (0.90 g), mixed well and fused in a furnace at 1000°C. The resulting melt is then cooled and dissolved in 100 mL of 4% nitric acid/2% hydrochloric acid. This solution is then analyzed by ICP-AES and the results are corrected for spectral inter-element interferences. Oxide concentration is calculated from the determined elemental concentration and the result is reported in that format.

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Aluminum	Al_2O_3	%	0.01	100
Barium	BaO	%	0.01	100
Calcium	CaO	%	0.01	100
Chromium	Cr_2O_3	%	0.01	100
Iron	Fe_2O_3	%	0.01	100
Magnesium	MgO	%	0.01	100
Manganese	MnO	%	0.01	100
Phosphorus	P_2O_5	%	0.01	100
Potassium	K_2O	%	0.01	100
Silicon	SiO	%	0.01	100
Sodium	Na_2O	%	0.01	100
Strontium	SrO	%	0.01	100
Titanium	TiO_2	%	0.01	100

***NOTE:** For samples that are high in sulphides, we may substitute a peroxide fusion in order to obtain better results.

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ME- ICP06 and OA- GRA05

OA- GRA05, ME- GRA05

SAMPLE DECOMPOSITION

Thermal decomposition Furnace or TGA (OA-GRA05 or ME-GRA05)

ANALYTICAL METHOD

Gravimetric

If required, the total oxide content is determined from the ICP analyte concentrations and loss on Ignition (L.O.I.) values. A prepared sample (1.0 g) is placed in an oven at 1000°C for one hour, cooled and then weighed. The percent loss on ignition is calculated from the difference in weight.

METHOD CODE	PARAMETER	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
OA-GRA05	Loss on Ignition (Furnace)	LOI	%	0.01	100
ME-GRA05	Loss on Ignition (TGA)	Moisture	%	0.01	100
		LOI	%	0.01	100

APPENDIX C : Gibraltar Red Cloud Quarry DDH

ddh no	from (m)	to (m)	int. (m)	lithology
18G1	0	6	6	Overburden
18G1	**6**	**9**	3	Mt Wilson Fm orthoquartzite
18G1	**9**	**12**	3	Mt Wilson Fm orthoquartzite
18G1	**12**	**15**	3	Mt Wilson Fm orthoquartzite
18G1	**15**	**18**	3	Mt Wilson Fm orthoquartzite
18G1	**18**	**21**	3	Mt Wilson Fm orthoquartzite
18G1	**21**	**24**	3	Mt Wilson Fm orthoquartzite
18G1	**24**	**27**	3	Mt Wilson Fm orthoquartzite
18G1	**27**	**29**	2	Mt Wilson Fm orthoquartzite
18G1	**29**	**32**	3	Mt Wilson Fm orthoquartzite
18G1	32	35	3	Fault zone
18G1	35	36	1	Beaverft Brisco Fm Limestone
18G1	36	39	3	Beaverft Brisco Fm Limestone
18G1	39	42	3	Beaverft Brisco Fm Limestone
18G1	42	45.7	3.7	Beaverft Brisco Fm Limestone

End of hole = 45.7m (150ft)
DDH 18G1; Az 345°, Incl -45°
595135E, 5576246N, Elev 996m
sampled bold intervals:
8 silica samples; 6-9, 9-12, 12-15, 15-18, 18-21, 21-24, 24-27, 27-29
1 ICP sample 29-32

ddh no	from (m)	to (m)	int. (m)	RQD %	alteration
18G1	0	6	6	---	
18G1	6	9	3	35	Calcite & illite on fracts,
18G1	9	12	3	57	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G1	12	15	3	47	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G1	15	18	3	10	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G1	18	21	3	47	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G1	21	24	3	30	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G1	24	27	3	37	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G1	27	29	2	45	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G1	29	32	3	53	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G1	32	35	3	27	black cherty limestone, graphitic shears & gouge
18G1	35	36	1	32	2ndy calcite on fractures, thin graphitic interbeds & shears
18G1	36	39	3	80	2ndy calcite on fractures, thin graphitic interbeds & shears
18G1	39	42	3	59	2ndy calcite on fractures, thin graphitic interbeds & shears
18G1	42	45.7	3.7	78	2ndy calcite on fractures, thin graphitic interbeds & shears

ddh no	from (m)	to (m)	int. (m)	lithology, minerals
18G1	0	6	6	crystalline quartzite boulders
18G1	6	9	3	Micro – crypto crystalline quartzite
18G1	9	12	3	Micro-crystalline quartzite
18G1	12	15	3	Micro-crystalline quartzite
18G1	15	18	3	Micro-crystalline quartzite
18G1	18	21	3	Micro-crystalline quartzite
18G1	21	24	3	Micro-crystalline quartzite
18G1	24	27	3	Micro-crystalline quartzite
18G1	27	29	2	Micro-crystalline quartzite
18G1	29	32	3	Micro-crystalline quartzite
18G1	32	35	3	Cherty limestone & graphite
18G1	35	36	1	limestone with minor graphic slips
18G1	36	39	3	limestone with minor graphic slips
18G1	39	42	3	limestone with minor graphic slips
18G1	42	45.7	3.7	limestone with minor graphic slips

ddh no	from (m)	to (m)	int. (m)	comments
18G1	0	6	6	White-lt grey, mottled in part,abun fracturing
18G1	6	9	3	White-lt grey, mottled in part,abun fracturing
18G1	9	12	3	
18G1	12	15	3	9-22 beds @ 30-40 to c.a.
18G1	15	18	3	
18G1	18	21	3	
18G1	21	24	3	
18G1	24	27	3	22-23.5 beds @ 40-70 to c.a.
18G1	27	29	2	
18G1	29	32	3	23.5-29.6 weak breccia texture developed
18G1	32	35	3	
18G1	35	36	1	
18G1	36	39	3	
18G1	39	42	3	37-37.1 & 37.85-37.9 increased pyrite, carbonaceous matter
18G1	42	45.7	3.7	pyrite-graphite late stage fracture filling 0.1 cm @ 50-70 to c/a.

ddh no	from (m)	to (m)	int. (m)	fault & or fracture (% recov)
18G1	0	6	6	pos bedding 20° - 25° to core axis, fract'g 30-45° to c/a
18G1	6	9	3	Fract 45° c/a, bedding 30° c/a, (95% recov)
18G1	9	12	3	Fract 30° c/a, bedding 30° c/a, (95% recov)
18G1	12	15	3	Fract 40° c/a, bedding 20° c/a, (95% recov)
18G1	15	18	3	Fract 45° c/a, (80% recov)
18G1	18	21	3	(95% recov)
18G1	21	24	3	(95% recov)
18G1	24	27	3	(70% recov)
18G1	27	29	2	sharp contact 10°c/a, conformable, prob thrust fault
18G1	29	32	3	29.6-29.7= blk graphitic fault gouge. Sharp contact
18G1	32	35	3	dk gy-blk, silic brittle dolomite,carbonaceous, cherty
18G1	35	36	1	gradational contact , chty LS & Dol above 35.4m freq
18G1	36	39	3	graph'c slicks above in thin bedded hard limestone
18G1	39	42	3	Below 35.4m; varved, disjointed LS with thin relic
18G1	42	45.7	3.7	Beds 1-3cm & occ shiney graphitic slicks parrallel to Bedding, Bedding = 22° c/a (overall 90% recov)

ddh no	from (m)	to (m)	int. (m)	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	Total %	SiO2/Total
18G1	0	6	6	---	---	---	---	---	
18G1	6	9	3	97.5	0.17	0.1	0.13	98.24	99.25
18G1	9	12	3	98.4	0.18	0.03	0.09	99.07	99.32
18G1	12	15	3	100	0.16	0.04	0.2	100.81	99.2
18G1	15	18	3	100	0.12	0.04	0.05	100.43	99.57
18G1	18	21	3	100	0.34	0.04	0.05	100.84	99.17
18G1	21	24	3	99.2	0.29	0.05	0.09	100.05	99.15
18G1	24	27	3	100	0.2	0.04	0.28	101.03	99
18G1	27	29	2	99.5	0.53	0.05	0.18	101.02	98.5
18G1	29	32	3					average	99.145
18G1	32	35	3						
18G1	35	36	1						
18G1	36	39	3						
18G1	39	42	3						
18G1	42	45.7	3.7						

ddh no	from (m)	to (m)	int. (m)	lithology
18G2	0	4.4		Overburden
18G2	4.4	6	1.6	Mt Wilson Fm orthoquartzite
18G2	6	9	3	Mt Wilson Fm orthoquartzite
18G2	9	12	3	Mt Wilson Fm orthoquartzite
18G2	12	15	3	Mt Wilson Fm orthoquartzite
18G2	15	18	3	Mt Wilson Fm orthoquartzite
18G2	18	21	3	Mt Wilson Fm orthoquartzite
18G2	21	24	3	Mt Wilson Fm orthoquartzite
18G2	24	27	3	Mt Wilson Fm orthoquartzite
18G2	27	30	3	Mt Wilson Fm orthoquartzite
18G2	30	33	3	Fault zone
18G2	31	33	1.5	Fault zone
18G2	34.5	36	1.5	Beaverft Brisco Fm Limestone
18G2	36	38.1	2.1	Beaverft Brisco Fm Limestone

End of hole = 38.1m (125ft)

DDH 18G2; Az 270°, Incl -45°

595135E, 5576246N, Elev 996m

sampled bold intervals:

10 silica samples; 4.4-6, 6-9, 9-12, 12-15, 15-18, 18-21, 21-24, 24-27, 27-30, 30-33

ddh no	from (m)	to (m)	int. (m)	RQD %	alteration
18G2	0	4.4		---	
18G2	4.4	6	1.6	95	Calcite, illite & trace dendritic MnO, chlorite & sericite on fracts
18G2	6	9	3	100	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G2	9	12	3	62	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G2	12	15	3	40	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G2	15	18	3	31	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G2	18	21	3	65	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G2	21	24	3	67	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G2	24	27	3	45	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G2	27	30	3	19	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G2	30	33	3	9	silicification, thin graphitic interbeds, trace chlorite & sericite
18G2	31	33	1.5	10	silicification, thin graphitic interbeds, trace chlorite & sericite
18G2	34.5	36	1.5	92	2ndy calcite on fractures, thin graphitic interbeds & shears
18G2	36	38.1	2.1	90	2ndy calcite on fractures, thin graphitic interbeds & shears

ddh no	from (m)	to (m)	int. (m)	RQD %	lithology, minerals
18G2	0	4.4		---	
18G2	4.4	6	1.6	95	Micro – crypto crystalline quartzite
18G2	6	9	3	100	Micro – crypto crystalline quartzite
18G2	9	12	3	62	Micro – crypto crystalline quartzite
18G2	12	15	3	40	Micro – crypto crystalline quartzite
18G2	15	18	3	31	Micro – crypto crystalline quartzite
18G2	18	21	3	65	Micro – crypto crystalline quartzite
18G2	21	24	3	67	Micro – crypto crystalline quartzite
18G2	24	27	3	45	Micro – crypto crystalline quartzite
18G2	27	30	3	19	Micro – crypto crystalline quartzite
18G2	30	33	3	9	black cherty limestone, graphitic
18G2	31	33	1.5	10	limestone with intbedd graphic slips
18G2	34.5	36	1.5	92	limestone with minor graphic slips
18G2	36	38.1	2.1	90	limestone with minor graphic slips

