DRILL HOLE RECORD

824356 Samatosum

PROJECT NAME : SAM		DATE STARTED (M/D/Y): 07/05/91			
HOLE NUMBER: RG 408		DATE COMPLETED(M/D/Y): 07/07/91			
LOCATION : REA HORIZON		DATE LOGGED (M/D/Y): 07/07/91			
PROJECT NUMBER: 240		UNITS (F/M) : M			
CLAIM NUMBER :					
PLOTTING COORDS	GRID : SAM	ALTERNATE COORDS	GRID : ESTIMATED		
	NORTH: 365.0 N		NORTH : 3+65 N		
	EAST : 11035.0 N		EAST : 110+35 W		
	ELEV : 1033.0		ELEV : 1033.		
COLLAR BRNG	GRID : 180° 00' 00"	COLLAR SURVEY(Y/N) : N			
	ASTRONOMIC: 225° 00' 00"	RQD LOG (Y/N) : N			
	COLLAR DIP: -88° 00' 00"	PULSE EM SURVEY(Y/N): N			
CONTRACTOR : FRONTIER DRILLING		LOGGED BY : C. NAGATI			
CORE STORAGE : SAM EX CAMP		START DEPTH: 0.0			
CASING : PULLED		FINAL DEPTH: 249.0			
PLUGGED (Y/N) : N					
HOLE SIZE : NQ					
PURPOSE/COMMENTS: To fill in untested portion of the REA Horizon down dip of RG 290 (same pad).					

DIRECTIONAL DATA: A = Acid Test, L = Light Log, M = Multishot, T = Tropari

DEPTH (m)	TYPE A/L/M/T	ASTRONOMIC AZIMUTH	DIP	FLAG	COMMENTS
81.4	A	—	-83	OK	
150.9	A	—	-81	OK	
217.9	A	—	-81	OK	

HOLE NO. RG 408

LOGGED BY C. NAGATI

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
0.0 – 24.3.	<CSG>							
24.3 – 46.7.	<MAF TUFF>	green	fine.	interval is dk green, coarse ash; chlorite wisps are locally abundant - possible altered glass shards; some stretching has taken place. Abundant white Fe-calcite nodules, stringers, patches oriented parallel to the foliation at Matrix is aphanitic Core is very blocky to 36.6m; Intermittant narrow fault bx zones between 26.8 – 28.7m.	60	Core is strongly chloritic 42.2 – 46.7: Core is weakly to intensely bleached. Bleaching is associated with increased quartz/carb (20/80%) veining/flooding and pyrite	Trace pyrite. 42.2 – 46.7: 3% fine grained pyrite stringers and patches. 42.6 – 43.2: 10% patchy pyrite	26.5 – 29.5: 70% core recovery 29.5 – 32.6: 85% core recovery
46.7 – 64.9.	<MAF ASH TUFF/TUFF>	green	fine.	rock alternates between a near aphanitic, laminated foliated ashy tuff and a coarser grained tuff (NOT lapilli sized) locally there are fine interbeds of the two types. The coarser tuff contains chlorite spots - altered		core is chloritic and locally moderately epidote altered.	2% coarsely disseminated pyrite, local concentrations to 5% in vicinity of more intensely veined/flooded rock.	It is possible that there is mafic flows within the interval.

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FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				glassy clasts? and has been weakly epidotized. Approx. equal amounts of the two types. Foliation /Bedding 5% white qtz/calcite/siderite (2/93/5%) stringers and veins. +149.6 – 50.6+ <FH bx>	 40.	-	- -	-
64.9 – 99.0	<FELD? XTAL? TUFF>	green	fine.	aphanitic green matrix supports up to 40% white to greenish grains of altered feldspar? Grains reach .5mm. Grains stain mauve with syenjuice. Crystal structure difficult to identify. Foliation at 25–40 degrees to C/A. 3% white veining—predominantly calcite. 65.4 – 65.6 : calcite vein 67.3 – 67.6 : calcite vein oriented at +81.3 – 88.5+ intermittent <wk FH Bx>	 20	core is chloritic and calcareous 96.8 – 99.3 : core is weakly bleached.	Trace to 2% pyrite	Crystals may be a secondary carbonate alt'n rather than primary feldspar

