

ANVIL RANGE MINING CORPORATION

GEOTECHNICAL LOG FAULT

DDH#

96MM-02

Units: Feet Metres

Date: Sept 12/96 Logged By: DM

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FROM To	Recovery length FEATURE	RQD Length	Hardness	Degree Breakage	Degree Weathering	FRACTURES/JOINTS/PARTING		Core Size	Comments
						Number	Comments FAULTS		
28'-28.5'	R2G					1		N/Q	~ 6mm fault gouge, rest rubble, @ ~ 60° dip from edge of core
@ 34.5'	R2G					2		N/Q	~ 4mm gouge, rest rubble @ ~ 50° dip from edge of core
@ 90'	R2G					3		N/Q	~ 8-10mm gouge, rest rubble
@ 205'	R2G					4		N/Q	~ 3-4mm gouge, rest rubble @ ~ 30° from edge of core
213'-214'	BR3G					5		N/Q	~ 5cm of gouge, rest is rubble and broken core.
218'-221'	BR3G					5		N/Q	8-10cm of gouge, rest is rubble and broken rock,
220'-230'	BR2G					6		N/Q	~ 1 cm of gouge, @ ~ 30° dip from edge of core.
241'-242'	BR3G					7		N/Q	~ 6cm of gouge @ ~ 20° dip from edge of core,
@ 248'	B2R					8		N/Q	- no gouge
322'-325'	B2R					9		N/Q	- no gouge

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FROM To	Recovery Length FEATURE	RQD Length	Hardness	Degree Breakage	Degree Weathering	FRACTURES/JOINTS/PARTING		Core Size	Comments
						Number	Comments FAULTS		
3265-327'	BR2R					10		N/A	no gouge.
389'-391'	BR3G					11		N/A	~ 10 cm gouge, rest is rubble it broke - < one.
@ 533'	BR2					12		N/A	no gouge
@ 573'	BR2G					13		N/A	~ 8 mm gouge.
@ 605'	BR2T					14		N/A	
@ 834'	BR2G					15		N/A	~ 12 mm gouge.
@ 919	BR2R					16		N/A	no gouge
975'-985'	BR3G					17		N/A	~ 5 cm gouge.
@ 1017.5	BR3R					18		N/A	
1047'-1077'	BR3GT					18		N/A	~ 7.5 cm of gouge.
@ 1144'	BR2G					19		N/A	~ 5.0 cm of gouge
@ 1215'	BR2R					20		N/A	
1223-1234	BR3G					21		N/A	~ 8.0 cm of gouge -
@ 1264	BR2R					22		N/A	

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ALTERATION LOG

Units: Feet / Metres

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From	To	No.	Alt1	Alt2	Description
68'	78'	1	✓		DOLOMITIC SEQUENCE SUBJECTED TO FE ALTERATION - MOST ALTERATION APPEARS ALONG FRACTURES, MORE ADVANCED ALTERATION APPEARS FOR 5CM, AT 76' - FRIABLE
158'	159'	2	✓		DOLOMITE SUBJECTED TO EPIDOTE ALTERATION (?) - found in dolomite matrix and especially along calcite filled fractures.
205'	221'	3	✓		DOLOMITE SUBJECTED TO DUNITIC ALTERATION. - alteration appears to increase after 213' to 221' at contact of ultramafics.
229'	248.5'	4	✓		Calc-silicate schist subjected to dunitic alteration - traces of serpentinite found in places.
316.5'	329.5'	5	✓		Calc-silicate schist subjected to dunitic alteration - traces of serpentinite found in places
329.5'	~337'	6	✓		Calc-silicate " " " " " " " " " "
390'	~394.5'	7	✓		DOLOMITIC SEQUENCE subjected to chloritic alteration adjacent to Chlorite Biotite schist.
1204'	1206'	8	✓		Schist zone being subjected to epidote (?) alteration on both sides of a 10cm qtz vein.

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GEOTECHNICAL LOG

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Units Feet Metres

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FROM To	Recovery Length	RQD Length	Hardness	Degree Breakage	Degree Weathering	FRACTURES/JOINTS/PARTING		Core Size	Comments
						Number	Comments		
197-207	98	.68							
207-217	95	.75							
217-227	95	.74							
227-237	100	.95							
237-247	90	.52							
247-257	100	.78							
257-267	98	.85							
267-277	98	.90							
277-287	100	.81							
287-297	100	.81							
297-307	100	.72							
307-317	100	.75							
317-326	100	.95							
326-337	90	.90							
337-347	100	.84							
347-357	100	.90							
357-367	98	.87							
367-377	100	.87							
377-387	98	.81							
387-397	100	.77							
397-407	100	.90							
407-417	100	.96							
417-427	100	.88							
427-437	100	.84							
437-447	100	.85							
447-457	98	.85							
457-467	100	.90							
467-477	100	.88							

