

**Project:** FWZ

**Hole:** TS18-007

<b>Prospect:</b>	Tom West	<b>Survey Type:</b>	DGPS	<b>Logged By:</b>	C.Allessandrini	<b>Hole Type:</b>	DDH
<b>UTM Grid:</b>	NAD83_09	<b>Survey By:</b>	C.Allessandrini	<b>Date Started:</b>	2018-07-20	<b>Hole Diameter:</b>	
<b>UTM East:</b>	441902.87	<b>Date Surveyed:</b>	2018-07-21	<b>Date Completed:</b>	2018-07-24	<b>Core Size:</b>	HQ3
<b>UTM North:</b>	7004055.951	<b>Survey Accuracy:</b>		<b>Drill Company:</b>	New Age	<b>Casing Pulled?:</b>	<input type="checkbox"/>
<b>UTM Elevation (m):</b>	1538.928	<b>Grid Convergence:</b>	-1.03	<b>Drill Rig:</b>		<b>Casing Depth (m):</b>	4.37
<b>Local Grid:</b>		<b>Azimuth:</b>		<b>Drill Started:</b>		<b>Reduced (m):</b>	
<b>Local East:</b>		<b>Dip:</b>	-50	<b>Drill Completed:</b>		<b>Reduced Size:</b>	
<b>Local North:</b>		<b>Length (m):</b>	135.5	<b>Approved By:</b>		<b>Oriented?:</b>	<input type="checkbox"/>
<b>Local Elevation (m):</b>		<b>Comments:</b>				<b>Geotech?:</b>	<input type="checkbox"/>
<b>Hole Status:</b>	Completed						
<b>Hole Purpose:</b>							

Depth (m)	Survey Method	Survey By	Date Surveyed	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Mag. Field	Accept Values?	Comments
0	GYRO	C.Allessandrini	2018-07-21	-49.93	65.79				<input checked="" type="checkbox"/>	
3	GYRO	twins	2018-07-25	-49.83	64.9				<input checked="" type="checkbox"/>	
9	GYRO	twins	2018-07-25	-49.49	65.84				<input checked="" type="checkbox"/>	
12	GYRO	twins	2018-07-25	-49.42	66.73				<input checked="" type="checkbox"/>	
15	GYRO	twins	2018-07-25	-49.25	68.07				<input checked="" type="checkbox"/>	
18	GYRO	twins	2018-07-25	-49.14	66.47				<input checked="" type="checkbox"/>	
21	GYRO	twins	2018-07-25	-49.01	67.06				<input checked="" type="checkbox"/>	
24	GYRO	twins	2018-07-25	-48.94	66.69				<input checked="" type="checkbox"/>	
27	GYRO	twins	2018-07-25	-48.89	67.16				<input checked="" type="checkbox"/>	
30	GYRO	twins	2018-07-25	-48.82	67.38				<input checked="" type="checkbox"/>	