HOLE NO RG 408

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
99.0 145.9 15/47	<ALT. MAF VOL>	green buff grey	fine	Relatively unaltered mafic tuffs and flows? comprise 60% of the interval. Unaltered core is green, chloritic, locally massive, aphanitic (the flows?) or speckled dk green (chl) and pale brown in a weakly bleached matrix (tuff) Fault bx occurs between 102.7-103m, 133.5-133.6 m, 145.6-145.9m Core between 111.8 - 114.7m and 118 - 125.4m is very blocky. Core contains 5% white qtz/carb (25/75%) veining, preferentially located in the mid to lower portion of the interval		The relatively unaltered volc. are chloritic, and calcareous; minor epidote present. In altered zones core becomes bleached. Intensity of bleaching varies from weak to intense. resulting in a pale buff color. strongly altered core has intense Fe-dol att'n, weak to mod yellowish sericite att'n, no chlorite, is variably pyritiferous and contains at least minor amounts of fuchsite; between 99.2 - 100.6m and 102.2 - 106.2m, in moderate to intense alt. volc there is 5-10% fuchsite. Qtz veinlets/flooding locally present. Intensely altered intervals occur between 102.4 - 111.7m, 128-129.7m, and 139.7 - 145.9m	There is only minor pyrite in the unaltered volcanics. In the strongly altered core the pyrite content is as follows. 102.4 - 111.7m : 8% except (109.9 - 110.35) where there is <25% PY> 128-129.7m : 3% py 139.7-145.9m : 5% py Pyrite is fine grained, coarsely disseminated in patches and discontinuous stringers in qtz.	

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FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
145.9- 183.6	<INTBED TUFF/FLOW>	green	fine n.p.	Interval consists of 25% aphanitic massive flows with up to 3% carbonate nodules; possibly some (amygdules) and 70% spotted, foliated tuff? Tuff matrix is green, aphanitic and contains 35% white spots, some of which are elongated carbonate, primarily calcite. Foliation is at 3% qtz/carb (5/95?) veining. + 181.9 - 183.6 + intermittent <FTH bx> Alteration very gradual grades into lower unit.	50	Core is chloritic and strongly calcareous. 172.4 - 183.6: Core becomes gradual bleached to a grey color with a green tint. except between 172.6 - 173.9m where there is a yellow sericite and quartz alteration zone. Amount of carbonate starts to decrease slightly.	Trace pyrite.	Core between 168.5 - 179m is very blocky.
183.6 - 212.5 -	<PY ALT TUFF? /SOD>	grey	fine.	Core is very highly altered and bleached to a grey color. Local carbonate and minor fuchsite alteration reminiscent of volcanic origin except between 201.8 - 207.6m where there is some of what appears to be intensely		183.6 - 201.8: bleached, carbonatized with some qtz/carb flooded and veined zones. Core is phyllitic - grey sericite. Between 199.6 - 201.8m there is 3% fuchsite.	Between 183.6 - 201.8m there is 8% very fine grained, coarsely disseminated pyrite overall with concentrations ranging between 5 - 10%. Zones of concentration within this subinterval	

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FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				silicified argillite. Alteration obscures any contacts. Foliation at	50		are: 185-185.6 : 15% py 190.4-191 : 12% py These higher concentrations occur in more siliceous zones.	
				+202.6-205.9+ intermittent weak brittle <Flt Bx>		201.8-207.6: core is weakly to moderately siliceous with weak Fe-dol 3% pale brown sericite / leucoxene?	+201.8-207.6+ <15% py> with concentration to 25%.	
				Lower contact is oriented at	55.	207.6-209.2: less siliceous than previously; weak Fe-dol alt'n; very fine grained sericite	207.6-212.5: 10% pyrite.	
						209.2-212.5: moderate yellow sericite alt'n present.		
212.5-249.0	<ARGILLITE/ WACKE>	black grey	fine	Core is predominantly well interbedded argillite and siltstone with minor wacke beds. Bedding is generally oriented at between 236.3-249.0m bedding highly variable- frequently oriented sub-parallel to C/A +212.5-216.9+ <Flt bx>	50	Argillite in fault zones is graphitic 216.9-217.4: weak to moderate yellowish gray sericite alt'n. 217.4-217.9: weak silicification. 217.9-218.5: weak grey sericite alt'n	Trace pyrite, except 216.9-218.5m where there is 2% coarsely dissem. pyrite blebs.	Core between 212.5-220m and 239.7-247.1m is very blocky with local narrow, brittle fault bx.

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FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				214.5 – 216.9 : 15% white qtz veining. Veins have been fault bx. Max. vein width 15 cm. 222.2 - 222.35 m : white qtz vein.				
				END OF HOLE				