ddh no	from (m)	to (m)	int. (m)	RQD %	comments
18G2	0	4.4		---	
18G2	4.4	6	1.6	95	White-lt grey, mottled in part, common fracturing (occ sutured)
18G2	6	9	3	100	8.5-9.5m dendritic chlorite & sericite
18G2	9	12	3	62	Pos 05° bedding c/a @ 6m, dendritic chlor, sericite & Mno on
18G2	12	15	3	40	select fractures, pos bedding 10° c/a at 16m
18G2	15	18	3	31	
18G2	18	21	3	65	
18G2	21	24	3	67	22-23.5 beds @ 40-70 to c/a. Relic cross bedding
18G2	24	27	3	45	22.5-29.6 weak breccia texture developed
18G2	27	30	3	19	
18G2	30	33	3	9	
18G2	31	33	1.5	10	
18G2	34.5	36	1.5	92	pred black wi minor thin white wispy beds
18G2	36	38.1	2.1	90	

ddh no	from (m)	to (m)	int. (m)	RQD %	fault & or fracture (% recov)
18G2	0	4.4		---	
18G2	4.4	6	1.6	95	pos bedding 0° - 5° to core axis, fract'g 70-80° to c/a
18G2	6	9	3	100	100% recovery
18G2	9	12	3	62	Fract 70° c/a, bedding 10° c/a, (80% recov)
18G2	12	15	3	40	(100% recov)
18G2	15	18	3	31	Fract 80° c/a, (80% recov)
18G2	18	21	3	65	(95% recov)
18G2	21	24	3	67	pos bedding 0° c/a, 95% recov)
18G2	24	27	3	45	(95% recov)
18G2	27	30	3	19	(85% recov)
18G2	30	33	3	9	sutured fractures 89° c/a , (50% recov)
18G2	31	33	1.5	10	sharp fault contact, black cherty or graph'c limestone
18G2	34.5	36	1.5	92	dk gy-blk, silic brittle dolomite,carbonaceous, cherty
18G2	36	38.1	2.1	90	cherty, with shiney graphitic slips & shears (50% recov
					graph'c slicks int bedd wi thin bedded hard limestone
					pos bedding 45° c/a
					Overall 82% recov

ddh no	from (m)	to (m)	int. (m)	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	Total %	SiO2/Total
18G2	0	4.4		---	---	---	---	---	
18G2	4.4	6	1.6	97.9	0.23	0.02	0.11	98.7	99.19
18G2	6	9	3	97.5	0.27	0.02	0.09	98.25	99.24
18G2	9	12	3	98.6	0.36	0.03	0.13	99.65	98.95
18G2	12	15	3	98	0.16	0.03	0.1	98.63	99.36
18G2	15	18	3	100	0.23	0.04	0.31	101.12	98.89
18G2	18	21	3	97.5	0.19	0.02	0.1	98.06	99.43
18G2	21	24	3	96.6	0.19	0.03	0.65	98.31	98.26
18G2	24	27	3	99.8	0.18	0.03	0.23	100.66	99.15
18G2	27	30	3	97.5	0.15	0.04	0.09	98.09	99.4
18G2	30	33	3	86.4	0.73	0.2	4.26	100.19	86.24
18G2	31	33	1.5						
18G2	34.5	36	1.5						
18G2	36	38.1	2.1			average	4.4 m	to 30 m	99.1

ddh no	from (m)	to (m)	int. (m)	lithology
18G3	0	5.8	6	Overburden
18G3	5.8	9	3.2	Mt Wilson Fm orthoquartzite
18G3	9	12	3	Mt Wilson Fm orthoquartzite
18G3	12	15	3	Mt Wilson Fm orthoquartzite
18G3	15	18	3	Mt Wilson Fm orthoquartzite
18G3	18	21	3	Mt Wilson Fm orthoquartzite
18G3	21	24	3	Mt Wilson Fm orthoquartzite
18G3	24	27	3	Mt Wilson Fm orthoquartzite
18G3	27	29	2	Mt Wilson Fm orthoquartzite
18G3	29	32	3	Fault zone
18G3	33	36	3	Fault zone
18G3	36	39	3	Beaverft Brisco Fm Limestone
18G3	39	42.7	3.7	Beaverft Brisco Fm Limestone

End of hole = 42.7m (140ft)
DDH 18G3; Az 010°, Incl -50°
595114E, 5576233N, Elev 999m
sampled bold intervals:
8 silica samples; 5.8-9, 9-12, 12-15, 15-18, 18-21, 21-24, 24-27, 27-29
1 ICP sample 29-32

ddh no	from (m)	to (m)	int. (m)	RQD %	alteration
18G3	0	5.8	6	---	
18G3	5.8	9	3.2	32	Calcite & illite on fracts,
18G3	9	12	3	33	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G3	12	15	3	96	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G3	15	18	3	65	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G3	18	21	3	47	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G3	21	24	3	36	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G3	24	27	3	42	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G3	27	29	2	13	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G3	29	32	3	17	black cherty limestone, graphitic shears & gouge
18G3	33	36	3	60	black cherty limestone, graphitic shears & gouge
18G3	36	39	3	55	2ndy calcite on fractures, thin graphitic interbeds & shears
18G3	39	42.7	3.7	42	2ndy calcite on fractures, thin graphitic interbeds & shears

ddh no	from (m)	to (m)	int. (m)	lithology, minerals
18G3	0	5.8	6	crystalline quartzite boulders
18G3	5.8	9	3.2	Micro – crypto crystalline quartzite
18G3	9	12	3	Micro-crystalline quartzite
18G3	12	15	3	Micro-crystalline quartzite
18G3	15	18	3	Micro-crystalline quartzite
18G3	18	21	3	Micro-crystalline quartzite
18G3	21	24	3	Micro-crystalline quartzite
18G3	24	27	3	Micro-crystalline quartzita
18G3	27	29	2	Micro-crystalline quartzite
18G3	29	32	3	Cherty limestone & graphite
18G3	33	36	3	Cherty limestone & graphite
18G3	36	39	3	limestone with minor graphic slips
18G3	39	42.7	3.7	limestone with minor graphic slips

ddh no	**from (m)**	**to (m)**	**int. (m)**	**Comments (% recov)**
18G3	**0**	**5.8**	**6**	
18G3	**5.8**	**9**	**3.2**	**5.8-17.5m wh-lt gy qtzite, (99% recov)**
18G3	**9**	**12**	**3**	**glassy on fractures (slick) (95% recov)**
18G3	**12**	**15**	**3**	**17.5-19.0m, dk gy-lt gy qtzite, crypto xln in part, (95% recov)**
18G3	**15**	**18**	**3**	**(100% recov)**
18G3	**18**	**21**	**3**	**19-22m lt gy qtzite, (85% recov)**
18G3	**21**	**24**	**3**	**(95% recov)**
18G3	**24**	**27**	**3**	**22-29m, mottled lt gy-wh qtzite, disjointed thin beds, trace breccia**
18G3	**27**	**29**	**2**	**(80% recov)**
18G3	**29**	**32**	**3**	**29-31.5m, sheared limestone (fault zone), hard, blk-dk gy, dol'zd &**
18G3	**33**	**36**	**3**	**silic'd in part, minor wh limestone as thin wispy beds (70% recov**
18G3	**36**	**39**	**3**	**limestone, dk gy-blk, distorted thin wavey beds to 1.5cm,**
18G3	**39**	**42.7**	**3.7**	**graphitic in part, thin graph'c shears parallel to bedding, 20°c/a**

(92% recovery overall)

ddh no	from (m)	to (m)	int. (m)	fault & or fracture
18G3	0	5.8	6	
18G3	5.8	9	3.2	pos bedding 20° - 25° to core axis, fract'g 30-45° to c/a
18G3	9	12	3	Fract 50° c/a, bedding 45° c/a,
18G3	12	15	3	Fract 45° c/a orthogonal to bedding 50° c/a,
18G3	15	18	3	Fract 30° c/a, bedding 50° c/a,
18G3	18	21	3	
18G3	21	24	3	
18G3	24	27	3	Fract 45° c/a, disjointed thin beds
18G3	27	29	2	
18G3	29	32	3	sharp fault contact
18G3	33	36	3	hard dol'zd & silic'd limestone, sheared & shattered
18G3	36	39	3	dk gy-blk, silic brittle dolomite,carbonaceous, cherty
18G3	39	42.7	3.7	

ddh no	from (m)	to (m)	int. (m)	Remarks
18G3	0	5.8	6	
18G3	5.8	9	3.2	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G3	9	12	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G3	12	15	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G3	15	18	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G3	18	21	3	glassy or succroidal texture, white-lt grey on fresh surface, tr calcite in vugs
18G3	21	24	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G3	24	27	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G3	27	29	2	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G3	29	32	3	
18G3	33	36	3	Silic'd limestone, brittle fault zone, freq white thin disjointed beds, common graphite
18G3	36	39	3	Black-dk gy limestone; hard thin bedded, disrupted beds, graphitic slicks com wi bedding
18G3	39	42.7	3.7	graph'c slicks in thin bedded hard limestone
				limestone, varved, disjointed with thin relic beds
				Parallel to bedding, Bedding = 20° c/a

ddh no	from (m)	to (m)	int. (m)	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	Total %	SiO2/Total
18G3	0	5.8	6	---	---	---	---	---	
18G3	5.8	9	3.2	97.7	0.22	0.03	0.23	98.5	99.19
18G3	9	12	3	97.1	0.33	0.02	0.48	98.74	98.34
18G3	12	15	3	98	0.15	0.02	0.19	98.68	99.31
18G3	15	18	3	100	0.19	0.03	0.09	100.6	99.4
18G3	18	21	3	97.9	0.11	0.04	0.18	98.68	99.21
18G3	21	24	3	97.8	0.13	0.03	0.21	98.57	99.22
18G3	24	27	3	99.7	0.24	0.03	0.3	100.8	98.91
18G3	27	29	2	99.8	0.32	0.03	0.21	101.1	98.71
18G3	29	32	3						
18G3	33	36	3						
18G3	36	39	3						
18G3	39	42.7	3.7			average	5.8 m	to 24 m	99.11

ddh no	from (m)	to (m)	int. (m)	lithology
18G4	0	4		Overburden
18G4	4	6	2	Mt Wilson Fm orthoquartzite
18G4	6	9	3	Mt Wilson Fm orthoquartzite
18G4	9	12	3	Mt Wilson Fm orthoquartzite
18G4	12	15	3	Mt Wilson Fm orthoquartzite
18G4	15	18	3	Mt Wilson Fm orthoquartzite
18G4	18	21	3	Mt Wilson Fm orthoquartzite
18G4	21	24	3	Mt Wilson Fm orthoquartzite
18G4	24	26.6	2.6	Mt Wilson Fm orthoquartzite
18G4	26.6	29	2.4	Fault zone
18G4	29	32	3	Fault zone
	32	35	3	Beaverft Brisco Fm Limestone

