60001546

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-98-95
AUTHOR	C. Muerhoff; S. King
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 120' handwritten notes 4p.

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: mah
Initials Date
SCANNED: NV Blue
Initials Date

Revised: 1/22/08

D-98-95

SOUTH ZONE / 950 N

60001546 4010

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

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Hecla MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	D-98-95	LOCATION	South Zone / 950 N	REMARKS	
PAGE 1 OF 2		NORTHING	2,203,951.570	Drilled from station 18 in decline	
DATE	10/28/95	EASTING	481,802.085	NW Drilling - Hagby On-ram 1000	
LOGGED BY	C. Muerhoff	ELEVATION	4653.194	NDBGM Core (2.2" diameter)	
SCALE	1" = 10'	AZIMUTH	0'-60': 121° (S59E)	60'-120': 121°	
TOTAL DEPTH	120'	INCLINATION	0'-60': +12°	60'-120': +12°	

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
0'-5'; only 65% core recovery - ground up first 1½ ft.		0'-120' LBT 0'-20.4' Clast-supported, heterolithic volcanic breccia w/ large (≤ core diameter), light green massive vfg ash frags & light green very finely-laminated vfg ash flow frags - all sub-angular to sub-rounded - > very angular (tabular), small (≤ 1/4") light tan aphanitic frags in a weakly K-altered to locally strongly chloritic fg fragmental groundmass. Clast/matrix ≈ 80/20. ~18', begin to include angular frags of light green, devitrified flow breccia (frags still have glassy, spherical texture, but completely devitrified.) 20.4'-25.0' Light green flow breccia (same description as breccia clasts @ 18'). Flow foliation @ 60° to c.a.? 25.0'-33.7' Rapid, conformable gradation into clast-supported, heterolithic volcanic breccia w/ sub-angular, light green vfg ash frags > v. angular, tan vfg ash frags. Weakly K-altered vfg groundmass → rebrecciated & cemented/replaced by chloritic/calcite matrix. 33.7'-44.7' breccia conformably grades into vfg, very finely planar laminated tan ash w/ "bedding" @ 60° to c.a. Cut by irregular chlorite stringers along bedding planes & across bedding planes; in turn cut by chlorite + calcite + pyrite + white clay veinlets @ 20° to c.a. (± 20°); propylitic along selveges of all stringers & veinlets. 44.7'-56.3' Unit described above continues, but begins to include bands (≤ 1/4" thick) of med-grain argillized ash tuff (increasing in frequency downhole). Becoming increasingly brecciated & vugy downhole w/ matrix of light green waxy clay or calcite + pyrite + chlorite + white clays ± mave. V. little to no rotation of laminated clasts.	10 20 30 40 50		0'-20.4' V. competent, hard core. Only 3 fractures/joints over entire interval @ 50° to c.a. w/ minor calcite + chlorite ± pyrite on rough, irregular surfaces. 20.4' slicked fracture @ 60° to c.a. w/ sticks in light green waxy clay @ 40° to c.a. 20.4'-25.0' No fractures 25.0'-33.7' 3 fractures in interval; all @ 35° to c.a. w/ pyrite ↔ mave blades in white clay which coates light green waxy clay. Diss pyrite strongly associated/proximal to fractures. 33.7'-44.7' Strongly fractured along bedding planes w/ chlorite & light green waxy clays on surfaces & @ 40° to c.a. w/ chlorite ± calcite ± pyrite on smooth, planar surfaces. 44.7'-56.3' Fractures @ 35° to c.a. (~1/ft) w/ light green waxy clay + white clay + calcite + pyrite ↔ mave.	0'-20.4'. Discontinuous, random stringers & "blebs" of pyrite & pyritic calcite in breccia groundmass only - doesn't cut into clasts. Also minor "spider-web" stringers of chlorite ± pyrite. - past 12', short intervals of calcite totally replacing breccia groundmass. 20.4'-25.0' "Spider-web" stockwork of chlorite stringers cut by occassional calcite ± pyrite stringers @ ± 50° to c.a. w/ some @ random orientations. 25.0'-33.7' Minor fg pyritic stringers @ random orientations + local zones of fg diss pyrite (up to 10% of surface area) 33.7'-44.7' see lith. comments. 44.7'-56.3' see lith comments + laminated tuff no longer displays propylitization. Clasts are all tan & pervasively silicified. Don't see any SiO2 stringers or veinlets.

Coarsening upward sequence

ANALYTICAL DATA

FROM	TO	W	Au (opt)	Ag (opt)	Au2 (opt)	~~Ag2~~ Au Grav (opt)
0'	5'	5'	0.016	0.04		
5'	10'	5'	0.010	0.04		
10'	15'	5'	0.001	0.02		
15'	20.4'	5.4'	0.003	0.03		
20.4'	25'	4.6'	0.001	0.04		
25'	30'	5'	0.003	0.09	0.003	
30'	33.7'	3.7'	0.004	0.11		
33.7'	39'	5.3'	0.170	0.20		0.160
39'	44.7'	5.7'	0.160	0.25		0.150
44.7'	51'	6.3'	1.830	4.14		1.760