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ASSAY SHEET

Sample Number	From ( )	To ( )	Estimate Cu	Estimate Zn	Length ( )	% Cu	% Zn	% Pb	gm/T Ag	gm/T Au	% SiO_2	% TiO_2	% Na_2O	% MgO	% Fe	PPM Cu	PPM Zn	PPM Pb	As PPM	Ba PPM	Sb PPM	Ag PPM	Au PPb
32440	42-6	43.2			0-6											67	48	11	32	40	5	2·2	26
32441	108.7	110·2			1.5											70	29	11	73	96	6	1.3	19
32442	110.2	111·7			1.5											93	47	8	72	88	5	1·1	25
32443	139·6	141.1			1·5											72	32	14	56	77	6	0.9	38
32444	141.1	142·6			1.5											68	67	15	70	87	8	0.9	44
32445	184.4	185·9			1.5											74	44	7	70	27	9	0.7	78
32446	189.4	190·9			1 5											111	87	6	97	22	10	0·7	73
32447	200·5	202·0			1.5											59	57	6	70	38	7	0.1	28
32448	202.0	203.5			1.5											181	75	4	35	33	6	0.1	23
32449	203.5	205·0			1·5											145	90	10	48	47	9	0.1	65
32450	205·0	206·5			1·5											142	152	14	38	33	8	0.1	59
324 51	206-5	208·0			1-5											135	47	19	40	40	13	0·2	82
324 52	208·0	209·5			1·5	·017	·009	·003	0·3	·14						167	89	27	47	43	14	0·3	138
324 53	209·5	211·0			1·5											121	29	26	91	46	13	0·2	91
324 54	211·0	212·5			1, 5											125	33	15	95	57	10	0.7	71
324 55	214·2	215·7			1.5											44	47	19	61	240	5	1·3	37

HOLE NO RG 408

DRILL HOLE RECORD

PROJECT NAME : SAM	DATE STARTED (M/D/Y): 07/03/91
HOLE NUMBER : RG-407	DATE COMPLETED (M/D/Y): 07/05/91
LOCATION : REA HORIZON	DATE LOGGED (M/D/Y): 07/05/91
PROJECT NUMBER : 240	UNITS (F/M) : M.
CLAIM NUMBER :	

PLOTTING COORDS		ALTERNATE COORDS	
	GRID : SAM GEOL		GRID : ESTIMATED
	NORTH : 343.92N		NORTH : 3+65 N
	EAST : 11416.74W		EAST : 11+20 W
	ELEV : 1003.67		ELEV : 1025.---

COLLAR BRNG			
	GRID : 180° 00' 00"	COLLAR SURVEY (Y/N) :	Y
	ASTRONOMIC : 225° 00' 00"	RQD LOG (Y/N) :	N
	COLLAR DIP : -70° 00' 00"	PULSE EM SURVEY (Y/N) :	N

CONTRACTOR : FRONTIER DRILLING	LOGGED BY : C. NAGATI
CORE STORAGE : SAMEX CAMP	START DEPTH : 0.0
CASING : PULLED	FINAL DEPTH : 199.0
PLUGGED (Y/N) : N	
HOLE SIZE : NQ	

PURPOSE/COMMENTS : FILLIN DRILLING ON THE REA HORIZON IN THE VICINITY OF JOHNSON CREEK

DIRECTIONAL DATA: A = Acid Test, L = Light Log, M = Multishot, T = Tropari

DEPTH (m)	TYPE A/L/M/T	ASTRONOMIC AZIMUTH	DIP	FLAG	COMMENTS
113.4	A	—	-66	OK	DOUBLE ETCH
194.1	A	—	-64	OK	

HOLE NO. RG-407

LOGGED BY C. NAGATI

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
0.0 – 52.6	<CSGT							
52.6 – 95.5	<ACT MAF TUFF>	green grey buff yellow	fine.	Tuffs are variably altered throughout interval The interval 71–87.5 is relatively unaltered and is composed of a dark green, chloritic tuff which is spotted by white Fe-poor calcite nodules/patches and minor stringers. Carbonate content is 15–20%. A weak foliation at. 70 which may be representative of a bedding plane +63.35 – 63.45 +<FLT BX>	70	52.6 – 71m: Alteration is highly variable. Core varies between a green, chloritic tuff with pale silicate patches which are paler than the matrix. Core in these zones are moderately Fe-calcareous. These weakly altered tuffs grade into/out of a pale, buff, siliceous, bleached tuff. These zones are only weakly calcareous and are highly pyritiferous. A buff/hard green to yellow alt'n mineral -silicate? - also occurs within this alt'n type. Between 61.5 – 63.25m the core has patchy, moderate silicification associated with patchy white qtz. Qtz has Fe-calcite along fractures.	52.6 – 71m: 10% med to very fine grained pyrite patches coarsely dissem within the bleached core. Local concentrations to 20%. +62.7 – 63.1 + Interval is primarily patchy quartz veining. A 5cm wide selvage on the upper contact of one vein contains 5% cp, .5% gn, 3% sp. Overall the interval contains < 1% BM, 4% py>	

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
						71-87.5m: relatively unaltered tuff. Strongly calcareous, chloritic 87.5-95.5: Core becomes bleached, some eklait to destroyed, development of a yellowish sericite (weak) Calcite stringers most prevalent within this subinterval.	71-87.5: minor py. 87.5-95.5: 1% py.	
95.5-102.8.	<INTERB TUFF/SED> Interbedded Tuff and Sediments	black yellow-green white.	fine.	40% of the unit consists of black argill to which contains 20% massive white to gray qtz veining (Fe-dol on fractures) The remainder of the interval is finely laminated argillite and sericitized tuff. Tuff laminae are similar to overlying altered tuffs. Bedding at. 70 Core is very blocky throughout. Localized fault brecciation: 95.6-97.5 + <FLT BX> and gauge. Minor		Tuff are altered to green to yellow sericite. Tuffs are calcareous. Between 95.7-96m the argillites are moderately graphitic	Minor pyrite is disseminated in the laminated core. The black argillite contains 1% disseminated stringers of pyrite.	