End of hole = 35.0m (115ft)
DDH 18G4; Az 280°, Incl -60°
595114E, 5576233N, Elev 999m
sampled bold intervals:
8 silica samples; 4- 6, 6- 9, 9-12, 12-15, 15-18, 18-21, 21-24, 24-26.6

ddh no	from (m)	to (m)	int. (m)	RQD %	alteration
18G4	0	4		---	
18G4	4	6	2	50	Calcite & illite on fracts,
18G4	6	9	3	35	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G4	9	12	3	48	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G4	12	15	3	80	minor calcite and illite on fract's,
18G4	15	18	3	42	minor calcite and illite on fract's,
18G4	18	21	3	60	minor calcite and illite on fract's, tr dend'c chlorite,sericite,Mn
18G4	21	24	3	18	minor calcite and illite on fract's,
18G4	24	26.6	2.6	8	minor calcite and illite on fract's,
18G4	26.6	29	2.4	8	black cherty limestone, graphitic shears & gouge
18G4	29	32	3	18	black cherty limestone, graphitic shears & gouge
	32	35	3	70	2ndy calcite on fractures, thin graphitic interbeds & shears

ddh no	from (m)	to (m)	int. (m)	lithology, minerals
18G4	0	4		
18G4	4	6	2	Micro – crypto crystalline quartzite
18G4	6	9	3	Micro-crystalline quartzite
18G4	9	12	3	Micro-crystalline quartzite
18G4	12	15	3	Micro-crystalline quartzite
18G4	15	18	3	Micro-crystalline quartzite
18G4	18	21	3	Micro-crystalline quartzite
18G4	21	24	3	Micro-crystalline quartzite
18G4	24	26.6	2.6	Micro-crystalline quartzite
18G4	26.6	29	2.4	Cherty limestone & graphite
18G4	29	32	3	Cherty limestone & graphite
	32	35	3	limestone with minor graphic slips

ddh no	**from (m)**	**to (m)**	**int. (m)**	**Comments (% recov)**
18G4	**0**	**4**		
18G4	**4**	**6**	**2**	**white qtzite = pred crypto-crystalline, (100% recov)**
18G4	**6**	**9**	**3**	**grey qtzite = pred micro-crystalline, (100% recov)**
18G4	**9**	**12**	**3**	**14-21m, darker grey qtzite (100% recov)**
18G4	**12**	**15**	**3**	**(100% recov)**
18G4	**15**	**18**	**3**	**(95% recov)**
18G4	**18**	**21**	**3**	**23-24m, lt gy to white qtzite, (85% recov)**
18G4	**21**	**24**	**3**	**(100% recov)**
18G4	**24**	**26.6**	**2.6**	**24-26.6m, lt gy – dk gy qtzite (90% recov)**
18G4	**26.6**	**29**	**2.4**	**26.6 – 29.8m, sheared limestone (fault zone), hard, blk-dk gy, dol'zd**
18G4	**29**	**32**	**3**	**silic'd in part, pos fault gouge 28-28.7m, (65% recov)**
	32	**35**	**3**	**limestone, dk gy-blk, distorted thin, disjointed beds, dk gy – wh (mottled), loc brecciated, minor graphitic, (85% recov)**
				(overall 95% recov)

ddh no	from (m)	to (m)	int. (m)	fault & or fracture
18G4	0	4		
18G4	4	6	2	pos bedding 15° to core axis, fract'g 35-40° c/a (90% re)
18G4	6	9	3	bedding 45° c/a,
18G4	9	12	3	Fract 35° c/a. Bedding 30° c/a,
18G4	12	15	3	Fract 30° c/a, bedding 50° c/a,
18G4	15	18	3	bedding 25° c/a,
18G4	18	21	3	Fract 40° c/a, bedding 25° c/a,
18G4	21	24	3	bedding 50° c/a,
18G4	24	26.6	2.6	
18G4	26.6	29	2.4	sharp fault contact @26.8m 60° c/a
18G4	29	32	3	hard dol'zd & silic'd limestone, sheared 1m above fault
18G4	32	35	3	dk gy-blk, silic brittle dolomite,carbonaceous, cherty
				Bedding @ bottom hole = 50°

ddh no	from (m)	to (m)	int. (m)	Remarks
18G4	0	4		
18G4	4	6	2	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G4	6	9	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G4	9	12	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G4	12	15	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G4	15	18	3	glassy or succroidal texture, white-lt grey on fresh surface, tr calcite in vugs
18G4	18	21	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G4	21	24	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G4	24	26.6	2.6	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G4	26.6	29	2.4	Silic'd limestone, brittle fault zone, common graphite, gouge 28.0-28.7m
18G4	29	32	3	Silic'd limestone, brittle fault zone, freq white thin disjointed beds, common graphite
	32	35	3	Black-dk gy-wh mottled limestone; hard, thin bedded, disrupted beds, graphitic in part
				tr vuggy @ 33.8m, disjointed with thin relic beds

ddh no	from (m)	to (m)	int. (m)	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	Total %	SiO2/Total
18G4	0	4		---	---	---	---		
18G4	4	6	2	98.1	0.47	0.02	0.85	100.58	97.53
18G4	6	9	3	99.3	0.36	0.03	0.26	100.46	98.85
18G4	9	12	3	99.4	0.23	0.03	0.32	100.5	98.91
18G4	12	15	3	99.8	0.16	0.03	0.45	101.87	97.97
18G4	15	18	3	98.6	0.26	0.03	0.22	99.95	98.65
18G4	18	21	3	98.4	0.34	0.02	0.3	99.7	98.7
18G4	21	24	3	99.9	0.22	0.03	0.24	100.77	99.14
18G4	24	26.6	2.6	99	0.22	0.03	0.7	100.9	98.17
18G4	26.6	29	2.4						
18G4	29	32	3			average	6 m	to 24 m	98.7
	32	35	3						

ddh no	from (m)	to (m)	int. (m)	lithology
18G5	0	7.5		Overburden
18G5	7.5	9	1.5	Mt Wilson Fm orthoquartzite
18G5	9	12	3	Mt Wilson Fm orthoquartzite
18G5	12	15	3	Mt Wilson Fm orthoquartzite
18G5	15	18	3	Mt Wilson Fm orthoquartzite
18G5	18	21	3	Mt Wilson Fm orthoquartzite
18G5	21	24	3	Mt Wilson Fm orthoquartzite
18G5	24	27	3	Fault zone
18G5	27	30.5	3.5	Beaverft Brisco Fm Limestone

End of hole = 30.5m (100ft)
DDH 18G5; Incl -90°
595114E, 5576233N, Elev 999m
sampled bold intervals:
6 silica samples; 7.5 - 9, 9-12, 12-15, 15-18, 18-21, 21-24

ddh no	from (m)	to (m)	int. (m)	RQD %	alteration
18G5	**0**	**7.5**		---	
18G5	**7.5**	**9**	**1.5**	**47**	**Calcite & illite on fracts,**
18G5	**9**	**12**	**3**	**25**	**minor calcite and illite on fract's, tr chlorite,sericite,Mn**
18G5	**12**	**15**	**3**	**63**	**minor calcite and illite on fract's,**
18G5	**15**	**18**	**3**	**86**	**minor calcite and illite on fract's,**
18G5	**18**	**21**	**3**	**47**	**minor calcite and illite on fract's,**
18G5	**21**	**24**	**3**	**34**	**minor calcite and illite on fract's,**
18G5	**24**	**27**	**3**	**5**	**black cherty limestone, graphitic shears & gouge**
18G5	**27**	**30.5**	**3.5**	**40**	**Black – dk gy hard limestone, minor graph'c shears, thin bedded**

ddh no	from (m)	to (m)	int. (m)	lithology, minerals
18G5	0	7.5		
18G5	7.5	9	1.5	Micro – crypto crystalline quartzite
18G5	9	12	3	Micro-crystalline quartzite
18G5	12	15	3	Micro-crystalline quartzite
18G5	15	18	3	Micro-crystalline quartzite
18G5	18	21	3	Micro-crystalline quartzite
18G5	21	24	3	Micro-crystalline quartzite
18G5	24	27	3	Cherty limestone & graphite
18G5	27	30.5	3.5	limestone with minor graphic slips

ddh no	**from (m)**	**to (m)**	**int. (m)**	**Comments (% recov)**
18G5	**0**	**7.5**		
18G5	**7.5**	**9**	**1.5**	**lt gy – wh qtzite, rare cross bedding visible, common calcite on fract**
18G5	**9**	**12**	**3**	**lt gy – wh qtzite, common calcite on fract, (100% recov)**
18G5	**12**	**15**	**3**	**lt gy – wh qtzite, (95% recov)**
18G5	**15**	**18**	**3**	**lt gy – wh qtzite,(100% recov)t**
18G5	**18**	**21**	**3**	**lt gy – wh qtzite, (95% recov)**
18G5	**21**	**24**	**3**	**lt gy – wh qtzite, (80% recov)**
18G5	**24**	**27**	**3**	**graphitic cherty limestone, minor graphitic slips (75% recov)**
18G5	**27**	**30.5**	**3.5**	**hard thin bedded limestone (95% recov)**

(overall 92% recov)

ddh no	from (m)	to (m)	int. (m)	fault & or fracture
18G5	0	7.5		
18G5	7.5	9	1.5	bedding 40° to core axis, fract'g 45° c/a (90% re)
18G5	9	12	3	bedding 40° c/a,
18G5	12	15	3	Bedding 50° c/a,
18G5	15	18	3	fract 40° c/a, bedding 45° c/a,
18G5	18	21	3	bedding 45° c/a,
18G5	21	24	3	bedding 40° c/a,
18G5	24	27	3	Bedding 50° c/a,
18G5	27	30.5	3.5	(70% recov), sharp fault contact @24.1m 65° c/a silic'd limestone, sheared near fault, graphitic in part dk gy-blk, silic limestone, carbonaceous, thin - medium bedded

ddh no	from (m)	to (m)	int. (m)	Remarks
18G5	0	7.5		
18G5	7.5	9	1.5	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G5	9	12	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G5	12	15	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G5	15	18	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G5	18	21	3	glassy or succroidal texture, white-lt grey on fresh surface, tr calcite in vugs
18G5	21	24	3	glassy or succroidal texture, white-lt grey on fresh surface, tr illite & calcite on fractures
18G5	24	27	3	Silic'd sheared limestone, brittle fault zone, common graphite
18G5	27	30.5	3.5	Black-dk gy-wh mottled limestone; hard, thin bedded, disrupted beds, graphitic in part

ddh no	from (m)	to (m)	int. (m)	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	Total %	SiO2/Total
18G5	0	7.5		---	---	---	---		
18G5	7.5	9	1.5	81.3	0.2	0.17	5.81	100.31	81.05
18G5	9	12	3	94.9	0.22	0.08	2.12	101.55	93.45
18G5	12	15	3	100	0.17	0.03	0.26	100.95	99.06
18G5	15	18	3	99.8	0.13	0.03	0.16	100.48	99.32
18G5	18	21	3	100	0.36	0.04	0.16	101.43	98.59
18G5	21	24	3	96.6	0.27	0.04	0.78	99.29	97.29
18G5	24	27	3						
18G5	27	30.5	3.5			average	12 m	to 18 m	99.2

