60001565

Mining District File Summary Sheet

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Rosebud Drill Hole File - Hole No. D-117-95
AUTHOR	C. Muerhoff; S. King; K. Allen
DATE OF DOC(S)	1995
MULTI_DIST Y / N? Additional Dist_Nos:	
QUAD_NAME	Sulphur 7.5'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Rosebud Project; Hecla Mining Co. South Zone
COMMODITY If not obvious	gold silver
NOTES	Drill log; geology; assay; total depth 255' handwritten notes 11p.

Keep docs at about 250 pages if no oversized maps attached
(for every 1 oversized page (>11x17) with text reduce
the amount of pages by ~25)

SS: DD 5/29/08
Initials Date
DB: MOK
Initials Date
SCANNED: DV Blue
Initials Date

Revised: 1/22/08

D-117-95

SOUTH ZONE / 800 N

60001565 4010

- [ ] quartz, chalcedony, silicification
- [ ] faults, fractures, joints
- [ ] FeO_X
- [ ] sulfide
- [ ] calcite, carbonate
- [ ] argillization, white clays
- [ ] propylitization
- [ ] potassic alteration
- [ ] chlorite, chloritic clays

Hecla MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

6000 1565

HOLE NUMBER	D-117-95	LOCATION	South Zone 800N	REMARKS	
PAGE 1 OF 4		NORTHING	2,203,833.616		Drilled from decline @ station #15
DATE	11/15/95	EASTING	481,714.168		Northwest Drilling - Hagby On-ram 1000
LOGGED BY	KDA	ELEVATION	4656.256		NQBGM core (2.2" diameter)
SCALE	1" = 10'	AZIMUTH	collar: 123° (S57°E)	125': 122.5° (S57.5°E)	250': 122° (S58°E)
TOTAL DEPTH	255	INCLINATION	collar: +11°	125': +10.5°	250': +10°

LITHOLOGY

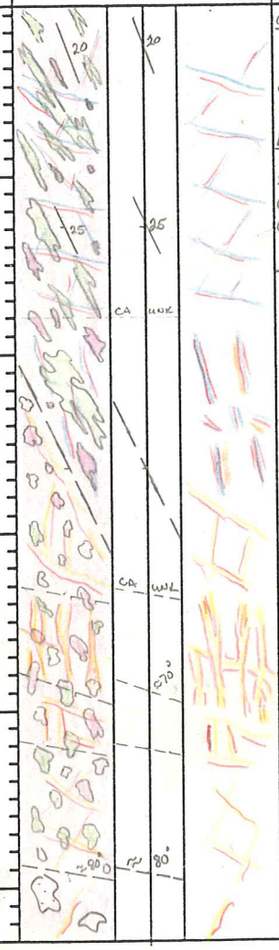
0- ' - LBT

0-26.5' - Moderately hard to moderately soft, heterolithic, matrix supported, potassically altered w/ minor propylitization, lt. pink matrix (+o lt grey due to disseminated sulfide) and lt green +o dk. brown clasts, volcanic breccia. Clasts are composed of massive and planar laminated? ash tuffs. Clasts are sub-rounded, squashed & stretched which is propably due to re- or partial melting of this, "the moderately densly welded" portion of this ash-flow tuff unit. The flow laminations (minor) are due to anomorphic movement w/in the "partially molten interval". Clasts are ≈85% lapilli - 15% block, and 70% clasts-30% matrix.

26.5-49.2' - Moderately soft to moderately hard, heterolithic, matrix supported, potassically altered w/ minor propylitization, lt. pink matrix and brown to pink to lt. green clasts, volcanic breccia. Clasts are composed of massive and planar laminated ash tuffs. Clasts are sub-rounded to sub-angular w/ minor "squashing & stretching" which is due to re- or partially melting of this weakly to moderately welded portion of this ash-flow tuff unit. The contact @ 26.5' is relatively sharp between this weakly to moderately welded and the moderately densly welded portion of this ash-flow tuff unit. Minor flow alignment of clasts. Clasts are 100% lapilli, and ≈60% matrix - 40% clasts.

FT: 10, 20, 30, 40, 50

GRAPHIC LOG



STRUCTURE

0-18.1' - Calcite + pyrite ± marcasite veinlets common
@ 60-70° to CA ≈ 2-3/foot (.1-.2" wide)
@ 30-40° to CA ≈ 1/foot (.5-1 mm)
@ 0-20° to CA ≈ .2/foot (.5-1 mm)

18.1-26.5' - Calcite + marcasite + pyrite w/ minor white clay open space veinlets common
@ 0-20° to CA ≈ 2/foot (up to .4" wide)
@ 30-40° to CA ≈ 1/foot (≤ .2" wide)

26.5-33.4' - Chalcedonic + marcasite veinlets moderately common.
@ 0-20° to CA ≈ 1/foot
@ 50-60° to CA ≈ 1/foot } ≤ 0.1" wide

33.4-38.9' - Chalcedony + marcasite ± cpy ± white clay + barite veinlets abundant. Possible fault zone
@ 0-20° to CA ≈ 3/foot (≥ 1/2")
@ 60° to CA ≈ .2/foot (1mm)

38.9'-42.2' - Chalcedony + marcasite ± pyrite veinlets moderately common.
@ 50-60° to CA ≈ 1/foot
@ 30-40° to CA ≈ .3/foot
@ 0-20° to CA ≈ 1/foot.

42.2-49.2' - Chalcedony + marcasite ± pyrite ± white clay veinlets moderately common.
@ 0-20° to CA ≈ .5/foot
@ 30-40° to CA ≈ 1/foot
@ 50-60° to CA ≈ 1/foot

ALTERATION AND MINERALIZATION

0-18.1' - Potassically altered w/ minor propylitization. Dissem. pyrite ± marcasite up to 10%. Calcite + pyrite ± marcasite fracture or veinlets moderately common.