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Depth (m)	Survey Method	Survey By	Date Surveyed	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Mag. Field	Accept Values?	Comments
33	GYRO	twins	2018-07-25	-48.76	67.23				<input checked="" type="checkbox"/>	
36	GYRO	twins	2018-07-25	-48.7	66.82				<input checked="" type="checkbox"/>	
39	GYRO	twins	2018-07-25	-48.68	65.42				<input checked="" type="checkbox"/>	
42	GYRO	twins	2018-07-25	-48.71	65.57				<input checked="" type="checkbox"/>	
45	GYRO	twins	2018-07-25	-48.69	68.22				<input checked="" type="checkbox"/>	
48	GYRO	twins	2018-07-25	-48.67	67.49				<input checked="" type="checkbox"/>	
51	GYRO	twins	2018-07-25	-48.62	65.87				<input checked="" type="checkbox"/>	
54	GYRO	twins	2018-07-25	-48.58	65.65				<input checked="" type="checkbox"/>	
57	GYRO	twins	2018-07-25	-48.59	67.28				<input checked="" type="checkbox"/>	
60	GYRO	twins	2018-07-25	-48.55	67.37				<input checked="" type="checkbox"/>	
63	GYRO	twins	2018-07-25	-48.5	66.6				<input checked="" type="checkbox"/>	
66	GYRO	twins	2018-07-25	-48.46	65.53				<input checked="" type="checkbox"/>	
69	GYRO	twins	2018-07-25	-48.33	65.83				<input checked="" type="checkbox"/>	
72	GYRO	twins	2018-07-25	-48.23	64.96				<input checked="" type="checkbox"/>	
75	GYRO	twins	2018-07-25	-48.11	65.55				<input checked="" type="checkbox"/>	
78	GYRO	twins	2018-07-25	-47.99	65.83				<input checked="" type="checkbox"/>	
81	GYRO	twins	2018-07-25	-47.86	64.31				<input checked="" type="checkbox"/>	
84	GYRO	twins	2018-07-25	-47.72	66.56				<input checked="" type="checkbox"/>	
87	GYRO	twins	2018-07-25	-47.65	66.21				<input checked="" type="checkbox"/>	
90	GYRO	twins	2018-07-25	-47.53	65.74				<input checked="" type="checkbox"/>	
93	GYRO	twins	2018-07-25	-47.39	65.22				<input checked="" type="checkbox"/>	
96	GYRO	twins	2018-07-25	-47.25	66.84				<input checked="" type="checkbox"/>	
99	GYRO	twins	2018-07-25	-47.16	65.57				<input checked="" type="checkbox"/>	

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Depth (m)	Survey Method	Survey By	Date Surveyed	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Mag. Field	Accept Values?	Comments
102	GYRO	twins	2018-07-25	-47.02	64.94				<input checked="" type="checkbox"/>	
105	GYRO	twins	2018-07-25	-46.89	67.17				<input checked="" type="checkbox"/>	
108	GYRO	twins	2018-07-25	-46.8	66.03				<input checked="" type="checkbox"/>	
111	GYRO	twins	2018-07-25	-46.72	65.17				<input checked="" type="checkbox"/>	
114	GYRO	twins	2018-07-25	-46.63	66.17				<input checked="" type="checkbox"/>	
117	GYRO	twins	2018-07-25	-46.5	66.44				<input checked="" type="checkbox"/>	
120	GYRO	twins	2018-07-25	-46.35	65.63				<input checked="" type="checkbox"/>	
123	GYRO	twins	2018-07-25	-46.2	67.17				<input checked="" type="checkbox"/>	
126	GYRO	twins	2018-07-25	-46.05	65.12				<input checked="" type="checkbox"/>	

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From (m)	To (m)	Rock Type & Description	From (m)	To (m)	Length	Sample #	Au Best ppm	Ag Best ppm	Cu Best ppm	Pb Best ppm	Zn Best ppm
0.00	4.37	CASE Casing	3.37	5.00	1.63	3208086	0.007	1.1	34.6	50	50
4.37	26.25	BMST Black mudstone									
Thin to thickly bedded very fine dark grey-black siliceous carbonaceous mudstone with zones of concentrated quartz veining. Beds are faint, defined by mm-scale quartz +/- pyrite veinlets, pyrite laminations and slight color variations, ranging from 65-85° to core axis. Natural breaks along some bedding planes are coated in shiny black graphite. Cm-scale zones of intense milky white veining or stockwork occur throughout interval, variably crackle brecciating or filling tension gashes in host siliceous mudstone; 1-2cm wide clast-supported breccias are common within or on borders of these zones. Halos of silicification extend into the host mudstone, evidenced by hardness and color changes. By end of interval, stockwork veining is dominate. Two veining events are apparent, with low angle milky white quartz veins cutting mm-scale bedding plane veinlets. Up to 2% pyrite total, occurring as very fine grained dull brassy-brown mm-scale laminations and as fine grained to coarse grained bright brassy anhedral-euhedral crystals in quartz veins. Locally, cm-scale sections of mudstone have up to 7% disseminated very fine grained pyrite.											
<<Alt: 23 - 27.65: Strong Quartz>> Silicification of host mudstone in quartz vein zones											
<<Struc: 17.9 - 17.9: bedding>>											
<<Struc: 18.16 - 18.16: bedding>>											
<<Struc: 25.92 - 25.92: foliation>>											
5.00	7.00	2.00	3208087	0.008	1	85.5	50	600			
7.00	9.00	2.00	3208088	0.009	1	61.4	50	800			
9.00	11.00	2.00	3208089	0.008	0.8	64.6	50	600			
11.00	13.00	2.00	3208090	0.019	0.7	45.3	50	2800			
13.00	15.00	2.00	3208091	0.009	0.8	57.6	50	1400			
15.00	17.00	2.00	3208092	0.008	0.6	52.2	50	1400			
17.00	18.00	1.00	3208065	0.018	0.5	40.6	50	1400			
18.00	19.50	1.50	3208066	0.018	0.6	51.8	50	500			
19.50	21.00	1.50	3208067	0.032	0.7	53.2	50	1100			
21.00	22.50	1.50	3208068	0.034	0.8	62.7	50	1600			
22.50	24.00	1.50	3208069	0.042	0.6	50.5	100	1900			
24.00	25.60	1.60	3208070	0.034	0.7	49.6	50	400			
25.60	26.41	0.81	3208071	0.03	3.6	508.1	300	3700			