APPENDIX D: Gibraltar North Zone Rock Chip Sample Descriptions

Sample ID	Zone name	MTO claim	Easting NAD 83	Northing NAD 83	Elev (m)	Elev (ft)
18G1B-4A	North Zone East Contact	1050895	595370	5576889	1327	4352.6
18G1B-4B	North Zone East Contact	1050895	595373	5576889	1325	4346
18G1B-4C	North Zone East Contact	1050895	595376	5576889	1324	4342.7
18G1B-4D	North Zone East Contact	1050895	595379	5576889	1323	4339.4
18G1B-5A	North Zone East Contact	1050895	595374	5576865	1330	4362.4
18G1B-5B	North Zone East Contact	1050895	595377	5576865	1328	4355.8
18G1B-5C	North Zone East Contact	1050895	595380	5576865	1326	4349.3
18G1B-5D	North Zone East Contact	1050895	595383	5576865	1325	4346
18G1B-5E	North Zone East Contact	1050895	595386	5576865	1323	4339.44

Sample ID	Lithology	Sample type	Bed Strike	Bed Dip	Width (cm)
18G1B-4A	orthoquartzite	outcrop, base of quartzite slope	5	75 W	300
18G1B-4B	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-4C	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-4D	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-5A	orthoquartzite	outcrop, base of quartzite slope	6	76 W	300
18G1B-5B	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-5C	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-5D	orthoquartzite	outcrop, base of quartzite slope			300
18G1B-5E	orthoquartzite	outcrop, base of quartzite slope			300

Sample ID	% SiO2	% Al2O3	% Fe2O3	% MgO	% CaO	Na2O	K2O	% LOI	% Total	SiO2/Total
18G1B-4A	98.6	0.21	0.04	0.03	0.01	0.04	0.14	0.13	99.21	99.39
18G1B-4B	100	0.19	0.03	0.02	0.02	0.05	0.17	0.11	100.61	99.39
18G1B-4C	99.7	0.18	0.02	0.02	<0.01	0.01	0.13	0.1	100.18	99.52
18G1B-4D	100	0.13	0.02	0.01	0.01	0.04	0.12	0.11	100.46	99.54
18G1B-5A	98.4	0.09	0.04	0.02	0.03	0.04	0.08	0.24	98.97	99.42
18G1B-5B	100	0.11	0.02	0.03	0.06	0.01	0.03	0.17	100.46	99.54
18G1B-5C	98.1	0.11	0.01	0.03	0.06	0.02	0.17	0.19	98.71	99.38
18G1B-5D	98.4	0.09	<0.01	0.02	0.05	0.01	0.05	0.16	98.8	99.59
18G1B-5E	98.4	0.09	0.01	0.02	0.05	0.02	0.08	0.2	98.89	99.51
									average	99.476

APPENDIX E: Minfile Description

MINFILE Record Summary
MINFILE No 082JSW001

Print Preview | PDF | -- SELECT REPORT --

XML Extract / Inventory Report

File Created: 24-Jul-1985 by BC Geological Survey (BCGS)
Last Edit: 14-Apr-1987 by Gary R. Foye (GRF)

SUMMARY Summary Help

Name	RED CLOUD	**NMI**	
		Mining Division	Golden
		BCGS Map	082J032
Status	Developed Prospect	**NTS Map**	082J05E
Latitude	050° 19' 50"	**UTM**	11 (NAD 83)
Longitude	115° 39' 44"	**Northing**	5576240
		Easting	595214
Commodities	Silica	**Deposit Types**	R07 : Silica sandstone
Tectonic Belt	Foreland	**Terrane**	Ancestral North America

Capsule Geology

The small Red Cloud quarry is located on the west side of the Kootenay River, north from Canal Flats.

Quarrying has taken place on a band of quartzite of the Middle and/or Upper Ordovician Mount Wilson Formation (formerly the Wonah Formation). The band strikes northeast with dips of 40 to 50 degrees west. The band is 18.3 to 21.3 metres wide at the quarry. Wallrock consists of shale and limestone.

The quartzite is a hard white rock with grey streaks and occasional yellowish sandy patches. It is commonly fractured at intervals of 8 centimetres or greater.

The only record of production is a small trial shipment sent in 1967 when the quarry measured 30 by 3 by 3 metres. A grab sample of loose muck pieces taken in 1967 assayed 98.56 per cent SiO_2, 0.65 per cent Al_2O_3, 0.12 per cent total Fe, and 0.05 per cent CaO (Open File 1987-15).

Bibliography

EMPR AR 1967-320
EMPR OF *1987-15
GSC OF 634

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Fig 1 Gibraltar Silica General Location

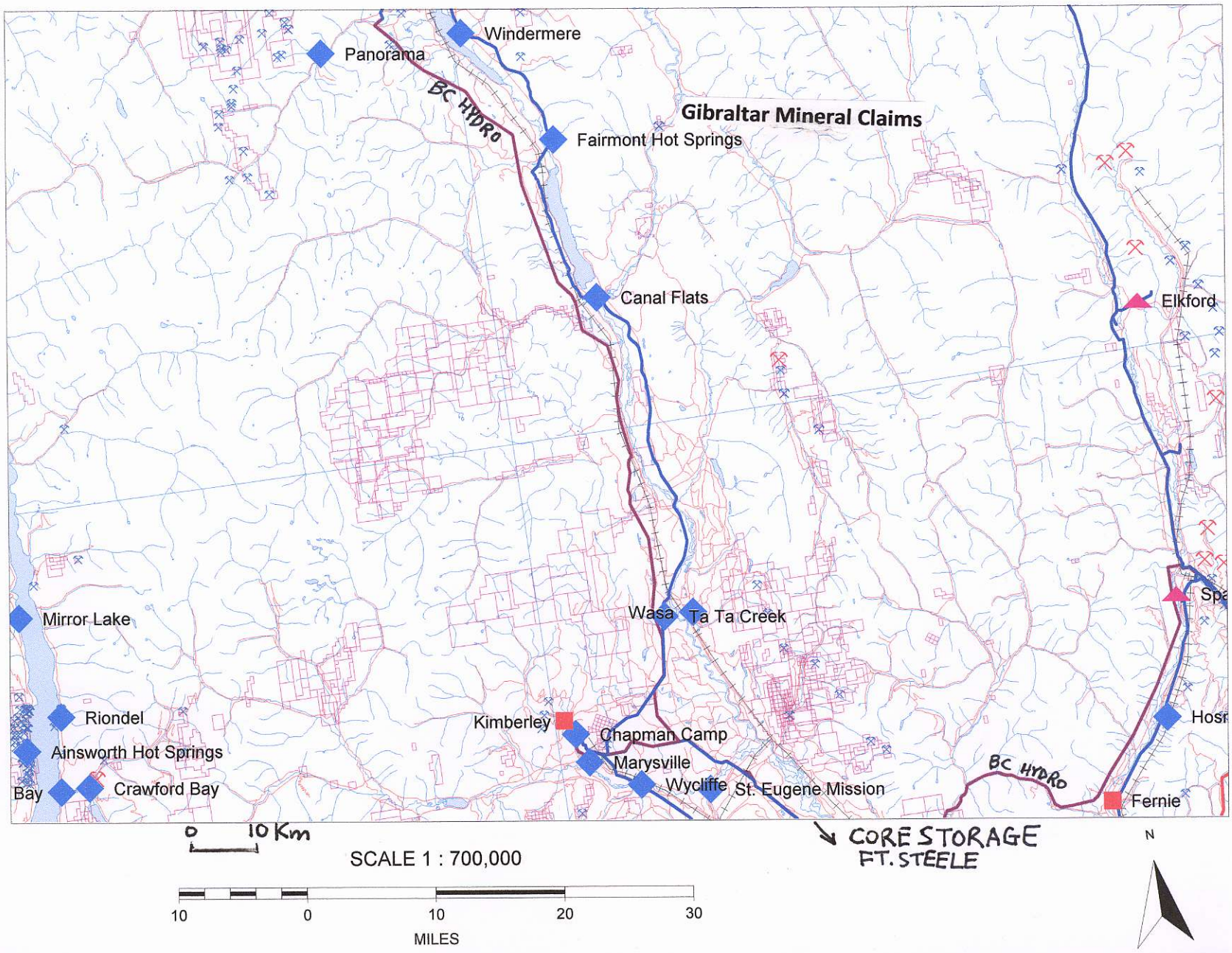
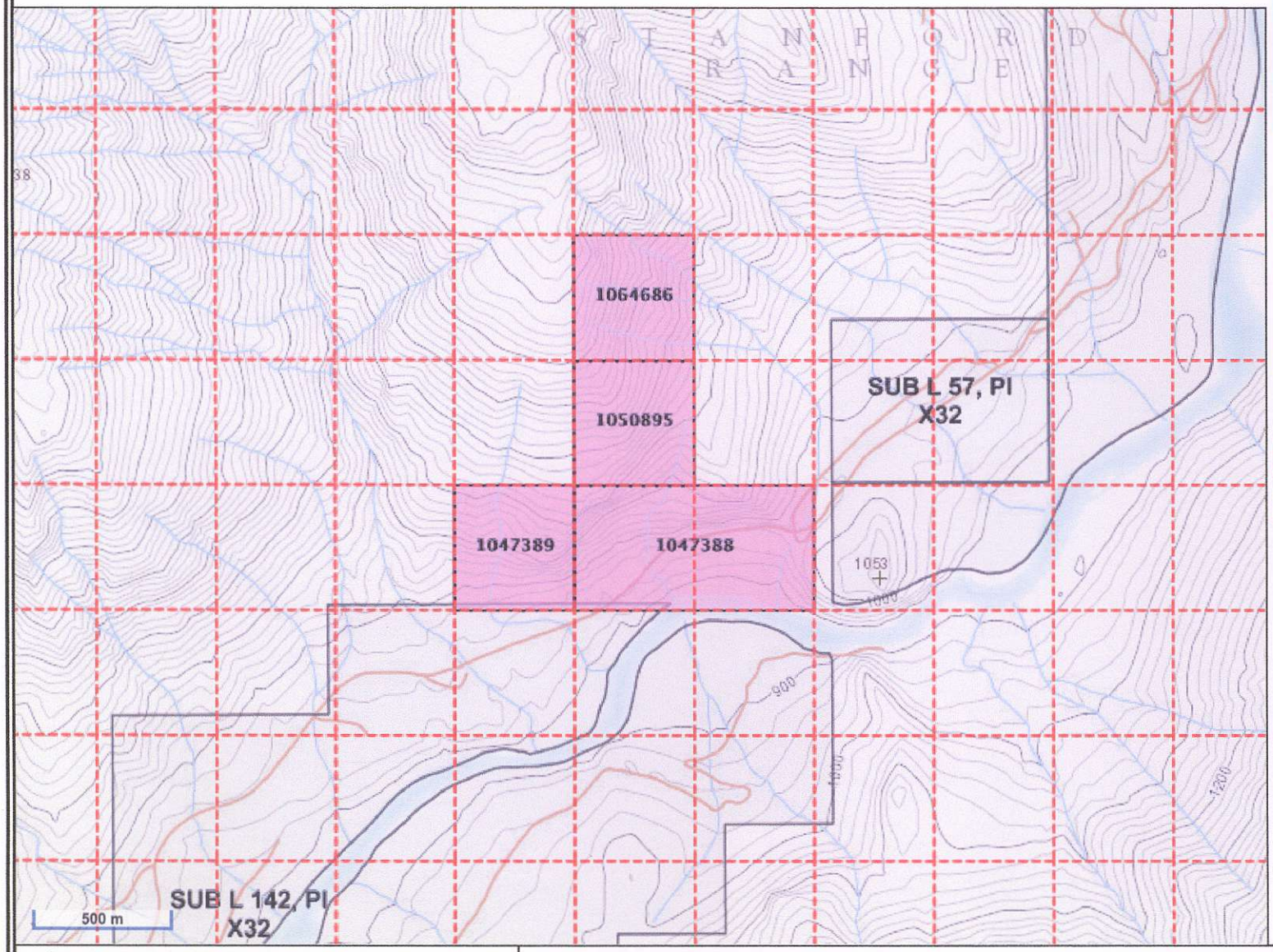