HOLE NUMBER D-98-95 PAGE 2 OF 2

REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		56.3' - 73.5' 6" zone of med-grain / fine-grain laminated frags (from previous unit) & LST frags; all pervasively silicified, floating in grey chalcedony. Fault bxa? or flooded, brecciated contact? Then into "Leopard-skin Tuff". Brecciated & healed by grey chalcedony ± dark sulfide to 60.8'. Flow banding / foliation @ 40° to c.a. Slightly elongated pumice fiammé (?) Intally replaced/altered to dark red clay, chlorite, or white clay. Light green vfg groundmass (moderately to locally intensely silicified. replaced by calcite occassionally.	60		56.3' - 73.5' Only a couple of fractures @ ±50° to c.a. throughout entire interval w/ minor white clay ± pyrite on rough surfaces.	56.3' - 73.5' see lith comments + occassional, random stringers of grey, pyritic chalcedony & white clay + pyrite; locally replacing vfg groundmass.
		73.5' - 88.0' LST conformably grades into laminated unit containing interbedded intervals of med-gr. ash tuff > LST > vfg ash. Med-gr ash tuff & LST are generally argillized w/ pumice frags leached out or clay-replaced. Vfg ash is tan to locally propylitic, locally overprinted / flooded by silica. Flow banding @ ±45° to c.a.	70 80		73.5' - 88.0' Fractures along bedding planes w/ chlorite + white clay ± pyrite. A few fracture sets (<1/5f.) @ 30° (with minor white clay) & 35° to c.a. (with white/grey clay slicked @ 50°)	73.5' - 88.0' Vugy stockwork of grey chalcedony + pyrite @ random orientations & along bedding planes. Chlorite "spider-web" stringers. Calcite + pyrite + white clay @ ±60° to c.a. & randomly distributed & drusy qtz + pyrite preferentially @ ±70° to c.a.
		88.0' - 101.6' Very fine grained ash flow (w/ extremely subtle banding @ ±70° to c.a.). Strongly propylitized. Intensely brecciated & cemented by grey chalcedony & silica - flooded, chloritic fragmental groundmass - vugy with drusy qtz + dark sulfide + pyrite; often packed with white "gooey" clay. Brecciation is intense for the first couple of feet, but persists moderately downhole to ~97'.	90		88.0' Unconformity. Bedded unit is truncated @ 85° to c.a. by bxa unit. Definitely not a fault, unless following unit is a healed fault breccia. 88.0' - 101.6' Distinct fracture set @ ±50° to c.a. (cuts both breccia & non-brecciated portions of interval) w/ green clay > white clay ± pyrite ± minor unknown vfg grey sulfide.	88.0' - 101.6' In addition to lith comments, unit is cut by pyrite + chlorite stringers @ 10°-30° to c.a. & along bedding planes.
		101.6' - 120' Conformable, gradation into light green, propylitized to mod-argillized vfg ash tuff w/ ~5% chloritized phenos aligned @ ±60° to c.a. Argillization increases with depth. Also, unit becomes brecciated at depth w/ strongly argillized clasts (phenos are still replaced by chlorite) supported in a dark green, chloritic, aphanitic groundmass. Intermittent short (±6") intervals of pervasive silicification - vugy w/ pyrite coating / replacing marc. blades in drusy qtz; vugs often filled w/ late white clay (halloysite?).	100 110 120		101.6' - 120' Few fractures along bedding planes only with white clay + marc blades ↔ pyrite ± v. minor calcite. T.D. 120'	101.6' - 120' In addition to lith comments, chlorite + pyrite + white clay ± calcite stringers along bedding planes & @ ±0° to c.a. (v. irregular).

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	~~Ag2~~ Au Grav
51'	56.3'	5.3'	0.601	1.40		0.680
56.3'	60.8'	4.5'	0.213	0.60		0.206
60.8'	65'	4.2'	0.400	0.76		0.403
65'	70'	5'	0.221	0.33		0.239
70'	73.5'	3.5'	0.266	0.39	0.219	0.218
73.5'	78'	4.5'	0.233	0.35		0.190
78'	83'	5'	0.079	0.26		
83'	88'	5'	0.015	0.14		
88'	93'	5'	0.007	0.07		
93'	97'	4'	0.005	0.07		
97'	101.6'	4.6'	0.009	0.08		
101.6'	105'	3.4'	0.007	0.09		
105'	110'	5'	0.009	0.11		
110'	115'	5'	0.012	0.10		
115'	120'	5'	0.052	0.09		

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP036291

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-98-95 RECEIVED : 1 NOV 1995

No. SAMPLES : 25 REPORTED : 13 NOV 1995

MAIN SAMPLE TYPE : DRILL CORE

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 SP036291

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-98-95

REPORTED : 13 NOV 1995

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-98-95 00-05	0.016			0.04
D-98-95 05-10	0.010			0.04
D-98-95 10-15	0.001			0.02
D-98-95 15-20.4	0.003			0.03
D-98-95 20.4-25	0.001			0.04
D-98-95 25-30	0.003	0.003		0.09
D-98-95 30-33.7	0.004			0.11
D-98-95 33.7-39	0.170		0.160	0.20
D-98-95 39-44.7	0.160		0.150	0.25
D-98-95 44.7-51	1.830		1.760	4.14
D-98-95 51-56.3	0.601		0.680	1.40
D-98-95 56.3-60.8	0.213		0.206	0.60
D-98-95 60.8-65	0.400		0.403	0.76
D-98-95 65-70	0.221		0.239	0.33
D-98-95 70-73.5	0.266	0.219	0.218	0.39
D-98-95 73.5-78	0.233		0.190	0.35
D-98-95 78-83	0.079			0.26
D-98-95 83-88	0.015			0.14
D-98-95 88-93	0.007			0.07
D-98-95 93-97	0.005			0.07
D-98-95 97-101.6	0.009			0.08
D-98-95 101.6-105	0.007			0.09
D-98-95 105-110	0.009			0.11
D-98-95 110-115	0.012			0.10
D-98-95 115-120	0.052			0.09