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				fault gouge at 98.5-98.7m.				
102.8-127.9	<GN/GY SER/DOL TUFF?>	green grey yellow	fine	Interval consists of strongly altered mafic tuffs(?). Most marked textural change is the very gradational change from green-yellow to grey. +121.85 - 122.5+ <WK Flt Bx> Lower 'contact' is very gradational. Minor zones of core are very similar to the green tuffs seen at the top of the hole.		Tuffs are initially very calcareous are pervasively, moderately altered to green to yellow sericite. The green/yellow sericite alt'n very gradually weakens, leaving the core grey in color. With increasing depth the amount of carbonate also starts decreasing, weakening of carb. starts later than that of the yellow/green sericite, and does not completely disappear. The green/yellow sericite color effective disappears by 115m.	102.8 - 108.3: 5% PY; very fine grained patches, coarse dissem. 108.3-127.9: <1% pyrite.	-
127.9-155.1	<PY/QTZ ALT TUFF?>	grey	fine	Tuffs? are the same as those immediately above, except that they are pyritiferous and siliceous. Some pale brown patchy mineral - leucoxene?		Core is weakly calcareous and siliceous. Silica is markedly higher than in the rock above and below. Minor gray sericite	Pyrite content varies between 8-25%. Pyrite is generally very fine grained but locally becomes coarse. Pyrite occurs as coarse	Possibly a deformed stringer ~~zone~~. Protolith may be sedimentary or mixed volc & seds. but

HOLE NO RG 407

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FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				Between 138.7 - 141m there is a minor amount of recognizable wispy argillite remnants 152.7 – 154.2: intermittant weak fault bx. Lower contact is sharp but is faulted. Contact is apparently at	90.	and brown sericite. 153.4 – 155.1: alteration grades into banded yellow sericite + qtz + pyrite	dissem and patches. 148 – 155.1: pyrite is less patchy, more finely disseminated	no clear contacts - very gradational changes.
155.1 - 199	<ARG/SILT>	black grey	fine	A finely interbedded sequence of argillite and siltstone. Bedding is generally consistent at ..... but is locally contorted subparallel to C/A Core is generally blocky throughout with parting occurring along bedding planes. Local, narrow fault bx zones present between 155.1 - 155.6 + <Flt Bx>, 163.2 – 165.7, 166.8 – 167.9m, and 198.4 - 199.0 m	70		Minor pyrite	

HOLE NO RG 407

END OF HOLE

ASSAY SHEET

Sample Number	From ( )	To ( )	Estimate Cu	Estimate Zn	Length ( )	% Cu	% Zn	% Pb	gm/T Ag	gm/T Au	% SiO_2	% TiO_2	% Na_2O	% MgO	% Fe	PPM Cu	PPM Zn	PPM Pb	As PPM	Ba PPM	Sb PPM	Ag PPM	Au PPb
32415	52.9	53.9			1.0											117	103	29	86	86	3	0.4	36
32416	53.9	55.2			1.3											133	76	19	61	79	1	0.4	32
32417	59.7	61.3			1.4											118	29	21	56	143	3	0.1	9
32418	61.3	62.7			1.4											88	114	40	71	137	5	0.3	30
32419	62.7	63.1			0.4	.010	.331	.125	2.5	.04						993	3306	1254	103	120	11	2.5	40
32420	63.1	64.6			1.5											66	98	26	46	116	5	0.5	21
32421	64.6	66.1			1.5											67	145	21	56	138	2	0.1	27
32422	66.1	67.6			1.5											119	184	33	137	148	2	0.1	63
32423	98.9	100.4			1.5											48	73	11	24	121	1	0.2	2
32424	100.4	101.9			1.5											60	72	15	23	94	2	0.4	4
32426	127.9	129.4			1.5											119	50	14	31	24	4	0.1	1
32427	129.4	130.9			1.5											130	79	22	65	21	3	0.1	35
32428	130.9	132.4			1.5											230	237	161	172	22	2	0.1	40
32429	132.4	133.9			1.5											155	243	134	304	20	5	0.1	64
324 30	133.9	135.4			1.5											128	350	87	2445	19	20	0.9	272
324 31	135.4	136.9			1.5								Elevated Au,			192	716	81	629	23	9	1.6	220
324 32	136.9	138.4			1.5									As		140	120	60	277	19	11	2.9	233
324 33	138.4	139.9			1.5											186	524	44	377	28	10	2.6	188
324 34	139.9	141.4			1.5											165	189	30	122	29	11	3.6	205
324 35	141.4	142.9			1.5											150	131	8	77	35	8	1.5	110