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From (m)	To (m)	Rock Type & Description	From (m)	To (m)	Length	Sample #	Au Best ppm	Ag Best ppm	Cu Best ppm	Pb Best ppm	Zn Best ppm
26.25	27.65	<b>BMST Black mudstone</b> Quartz-shattered strongly silicified light grey very fine mudstone containing interbeds of quartz-disrupted laminated sphalerite, barite and pyrite with lesser galena. Interval is stockworked and brecciated by mm-cm scale milky white quartz veins. Larger vuggy veins run parallel to core axis, with numerous thin splays penetrating lithofacies both along and normal to bedding planes (tension gashes). Overall, quartz accounts for ~25% of interval. Mudstone is strongly silicified to light grey in color and is shattered in-place by hair-thin quartz-filled tension gashes and erratic veinlets. Stylolites have developed in most silicified portion of mudstone, appearing to follow planes normal to each other. Laminated sulphides and barite are cut through by cm-scale quartz veins travelling along core axis, but exhibit much less internal penetration. Light tan sphalerite is very fine grained, predominately occupying laminae up to 3mm wide, but also occurring as mm-scale amorphous honey to orange-colored masses within and along margins of larger quartz veins. Barite is dull white-light grey, contained in mm-scale laminations; hairline graphitic laminae occur in some barite-rich sections aligned with bedding. Minor amounts of galena are present as very-fine grained masses on edge of veins, and as coarse-grained euhedral crystals within the vein itself. Estimate 3-5% sphalerite, 0.5% galena over interval <<Min: 26.25 - 27.65: >> See Lithology Tab	26.41	27.65	1.24	3208072	0.036	9.1	127.8	14500	55600
27.65	28.95	<b>LBSC Laminated: barite-sphalerite-chert&gt;&gt;mudstone-galena</b> Laminated barite, sphalerite and pyrite with minor black siliceous mudstone and galena. Interval is overall deformed, with open-tight folding in sulphides/barite and mm-scale brecciation/cracking in mudstone. Mudstone laminae are light grey-grey and strongly brecciated or tension-gashed. Some clasts are rotated, but are still roughly aligned along assumed bedding planes. Tension gashes and matrix are composed of milky white quartz, rarely with light orange crystalline sphalerite or fine grained dull brown pyrite. Very fine grained sphalerite is contained within beige-light brown laminae, with <1% as yellow-orange vein mineral. Barite is dull white-light grey and fine grained, occupying laminae and masses as the dominant mineral in this interval; mm-scale angular black mudstone fragments occasionally carried within larger barite laminae/beds. Pyrite is dull brassy brown and fine grained, occurring as both laminae and mm-scale wisps/clots. Galena, when present (or apparent) is silver on core surface in very fine laminae associated with barite. Estimate 5-7% sphalerite, 1% galena over interval. <<Min: 27.65 - 28.95: >> See Lithology Tab <<Struc: 28.65 - 28.65: fold axis>>									
28.95	33.10	<b>BMST Black mudstone</b> Grey-dark grey silicified and quartz-disrupted carbonaceous mudstone. Mudstone is very fine, with thin-medium beds at 55-60° to core axis apparent when not overprinted by alteration or quartz veins. Entire interval is strongly jointed, with some rubble sections, exhibiting stress fractures both along and normal to bedding planes as well as mm-scale quartz filled tension gashes. Cm-scale stockwork zones and crackle breccias occur within 3m of above mineralized zone; silicification lessens downhole. Interval ends in rubble zone. <<Alt: 28.95 - 36.5: Strong Quartz>> Silicification of host mudstone in quartz vein zones	31.90	33.10	1.20	3208079	0.034	1.1	61.4	400	900

