

DRILL HOLE REPORT

Hole Number **H-18-3522**

Project: **2018-BUCHANS**

Project Number:

<u>Drilling</u>		<u>Casing</u>		<u>Core</u>		<u>Location</u>		<u>Other</u>	
Azimuth:	0	Length:	19.8	Dimension:	NQ	Township:		Logged by:	Paul Moore/David Butler
Dip:	-90	Pulled:	no	Storage:	RRO Buchan	Claim No.:	22209M	Relog by:	
Length:	641	Capped:	yes	Section:		NTS:	12A/15	Contractor:	Cabo Drilling
Started:	14-Sep-18	Cemented:		Hole Type	DD	Hole:	SURFACE	Spotted by:	Jim Harris
Completed:	08-Oct-18							Surveyed:	
Logged:	06-Aug-18	Relogged:						Surveyed by:	hand held GPS
Comment:	H-18-3522: Hole collared 30 m West of H-1910 that intersected 8.3% CBM over 1.83 m as 0.4% Cu, 3.1% Pb, 4.8% Zn, 48 g/t Ag & 0.7 g/t Au.					<u>Local Grid Coordinate</u>		<u>UTM Coordinate</u>	
						East:	0	East:	513050
						North:	0	North:	5410125
						Elev.:	0	Elev.:	240
						Zone:	21	NAD:	NAD83
								Geophysics:	
								Geophysical Contractor:	
								Left in hole:	Casing
								Making water:	
								Multi shot survey:	yes

Deviation

Distance	Azimuth	Dip	Type	Good	Comn
0.00	0.00	-90.00	C	☒	collar
23.00	79.10	-89.70	F	☒	mag: 5
73.00	177.00	-88.50	F	☒	mag: 5
124.00	186.40	-88.70	F	☒	Mag: 5
175.00	161.20	-88.20	F	☒	Mag: 5
225.00	182.50	-87.50	F	☒	Mag: 5
286.00	171.70	-87.70	F	☒	Mag: 5
337.00	186.30	-87.30	F	☒	Mag: 5
388.00	176.40	-87.20	F	☒	Mag: 5
439.00	182.00	-86.40	F	☒	Mag: 5
490.00	175.80	-86.40	F	☒	Mag: 5
541.00	189.60	-86.10	F	☒	Mag: 5
592.00	189.50	-86.90	F	☒	Mag: 5
641.00	190.60	-86.10	F	☒	Mag: 5

LITHOLOGY REPORT

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From (m)	To (m)	Lithology	Sample #	From	To	Length	Cu (%)	Pb (%)	Zn (%)	Ag (ppm)	Au (ppb)
0.00	17.45	OB Overburden									
		Upper Contact:									
		Colour:									

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From (m)	To (m)	Lithology	Sample #	From	To	Length	Cu (%)	Pb (%)	Zn (%)	Ag (ppm)	Au (ppb)	
17.45	174.20	Maf/Int Tuff <i>Maf/Int-flows/t,f,fol,mag,1%py(WBV)</i> WBV-Int <i>Upper Contact:</i> <i>Colour:</i> Dark-green Dark-green, hard, mafic to intermediate flows and tuffs with pervasive moderate foliation at 75-80 degrees to CA. Unit has streaky appearance and internal contacts suggest flows/ breccia with lesser intercalated fine granular tuff material. Unit often feldspar-phyric with stretched/aligned white, weakly locally saussuritized feldspars <10%<2 mm particularly in tuff sections. Moderately magnetic throughout, fizzes with acid throughout. Top 0.5 m has slightly lighter grey colour - looks more felsic, but is likely just surface weathering. Also more felsic-looking section from 61.5 to 64.9 m where increased quartz-pyrite veining with rare trace chalcopyrite (e.g., 62.8 m). Below ~115 m see sections of feldspar-phyric glassy lapilli with glassy-purplish-green andesitic lapilli containing feldspars<5%<4 mm (pinkish-white). *Tuff banding/ bedding @120 m is @ 73 degrees to CA. Amygdules are common locally and appear more prevalent down-unit as silica and chlorite. Below 146m unit has 15-25% buff-pale green-grey to pinkish altered basaltfragments in a medium green basaltic matrix. Bleached fragments have a fair amount of calcite. Unit is competent with some strain seen from 153.2-154.5m as broken/blocky core with purple alteration along fractures.										
174.20	206.10	Maf/Int Tuff <i>Maf/Int-flows/t,f,fol,mag,1%py(WBV)</i> WBV-INT <i>Upper Contact:</i> Conformable Gradational <i>Colour:</i> Unit is similar to above unit but doesn't have bleached fragments, just foliated or bedded (40-50° to CA)										