Fig 2 MTO Gibraltar Claims



Legend

Mineral Titles (MTO)
- MTO Grid
- Title (current)
- LEASE
- CLAIM
- Reserves
- No Registration
- Conditional
- Heritage/Historic Site

Other Mining Layers
- Mineral Occurrences (MINFILE)
- Producer
- Past Producer
- Developed Prospect
- Other

Crown Land Layers (Tantalis)
- Land Act Survey Parcels - Tantalis - Legal Descriptions
- Label Text
- Land Act Survey Parcels - Tantalis - Outlined

Administrative Boundaries
- Federal Transfer Lands - Outlined
- Federal Transfer Lands - Colour Filled
- National Parks - Outlined
- National Park
- National Parks - Colour Filled
- Conservancy Areas - Tantalis - Colour Filled
- Conservancy Areas
- Ecological Reserves - Tantalis - Colour

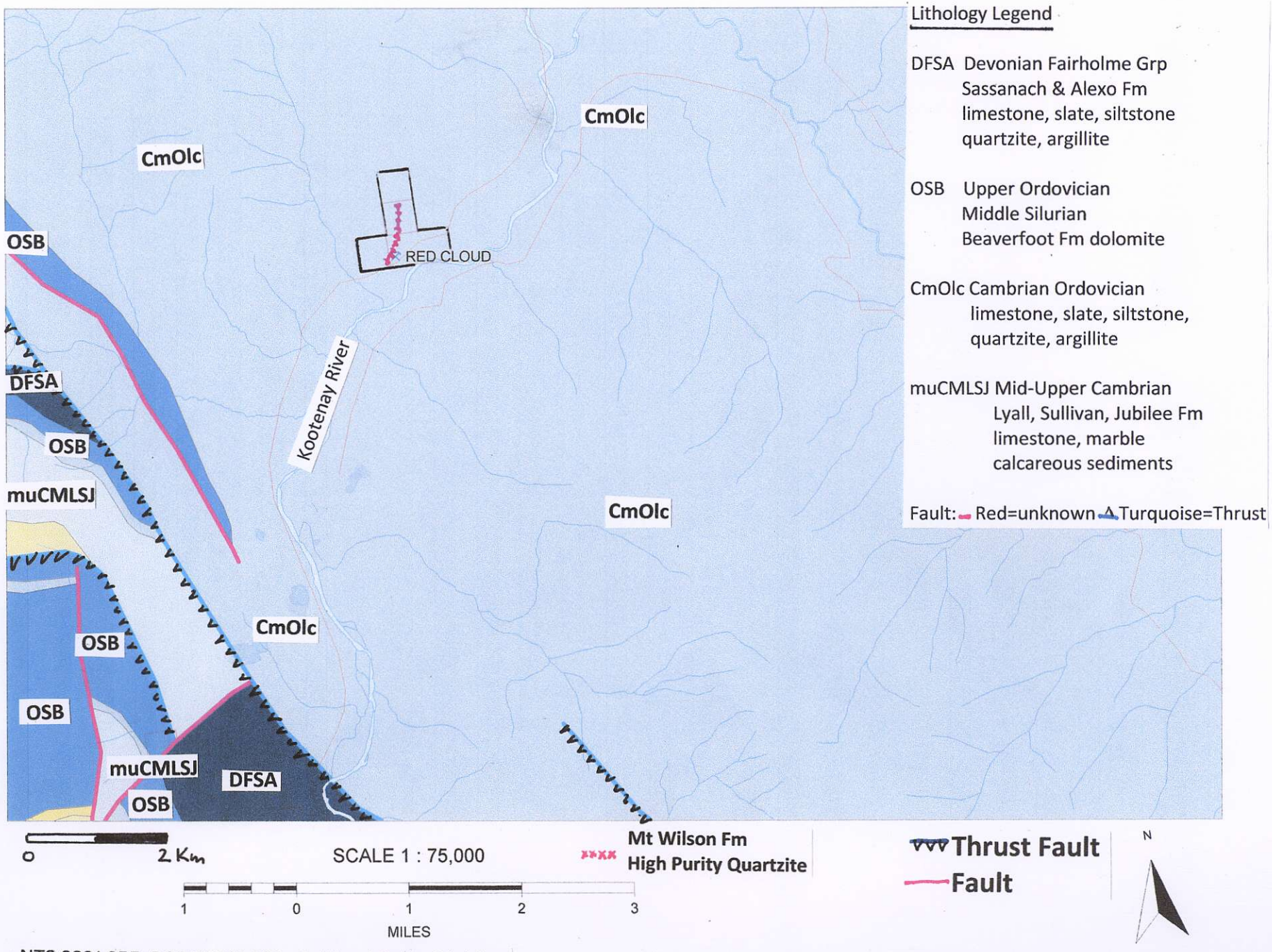
This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Printed using the Mineral Titles Online (MTO) application.082J 5/E, 082J.032, Golden Mining Division