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To	Recovery Length	RQD Length	Hardness	Degree Breakage	Degree Weathering	FRACTURES/JOINTS/PARTING		Core Size	Comments
						Number	Comments		
477-487	100	186							
487-497	100	184							
497-507	100	194							
507-517	100	182							
517-527	100	185							
527-537	100	195							
537-547	100	192							
547-557	100	190							
557-567	100	185							
567-577	100	177							
577-587	100	182							
587-597	100	182							
597-607	100	177							
607-617	100	187							
617-627	100	181							
627-637	100	178							
637-647	100	167							
647-657	100	172							
657-667	100	186							
667-677	100	191							
677-687	100	193							
687-697	100	185							
697-707	95	177							
707-717	100	189							
717-727	98	182							
727-736	100	197							
736-747	100	198							
747-757	100	181							

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To	Recovery Length	RQD Length	Hardness	Degree Breakage	Degree Weathering	FRACTURES/JOINTS/PARTING		Core Size	Comments
						Number	Comments		
757-767	100	.78							
767-787	100	.93							
787-797	100	.80							
797-807	100	.85							
807-817	100	.78							
817-827	100	.9							
827-837	100	.70							
837-847	100	.80							
847-857	100	.91							
857-867	100	.80							
867-877	100	.85							
877-887	100	.78							
887-897	100	.85							
897-907	100	.94							
907-917	100	.92							
917-927	100	.86							
927-937	100	.81							
937-947	100	.73							
947-957	100	.83							
957-967	100	.7							
967-977	100	.72							
977-987	100	.70							
987-997	100	.79							
997-1007	100	.41							
1007-1017	100	.8							
1017-1027	100	.475							
1027-1037	100	.625							
1037-1047	100	.458							

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FROM To	Recovery Length	RQD Length	Hardness	Degree Breakage	Degree Weatherng	FRACTURES/JOINTS/PARTING		Core Size	Comments
						Number	Comments		
1047-1057	70	.03							
1057-1067	150	.52							
1067-1077	80	.25							
1077-1087	95	.60							
1087-1097	150	.57							
1097-1107	150	.57							
1107-1117	150	.64							
1117-1127	100	.90							
1127-1137	150	.75							
1137-1147	150	.69							
1147-1153	150	.88							
1153-1163	150	.75							
1163-1173	150	.85							
1173-1183	150	.65							
1183-1193	150	.50							
1193-1203	95	.61							
1203-1213	150	.68							
1213-1223	150	.60							
1223-1228	150	.46							
1228-1234	150	.43							
1234-1244	150	.42							
1244-1254	150	.86							
1254-1264	150	.69							
1264-1267	150	.69							
1267-1276	150	.81							
1276-1286	150	.74							
1286-1292	150	.61							
1292-1297	150	.45							

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96 mm 02

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To	Recovery Length	RQD Length	Hardness	Degree Breakage	Degree Weathering	FRACTURES/JOINTS/PARTING		Core Size	Comments
						Number	Comments		
1297-1307	100	.60							
1307-1317	100	.65							
1317-1327	100	.61							
1327-1337	100	.6							
1337-1344	100	.79							
1344-1353	100	.74							
1353-1363	100	.65							
1363-1373	100	.7							
1373-1378	80	.63							
1378-1384	90	.61							
1384-1397	100	.70							
1397-1407	100	.6							
1407-1417	100	.79							
1417-1427	100	.68							
1427-1437	100	.61							
1437-1447	100	.61							
1447-1454	90	.17							
1454-1464	96	.22							
1464-1474	95	.50							
1474-1484	100	.37							
1484-1487	100	.50							
1487-1497	100	.67							
1497-1507	100	.27							
1507-1517	96	.63							
1517-1526	100	.90							
1526-1528	100	.69							

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78
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STRUCTURAL LOG

 DDH # 96MM-02

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 DATE: Sept. 12 196

 LOGGED BY: D. MATTILA

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FROM	TO	RFE = $S_0 = S_2$					A				B				C				COMMENTS
		SYM	FEATURE	PHASE	DIP	DIR	FEATURE	PHASE	DIP	DIR	FEATURE	PHASE	DIP	DIR	FEATURE	PHASE	DIP	DIR	
32'	76'				30°	276°													sample structure - no F ₁ visible
76'	78'				55°	276°													S ₂ = S ₀ (assumed)
78'	115'				30°	276°													"
115'	120'				40°	276°													"
120'	130'				30°	276°													"
130'	137'				15°	276°													"
137'	155'				40°	276°													"
155'	157.5'				50°	276°													S ₂ - S ₀
157.5'	163'				40°	276°	PS ₂	2	40°	96°	DD ₁	1	?	?					F ₂ structure cuts S ₂ / F ₁ , F ₁ dip + dip dir. unable to measure.
163'	173'				25°	276°	PS ₂	2	25°	26°	DD ₁	1	?	?					"
173'	190'				40°	276°	PS ₂	2	30°	6°	DD ₁	1	?	?					"
190'	194'				40°	276°	PS ₂	2	35°	36°	DD ₁	1	?	?					PS ₂ dip direction change. unable to measure F ₁ .
194'	203'				30°	276°	PS ₂	2	25°	16°	DD ₁	1	?	?					PS ₂ dip direction change. So shallows