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LITHOLOGY REPORT

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Project: **2018-BUCHANS**

Project Number:

<i>From (m)</i>	<i>To (m)</i>	<i>Lithology</i>	<i>Sample #</i>	<i>From</i>	<i>To</i>	<i>Length</i>	<i>Cu (%)</i>	<i>Pb (%)</i>	<i>Zn (%)</i>	<i>Ag (ppm)</i>	<i>Au (ppb)</i>
		mafic tuff. Unit has weak pervasive chlorite alteration, with local moderately altered zone becoming more sheared in appearance. Local zones of intermediate to felsic looking material from 198.2-200.8m is very siliceous and weakly foliated at 40-50° to CA. Unit has trace pyrite. Upper contact is conformable and gradational.									
206.10	310.40	Fel-Int <i>Felsic to int tuff, q-phy, loc prom</i> FEL_T_Q-PHY Upper Contact: Conformable Gradational Colour: Intermediate to felsic tuff is medium grey-green to locally dark grey-green and locally pinkish where rhyolitic. Unit is variably quartz phyrlic and local zone of Prominent quartz seen from 239.6-241.3m. Darker grey-green sections appear more mafic looking and could be narrow units. Foliation is moderately developed, but locally strong in chloritized zones. Local lapilli tuff sections (232.8-236.9m). Unit is carbonatized and pink calcite stringers are locally common. Unit has 1-2% pyrite as narrow stringers <1cm in width. Upper contact is sharp and conformable. Local chloritic altered mafic volcanic breccia zones. From about 236 to 270.0 m there are zones with 3 to 5% pyrite and local stockwork and disseminated base metal sulphides, often associated with chloritized zones, (some could be flattened sulphide clasts). Stockwork veins are with chlorite, +/- carbonate +/- quartz. The stronger mineralized zones are from: 245.5 to 254 m ; 252 to 252.35 m and 262.4 to 270.0 m, BM sul to 5% over short intervals. From 255.2 to 261.5 m the unit has common feldspar phyrlic mafic to intermediate flow to flow breccia. From 261.5 to 278.8 m is a lapilli tuff to breccia with occasional qtz phyrlic rhyolite clasts. There is pink potassic alteration locally along veins and fractures below 273 m. Prominent qtz rhyolite clasts/zones are more common below 276.5 m. From 278.8 to 292.5 m is prominent qtz xtal tuff with 5%+ 2 to 5 mm qtz xtals and variable 2 to 3 mm white and pink feldspar xtals. Could be rhyolite locally but common black chloritic 'shards'. At 279.2 m there is a 1 to 2 cm sulphide vein with sp and cpy. From 292.55 to 293.0 m approx 6% py and 2 to 3% sphalerite as veinlets with chlorite. From 292.5 to 304 m is interbedded qtz phyrlic felsic tuff and mafic tuff, local sharp contacts at approx 50 deg tca. From 304 to 310.4 m is intermediate tuff with qtz xtals.	18-344302	246.00	247.00	1.00	0.01	0.00	0.01	0	9
			18-344303	247.00	247.50	0.50	0.05	0.01	0.35	1	35
			18-344304	247.50	248.50	1.00	0.01	0.00	0.01	0	3
			18-344305	248.50	249.50	1.00	0.02	0.00	0.01	0	3
			18-344307	262.70	263.50	0.80	0.02	0.04	0.38	2	3
			18-344308	263.50	264.50	1.00	0.01	0.00	0.08	0	7
			18-344309	264.50	265.00	0.50	0.02	0.00	0.46	0	7
			18-344311	265.00	266.00	1.00	0.00	0.00	0.03	0	9
			18-344312	266.00	267.00	1.00	0.00	0.01	0.08	0	10
			18-344313	267.00	268.00	1.00	0.03	0.01	0.09	1	11
			18-344314	268.00	269.00	1.00	0.16	0.00	0.05	2	44
			18-344315	269.00	269.50	0.50	0.02	0.01	0.20	2	29
			18-344316	269.50	270.00	0.50	0.78	0.44	0.77	12	153
			18-344317	270.00	271.00	1.00	0.02	0.00	0.02	0	10
			18-344318	291.50	292.50	1.00	0.00	0.00	0.01	0	5
			18-344319	292.50	293.00	0.50	0.01	0.00	0.57	1	64
			18-344321	293.00	294.00	1.00	0.00	0.00	0.03	0	51
			18-344322	309.40	310.40	1.00	0.01	0.00	0.02	0	7