Center: 50°20'1", -115°39'37"
Scale: 1 : 33855
SRS: EPSG:3857
UTM Zone: 11

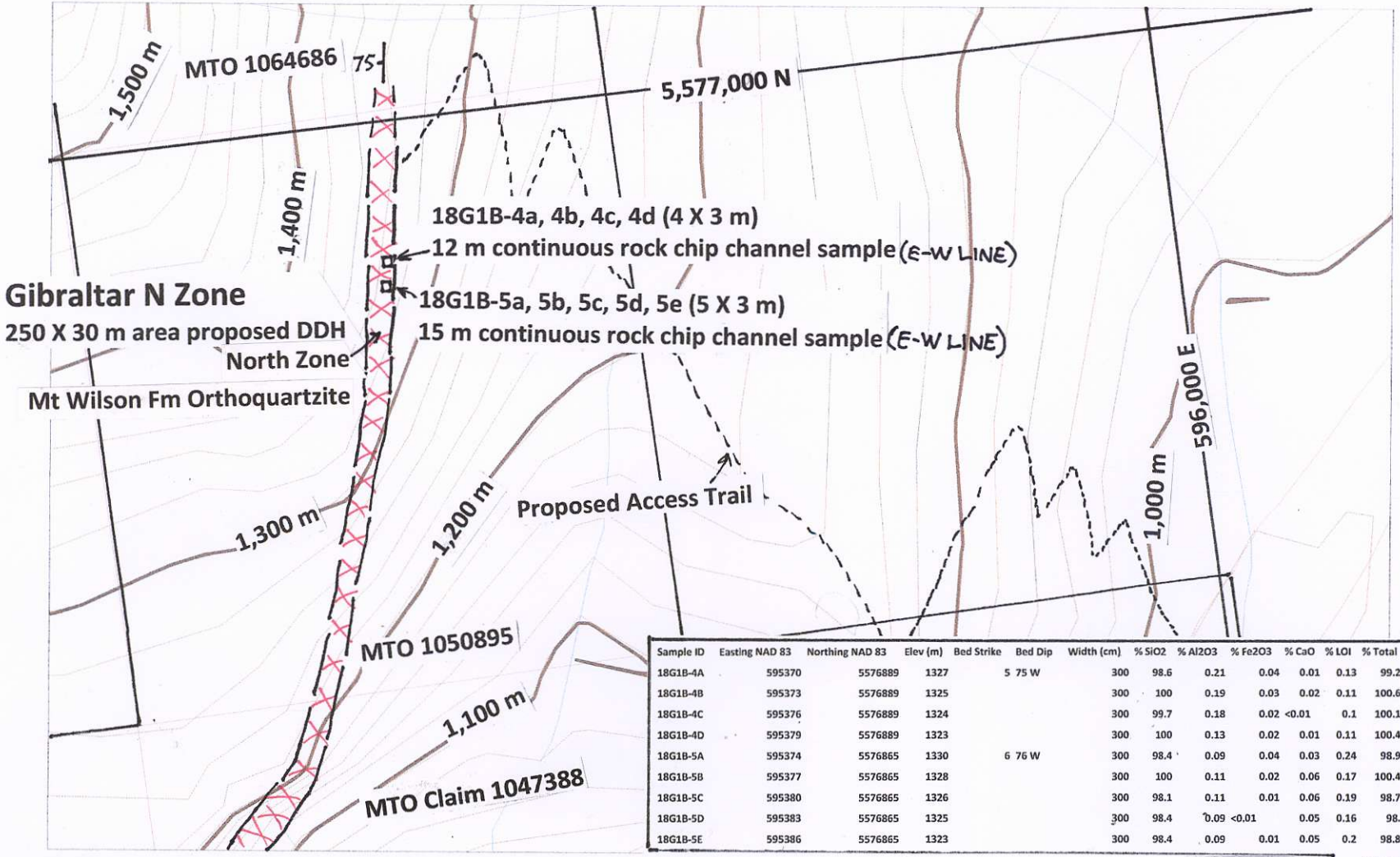
N

Fig 3 Gibraltar (Red Cloud) Silica General Geology



NTS 082J 05E, BCGS 082J.032; Golden Mining Division

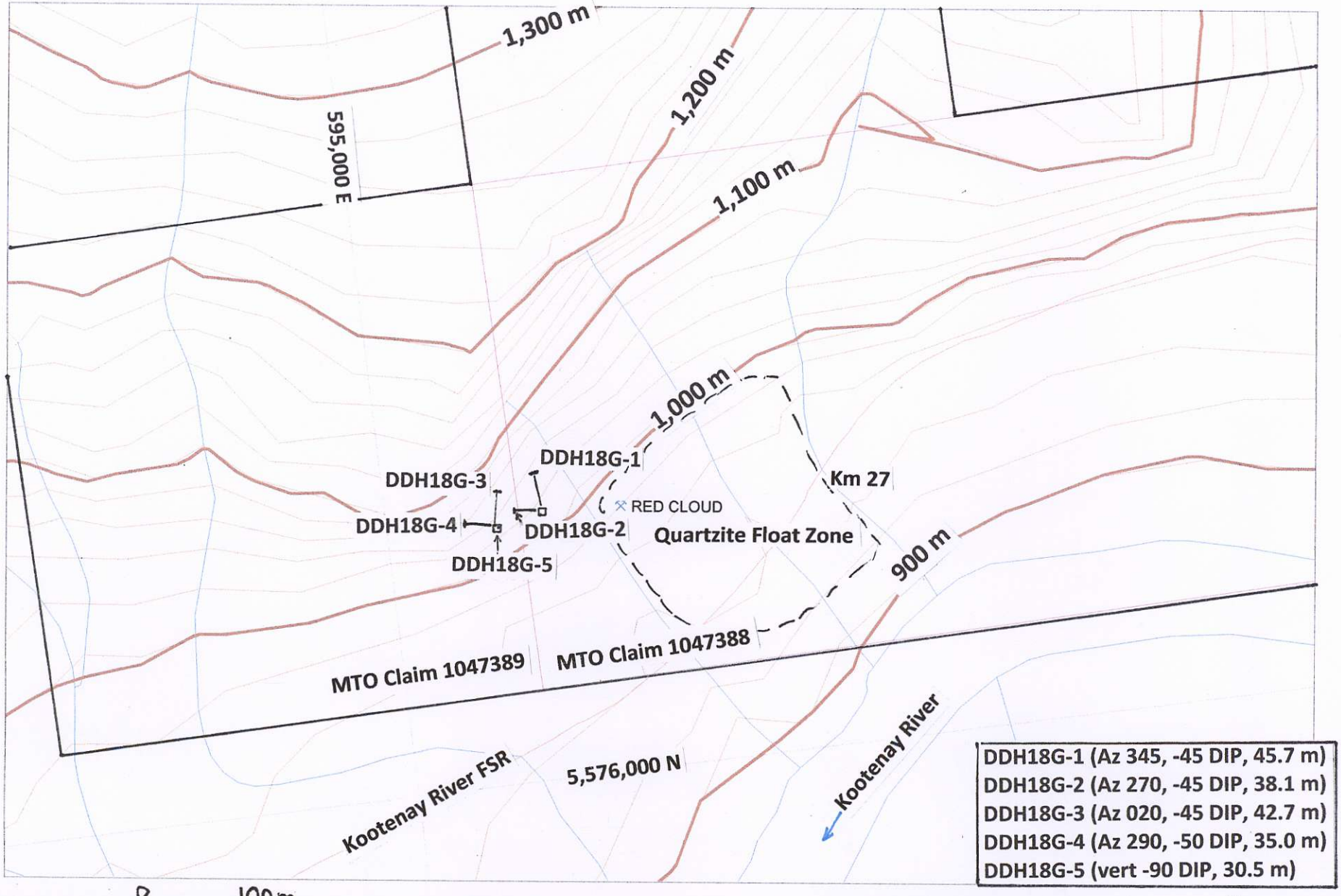
Fig 4 2018 Rock Chip Samples Gibraltar N Zone



Sample ID	Easting NAD 83	Northing NAD 83	Elev (m)	Bed Strike	Bed Dip	Width (cm)	% SiO2	% Al2O3	% Fe2O3	% CaO	% LOI	% Total	SiO2/Total
18G1B-4A	595370	5576889	1327		5 75 W	300	98.6	0.21	0.04	0.01	0.13	99.21	99.39
18G1B-4B	595373	5576889	1325			300	100	0.19	0.03	0.02	0.11	100.61	99.39
18G1B-4C	595376	5576889	1324			300	99.7	0.18	0.02	<0.01	0.1	100.18	99.52
18G1B-4D	595379	5576889	1323			300	100	0.13	0.02	0.01	0.11	100.46	99.54
18G1B-5A	595374	5576865	1330		6 76 W	300	98.4	0.09	0.04	0.03	0.24	98.97	99.42
18G1B-5B	595377	5576865	1328			300	100	0.11	0.02	0.06	0.17	100.46	99.54
18G1B-5C	595380	5576865	1326			300	98.1	0.11	0.01	0.06	0.19	98.71	99.38
18G1B-5D	595383	5576865	1325			300	98.4	0.09	<0.01	0.05	0.16	98.8	99.59
18G1B-5E	595386	5576865	1323			300	98.4	0.09	0.01	0.05	0.2	98.89	99.51
												average	99.47555556

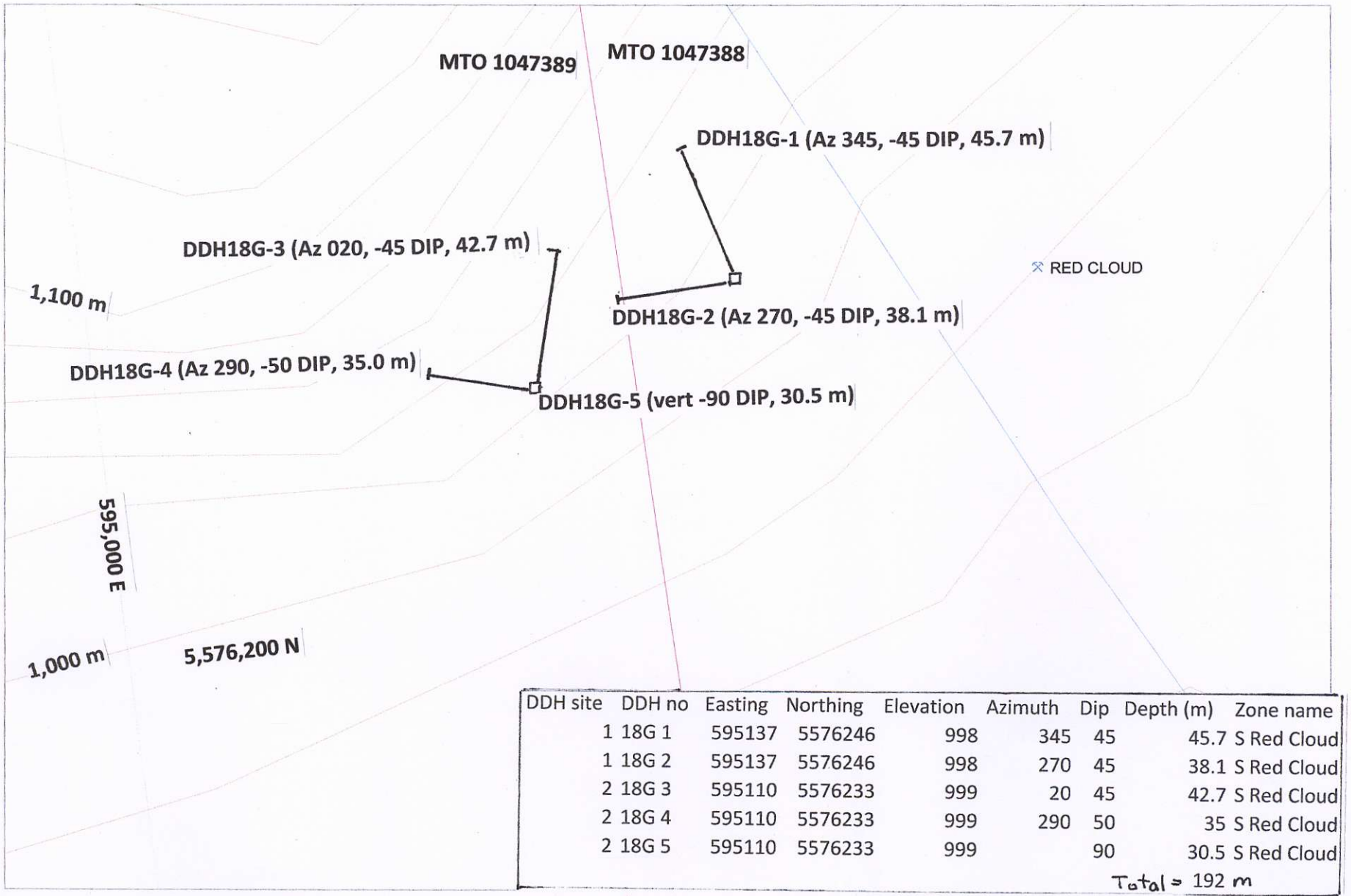
Fig 5 DDH's 2018
MTO 1047388, & 1047389
NTS 082J 05/E, BCGS 082J.032
Golden Mining Division
Legend
DDH 2018
FAULT
QUARTZITE
FAULT
DDH SITE 1
18D1,2
DDH SITE 2
18D3,4,5
Kootenay River FSR
Kootenay River
N
100 m
Google Earth
Image © 2019 Province of British Columbia

Fig 6 Gibraltar 2018 DDH Locations



NTS 082J 05/E, BCGS 082J.032
Golden Mining Division

Fig 7 Gibraltar Detail 2018 DDH Locations



DDH site	DDH no	Easting	Northing	Elevation	Azimuth	Dip	Depth (m)	Zone name
1	18G 1	595137	5576246	998	345	45	45.7	S Red Cloud
1	18G 2	595137	5576246	998	270	45	38.1	S Red Cloud
2	18G 3	595110	5576233	999	20	45	42.7	S Red Cloud
2	18G 4	595110	5576233	999	290	50	35	S Red Cloud
2	18G 5	595110	5576233	999		90	30.5	S Red Cloud
							Total = 192 m	