18.1-26.5' - Potassically altered w/ minor propylitization. Disseminated pyrite ± marcasite up to 8%. Calcite + marcasite + pyrite veinlets (some open-space) w/ minor white clay (efflorescesses) common.

26.5-33.4' - Potassically altered w/ minor propylitization. Disseminated pyrite ± marcasite up to 5%. Chalcedonic lt gray silica + marcasite veinlets moderately common. Calcite absent. Trace amounts of white clay and trace amounts of cpy?

33.4-38.9' - Potassically altered w/ minor propylitization. Disseminated pyrite ± marcasite up to 5%. Abundant chalcedonic lt gray silica + marcasite blades (some appears to be coated by a black material & others partially replaced by cpy) ± white clay ± barite. Abundant open space.

38.9-42.2' - Potassically altered w/ minor propylitization. Disseminated pyrite to 5%. Lt grey chalcedonic silica w/ marcasite ± pyrite moderately common.

42.2-49.2' - Potassically altered w/ minor to moderate propylitization. Moderate lt gray chalcedonic silica veinlets w/ marcasite blades ± pyrite ± white clay.

ANALYTICAL DATA (opt)

FROM	TO	W	Au	Ag	Au2	Au Gray ~~Age~~
0	5	5'	0.009	0.09		
5	10	5'	0.042	0.15		
10	15	5'	0.446	0.30		0.504
15	18.1	3.1'	0.164	0.15		0.156
18.1	23	4.9'	0.146	0.20		
23	26.5	3.5'	0.142	0.43		
26.5	30	3.5'	0.028	0.12		
30	33.4	3.4'	0.185	0.38		0.227
33.4	38.9	5.5'	0.069	0.49		
38.9	42.2	3.3'	0.112	0.32		
42.2	46.2	4'	0.029	0.14		
46.2	49.2	3'	0.028	0.22		
49.2	54	4.8'	0.014	0.10		