27.65	28.95	1.30	3208074	0.087	11.2	79.4	29800	122100
28.95	30.50	1.55	3208076	0.035	0.8	47.4	500	2400
30.50	31.90	1.40	3208078	0.036	1.3	44	700	300

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From (m)	To (m)	Rock Type & Description	From (m)	To (m)	Length	Sample #	Au Best ppm	Ag Best ppm	Cu Best ppm	Pb Best ppm	Zn Best ppm
<<Struc: 31.9 - 31.9: bedding>>											
<<Struc: 32.54 - 32.54: bedding>>											
<b>33.10</b>	<b>83.51</b>	<b>MDST Mudstone</b>									
"Pinstriped" grey-dark grey interbedded mudstone and light grey-grey siltstone/sandstone. Bedding is parallel through all lithofacies, ranging from 40° -70° to core axis, steepening downhole, with some disruption due to soft sediment deformation. Silty/sandy beds are variably weakly-strongly replaced with brassy fine grained pyrite or light beige ankerite. Larger dm-scale coarser-grained beds exhibiting uphole fining (right-way-up) appear near end of interval. Upper contact is strongly silicified and shattered by mm-scale chaotic-stockwork quartz veining for the first 3m downhole. These veins crosscut older cm-scale pyrite laminae and quartz-ankerite veins generally paralleling bedding planes. <1% of older veins carry coarse grained sub-euhedral silver blue galena and honey sphalerite, seen in sections up to 10m downhole from contact. Cm-scale nodules also occur near upper contact, one of which is nearly pure red-brown sphalerite with a thin silver galena core, and another of pyrite with a galena core.											
<<Min: 33.1 - 41.31: >> See Lithology Tab											
<<Struc: 38.62 - 38.62: bedding>>											
<<Struc: 39.42 - 39.42: bedding>>											
<<Struc: 44.87 - 44.87: bedding>>											
<<Struc: 46.95 - 46.95: bedding>>											
<<Struc: 48.95 - 48.95: bedding>>											
<<Struc: 51.22 - 51.22: bedding>>											
<<Struc: 55.52 - 55.52: bedding>>											
<<Struc: 59.75 - 59.75: bedding>>											
<<Struc: 65 - 65: bedding>>											
<<Struc: 68.13 - 68.13: bedding>>											
<<Struc: 72.98 - 72.98: bedding>>											
<<Struc: 74.97 - 74.97: bedding>>											
<<Struc: 78.18 - 78.18: bedding>>											
<<Struc: 82.4 - 82.4: not recorded>>											
<<Struc: 82.77 - 82.77: bedding>>											
33.10	35.00	1.90	3208080	0.031	4.9	124.7	5000	1100			
35.00	36.34	1.34	3208081	0.057	1.8	67.5	200	2100			
36.34	38.00	1.66	3208082	0.035	2.2	59.6	700	2500			