LITHOLOGY REPORT

Hole Number		H-18-3522		Project:		2018-BUCHANS		Project Number:							
From	To	Lithology	Sample #	From	To	Length	Cu	Pb	Zn	Ag	Au				
(m)	(m)											(%)	(%)	(%)	(ppm)
310.40	315.75	BSLT_t													
		Basaltic tuff													
		basaltic tuff													
		Upper Contact:													
		Conformable													
		Colour:													
		Dark green, fine grained and chloritic tuff, local layerinr and/or foliation at 60 deg tca. Could be in part basalt flow. From 315.0 to 315.75 is lithic tuff. The unit shows moderate chloritic alteration and has 1 to 2% disseminated and stringer pyrite. From 310.4 to 311.2 there is 1 to 2% disseminated blebs and stringer sphalerite.													
			18-344323	310.40	311.40	1.00	0.04	0.04	0.62	2	15				
			18-344324	311.40	312.40	1.00	0.01	0.05	0.12	1	8				
315.75	319.00	RHY													
		Rhyolite													
		aphyric rhyolite													
		Upper Contact:													
		Conformable													
		Colour:													
		Pale pink and green aphyric rhyolite flow or sill. Contacts appear conformable. Tiny clay flecks may be after feldspar phenos. From 318.5 to 318.7 the unit is sheared at 40 to 50 deg tca.													

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From (m)	To (m)	Lithology	Sample #	From	To	Length	Cu (%)	Pb (%)	Zn (%)	Ag (ppm)	Au (ppb)	
319.00	332.90	Intermediate Tuff Intermed Tuff Upper Contact: Conformable Colour: Interlayered dark green mafic and grey to maroon rhyolite fragments and/or flows. The mafic tuff is fine grained and chloritic with local small lithic chips. The rhyolite is mostly the same as from 315.75 to 319 m. From 326.0 to 332.9 m is mostly aphyric, maroon rhyolite or welded tuff with local flow banding, (intermediate tuff from 330.5 to 331.1m).										
332.90	438.00	LT Lapilli Tuff Lithic tuff Upper Contact: Colour: Mainly medium green, intermediate tuff. From 332.9 to 334.7 is a coarse polyolithic tuff to dbx with some felsic clasts and qtz grains. Below 334.7 m is mostly tightly packed basaltic lithic tuff with some, generally larger rhyolite fragments. Occasional qtz xtals in the matrix and locally in rhyolite. From 347.0 to 348.4 there are common small felsic fragments. There is weak foliation/layering at 50 to 60 deg tca. The unit shows weak to moderate chlorite alteration and has trace pyrite down to 357.5 m. From 357.5 to 370.5 m there is about 1% py as thin veinlets and rare sphalerite, (at 362.5 m). Below 370.5 m there is generally <1% py except for local veins of py-cpy with black chl and/or qtz, (veins at 369.5 to 369.55 m, 370.13 to 370.17 m, 378.3 to 378.4 m and 381.0 to 381.04 m). A few other small veins and rare dessiminated flecks. From 351 to 361.5 m there is common pink and white calcite fracture veins. Common epidotized clasts below 375 m. From 386.3 to 386.9 rhyolite clast, felsic clasts and small chips more common below here also occasional qtz grains. From 401.1 to 401.2 m a fine grained, cherty clast with bedding along the core. From 413.5 to 416.4 m basalt flow or boulder with common calcite veinlets. From 416.4 m to 423.4 m common prominent qtz rhy clasts. From 421.9 to 422.7 m is a calcite amygdoidal basalt boulder. Below 432.4 m mostly basalt with white and pink carbonate void fill but still some felsic fragments, ie 436.5 to 437.1 m.	18-344325	369.40	370.20	0.80	0.59	0.01	0.12	9	271	

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From (m)	To (m)	Lithology	Sample #	From	To	Length	Cu (%)	Pb (%)	Zn (%)	Ag (ppm)	Au (ppb)
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438.00439.86

RHY_SILL_DY
KE

Rhyolite sill or dyke

Rhy-Felsite

Upper Contact:

Intrusive

Colour:

Rhyolite to Felsite dyke/sill, pink fine grained, pink feldspars. Sharp contacts but not well chilled. Intruded along Airport Thrust?