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		49.2-71.5' - MODERATELY SOFT TO MODERATELY HARD, HETEROLITHIC, MATRIX SUPPORTED, POTASSICALLY ALTERED, LT PINK MATRIX W/ BUFF COLORED CLASTS, VOLCANIC BRECCIA. CLASTS ARE COMPOSED OF ≈ 2 TYPES OF MASSIVE ASH TUFFS (PLANAR LAMINATED TUFF CLASTS ARE ABSENT). CLASTS ARE SUB-ROUNDED TO SUB-ANGULAR, 60% LAPILLI - 40% BLOCK SIZED, 60% CLASTS - 40% MATRIX. THESE CLASTS SHOW NO OR VERY LITTLE EVIDENCE OF WELDING AND IS THEREFORE PART OF THE "NON-WELDED" PORTION OF THIS ASH-FLOW TUFF UNIT. 71.5-72.3' - CHALCEDONIC HEALED BRECCIA. 72.3-93.8' - MODERATELY HARD, HETEROLITHIC, MATRIX SUPPORTED TO CLAST SUPPORTED, POTASSICALLY ALTERED W/ MINOR PROPYLITIZATION, LT TO DK PINK TO BUFF W/ MINOR LT GREEN COLORED CLASTS, VOLCANIC BRECCIA. CLASTS ARE SUB-ROUNDED TO SUB-ANGULAR, 90% LAPILLI - 10% BLOCK SIZED, 20% MATRIX - 80% CLASTS, AND COMPOSED OF @ LEAST 3 TYPES OF MASSIVE ASH-TUFFS AND A PLANAR LAMINATED (MINOR) ASH-TUFF. 93.8-94.7' - MODERATELY SOFT, FINE-GRAINED, MASSIVE, ASH-TUFF, LT GREEN IN COLOR AND PROPYLITIZED. THIS IS PROBABLY THE TOP "ASH-LAYER" OF THE ASH-FLOW TUFF DESCRIBED ABOVE, OR THE BASIL "ASH LAYER" OF THE ASH-FLOW TUFF UNIT DESCRIBED BELOW. 94.7-96.9' - MODERATELY HARD, HETEROLITHIC, MATRIX SUPPORTED POTASSICALLY ALTERED W/ MINOR PROPYLITIZATION, LT PINK MATRIX W/ DARK BROWN TO LT GREEN CLASTS, VOLCANIC BRECCIA. CLASTS ARE COMPOSED OF MASSIVE AND PLANAR LAMINATED ASH-TUFFS. CLASTS ARE SUB-ROUNDED, AND "SQUASHED & STRETCHED" WHICH IS PROBABLY DUE TO RE- OR PARTIAL MELTING OF THIS "MODERATELY-DENSELY WELDED PORTION OF THIS ASH-FLOW TUFF #2. THIS MARKS THE SECOND ASH-FLOW TUFF UNIT IN THIS HOLE. FLOWAGE @ ≈ 40° TO CA. 96.9-114.3' - MODERATELY SOFT TO MODERATELY HARD, HETEROLITHIC?, MATRIX SUPPORTED, POTASSICALLY ALTERED MATRIX W/ PROPYLITICALLY ALTERED CLASTS (LT PINK MATRIX & LT GREEN CLASTS), VOLCANIC BRECCIA. CLASTS ARE COMPOSED OF DOMINANTLY PLANAR? LAMINATED ASH TUFFS W/ MINOR MASSIVE ASH-TUFFS. CLASTS ARE SUB-ROUNDED TO SUB-ANGULAR, 60% LAPILLI - 40% BLOCK, 40% MATRIX - 60% CLASTS. THIS INTERVAL IS THE NON-WELDED PORTION OF ASH-FLOW TUFF UNIT # 2 IN THIS HOLE. 114.3-126.4' - SOFT TO MODERATELY SOFT, PROPYLITIZED, & ARGILLIZED, "CRACKLE" BRECCIATED MASSIVE? ASH-TUFF. PORTIONS OF THIS INTERVAL HAS THE DEVITROPHYRIC TEXTURES AND IS COMPOSED OF CLAY. THERE ARE AREAS WHICH APPEAR TO BE A MATRIX SUPPORTED BX. SIMILAR TO 96.9-114.3. THIS INTERVAL COULD BE VERY LARGE BLOCKS IN THE BX.	60 70 80 90 100 110 120	CA UNK 40° 40° 50° 60° 40° 40° 70° 51	49.2-63.9' - CHALCEDONY VEINLETS W/ MINOR OPEN SPACE CONTAINING MARCASITE ± PYRITE ± WHITE CLAY @ 0-15° TO CA ≈ 0.5/FOOT ≤ .2" @ 50-60° TO CA ≈ 2/FOOT ≤ 1-2MM @ 70-80° TO CA ≈ 1/FOOT ≤ 1-2MM 63.9-71.5' - CHALCEDONY VEINLETS W/ MODERATE OPEN SPACE CONTAINING MARCASITE ± PYRITE ± WHITE CLAY + BARITE. SOME MARCASITE IS COATED W/ A BLACK MATERIAL (SULFOSALT?). @ 30-40° TO CA ≈ 1/FOOT @ 50-60° TO CA ≈ 2-3/FOOT @ 0-20° TO CA ≈ 2/FOOT 71.5-72.3' - POSSIBLE FAULT BX HEALED W/ CHALCEDONY. 72.3-84.5' - CHALCEDONIC QUARTZ + MARCASITE ± PYRITE ± WHITE CLAY VEINLETS @ 0-20° TO CA ≈ 1-2/FOOT @ 30-40° TO CA ≈ 2-3/FOOT @ 50-60 TO CA ≈ 1/FOOT @ 70-80° TO CA ≈ 1/FOOT } ≤ .1" 84.5-93.8' - CALCITE + CHALCEDONY VEINLETS W/ MARCASITE + PYRITE ± WHITE CLAY @ 0-20° TO CA ≈ 0.5/FOOT @ 30-40° TO CA ≈ 1/FOOT @ 50-60° TO CA ≈ 1/FOOT @ 70-80° TO CA ≈ 0.5/FOOT. 94.7-96.9' - $CaCO_3$ ± SiO2 VEINLETS W/ MARCASITE ± PYRITE @ 1) 0-20° TO CA ≈ 0.2/FOOT 2) 30-40° TO CA ≈ 0.4/FOOT 3) 50-60° TO CA ≈ 1-2/FOOT. 96.9-114.9' - CALCITE + MARCASITE + PYRITE VEINLETS @ 1) 0-20° TO CA ≈ 0.5/FOOT 2) 30-40° TO CA ≈ 1-2/FOOT 3) 50-60° TO CA ≈ 0.5/FOOT. 114.9-126.4' - CALCITE VEINLETS W/ MARCASITE + PYRITE ± CPY @ 30-40° TO CA ≈ 2-3/FOOT @ 50-60° TO CA ≈ 1/FOOT @ 0-20° TO CA ≈ 0.5/FOOT.	49.2-71.5' - POTASSICALLY ALTERED - NO PROPYLITIZATION. MODERATELY COMMON LT. GREY CHALCEDONIC QUARTZ VEINLETS W/ MARCASITE ± PYRITE ± WHITE CLAY. INTERVAL CONTAINS MINOR SILICA FLOODING. CALCITE ABSENT 71.5-72.3' - CHALCEDONIC (LT. GREY) HEALED BRECCIA W/ PYRITE + CPY? + AN IRIDESCENT BLACK MINERAL? THIS MAY BE A SULFOSALT OR COPPER MINERAL OR TARNISHED CPY. 72.3-84.5' - POTASSICALLY ALTERED W/ MODERATE SILICA FLOODING. MODERATELY COMMON LT. GREY TO MILKY CHALCEDONIC VEINLETS W/ MARCASITE + PYRITE REPLACING MARCASITE ± WHITE CLAY (VERY MINOR). OPEN SPACE IS COMMON. ONE VUG CONTAINED A TRANSPARENT TO TRANSLUCENT LT GREEN XTAL (TETRAGONAL?). 84.5-93.8' - POTASSICALLY ALTERED W/ MODERATE PROPYLITIZATION. MODERATE CALCITE AND CHALCEDONY VEINLETS & STOCKWORKS W/ MARCASITE + PYRITE ± WHITE CLAY. 93.8-94.7' - PROPYLITIZED W/ MINOR DISS PYRITE. 94.7-96.9' - POTASSICALLY ALTERED W/ MODERATE PROPYLITIZATION. MODERATE $CaCO_3$ ± SiO2 VEINLETS W/ MARCASITE + PYRITE. ≤ .1". 96.9-114.9' - POTASSICALLY AND PROPYLITICALLY ALTERED. DISSEMINATED PYRITE UP TO 5%. CALCITE VEINLETS W/ MARCASITE + PYRITE MODERATELY COMMON. MINOR AMOUNTS OF LT. GREEN CLAY. 114.9-126.4' - PROPYLITIZED & ARGILLIZED CALCITE + MARCASITE ± PYRITE ± CPY COMMON. CLAY RICH DUE TO ALTERATION. 116-117' - CALCITE VEINLET & STOCKWORK WITH MARCASITE + PYRITE ± CPY + PYRARGYRITE? @ 34° TO CA.

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	~~Ag2~~ AuGrav
54	59	5'	0.007	0.11		
59	63.9	4.9'	0.004	0.08		
63.9	67.5	3.6'	0.025	0.16		
67.5	71.5	4'	0.038	0.36		
71.5	72.3	0.8'	0.013	0.11		
72.3	77.5	5.2'	0.014	0.11		
77.5	80.5	3'	0.016	0.12		
80.5	84.5	4'	0.034	0.24		
84.5	89.5	5'	0.013	0.12		
89.5	93.8	4.3'	0.019	0.08		
93.8	94.7	0.9'	0.003	0.04		
94.7	96.9	2.2'	0.004	0.07		
96.9	100.5	3.6'	0.012	0.05		
100.5	104.5	4'	0.026	0.07		
104.5	109.5	5'	0.032	0.13		
109.5	114.3	4.8'	0.063	0.32		
114.3	116	1.7'	0.038	0.09		
116	117	1.0'	0.020	14.63		
117	122	5'	0.008	0.28		

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%REC	RQD

LITHOLOGY

126.7-135.4' - MODERATELY HARD, FINE-GRAINED, MODERATELY PLANAR LAMINATED, PROPYLITIZED, LT GREEN, ASH-TUFF.