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From (m)	To (m)	Rock Type & Description	From (m)	To (m)	Length	Sample #	Au Best ppm	Ag Best ppm	Cu Best ppm	Pb Best ppm	Zn Best ppm
			38.00	39.50	1.50	3208083	0.042	1.5	65.1	200	1900
			39.50	41.31	1.81	3208084	0.037	7.1	79	10500	1100
			41.31	42.58	1.27	3208085	0.041	2.7	66.1	2800	800
			42.58	44.00	1.42	3208095	0.031	1.5	72.1	50	400
			44.00	46.00	2.00	3208096	0.017	1.1	71.9	50	200
			46.00	48.00	2.00	3208097	0.014	1.1	67.7	50	50
			48.00	50.00	2.00	3208098	0.012	0.9	78.2	50	200
			50.00	52.00	2.00	3208099	0.01	1.2	117.6	50	50
			52.00	54.00	2.00	3208100	0.013	1.4	72.8	50	50
			54.00	56.00	2.00	3208101	0.026	1.2	79.5	50	50
			56.00	58.00	2.00	3208102	0.029	0.9	116.8	50	100
			58.00	60.00	2.00	3208103	0.016	0.8	80	50	50
			60.00	62.00	2.00	3208104	0.01	0.7	70	50	50
			62.00	64.00	2.00	3208105	0.01	0.5	66.2	50	50
			64.00	66.00	2.00	3208106	0.013	0.6	63.2	50	50
			66.00	68.00	2.00	3208107	0.01	0.5	98.4	50	50
			68.00	70.00	2.00	3208108	0.015	0.25	64.9	50	200
			70.00	72.00	2.00	3208109	0.02	1	82.5	50	50
			72.00	74.00	2.00	3208110	0.012	0.8	72	50	600
			74.00	76.00	2.00	3208111	0.009	0.8	79.4	50	50
			76.00	78.00	2.00	3208112	0.012	0.9	83.3	50	50
			78.00	80.00	2.00	3208113	0.011	0.8	76.3	50	50
			80.00	82.00	2.00	3208114	0.007	0.7	75.7	50	100
			82.00	84.00	2.00	3208115	0.012	1.2	75.6	50	50

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From (m)	To (m)	Rock Type & Description	From (m)	To (m)	Length	Sample #	Au Best ppm	Ag Best ppm	Cu Best ppm	Pb Best ppm	Zn Best ppm
83.51	114.82	<b>CONG Conglomerate</b>	84.00	86.00	2.00	3208116	0.006	0.25	29.1	50	50
Mixed interval of chert grit-pebble conglomerate and muddy polymictic diamictite. White and grey chert grit to pebbles are carried in a silica rich sand matrix, with fining direction indicating uphole (right-way-up). Up to 5% of the conglomerate is made up of mm-cm scale angular-rounded siliceous black mudstone. Small patchy sections of the silica-sand matrix have been replaced by light tan-beige weakly effervescent ankerite. Diamictite is dark grey, with mm-cm scale mud-hosted polymictic clasts of siltstone, chert, chert pebble conglomerate and sandstone. Diamitic interbeds are unconformable within larger conglomerate beds. Trace (<0.1%) fine grained brassy euhedral pyrite associated with areas of ankerite alteration in conglomerate, and as fine stringers/blebs within diamictite. Lower contact (conglomerate contacting pinstripe) is quartz flooded, with veins/flooding for 1.5 m uphole. Mm-cm scale veins make up less than 1% of rest of interval, present only in conglomerate, showing two preferred orientations normal to each other at low angles to core axis.											
<<Alt: 89 - 93: Weak Fe Carbonate>> Patchy ankerite replacement of silica-sand matrix in conglomerate			86.00	88.00	2.00	3208118	0.011	0.25	89.6	50	50
<<Struc: 84.8 - 84.8: not recorded>>			88.00	90.00	2.00	3208119	0.008	0.25	10.5	50	50
<<Struc: 86.38 - 86.38: bedding>>			90.00	92.00	2.00	3208120	0.011	0.25	11.6	50	50
<<Struc: 88.78 - 88.78: vein>>			92.00	94.00	2.00	3208121	0.012	0.25	37	50	200
<<Struc: 90.15 - 90.15: not recorded>>			94.00	96.20	2.20	3208122	0.022	0.6	40.7	50	200
<<Struc: 91.5 - 91.5: vein>>			96.20	97.60	1.40	3208123	0.009	0.6	53.5	50	50
<<Struc: 94.5 - 94.5: vein>> intersecting vein set			97.60	99.50	1.90	3208124	0.005	0.5	41.8	50	50
<<Struc: 108.69 - 108.69: bedding>>			99.50	101.00	1.50	3208125	0.008	0.6	48.6	50	50
			101.00	102.75	1.75	3208126	0.005	0.25	46.8	50	50
			102.75	104.37	1.62	3208127	0.007	0.9	189.7	50	50
			104.37	105.20	0.83	3208128	0.008	0.25	65.8	50	50
			105.20	106.20	1.00	3208129	0.007	0.25	29.9	50	50
			106.20	107.58	1.38	3208130	0.011	0.25	52.2	50	100
			107.58	109.75	2.17	3208131	0.012	0.25	72.4	50	200
			109.75	111.20	1.45	3208132	0.016	0.25	56.2	50	50
			111.20	113.00	1.80	3208134	0.017	0.25	24.6	50	50
			113.00	114.82	1.82	3208135	0.008	0.25	24.8	100	200