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FROM	TO	RFE = S ₀ - S _r					A				B				C				COMMENTS
		SYM	FEATURE	PHASE	DIP	DIR	FEATURE	PHASE	DIP	DIR	FEATURE	PHASE	DIP	DIR	FEATURE	PHASE	DIP	DIR	
939'	972'			2	50°	276°													F ₂ = S ₀ , assumed that F ₂ = RFE - S ₀
1050'	1015'			2	40°	276°													F ₂ , F ₁ not visible
1015'	1075'			2	50°	276°													" " " "
1075'	1093.5'			2	40°	276°													sample S ₀ structure visible S ₀ = F ₂ , F ₁ not visible.
1093.5'	1103'			2	55°	276°													" "
1103'	1122.5'			2	35°	276°													
1122.5'	1145'			2	40°	276°	P5 ₂	2	40°	276°	DD ₁	1	?	?					F ₂ = S ₀ , F ₂ cuts off F ₁ F ₁ dip strike not able to read.
1145'	1153'			2	25°	276°													no F ₂ , F ₁ visible
1153'	1181'			2	35°	276°													" " " "
1181'	1197'			2	50°	276°													
1197'	1209'			2	30°	276°													" " " "
1209'	1218'			2	50°	276°													sample structure " " "

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From	To	No.	Unit	Modifiers	Description
0	8'				casing, overburden
8'	221'	1	SDA		ASKIN DOL. MARBLE, LIMESTONE, QUARTZITE DOLOMITE: - LIGHT-MED. - DARK GRAY - HIGHLY FRACTURED, MODERATE CALCITE INFILL - MOTTLED APPEARANCE VISIBLE UP TO 32', AFTER 32' - BEDDING PLANES VISIBLE. - LIMY COMPOSITION. - TRACE OF PYR. - calcite veining becomes more abundant after 116' with some veins up to 2.5 cm., most of which average 2-3mm wide. - high calcite vein @ 216' - 12"-18".
221'	229'	2	CPaub		Ultramafic - Serpentinized Diorite. - med-dark gray - green - very fine grained - traces of Serpentine along fractures
229'	324'	3	CTres		Calc. Silicate Schist. - med-dark gray to green - very fine grained - minimal calcite veining - slightly gneissitic - rather siliceous zones located @ 247'-257', 271'-280' - appear as interbedded quartzite and schist layers. - Pyrr (<1%), TR PYR

- locally mottled with small qty nodules up to 0.3mm in a fine grain
at a distance from 280' - 287'

**ANVIL RANGE MINING CORPORATION
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From	To	No.	Unit	Modifiers	Description
324'	329.5'	4	?		BRECCIA ZONE - subangular to angular fragments of the above material (2.5-3.0cm) in a fine grained qtz. matrix.
329.5'	333'	5	CPaub		Ultramafic - same as above
333'	337'	6	?		BRECCIA ZONE - as above.
337'	390'	7	CTRes		VARIABLY GRAPHITIC CALC-SILICATE SCHIST - med-dark gray. - fine grained - variably graphitic. - minor calcite veining. - mottled appearance from 340'-347', 354'-375' - banded PYRR @ 349'-349.5', 3-4% - moderately fractured throughout. - zone appears to be heavily chloritized. - trace of pyrite. - PYRR in large crystals (4-12mm) - 1-2% from 388'-389'
390'	437.5'	8	SDA		ASKIN DOLOMITE - light-med-dark gray - slightly siliceous. - moderate calcite veining - moderately fractured. - upper half of sequence - Fe oxide coating along margins of some fractures @ 410'-411', 420'-421', 436'-437'. No alteration visible.