135.4-136.5' - FAULT RUBBLE ZONE.

136.5-139.8' - MODERATELY SOFT to MODERATELY HARD, FINE-GRAINED, MASSIVE, ASH-TUFF. CRACKLE BRECCIATED TEXTURE.

139.8-160.1' - MODERATELY SOFT to MODERATELY HARD, MATRIX SUPPORTED, HETEROLITHIC ?, LT PINK MATRIX w/ LT GREEN CLASTS, POTASSICALLY AND PROPYLITICALLY ALTERED, VOLCANIC BX. (NON welded ASH-FLOW TUFF). CLASTS ARE SUB-ANGULAR to SUB-ROUNDED, 70% LAPILLI-30% BLOCK SIZED, 30% MATRIX-70% CLASTS, AND ARE COMPOSED OF DOMINANTLY FINE-GRAINED PLANAR LAMINATED ? ASH TUFFS w/ MINOR MASSIVE ASH TUFFS.

160.1-169.6' - MODERATELY HARD, FINE-GRAINED, MASSIVE, ASH TUFF. Buff IN COLOR w/ MINOR GREEN. BLEACHED w/ MINOR SILICIFICATION

165.9-168.2 - MODERATELY HARD, SULFIDE RICH, FAULT BRECCIA.

169.6-175.2' - MODERATELY HARD to MODERATELY SOFT, Buff to LT. GREEN, BLEACHED w/ MINOR PROPYLITIZATION, COARSE ASH GRAINED SLIGHTLY PLANAR LAMINATED ASH TUFF (WAVY LAMINATED).

175.2-188.6' - MODERATELY HARD, Buff to LT GREEN, MODERATELY silicified & PROPYLITIZED, NORMALLY GRADED, LEOPARD SKIN-TUFF. VESICLES OR PUMICE CLASTS ARE COARSE GRAINED ≈ .5-.1" & FINES upwards to ≈ .2-.5" @ 188.6'.

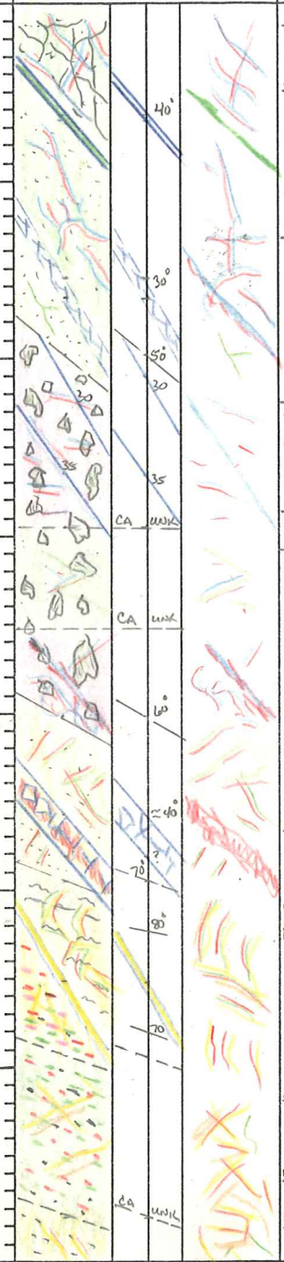
ALT & MIN

169.6-175.2' - BLEACHED w/ MINOR PROPYLITIZATION Containing COMMON SILICA-MARCASITE VEINLETS w/ DK GREEN CHLORITE + MARCASITE BLADES + PYRITE ± CPY ± Ag-Sulfos. MINOR AMOUNTS OF WHITE CLAY.

175.2-179.4' - BLEACHED & SILICIFIED LST. PUMICE VESICLES FILLED w/ CHLORITIC CLAYS & MINOR PYRITE + MARCASITE. COMMON SILICA VEINLETS CONTAIN ABUNDANT MARCASITE + PYRITE ± WHITE CLAY.

179.4-188.6' - PROPYLITIZED LST w/ SILICA + MARCASITE + WHITE CLAY FRACTURES/VEINLETS COMMON w/ PYRITE. CPY IS MODERATELY COMMON to MINOR w/in these FRACTURES.

GRAPHIC LOG



STRUCTURE

126.4-126.7 - FAULT GOUGE ZONE. PROPYLITIZED w/ LT GREEN CLAY & ROCK FLOUR.

126.7-135.4' - Calcite + MARCASITE + PYRITE ± CPY VEINLETS @
1) RANDOM STOCKWORK
2) 40-50° to CA ≈ 1-2/FOOT
3) 0-20° to CA ≈ 1/FOOT.

135.4-136.5' - FAULT RUBBLE ZONE

136.5-139.8' - GREEN CLAY ± MARCASITE & PYRITE FRACTURES ⇒
1 @ 0-10° to CA
1 @ 50° to CA.

139.8-149.5' - CALCITE VEINLETS w/ MARCASITE + PYRITE ± CPY @ 60-80° to CA @ 1-2/FOOT
@ 30-40 @ ≈ 0.5/FOOT

141' - SMALL FAULT OR FRACTURE (CLAY GOUGE)

146.5' - SMALL FAULT OR FRACTURE (CLAY GOUGE) FILLED w/ CALCITE

149.5-155.3' - MINOR Calcite ± MARCASITE FRACTURES @
40° to CA ≈ 0.3/FOOT
60° to CA ≈ 0.1/FOOT

155.3-160.1' - $CaCO_3$ + MARCASITE ± PYRARGYRITE ± PYRITE ⇒
@ 1) RANDOM STOCKWORK
2) 40° to CA ≈ 1-2/FOOT.