439.86503.80

BSLT

Basalt

basalt flow bx

Upper Contact:

Intrusive

Colour:

Dark green basalt with 20% white and pink calcite veins, clots and tiny amygdules. Appears to be fragmental, flow breccia, local epidote veining. From 439.86 to 440.0 is moderately sheared at approx 80 deg tca, Airport Thrust. Common red hematite staining below 484.5 m. The lower contact is broken but conformable.

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From (m)	To (m)	Lithology		Sample #	From	To	Length	Cu (%)	Pb (%)	Zn (%)	Ag (ppm)	Au (ppb)
503.80	517.70	FEL_t/bx	Felsic tuff/breccia			Fel xtal tuff						
		Upper Contact: Conformable										
		Colour:										
		Felsic xtal tuff, green and pink with 10%+ 2 to 4 mm qtz xtals and 5% 1 to 2 mm pink feldspar xtals and wispy black chlorite in the matrix. Common hairline fracturing and breccia with epidote-silica cement. From 510.7 to 517.7 m is mostly epidote-silica breccia, the host rock looks arkosic and could be rhyolite towards 517 m. From 510.7 to 517.7 is all cemented fault bx.										
517.70	533.00	BSLT_f	Basalt Flow			Basalt						
		Upper Contact: Tectonic										
		Colour:										
		Red and green basalt with some carbonate veining and amygdules but strong epidote veining and breccia zones. Mostly epidote-silica cemented breccia down to 521.5 m. From 519.4 to 519.6 m there are some Jasper fragments. From 520.3 to 520.5 m is arkose or felsic tuff. From 527.5 to 528.8 is strongly epidotized felsic rock with some qtz xtals, arkose or tuff. From 531.8 to 533.0 m the core is broken with some shearing at 50 to 60 deg tca and common gouge.										

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From (m)	To (m)	Lithology	Sample #	From	To	Length	Cu (%)	Pb (%)	Zn (%)	Ag (ppm)	Au (ppb)
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533.00534.40

CGL

Conglomerate

cong

Upper Contact:

Tectonic

Colour:

Felsic conglomerate to lithic tuff, assorted, small felsic and sediment clasts in a siliceous matrix. Tightly packed clasts with common qtz grains and a few black shards. Minor pyrite.

534.40536.60

BX

Breccia

lithic tuff/bx

Upper Contact:

Conformable

Colour:

Light green and grey-green fragmental rock. Some mafic clasts and some of silicified and/or cherty sediment. Local black chloritic shards to matrix. The unit has <1% pyrite.

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536.60	538.00	CGLConglomerate Upper Contact:Conformable Colour: As for 533 to 534.4 m.									
538.00	540.90	BXBreccia Upper Contact:Conformable Colour: similar to 534.4 to 536.6 m but more cherty sediment clasts, locally opalesent, minor chloritic matrix. A 5 to 10 cm fault gouge/bx at 540.8 m. conformable contact.									

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From (m)	To (m)	Lithology	Sample #	From	To	Length	Cu (%)	Pb (%)	Zn (%)	Ag (ppm)	Au (ppb)
540.90	542.40	SLST Siltstone Upper Contact: Conformable Colour: Grey, very fine grained cherty siltstone to mudstone. Locally brecciated and a few pink felsic veins. The unit has 1 to 2% network and disseminated py.	18-344326	541.00	542.00	1.00	0.00	0.02	0.03	2	18
542.40	564.50	RHY Rhyolite Upper Contact: Conformable Colour: Pink, aphyric rhyolite and local rhyolite breccia, breccia textures are generally faint with little movement. From 544.7 to 545.1 there is pink and white carbonate cementer fault breccia along the core. From 547.0 to 549.5 m there is minor brittle faulting along the core. From 558.5 to 564.5 is a lighter coloured rhyolite breccia. The unit is barren down to 555.1 m then has 2 to 5% pyrite as network veinlets and disseminated.	18-344327	559.00	560.00	1.00	0.00	0.01	0.03	4	7
			18-344328	560.00	561.00	1.00	0.00	0.01	0.06	3	100
			18-344329	561.00	562.00	1.00	0.00	0.01	0.09	3	13
			18-344331	562.00	563.00	1.00	0.00	0.01	0.10	8	7
			18-344332	563.00	564.00	1.00	0.00	0.01	0.30	5	8
			18-344333	564.00	564.70	0.70	0.00	0.02	0.17	16	3