HOLE NO Ry 407

ASSAY SHEET

Sample Number	From (m)	To (m)	Estimate Cu	Estimate Zn	Length (m)	% Cu	% Zn	% Pb	gm/T Ag	gm/T Au	% SiO_2	% TiO_2	% Na_2O	% MgO	% Fe	PPM Cu	PPM Zn	PPM Pb	As PPM	Ba PPM	Sb PPM	Ag PPM	Au PPB
32436	142.9	144.4			1.5											171	103	8	78	31	10	2.0	72
32437	144.4	145.9			1.5											133	101	4	98	37	9	0.9	42
32438	145.9	147.4			1.5											123	83	1	82	37	9	0.7	56
32439	147.4	148.9			1.5											126	113	4	83	46	7	0.5	54

HOLE NO 407

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LITHOGEOCHEMISTRY

Column:	1	2	3	4	5	6	7	8	9	12	13	16	17	18	19	20	22	23	24	25
SAMPLE NUMBER	From	To	Length	SiO_2	Al_2O_3	CaO	MgO	Na_2O	K_2O	Fe_2O_3	MnO_2	TiO_2	Cu ppm	Zn ppm	Au ppb	Ba ppm	Ag ppm	Pb ppm	P_2O_5	S %	Total %	As ppm	Sb ppm
32425	120.1	123.1	30	41.24	15.84	7.48	7.49	3.32	1.47	8.44	0.22	.87	62	63	5	16	0.1	1	.01	1.17	87.56	7	1

Hole No. RG 407 Entered by _____ Logged by _____ Page No. 1 of 1

copy → data entry

DRILL HOLE RECORD

PROJECT NAME : SAM	DATE STARTED (M/D/Y): 07/01/91
HOLE NUMBER : R6405	DATE COMPLETED (M/D/Y): 07/03/91
LOCATION : REA HORIZON	DATE LOGGED (M/D/Y): 07/02/91
PROJECT NUMBER : 240	UNITS (F/M) : M
CLAIM NUMBER :	

PLOTTING COORDS		ALTERNATE COORDS	
	GRID : SAM GEOL		GRID : ESTIMATED
	NORTH : 377.08 N		NORTH : 3+80 N
	EAST : 11643.26W		EAST : 116+50 W
	ELEV : 1013.553		ELEV : ------.---

COLLAR BRNG			
	GRID : 180° 00' 00"	COLLAR SURVEY (Y/N) : N	
	ASTRONOMIC : 225° 00' 00"	RQD LOG (Y/N) : N	
	COLLAR DIP : -60° 00' 00"	PULSE EM SURVEY (Y/N) : N	

CONTRACTOR : FRONTIER DRILLING	LOGGED BY : C. NAGATI
CORE STORAGE : SAM Ex CAMP	START DEPTH : 0.0
CASING : PULLED	FINAL DEPTH : 249.0
PLUGGED (Y/N) : N	
HOLE SIZE : NQ	

PURPOSE/COMMENTS : To test a previously untested section of the REA/Horizon in the vicinity of Johnson Creek.

DIRECTIONAL DATA: A = Acid Test, L = Light Log, M = Multishot, T = Tropari

DEPTH (m)	TYPE A/L/M/T	ASTRONOMIC AZIMUTH	DIP	FLAG	COMMENTS
60.0	A	—	-61	OK	
105.5	A	—	-57	OK	
169.8	A	—	-57	OK	
249.0	A	—	-54	OK	

HOLE NO. R6405

LOGGED BY C. NAGATI

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
0.0 - 37.8	<CSG>							
37.8 - 58.9	<MAF TUFF>	green grey	fine.	37.8 - 45.6 : Aphanitic green matrix with paler yellow green spotting. Foliation at. 70 Matrix is calcareous 2% Fe-calcite stringers and veinlets with a weak preference for the plane of foliation 45.6 - 58.9: textures weaken downhole, core becomes bleached, more massive in appearance. Change in due to alteration. Between 45 - 54m core is very blocky, minor narrow zones of clay fault gouge		Limonite stain occurs on fractures through to 57m. 37.8 - 45.6 : core is chloritic and weakly calcareous 45.6 - 58.9m : core is increasingly calcareous (ankerite). Chlorite content decreases Carbonate flooded patches	37.8 - 45.6 : <1% disseminated pyrite. 45.6 - 58.9 : <2% disseminated pyrite	
58.9 - 64.1	<ARG/SILT>	black grey	fine.	argillite is finely laminated by silt. Bedding is locally weakly crumpled. Bedding @ Upper contact is qtz veined. 60 5% white qtz/carb (90/10%) veining.		Sedimentary weakly phyllitic	<0.5% disseminated pyrite in fine to coarse grains	