160.1-165.9' - CHLORITIC CLAY FRACTURES w/ PYRITE + MARCASITE ± Ag SulfosaltS ± CPY
@ 30-40° to CA ≈ 4/FOOT
@ 50-60° to CA @ ≈ 0.2/FOOT
@ RANDOM STOCKWORKS.

165.9-168.2' - BRECCIA ZONE w/ RUBBLE.

168.2-169.6' - WHITE CLAY + CHLORITE FRACTURES w/ PYRITE ± MARCASITE @
60° to CA @ ≈ 7/FOOT ≤ 0.1 mm WIDE
30° to CA @ ≈ 1/FOOT
0-20° to CA @ ≈ 1/FOOT.

169.6-175.2' - VEINLETS @
0-20° to CA ≈ 3/FOOT
30-40° to CA ≈ 2/FOOT
RANDOM STOCKWORK.

175.2-179.4' - VEINLETS @ 0-20° to CA ≈ 2/FOOT
@ 30-40° to CA ≈ 0.5/FOOT

179.4-188.6' - VEINLETS @ 20-30° to CA ≈ 2-3/FOOT @ ≈ 60° to CA @ 1-2/FOOT. ALSO MINOR RANDOM STOCKWORK.

ALTERATION AND MINERALIZATION

126.7-135.4' - PROPYLITIZED w/ DISSEMINATED PYRITE ≤ 2%. Calcite + MARCASITE + PYRITE ± CPY VEINLETS MODERATELY COMMON. LT GREEN CHLORITIC CLAY COMMON w/ MINOR DK GREEN (ALMOST BLACK) CHLORITE. MINOR SIOL VEINLETS.

135.4-136.5' - RUBBLE ZONE w/ CALCITE + MARCASITE + PYRITE. PROPYLITICALLY ALT.

136.5-139.8' - PROPYLITIZED w/ DISSEMINATED MARCASITE + PYRITE up to 2%. MINOR LT GREEN CLAY FRACTURES ± MARCASITE & PYRITE. CALSITE ABSENT

139.8-149.5' - POTASSICALLY ALTERED w/ MODERATE PROPYLITIZATION of the CLASTS. DISSEMINATED PYRITE up to 2%. CALCITE + MARCASITE ± PYRITE ± CPY MODERATE.

149.5-155.3' - PROPYLITICALLY ALTERED w/ MINOR POTASSIC ALTERATION. LT GREEN CHLORITE CLAY w/ MINOR DK GREEN CHLORITIC CLAY COMMON ALONG FRACTURES. MINOR $CaCO_3$ ± MARCASITE FRACTURES. ≤ 1mm.

155.3-160.1' - POTASSICALLY ALTERED w/ MINOR PROPYLITIZATION of CLASTS. ABUNDANT $CaCO_3$ VEINLETS & STOCKWORK w/ MARCASITE ± PYRARGYRITE ± PYRITE ± CPY. MAIN $CaCO_3$ VEINLET @ 157.7' ≈ 1" WIDE @ 35° to CA. 155.3-157' ⇒ MINOR PYRARGYRITE. 157-160.1 ⇒ ABUNDANT PYRARGYRITE

160-165.9' - BLEACHED w/ MINOR SILICIFICATION & PROPYLITIZATION, ABUNDANT CHLORITE (DK GREEN) FRACTURES. CONTAINING PYRITE ± PYRARGYRITE AN UNKNOWN BLACK SULFOSALT?, MARCASITE, SOME MARCASITE IS ALTERED OR REPLACED BY BLACK MINERAL? CONTAINS MINOR CPY.

165.9-168.2' - BRECCIATED w/ MODERATE SILICIFICATION w/ ABUNDANT SULFIDE STOCKWORK w/ MINOR OPEN SPACE. SULFIDES DOMINANTLY MARCASITE + PYRITE + BLACK SULFO-SALTS ? MINOR (CPY) → Au

168.2-169.6 - PROPYLITIZED. WHITE CLAY + CHLORITE FRACTURES CONTAINING PYRITE ± MARCASITE

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	~~Ag2~~ AuGrav
122	126.4	0.006	0.07			
126.4	126.7	0.006	0.04			
126.7	131.7	0.002	0.06			
131.7	135.4	0.008	0.07			
135.4	136.5	0.002	0.05			
136.5	139.8	0.003	0.02			
139.8	144.8	0.005	0.04			
144.8	149.5	0.006	0.03			
149.5	155.3	0.005	0.08			
155.3	157	0.010	0.13			
157	160.1	0.678	10.35			0.780
160.1	165.9	6.104	21.46			6.203
165.9	168.2	46.200	21.02			48.958
168.2	169.6	0.306	2.35			0.405
169.6	175.2	2.050	13.83			2.142
175.2	179.4	0.802	2.02			1.051
179.4	184	1.380	3.03			1.430
184	188.6	0.134	0.52			
188.6	193	0.037	0.13			