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564.50	566.10	BX Breccia Tuff/breccia Upper Contact: Colour: Fragmental rock with rhyolite and some basalt clasts, also some small pyrite and barite clasts. Approximately 10% pyrite as clasts and disseminations. From 564.7 to 565.0 is mostly barite and pyrite.	18-344334	564.70	565.00	0.30	0.00	0.07	0.16	163	54
			18-344335	565.00	566.00	1.00	0.00	0.01	0.05	32	21
566.10	641.00	BSLT_bx Basalt Flow Breccia Basalt bx/tuff Upper Contact: Colour: Light and dark green basaltic fragmental. Tightly packed, small mafic clasts at the start with tiny chlorite amygdules and flecks. There is minor tuffaceous matrix. The unit becomes coarser down hole with larger basalt clasts floating in a black, tuffaceous matrix. There are occasional clasts with silica/carbonate amygdules. From 569.3 to 570.6 is silicified or rhyolitic. From 575.2 to 575.37 is a lighter coloured, fine grained clast with 1 to 2% stockwork BM sulphides. Generally about 1% pyrite, disseminated and in occasional altered clasts. Below 573.5 there is 1 to 2% pyrite. From 577.4 to 578.9 is a qtz-epidote cemented breccia along the core. From 578.9 to 580.4 is chilled, black and magnetic diabase. From 580.4 to 585 m the core is broken and rubbly with some low angle faulting. From 580.7 to 581.0 m is mostly carbonate vein/cement. From 583.75 to 584.1 and 585.2 to 586.0 there is some pink bleaching with about 55 py and some sphalerite and barite, <1% sp. From 584.8 to 585.15 m and 587.65 to 588.5 are chilled diabase. Below 586.5 m there are occasional, pyritic altered clasts and rare rhyolite clasts. There are also a few thin stringers with barite and sphalerite. At 586.8 m there is 20%+ fine py and minor sphalerite over 5 cm. From 594.05 to 594.15 is a barite vein or clast with minor Sp. From 595 to 598.5 m the core is broken with local faulting, 597.8 to 598.0 m is gouge. Below 596 m there is local bleaching and silicification with some pink felsic veinlets and about 5% py and <1% barite and sphalerite. From 616.0 to 643 m basalt breccia to lithic tuff, tightly packed chips and cobbles with approx 1% disseminated py. From 633.5 to 633.6 m is fault gouge. Fro 635.2 to 641.0 m the core ic commonly broken with common fault gouge/breccia.	18-344337	566.00	567.00	1.00	0.01	0.01	0.03	19	14
			18-344338	567.00	568.00	1.00	0.01	0.00	0.01	4	7
			18-344339	582.70	583.70	1.00	0.01	0.02	0.03	9	7
			18-344341	583.70	584.10	0.40	0.03	0.13	0.16	97	620
			18-344342	584.10	585.10	1.00	0.01	0.01	0.03	13	21
			18-344343	585.10	586.00	0.90	0.01	0.06	0.11	29	119
			18-344344	586.00	587.00	1.00	0.01	0.03	0.05	5	43
			18-344345	593.00	594.00	1.00	0.03	0.09	0.12	16	89
			18-344346	594.00	594.50	0.50	0.05	0.49	0.65	24	111
			18-344347	594.50	595.50	1.00	0.02	0.08	0.08	7	48
			18-344348	601.00	602.00	1.00	0.01	0.01	0.01	8	67
			18-344349	602.00	603.00	1.00	0.01	0.05	0.10	16	139
			18-344351	603.00	604.00	1.00	0.01	0.01	0.03	10	156
			18-344352	610.00	611.00	1.00	0.03	0.17	0.46	39	164
			18-344353	611.00	612.00	1.00	0.01	0.05	0.11	20	248
			18-344354	612.00	613.00	1.00	0.01	0.05	0.12	9	270
			18-344355	613.00	614.00	1.00	0.01	0.01	0.02	5	42
			18-344357	614.00	615.00	1.00	0.01	0.01	0.03	12	68
			18-344358	615.00	616.00	1.00	0.01	0.05	0.12	12	304

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EOH