HOLE NO RG 405

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FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				Foliation appears to be oriented parallel to bedding.				
64.1 - 115.1	< TUFF / SED TRANSITION ZONE >	green black grey white	fine.	Altered tuffs which range in color from a pale yellow-green (after epidote / zoisite?) to medium green is finely to coarsely interbedded with argillite and siltstone. 60% Volc, 40% seds. Locally alteration destroys original volcanic textures - increasingly so with depth - to the point where protolith is uncertain except that there are some argillite laminal remain. Core is generally blocky with most competent intervals composed of volc and alt volc. Argillite are extremely blocky and intermittantly fault bx. Brittle fault bx zones occur as follows:		There is minor weak silicification of argillites. With depth the tuffs(?) are increasingly altered to grey and yellow sericite. This style of alteration is the most pervasive between 92 - 100.7m. Below 100.7m there is only green sericitic alteration which is finely laminated with argillite. Volcanics are strongly Fe-carbonatized (ankerite)	Overall pyrite content 3% local concentrations to 5% Trace cp on vein margins.	Locally there is some minor intense yellow sericite quartz alt'n of what looks like was tuff - precursor to Qtz / Ser Alt'n Sed? rock type — maybe a tuff not a sediment! - Becoming "Yellow + Black" unit. Core Recovery: 75.2 - 76.7 : 55% 76.7 - 78 : 70% 78 - 79.5 : 53% 79.5 - 81.3 : 69% 85.9 - 87.4 : 60% 90.5 - 91.4 : 75% 91.4 - 92.0 : 65%

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				175.2 - 79.5 + <FLT BX> +85.4 - 92.7 + <FLT BX> +101.1 - 105.9 + <FLT BX> 15% massive white qtz/carb (80/10?), veins to 35cm Foliation at 95m	50			
115.1 - 163.6	<ALT. TUFF?>	green gray tint	fine	At top of interval the tuff? is aphanitic massive, med green color, with minor argill.te? wisps. Minor qtz/carb stringers. At 124.4m rock grades into a mottled volc. due to differential alteration? localized zones of bleaching. Spotty patches of a pale apple green calc.-silicate mineral. altering epidote/clinozoisite? Pale brown, spotty mineral may be leucoxene (1-3%) Between 140.2 - 163.6m the mottled textures caused by the green		Volcanics are strongly calcareous - ankerite - throughout interval. Weak green sericite Patchy, very weak silic. associated with qtz/carb flooding The green calc-silic mineral may be an alteration mineral.	115.1 - 140.2: <1% disem py. 140.2 - 163.3m: Pyrite content varies between 1-10% High concentrations of pyrite are coarsely disseminated in siliceous alt. vol. tuff.	The mottled interval of volc. between 124.4 - 140.2m may be a seperate tuff bed of slightly different composition than that surrounding it. SAMPLES TAKEN FOR J. CLARK TO ANALYZE.

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				calc-silicate is no longer present. Leucoxene? is still present. Qtz/carb patches are more prevalent than at the top of the interval				
				Lower contact is sharp at and is conformable with the underlying sediments.	70			
163.6 – 249.0	ARG/SILT/ WACKE	grey black	fine	typical turbidite sequence of finely interbedded arg and silt and coarse wacke beds to 6m.		Core is relatively unaltered	Minor pyrite	
				Bedding is consistent at Minor qtz/carb veins except between 193.5 – 201.8m where there is 10% veining. Veins are largely barren except for minor pyrite Veins are 65% qtz 35% carb.	65.			
				~165.4 – 166.1 FELT BX				
				END OF HOLE				

HOLE NO RG 405

PAGE 5

No significant assays.