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From (m)	To (m)	Rock Type & Description	From (m)	To (m)	Length	Sample #	Au Best ppm	Ag Best ppm	Cu Best ppm	Pb Best ppm	Zn Best ppm
114.82	135.50	<b>MDST Mudstone</b>									
<p>Typical "pinstriped" grey-dark grey mudstone with mm-dm scale regular silty/sandy interbeds and a 3.5 meter wide chert pebble conglomerate interbed. Bedding steepens from upper contact to ~118m downhole, then flips direction; dm-scale sandy interbed with disrupted contacts defines bedding change (fold nose?). A cm-scale dome fold is observed directly contacting conglomerate interbed. Sandy interbeds throughout are patchily-pervasively altered by beige ankerite, with abundant pyrite. Sporadic cm-scale beds of very fine grained beige soft ash tuff and a large (3.5 m) unsorted chert pebble conglomerate are interbedded conformably to the pinstriped mudstone. Subangular to round white and grey chert pebbles dominate the conglomerate, with minor angular to rounded black siliceous mudstone and beige sandy clasts; weak patchy ankerite alteration of silica sand matrix. 1-2% fine grained brassy pyrite over interval, mostly contained in altered sandy beds. &lt;0.1% contained in cm-scale quartz-rimmed nodules. Veining is restricted to upper contact, with a single cm-scale milky white vuggy quartz vein and rare mm veinlets roughly following bedding planes.</p>											
<<Struc: 116.22 - 116.22: bedding>>											
<<Struc: 117 - 117: bedding>>											
<<Struc: 118.75 - 118.75: bedding>>											
<<Struc: 119.13 - 119.13: bedding>>											
<<Struc: 119.4 - 119.4: bedding>>											
<<Struc: 122.25 - 122.25: bedding>>											
<<Struc: 125.72 - 125.72: bedding>>											
<<Struc: 127.28 - 127.28: contact>> sharp contact between pinstripe and conglomerate											
<<Struc: 131.58 - 131.58: bedding>>											
<<Struc: 133.05 - 133.05: foliation>>											
<<Struc: 134.35 - 134.35: bedding>>											
114.82	117.00	2.18	3208136	0.012	0.6	75.6	100	50			
117.00	119.00	2.00	3208137	0.009	0.6	75.7	50	50			
119.00	121.00	2.00	3208138	0.009	0.6	91.1	50	200			
121.00	123.00	2.00	3208139	0.007	0.25	65.3	50	50			
123.00	125.00	2.00	3208140	0.01	0.7	81.1	50	50			
125.00	127.28	2.28	3208141	0.007	0.5	70.8	50	50			
127.28	129.00	1.72	3208143	0.006	0.25	24.2	50	50			
129.00	130.77	1.77	3208144	0.005	0.25	17.1	100	50			
130.77	132.00	1.23	3208145	0.009	0.6	88.1	50	50			
132.00	134.00	2.00	3208146	0.007	0.5	92.4	100	50			

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From (m)	To (m)	Rock Type & Description	From (m)	To (m)	Length	Sample #	Au Best ppm	Ag Best ppm	Cu Best ppm	Pb Best ppm	Zn Best ppm
			134.00	135.50	1.50	3208147	0.011	0.6	77.6	50	50

End of Hole @ 135.5