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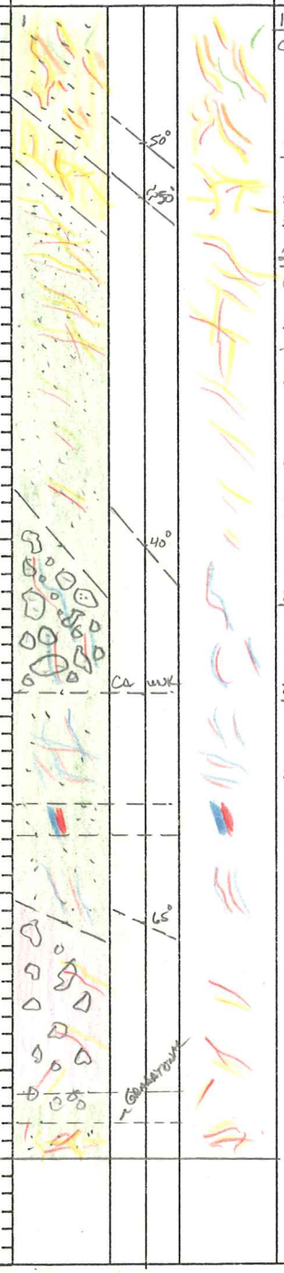
%REC	RQD	LITHOLOGY	FT
		188.6-197.7'- MODERATELY SOFT, MODERATELY PROPYLITIZED MEDIUM-GRAINED LST. MODERATELY COMMON SILICA VEINLETS & STOCKWORK 197.7-200.7'- FINE-GRAINED, MODERATELY HARD, MODERATELY SILICIFIED MASSIVE ASH-TUFF W/MODERATE SILICA CRACKLE BRECCIA. 200.7-220.5'- MODERATELY SOFT, PROPYLITIZED, LT GREEN, FINE-GRAINED, LEOPARD SKIN WANNA BE. THIS INTERVAL IS THE CONTINUEING (FINE-GRAINED PORTION) NORMALLY GRADING FINING UPWARD LST. THIS UNIT IS CLAY RICH DUE TO ALTERATION? & PORTIONS HAS THE "DE-VITROPHYRE" TEXTURE. 220.5-228.9'- MODERATELY SOFT TO MODERATELY HARD, PROPYLITIZED, LT. GREEN, MATRIX SUPPORTED, MONOLITHIC BRECCIA. CLASTS ARE COPOSED OF THE FINE-GRAINED LST WANNABE DESCRIBED @ 200.7-220.5'. CLASTS ARE SUB-ROUNDED & LAPILLI IN SIZE. MINOR CLASTS HAVE THE DE-VITROPHYRE TEXTURE 228.9-241.8'- MODERATELY SOFT, PROPYLITIZED & ARGILIZED, LT GREEN, FINE-GRAINED, LEOPARD SKIN WANNA BE. THIS INTERVAL CONTAINS INTERBEDDED? MATRIX SUPPORTED BRECCIAS WHICH CLASTS ARE COPOSED OF THIS LST WANNA BE. 241.8-253.1'- MODERATELY SOFT, POTASSICALLY ALTERED W/MINOR PROPYLITIZATION, DK PINKISH-BROWN TO LT GREEN IN COLOR, HETEROLITHIC ? MATRIX SUPPORTED VOLCANIC BRECCIA. CLASTS ARE SUB-ROUNDED TO SUB-ANGULAR, LAPILLI SIZED, & COMPOSED OF FINE-GRAINED LST WANNABE DESCRIBED AT 228.9-241.8' AND FINE-GRAINED MASSIVE ASH-TUFF DESCRIBED BELOW. 253.1-255' TD - MODERATELY SOFT TO MODERATELY HARD, PROPYLITIZED, LT-DK GREEN, FINE-GRAINED ASH-TUFF.	200 210 220 230 240 250 255 TD

GRAPHIC LOG



STRUCTURE	ALTERATION AND MINERALIZATION
188.6-197.7'- SILICA VEINLETS COMMON @ 1) RANDOM STOCKWORK 2) 30-40° TO CA ≈ 2-3/FOOT 3) 0-20° TO CA ≈ 0.5/FOOT 4) 50-60° TO CA ≈ 0.5/FOOT. 197.7-200.7'- CHALCEDONY VEINLETS 1) RANDOM STOCKWORK 2). 30-40 @ ≈ 3-4/FOOT 3) 60-70° TO CA ≈ 2-3/FOOT 200.7-220.5'- CHALCEDONIC VEINLETS @. 1) 0-20° TO CA ≈ 0.5/FOOT 2) 30-40° TO CA ≈ 2/FOOT 3) 50-60° TO CA ≈ 2/FOOT 220.5-228.9'- CALCITE + MARCASITE + PYRITE VEINLETS @ 1) 20-35° TO CA ≈ 1/FOOT 2) RANDOM 228.9-235'- $CaCO_3$ VEINLETS W/ MARCASITE + PYRITE @ 1) 20° TO CA ≈ 1-2/FOOT 2) 40° TO CA ≈ 1-2/FOOT } ≤ 0.1" 235-236.9'- $CaCO_3$ VEINLET W/ MARCASITE + PYRITE ± CPY @ 0-10° TO CA ≈ 1 ONLY EFFECTING ENTIRE INTERVAL. 236.9'-241.8'- MINOR $CaCO_3$ ± SiO_2 W/ MARCASITE + PYRITE @ 0-20° TO CA ≈ 1/FOOT. 241.8-253.1'- CHALCEDONY + PYRITE ± WHITE CLAY FRACTURES @ 1) RANDOM 2) 30-40° TO CA ≈ 1/FOOT 3) 60-70° TO CA ≈ 1/FOOT. 253.1-255'- SiO_2 + WHITE CLAY + MARCASITE + PYRITE COMM @ 30-40° TO CA ≈ 2-3/FOOT 50-60° TO CA ≈ 2-3/FOOT.	188.6-197.7'- PROPYLITIZED W/ COMMON SILICA VEINLETS CONTAINING MARCASITE + MARCASITE REPLACED BY PYRITE + COMMON WHITE CLAY, AND MINOR BARITE. MINOR DK. GREEN CHLORITIC CLAYS. 197.7-200.7'- SILICIFIED & SILICA STOCKWORKED CRACKLE BRECCIA. SILICA VEINLETS (CHALCEDONY) CONTAIN MARCASITE + MARCASITE REPLACED BY PYRITE ± WHITE CLAY + PYRITE. GREEN CHLORITIC CLAY MINOR. 200.7-220.5'- PROPYLITIZED W/ MODERATE CHALCEDONIC VEINLETS W/ MARCASITE + MARCASITE REPLACED BY PYRITE ± CPY. DK GREEN CHLORITE VEINLETS COMMON. OPEN SPACE FARCTURES COMMON @ 200.7' & DECREASE TO RARE @ 220.5'. 220.5-228.9'- PROPYLITIZED W/ COMMON $CaCO_3$ VEINLETS W/ MINOR SiO_2. VEINLETS CONTAIN MARCASITE + PYRITE. THE CALCITE VEINLETS SHOW AN ALTERING TO EFFERVESCING WHITE CLAY WHICH MAY PRODUCE THE NON-EFFERVESCING WHITE CLAYS. COMMON DK-GREEN CHLORITIC CLAY. 228.9-235'- PROPYLITIZED W/ CALCITE VEINLETS W/ MARCASITE + PYRITE ± UNKNOWN BLACK MINERAL (SULFOSALT?). 235-236.9'- PROPYLITIZED W/ ONE CALCITE VEINLET ≤ 1/2" CONTAINING MARCASITE + PYRITE ± CPY @ 0-10° TO CA EFFECTING ENTIRE INTERVAL 236.9-241.8'- SAME AS 228.9-235'. EXCEPT MINOR $CaCO_3$ ± SiO_2 VEINLETS. 241.8-253.1'- POTASSICALLY ALTERED W/ MINOR PROPYLITICALLY ALTERED. DISSEMINATED PYRITE UP TO 5%. CALCITE ABSENT, MINOR CHALCEDONY VEINLETS W/ PYRITE ± WHITE CLAY PROPYLITIC BETWEEN 251.5 - 253.1'. 253.1-255'- PROPYLITIZED W/ COMMON SiO_2 + WHITE CLAY + MARCASITE + PYRITE FARCTURES.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	~~Ag2~~ AuGrav
193	197.7	4.7'	0.003	0.09		
197.7	200.7	3'	0.023	0.11		
200.7	205	4.3'	0.004	0.06		
205	210	5'	0.007	0.07		
210	215	5'	0.012	0.07		
215	220.5	5.5'	0.008	0.11		
220.5	225	4.5'	0.016	0.06	0.019	
225	228.9	3.9'	0.013	0.05		
228.9	232.5	3.6'	0.014	0.04		
232.5	235	2.5'	0.015	0.20		
235	236.9	1.9'	0.007	0.12		
236.9	241.8	4.9'	0.004	0.05		
241.8	246.8	5'	0.013	0.05		
246.8	251.5	4.7'	0.026	0.10		
251.5	253.1	1.6'	0.019	0.11		
253.1	255 TD	1.9'	0.017	0.07		