ASSAY SHEET

Sample Number	From ( )	To ( )	Estimate Cu	Estimate Zn	Length ( )	% Cu	% Zn	% Pb	gm/T Ag	gm/T Au	% SiO_2	% TiO_2	% Na_2O	% MgO	% Fe	PPM Cu	PPM Zn	PPM Pb	As PPM	Ba PPM	Sb PPM	Ag PPM	Au PPb
32401	126.6	128.1			1.5											62	47	14	20	19	3	0.1	19
32403	140.2	141.7			1.5											125	39	14	10	19	3	0.1	78
32404	143.8	145.3			1.5											153	79	2	10	14	3	0.1	46
32405	145.3	146.8			1.5											152	69	6	8	20	3	0.1	30
32406	146.8	148.3			1.5											162	63	7	14	21	2	0.1	40
32407	148.3	149.8			1.5											153	86	11	5	23	2	0.1	40
32408	149.8	151.3			1.5											251	100	6	12	16	2	0.1	36
32409	151.3	152.8			1.5											107	80	2	8	20	2	0.1	17
32410	152.8	154.3			1.5											111	59	9	15	22	3	0.1	29
32411	159.1	160.7			1.6											140	65	19	21	38	3	0.1	41
32412	162.1	163.6			1.5											128	75	19	46	64	6	0.1	21
32413	199.5	200.8			1.3											44	54	25	85	51	2	0.2	1
32414	200.8	201.8			1.0											47	53	20	97	50	2	0.2	1
32396	72.2	72.7			.05											38	102	9	20	42	2	0.7	4
32397	75.2	78.0			2.8											39	37	15	29	68	3	0.4	1
32398	78.0	80.1			1.9											61	56	55	28	138	4	0.7	2
32399	85.95	88.1			2.25											68	56	20	37	32	3	0.3	1

HOLE NO 405

virtually identical!

LITHOGEOCHEMISTRY

Column:	1	2	3	4	5	6	7	8	9	12	13	16	17	18	19	20	22	23	24	25
SAMPLE NUMBER	From	To	Length	SiO_2	Al_2O_3	CaO	MgO	Na_2O	K_2O	Fe_2O_3	MnO_2	TiO_2	Cu ppm	Zn ppm	Au ppb	Ba ppm	Ag ppm	Pb ppm	P_2O_5	S %	Total %	As ppm	Sb ppm
32400	115.8	118.8	3.0	42.13	15.06	6.71	7.68	3.22	.99	10.14	.19	1.13	103	71	5	18	.6	1	.02	.28	87.56	1	1
32402	131.7	134.2	3.0	41.93	15.86	7.48	6.37	4.19	1.08	8.73	.20	1.15	89	61	5	18	.6	1	.03	.65	87.71	2	1

Hole No. Rg 405 Entered by RM Logged by _____ Page No. 1

DRILL HOLE RECORD

PROJECT NAME : SAM		DATE STARTED (M/D/Y): 06/17/91	
HOLE NUMBER : RG 399		DATE COMPLETED (M/D/Y): 06/18/91	
LOCATION : REA HORIZON		DATE LOGGED (M/D/Y): 06/20/91	
PROJECT NUMBER : 240		UNITS (F/M) : M	
CLAIM NUMBER :			
PLOTTING COORDS	GRID : SAM GEOL.	ALTERNATE COORDS	GRID : ESTIMATED
	NORTH : 269.21 N		NORTH : 2+70 N
	EAST : 11580.70 W		EAST : 115+90 W
	ELEV : 1014.81 m		ELEV : 1026.
COLLAR BRNG	GRID : 180° 00' 00"	COLLAR SURVEY (Y/N) : ~~N~~ Y	
	ASTRONOMIC : 225° 00' 00"	RQD LOG (Y/N) : N	
	COLLAR DIP : -55° 00' 00"	PULSE EM SURVEY (Y/N): N	
CONTRACTOR : FRONTIER DRILLING		LOGGED BY : C. NAGATI	
CORE STORAGE : SAMEX CAMP		START DEPTH: 0.0	
CASING : PULLED		FINAL DEPTH: 102.7	
PLUGGED (Y/N) : NO			
HOLE SIZE : NQ			

PURPOSE/COMMENTS : TO TEST A PREVIOUSLY UNTESTED PORTION OF THE REA HORIZON (P-8)

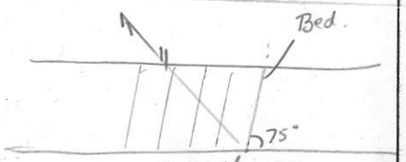
DIRECTIONAL DATA: A = Acid Test, L = Light Log, M = Multishot, T = Tropari

DEPTH (m)	TYPE A/L/M/T	ASTRONOMIC AZIMUTH	DIP	FLAG	COMMENTS

HOLE NO. RG 399 LOGGED BY C. NAGATI

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
0.0 - 61.1	<CSG>							
61.1 - 76.3.	<CHERT>	gray white black	fine	61.1-72.2: gray cherts contains contorted black argillite partings locally partings are weakly stylolitic. Density of partings tends to increase down hole. The subinterval contains 15-20% white qtz veining which primarily concentrated between 67-70 m. Qtz veins are generally massive, bull qtz with 3% white coarse grained dolomite. Veins contain stylolitic argillite. Veins oriented at all angles to C/A. Some veins are vuggy. 72.2 - 73+ Chert and qtz as above has been <FLT BX> and reheated. 73-75.1: argilliceous chert to cherty argillite; 7% white qtz veining. 75.1-76.3: silicified cherts and/or argillites. Remnant bedding and cleavage-parallel qtz is at low angles.		There is strong limonitic, minor hematitic, staining along fractures and vuggy margins of veins to a depth of 64.2 m. The limonite in the veins is derived from the oxidation of Fe-carbonates. Limonite decreases down hole. Patchy silicification along margins of some veins gives those veins diffuse rather than sharp margins. 73-75.1: arg. is graphitic 75.7-76.3: patchy moderate greenish-yellow sericite and mod. to intense silicification.	2% very fine grained pyrite occurs in irregular bands within argillites.	