NTS 082J 05/E, BCGS 082J.032
Golden Mining Division

Fig 8 Gibraltar Silica Geology & 2018 Drill Site Locations

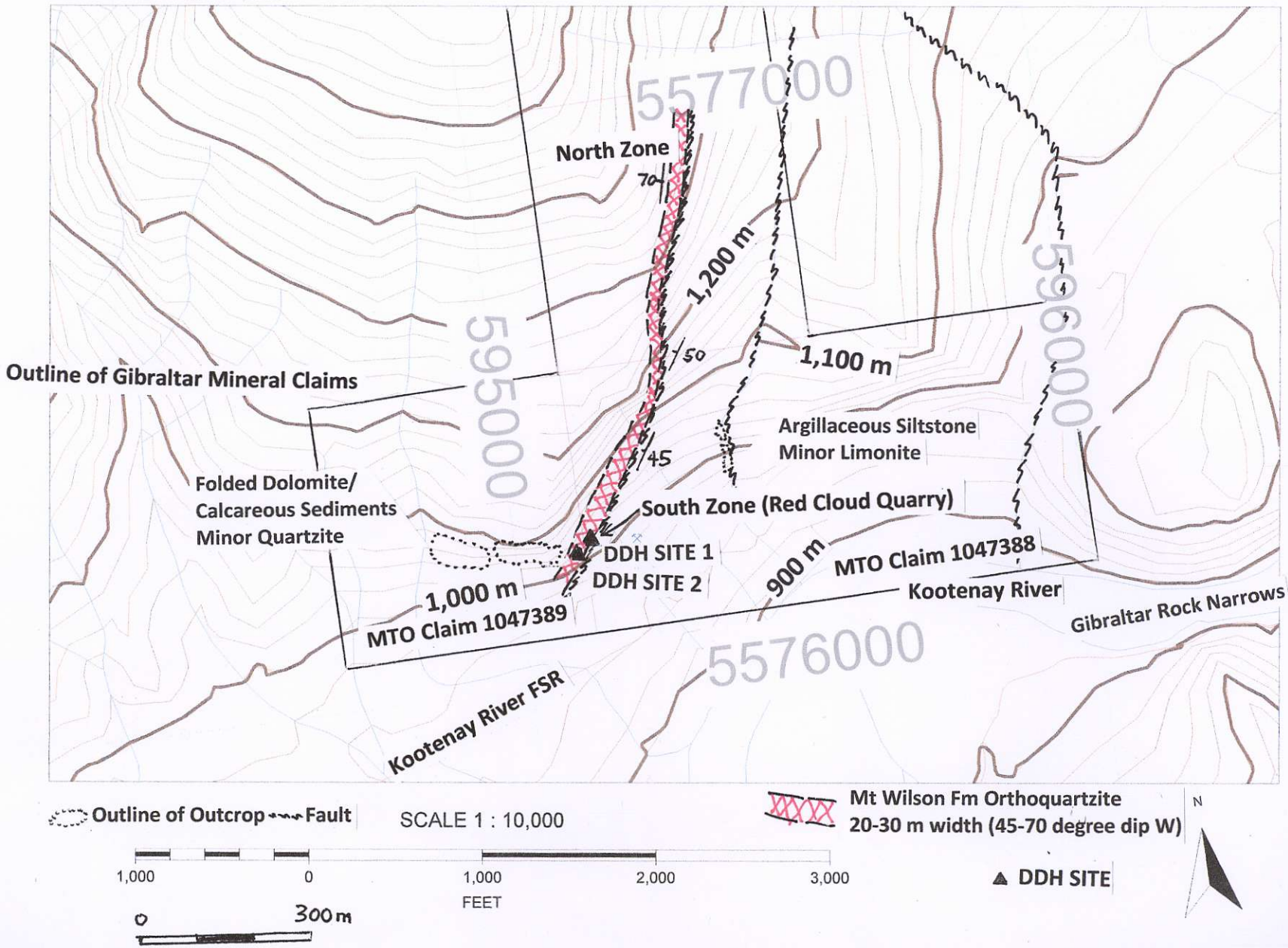
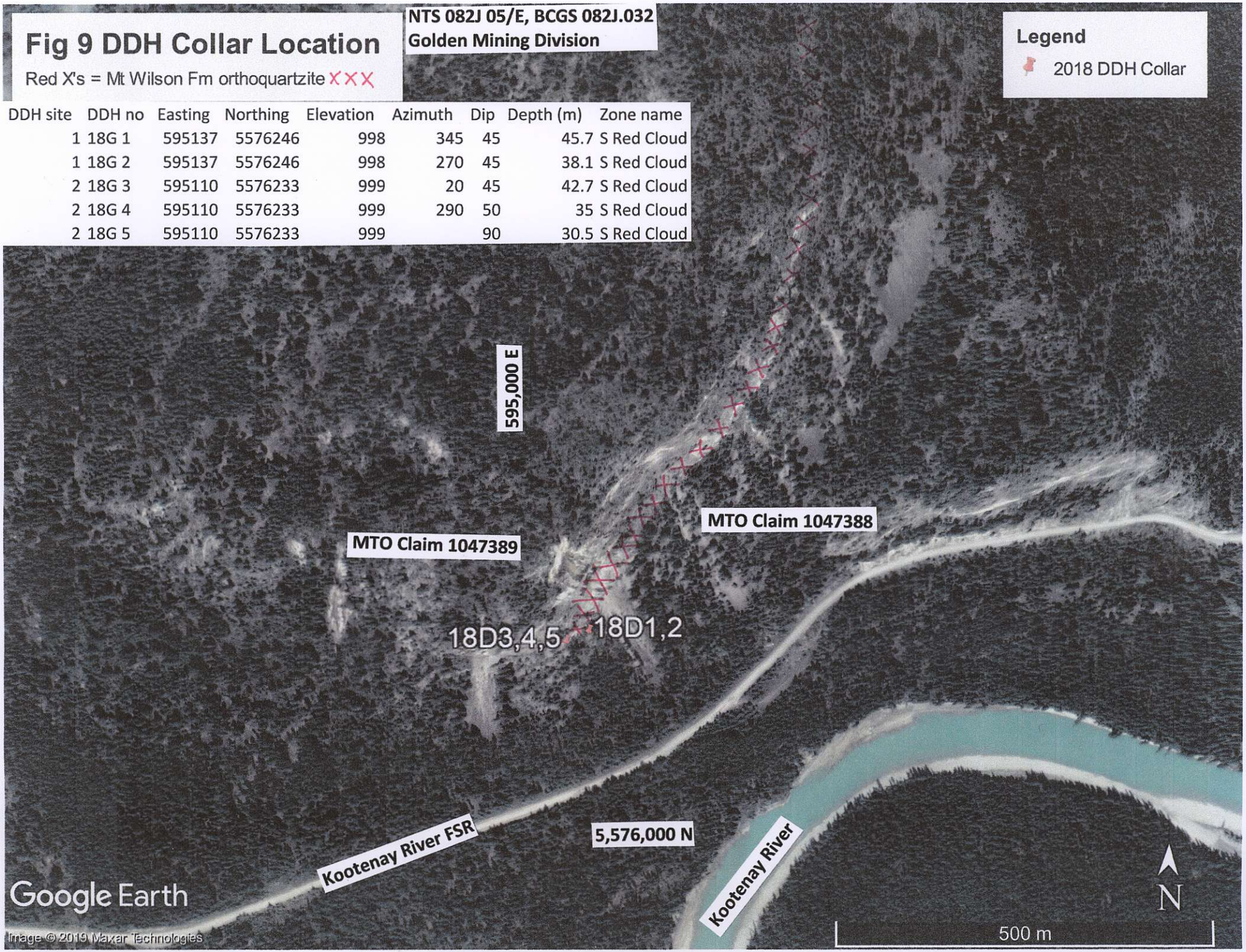


Fig 9 DDH Collar Location

Red X's = Mt Wilson Fm orthoquartzite XXX

NTS 082J 05/E, BCGS 082J.032
Golden Mining Division

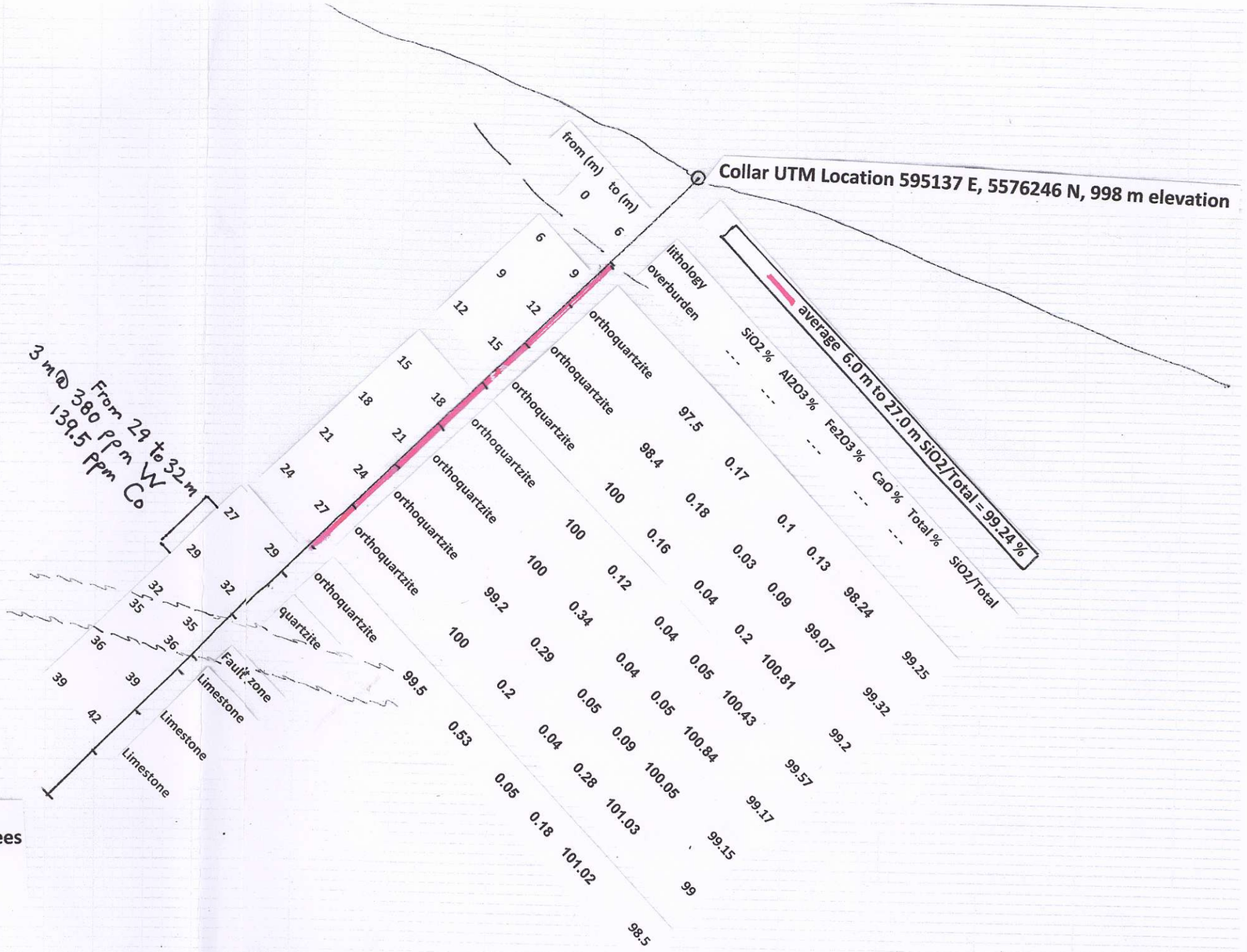
DDH site	DDH no	Easting	Northing	Elevation	Azimuth	Dip	Depth (m)	Zone name
1	18G 1	595137	5576246	998	345	45	45.7	S Red Cloud
1	18G 2	595137	5576246	998	270	45	38.1	S Red Cloud
2	18G 3	595110	5576233	999	20	45	42.7	S Red Cloud
2	18G 4	595110	5576233	999	290	50	35	S Red Cloud
2	18G 5	595110	5576233	999		90	30.5	S Red Cloud



1,000 m

975 m

950 m



DDH 18G-1
Collar Azimuth 345 Degrees
Collar Dip -45 Degrees
Final Depth 45.7 m

Fig 10

Gibraltar Silica DDH 18G-1
Cross Section Looking 075 Degrees
Scale 1: 250 1 cm equivalent to 2.5 m
NTS 082J 05/E, BCGS 082J.032
Golden Mining Division
MTO Claim 1047388