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036619

American Assay Laboratories

P.O. BOX 11530
RENO, NV,,USA
Ph.1-702-356-0606, Fax.1-702-356-1413

HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF

:

:

:

CLIENT REFERENCE No: D-117-95 RECEIVED : 27 NOV 1995

No. SAMPLES : 67 REPORTED : 20 DEC 1995

MAIN SAMPLE TYPE : DRILL CORE

NEVADA LEGISLATIVE DISCLAIMER :-
The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geological materials collected by the prospective investor or by a qualified person selected by him and based on an evaluation of all engineering data which is available concerning any proposed project.

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA60	15%	OPT	0.001
Au(RZ)	FA60	15%	OPT	0.001
AuGRAV	GRAV	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Sue King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036619

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-117-95

REPORTED : 20 DEC 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-117-95 00-05	0.009			0.09
D-117-95 05-10	0.042			0.15
D-117-95 10-15	0.446		0.504	0.30
D-117-95 15-18.1	0.164		0.156	0.15
D-117-95 18.1-23	0.146			0.20
D-117-95 23-26.5	0.142			0.43
D-117-95 26.5-30	0.028			0.12
D-117-95 30-33.4	0.185		0.227	0.38
D-117-95 33.4-38.9	0.069			0.49
D-117-95 38.9-42.2	0.112			0.32
D-117-95 42.2-46.2	0.029			0.14
D-117-95 46.2-49.2	0.028			0.22
D-117-95 49.2-54	0.014			0.10
D-117-95 54-59	0.007			0.11
D-117-95 59-63.9	0.004			0.08
D-117-95 63.9-67.5	0.025			0.16
D-117-95 67.5-71.5	0.038			0.36
D-117-95 71.5-72.3	0.013			0.11
D-117-95 72.3-77.5	0.014			0.11
D-117-95 77.5-80.5	0.016			0.12
D-117-95 80.5-84.5	0.034			0.24
D-117-95 84.5-89.5	0.013			0.12
D-117-95 89.5-93.8	0.019			0.08
D-117-95 93.8-94.7	0.003			0.04
D-117-95 94.7-96.9	0.004			0.07

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036619

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-117-95

REPORTED : 20 DEC 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-117-95 96.9-100.5	0.012			0.05
D-117-95 100.5-104.5	0.026			0.07
D-117-95 104.5-109.5	0.032			0.13
D-117-95 109.5-114.3	0.063			0.32
D-117-95 114.3-116	0.038			0.09
D-117-95 116-117	0.026			14.63
D-117-95 117-122	0.008			0.28
D-117-95 122-126.4	0.006			0.07
D-117-95 126.4-126.7	0.006			0.04
D-117-95 126.7-131.7	0.002			0.06
D-117-95 131.7-135.4	0.008			0.07
D-117-95 135.4-136.5	0.002			0.05
D-117-95 136.5-139.8	0.003			0.02
D-117-95 139.8-144.8	0.005			0.04
D-117-95 144.8-149.5	0.006			0.03
D-117-95 149.5-155.3	0.005			0.08
D-117-95 155.3-157	0.010			0.13
D-117-95 157-160.1	0.678		0.780	10.35
D-117-95 160.1-165.9	6.104		6.203	21.46
D-117-95 165.9-168.2	46.200		48.958	21.02
D-117-95 168.2-169.6	0.306		0.405	2.35
D-117-95 169.6-175.2	2.050		2.142	13.83
D-117-95 175.2-179.4	0.802		1.051	2.02
D-117-95 179.4-184	1.380		1.400	3.03
D-117-95 184-188.6	0.134			0.52