HOLE NO RG-399

FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
76.3 – 77.7	<Tuff/ GRAY. SER SED>	greenish-yellow, gray	fine	Intensely altered sediments.		76.3 – 76.55: intense greenish yellow sericite alt'n. No carbonate present. Minor patchy qtz vein and numerous tiny deformed, discontinuous pyritiferous qtz stringers.	76.3 – 76.55: 15% very fine grained coarsely dissem. pyrite and blebs.	Sediments are most likely to have been argillites with interbedded silt.
						76.55 – 77.7: intensely gray sericite altered Matrix is weakly Fe-dolomitized. Locally bleached with dol nodules. Minor qtz/dol stringers.	76.55 – 77.7 ± 10–15% very fine grained pyrite in faint bands	76.55 – 77.7. Approaches what is called 'MUT' in the mine.?
77.7 – 102.7	<ARG/SILT/ WACK>	black gray	fine	Clear turbidites. Bedding is generally at but locally is deformed. Core exhibits a wavy cross cutting micaceous cleavage at/near the hole oriented at There is some poor evidence that structural tops are down hole. The interval between 78.5 – 87.5 is weakly to strongly blocky	75° 45°	Very little alteration outside of sericitization of wall rock fragments in quartz veins. Argillites are weakly graphitic locally and are phyllitic	Minor dissem pyrite	 or locally  Coarse seds are strongly dolomitic but this appears to be primary rather than alteration.

HOLE NO RG399

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FROM TO	ROCK TYPE	COLOUR	GRAIN SIZE	TEXTURE AND STRUCTURE	ANGLE TO CORE AXIS	ALTERATION	SULPHIDES	REMARKS
				179.8 - 80.0 ft < FLT BX >. <5% massive white qtz/ dol veins (90/10%) and veinlets. Veining is generally oriented at steep angles to CA. 188.2 - 90.1 ft <90% QTZ/DOL VN> Dol. is white to pink in color, coarse grained. Veins contain intensely altered (green sericite) wall rock fragments. 85% qtz, 15% dol.			188.2 - 89 ft <5% Py 5% B.M> Vein contains 5% medium grained coarsely disseminated patchy Pyrite. 4% 'clotty' Chalcopyrite occurs by itself and intermixed with the pyrite. Trace galena 1% extremely fine grained gray metallic intimately associated with the cp; Mineral is soft and has a silvery gray streak - galena?, copper mineral? Other veins in vicinity are apparently barren except for pyrite	
				END OF HOLE				

HOLE NO RG 399

ZIPPY PRINT ® — BRIDGEPORT, RICHMOND

ASSAY SHEET

Sample Number	From ( )	To ( )	Estimate Cu	Estimate Zn	Length ( )	% Cu	% Zn	% Pb	gm/T Ag	gm/T Au	% SiO_2	% TiO_2	% Na_2O	% MgO	% Fe	PPM Cu	PPM Zn	PPM Pb	As ppm	Ba ppm	Sb ppm	Ag ppm	Au ppb
31519	61.1	62.6			1.5											42	57	17	47	68	3	0.5	5
31520	62.6	64.1			1.5											32	50	13	37	50	2	0.5	5
31521	64.1	65.6			1.5											24	11	12	19	79	1	0.3	15
31522	65.6	67.1			1.5											75	35	40	63	124	3	0.9	55
31523	67.1	68.6			1.5											28	11	32	30	68	2	0.5	30
31524	68.6	70.1			1.5											15	20	12	24	59	2	0.3	10
31525	70.1	71.6			1.5											20	19	144	34	97	4	1.2	45
31526	71.6	73.1			1.5											174	97	103	76	121	5	1.4	35
31527	73.1	74.7			1.6											72	48	257	48	108	4	1.6	40
31528	74.7	76.3			1.6	.009	.01	.01	2.1	.09						93	126	144	81	172	7	2.1	65
31529	76.3	77.7			1.4											91	65	51	49	147	6	1.5	35
31530	88.2	89.0			0.8	.549	.32	.01	14.4	.01						5490	3151	56	115	38	8	14.4	5
31531	89.0	90.3			1.3											60	48	15	87	38	1	1.0	5

HOLE NO RU399