1,000 m

975 m

950 m

Collar UTM Location 595137 E, 5576246 N, 998 m elevation

from (m)	to (m)	int. (m)	lithology
0	4.4	4.4	overburden
4.4	6	1.6	orthoquartzite
6	9	3	orthoquartzite
9	12	3	orthoquartzite
12	15	3	orthoquartzite
15	18	3	orthoquartzite
18	21	3	orthoquartzite
21	24	3	orthoquartzite
24	27	3	orthoquartzite
27	30	3	orthoquartzite
30	33	3	orthoquartzite
33	34.5	1.5	Fault zone
34.5	36	1.5	Limestone
36	38.1	2.1	Limestone

SiO2 %	Al2O3 %	Fe2O3 %	CaO %	Total %	SiO2/Total
---	---	---	---	---	
97.9	0.23	0.02	0.11	98.7	99.19
97.5	0.27	0.02	0.09	98.25	99.24
98.6	0.36	0.03	0.13	99.65	98.95
98	0.16	0.03	0.1	98.63	99.36
100	0.23	0.04	0.31	101.12	98.89
97.5	0.19	0.02	0.1	98.06	99.43
96.6	0.19	0.03	0.65	98.31	98.26
99.8	0.18	0.03	0.23	100.66	99.15
97.5	0.15	0.04	0.09	98.09	99.4
86.4	0.73	0.2	4.26	100.19	86.24

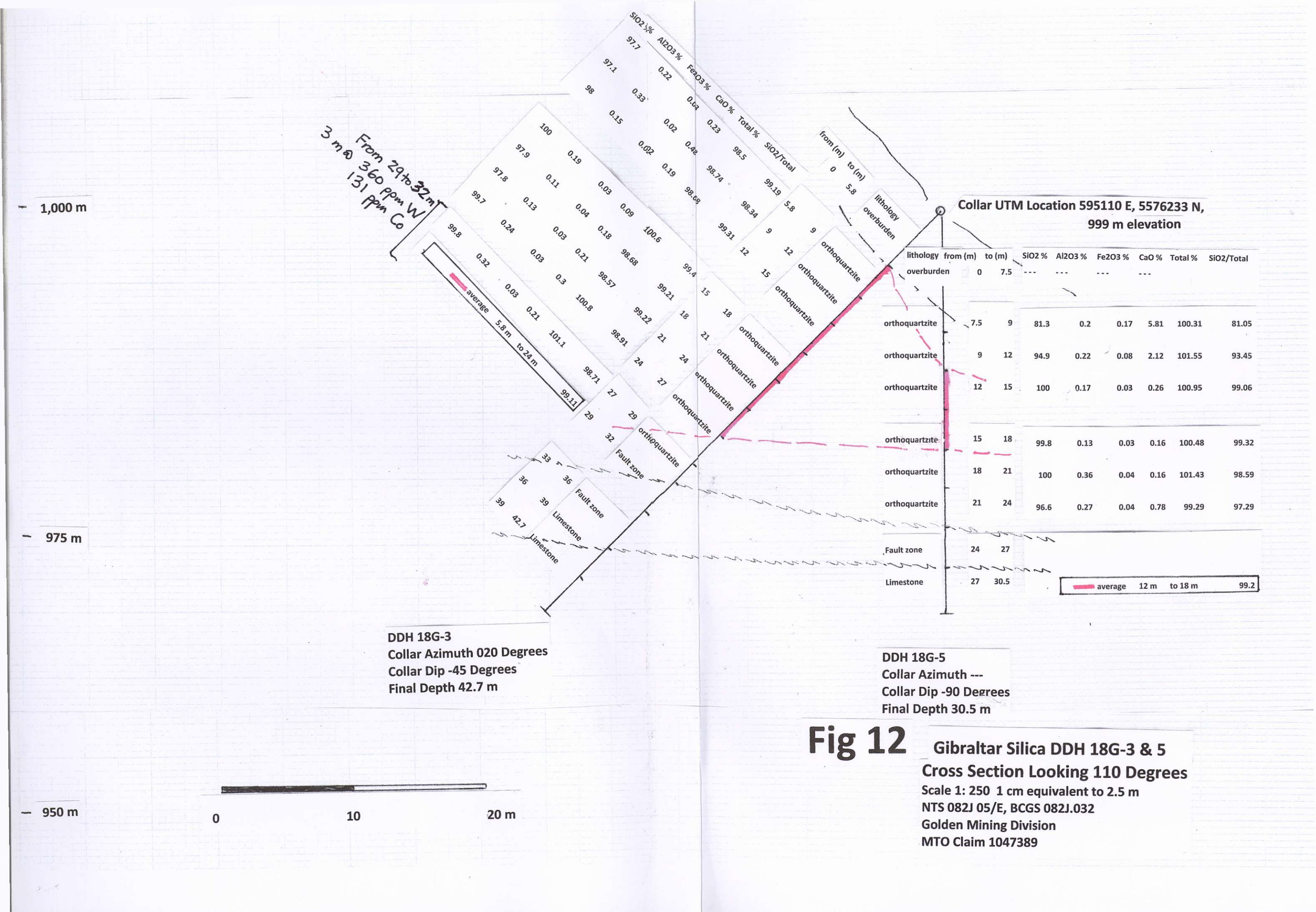
average 4.4 m to 30 m 99.1

DDH 18G-2
Collar Azimuth 270 Degrees
Collar Dip -45 Degrees
Final Depth 38.1 m

0 10 20 m

Fig 11

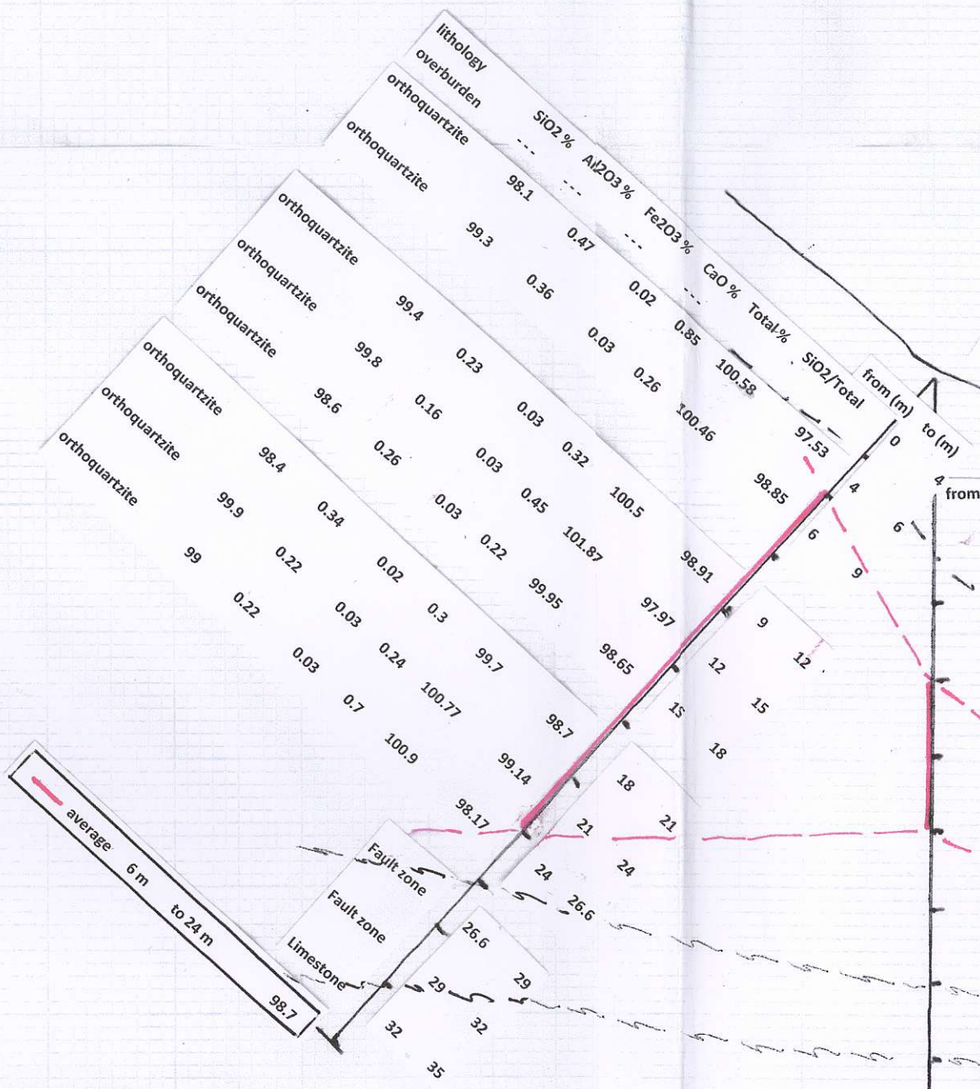
Gibraltar Silica DDH 18G-2
Cross Section Looking 000 Degrees
Scale 1: 250 1 cm equivalent to 2.5 m
NTS 082J 05/E, BCGS 082J.032
Golden Mining Division
MTO Claim 1047388



lithology	from (m)	to (m)	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	Total %	SiO2/Total
overburden	0	7.5	---	---	---	---		
orthoquartzite	7.5	9	81.3	0.2	0.17	5.81	100.31	81.05
orthoquartzite	9	12	94.9	0.22	0.08	2.12	101.55	93.45
orthoquartzite	12	15	100	0.17	0.03	0.26	100.95	99.06
orthoquartzite	15	18	99.8	0.13	0.03	0.16	100.48	99.32
orthoquartzite	18	21	100	0.36	0.04	0.16	101.43	98.59
orthoquartzite	21	24	96.6	0.27	0.04	0.78	99.29	97.29
Fault zone	24	27						
Limestone	27	30.5						

Fig 12

Gibraltar Silica DDH 18G-3 & 5
Cross Section Looking 110 Degrees
Scale 1: 250 1 cm equivalent to 2.5 m
NTS 082J 05/E, BCGS 082J.032
Golden Mining Division
MTO Claim 1047389



· 1,000 m

975 m

950 m

0 10 20 m

DDH 18G-4
Collar Azimuth 290 Degrees
Collar Dip -50 Degrees
Final Depth 35 m

Collar UTM Location 595110 E, 5576233 N, 999 m elevation

from (m)	to (m)	int. (m)	lithology	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	Total %	SiO2/Total
0	7.5		overburden	---	---	---	---		
7.5	9	1.5	orthoquartzite	81.3	0.2	0.17	5.81	100.31	81.05
9	12	3	orthoquartzite	94.9	0.22	0.08	2.12	101.55	93.45
12	15	3	orthoquartzite	100	0.17	0.03	0.26	100.95	99.06
15	18	3	orthoquartzite	99.8	0.13	0.03	0.16	100.48	99.32
18	21	3	orthoquartzite	100	0.36	0.04	0.16	101.43	98.59
21	24	3	orthoquartzite	96.6	0.27	0.04	0.78	99.29	97.29
24	27	3	Fault zone						
27	30.5	3.5	Limestone						

average 12 m to 18 m 99.2

DDH 18G-5
Collar Azimuth ---
Collar Dip -90 Degrees
Final Depth 30.5 m

Fig 13

Gibraltar Silica DDH 18G-4 & 5
Cross Section Looking 340 Degrees
Scale 1: 250 1 cm equivalent to 2.5 m
NTS 082J 05/E, BCGS 082J.032
Golden Mining Division
MTO Claim 1047389