**ANVIL RANGE MINING CORPORATION
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From	To	No.	Unit	Modifiers	Description
					<ul style="list-style-type: none"> - a few small bands of sphalerite (~1-2mm) between 657'-661' - minor calcite veining throughout the zone - PYR (<1%) SPHALERITE (<1%), GALENA (<1%) @ 726'-729'
726.5'	876.5'	10	Mbs		<p>Muscovite Chlorite Quartz Schist w/ banded sulphides - ZONE #1</p> <ul style="list-style-type: none"> - light-med. gray to green - fine grained - minor calcite veining. - moderate qtz. veining from 726.5' - 767' - average 2.5 cm in thickness. - slightly garnetiferous (1-2%) from 757' onwards. Most are 1-2 mm across. - most mineralization appears to follow bedding planes or veins - it also appears to be fairly uniform up to - PYRR (1-2%), PYR (1-2%), GALENA (~1%), SPHALERITE (<1%) - disseminated throughout the matrix up to 817' - PYRR crystals up to 6 mm across. - mineralization increases moderately after 847' with most of it found around qtz. veins and bedding planes. 3-4% PYR, 1-2% PYR, disseminated, galena (1-2%), sphalerite (1-2%) both disseminated. - qtz. veins found more prevalent after 823' + up to 10 cm thick, most average 1-2 cm. - mineralization decreases after 877' with only ~1% PYR, <1% PYR left
876.5'	943	11	Mps		<p>Quartzose Biotite Chlorite Schist</p> <ul style="list-style-type: none"> - light-med-dark gray, fine grained - abundant flat to equiaxed quartz nodules (average 2 cm long, 3-4 cm thick) visible along many bedding planes.

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Logged By: D. J. ...

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From	To	No.	Unit	Modifiers	Description
					<ul style="list-style-type: none"> - minor calcite veining. - moderate qtz veining (up to 10 cm. av. 1-2 cm.) - PYR (~1%) diss., PRR (~1%) diss. - most on calcite veins around qtz.
					<ul style="list-style-type: none"> - abundant garnet crystals (up to 6 mm, average 1-2 mm) 3-4% in the last 10-11 feet.
943'	964'	12	Mbs		<p>Muscovite Chlorite Quartz Schist with banded sulphide. ZONE 2(?)</p> <ul style="list-style-type: none"> - light to med gray to green - fine grained. - slightly garnetiferous (<1%) - variable sph. albite bands (2-3 mm thick av.) - 1-2% - PYR (2-3%) - PRR (~1%)
964'	1059'	13	Mps		<p>GARNETIFEROUS PELTIC SCHIST</p> <ul style="list-style-type: none"> - med to dark gray - fine grained - interbedded biotite and muscovite, minor chlorite. - garnet content increases (3-4%) - up to 8 mm across, average 1-2 mm - minor PYR from 1007-1017 - (<1%) - along fractures. - moderate calcite veining. - some qtz veining (minor) max size 10 cm.

**ANVIL RANGE MINING CORPORATION
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From	To	No.	Unit	Modifiers	Description
					<ul style="list-style-type: none"> - brecciated area from 1025.3' - 1027' with angular clasts up to 3 cm across of the above material - most 2-3 mm across, possible solidified fault gouge for matrix - some calcite visible - - trace of PYR. - trace of amphibole banding @ 1033'
1059'	1076'	14	SDA		<p align="center">QUARTZITE (SILICEOUS ASH OR CHERT?)</p> <ul style="list-style-type: none"> - light to med gray - fine grained - minor calcite veining - moderate qtz veining - PYR visible along fractures and qtz veins (<1%) - moderately fractured.
1076'	1093.5'	15	Mva ₁		<p align="center">Biotite Chlorite Muscovite Schist</p> <ul style="list-style-type: none"> - dark gray to black to green - fine grained - highly fractured with qtz infill, also qtz found many bedding planes - minor calcite veining - trace of PYR, trace of PYRR. - slightly graphitic in places
1093.5'	1119.5'	16	SDA		<p align="center">QUARTZITE (SILICEOUS ASH OR CHERT?)</p> <p>as above</p>

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From	To	No.	Unit	Modifiers	Description
1119.5'	1133.5'	17	Mva ₁ +UDMS		<p>Chlorite Biotite Schist</p> <ul style="list-style-type: none"> - light to med gray to green - fine grained - many quartz nodules (flattened) interbedded with schistose layers - minor calcite veining. - few gty veins. - PYR (~1%) disseminated throughout matrix. - PYR (TR). - trace of Sphalerite bands between 1130' - 1131' - slightly garnetiferous.
1133.5'	1177'	18	SDA		<p>QUARTZITE (SILICEOUS ASH OR CHERT?)</p> <ul style="list-style-type: none"> - as above. - numerous large bands of pyrrhotite and pyrite between 1153' - 1158' (3-4%) each. Large banded pyrite @ 1160' (~4-5% PYR), 1168, and 1169' - trace of fluorite @ 1158' - numerous interbeds with schist from 1173' - 1177' - moderate gty veining - trace of calcite veining.
1177'	1274'	19	Mva ₁ +UDMS		<p>Chlorite Biotite Schist</p> <ul style="list-style-type: none"> - med - dark gray to green. - minor calcite veining. - trace of pyrite banding in places. - moderate gty veining - some up to 10 cm thick - 1-2% garnets visible up to ~1200'