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036619

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CLIENT : HECLA MINING CO.
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REPORTED : 20 DEC 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-117-95 188.6-193	0.037			0.13
D-117-95 193-197.7	0.003			0.09
D-117-95 197.7-200.7	0.023			0.11
D-117-95 200.7-205	0.004			0.06
D-117-95 205-210	0.007			0.07
D-117-95 210-215	0.012			0.07
D-117-95 215-220.5	0.008			0.11
D-117-95 220.5-225	0.016	0.019		0.06
D-117-95 225-228.9	0.013			0.05
D-117-95 228.9-232.5	0.014			0.04
D-117-95 232.5-235	0.015			0.20
D-117-95 235-236.9	0.007			0.12
D-117-95 236.9-241.8	0.004			0.05
D-117-95 241.8-246.8	0.013			0.05
D-117-95 246.8-251.5	0.026			0.10
D-117-95 251.5-253.1	0.019			0.11
D-117-95 253.1-255	0.017			0.07

Vugy &/or vesicular samples : standard SG measurements
vs.
SG measurements w/ samples coated w/ plastic wrap.

HECLA MINING COMPANY - ROSEBUD PROJECT
1995 SOUTH ZONE FILL-IN DRILLING PROGRAM

Date: C. Muerhoff

HOLE ID: D-117-95

By: 11/22/95

Sample ID	Description	Mass (g)	H2O Level (cc) Beginning		H2O Level (cc) Ending		Displacement (cc)		Sp. Grav. (g/cc)	
			unwrapped	wrapped	unwrapped	wrapped	unwrapped	wrapped	unwrapped	wrapped
24.2' - 24.9'	Heterolithic flow breccia ; cut by open-space vugy stockwork of cg marc blades & chalcedony @ ± 0° to c.a. ; typically ≤ 0.5" thick ; covers ~10% of surface area.	1302.8	1060	1280	1585	1835	525	555	2.48	2.35
34.0' - 34.5'	S.A.A. & cut by one large (0.6") open-space vugy vein of drusy qtz + marc + white clay ; @ ± 0° to c.a. ; covers ~15% of surface area.	729.1	1210	1240	1520	1585	310	345	2.35	2.11
35.9' - 36.5'	S.A.A. w/ one large (0.4" thick) vein s.a.a. @ 20° to c.a; Covers ~5% of surface area. Open-spaces are through-going	1024.5	1200	1220	1620	1680	420	460	2.44	2.23
38.0' - 38.6'	Heterolithic breccia (not flow-foliated like above 3 samples); open-space, vugy stockwork & discontinuous vugs (≤ 0.1"). same mz as above; 6-8% of surface area	1021.0	1240	1200	1665	1645	425	445	2.40	2.29
48.1' - 48.8'	Monolithic tuff breccia w/ 8 thin (≤ 0.1" - 0.2") vugy cg veinlets of drusy qtz + marc + py + clay ~5-8% of surface area	1116.5	1320	1180	1790	1680	470	500	2.38	2.23
70.2' - 70.7'	S.A.A. w/ 2 (~0.3") qtz + marc open-space veinlets @ 25° to c.a. ~5-10% of surface area.	969.6	1175	1225	1575	1650	400	425	2.42	2.28
178' - 178.6'	LST breccia. open vugs comprise ~10% of surface area.	1001.0	1150	1345	1560	1780	410	435	2.44	2.30

HECLA MINING COMPANY - ROSEBUD PROJECT
1995 SOUTH ZONE FILL-IN DRILLING PROGRAM

Date: 11/17/95

HOLE ID: D-117-95

By: KDA

Sample ID	Description	Mass (g)	H2O Level (cc)		Displacement (cc)	Sp. Grav. (g/cc)
			Beginning	Ending		
37'	POTASSICALLY ALTERED MATRIX SUPPORTED BX.	549	1150	1380	230	2.39
72.2'	POTASSICALLY ALT MATRIX SUPPORTED BX (SILICA BX)	409.5	1240	1410	170	2.41
54'	POTASSICALLY ALT MATRIX SUPPORTED BX	787.5	1130	1470	340	2.32
82.5'	POTASSICALLY ALT MATRIX SUPPORTED BX	679.5	820	1100	280	2.43
93.8'	FINE-GRAINED ASH-TUFF.	634.5	970	1240	270	2.35
96'	WELDED ASH-FLOW TUFF,	659.5	930	1210	280	2.36
109	POT ALT MATRIX SUPPORTE BY	607.5	920	1180	260	2.34
122	ARG.WEED CRACKLE BX	829.5	980	1330	350	2.37
130	PLANAR LAM ASH-TUFF.	611.5	960	1200	240	2.55
136.5	FINE-GRAINED MASSIVE ASH-TUFF.	616.5	1040	1295	255	2.42

HECLA MINING COMPANY - ROSEBUD PROJECT
1995 SOUTH ZONE FILL-IN DRILLING PROGRAM

Date: 11/17/95

HOLE ID: D-117-95

By: AA

Sample ID	Description	Mass (g)	H2O Level (cc)		Displacement (cc)	Sp. Grav. (g/cc)
			Beginning	Ending		
149.5'	Potassically alt matrix supported by	424.5	840	1020	180	2.36
165'	massive ash-tuff.	597.5	1040	1280	240	2.49
179.4'	LST (CC)	783.5	1040	1395	355	2.21
188.9	FG LST	655	940	1220	280	2.34
200	FG ash tuff.	900	940	1300	360	2.50
214	LST wanna be	1127	1220	1680	460	2.45
224	LST breccia.	1068.5	1180	1620	440	2.43
246.8	Pot alt matrix by	1087	1000	1450	450	2.42
255	Prob FG ash tuff.	617.5	900	1150	250	2.47