60001476

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. 94-2970
AUTHOR	C. Winchester; C. Muerhoff; S. Fairchild
DATE OF DOC(S)	1994
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 400' handwritten notes; down hole camera images 17p. 5 down hole camera images

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:
Initials Date

Revised: 1/22/08

94-297c SOUTH ZONE

66001476 4010

6000 1476

Hecla
MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	94-297 C	LOCATION	South Zone	REMARKS	RECOVERY NOT
PAGE 1 OF	12	NORTHING	2,203,327.1		REPORTED UNLESS < 90%;
DATE	JUNE 8, 1994	EASTING	480,945.4		ORIENTATIONS STATED AS
LOGGED BY	CRAIG B. WINETEER	ELEVATION	5242.2		∡ TO CORE AXIS
SCALE	1" = 5'	AZIMUTH	182.5°		
TOTAL DEPTH	400'	INCLINATION	-89.5°		

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
				NO RECOVERY	5, 10, 15										
BOX 1	87% >3" w/7 TOTAL 23 83% >3" w/12	VERY HARD	CREAM TAN LT. GRY	17-32.5' SILICEOUS BRECCIA w/ MATRIX-SUPPORT; ANGULAR; SILICA REPLACED CLASTS IN A SILICEOUS F. G. MATRIX. CLASTS APPEAR TO BE HETEROGENEOUS w/ VARING DEGREE OF SILICA REPLACEMENT. C. G. CLASTS UP TO 3.0 CM DIA.	20, 25		LIM.-GEOTH. LINED FRAC'S @60' @20' LIM.-GEOTH-SiO2 LINED FRAC'S @10' @22' 25' LIM. LINED FRAC'S @50'	17-32' INTENSE SILICIFICATION-OXID. w/TOTAL REPLACEMENT OF PROTOLITHIC TEXTURES; APPARENT DEPLETION OF Fe; Fe PRIM. IN LIM. FORM.	17	22	5.0'	0.002	0.09		
									22	27	5.0'	0.002	0.14		

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%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
27 Box 2		VERY HARD CREAM TAN LT.GRY				26.5-27.5' CREAM TO RUST COLORED BANDED (VARVED) SANDY SILICA W/IN FRAC'S & SURROUNDING BRECCIA FRAG'S; CLEAR TO LT. BLUE SILICA MATRIX @ 27.5'
			30		29' FRAC'S @ 60° W/ LIM-GEOT-CLAY FILL. 31' LIM-HEM-CLAY-LINED FRAC'S @ 70°	
33	50% >3" W/10 TOTAL	LT. TO MED GRY 32.5-37' SILICEOUS BRECCIA W/ F.G.; MATRIX-SUPPORTED F.G. TUFF CLASTS (SILICA-REPLACED) IN A F.G. SILICEOUS GROUNDMASS	35		32-33.5' SiO_2 ± LIM-HEM @ 50° & 70° 33.5'-37' HEM-LIM-CLAY-LINED FRAC'S @ 70° & 5-30°	32-45' INTENSE SILICIFICATION & Fe-ENRICHMENT W/Fe IN HEM. FORM @ TOP CHANGING TO HEM + LIM. ↓
36 3		37-48' SILICIFIED FINE-GRAINED ASH-FLOW TUFF - CRACKLE BRECCIA	40		37' APPARENT CONTACT FRACTURED @ 45° 37-45' FRAC'S @ 70-85° & 5-25° & 50-60° W/ HEM-LIM-CLAY LINED	
42	47% >3" W/9 TOTAL					
45 4		HARD BRNISH GRY	45		45-50' WHT CLAY ± LIM FILLED 0.02-0.2" FRAC'S @ 50-70° & 30°	45-115' MODERATE TO INTENSE SILIC. (DYID.) W/ FRAC'S VNLTS FILLED W/ WHT CLAY + SiO_2 FRAMBOIDS OR BALLS. INTENSE SILIC. IN BANDS @ 50-55°
49.5	90% >3" W/12 TOTAL	48-61' SILICIFIED HETEROLITHIC TUFF-BRECCIA YELLISH GRN GRY	50		48' APPARENT CONTACT COINCIDENT W/ SILICA VNLT @ 40°	
54 5			55			54.5' CREAM SANDY BANDED SILICA @ 60° GRADATIONAL ↓ INTO LT BLUE CHALCEDONIC SILICA 55' S.A.A.
60			60			58' LT BLUE SILICA VNLTS

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
27	32.5	5.5'	0.001	0.17		
32.5	37	4.5'	0.003	0.22		
37	42	5.0'	0.001	0.10		
42	45	3.0'	0.004	0.07	0.004	
45	48	3.0'	<0.001	0.05		
48	53	5.0'	<0.001	0.03		
53	58	5.0'	0.001	0.03		
58	61	3.0'	0.001	0.03		

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%REC	RQD	LITHOLOGY				FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
64 Box 6	86% >3" W/10 TOTAL	HARD	YELL-GRN-GRY	61-67.5' SILICIFIED FLOW-BANDED LATITIC LAPILLI ASH FLOW TUFF W/ HETEROLITH LITHIC FRAGMENTS		65		61' LITHOLOGIC CHANGE COINCIDENT W/SILICA VNLTS @ 30°	61' LT BLUE CHALCEDONIC SILICA VNING COINCID-W/ CONTACT	61	67.5	6.5'	0.002	0.05		
70	80% >3" W/12 TOTAL		RED-BRN & GRN-GRY	67.5-76.5' SILICIFIED HETEROLITHIC TUFF BRECCIA		70		FRAC'D @ 60° & 20°	ZONE OF SILICIFICATION BANDS W/ CLAY ALT FRAG'S OR CLASTS 68.5-72' LT GRY/BLUE WHT CHALCEDONIC SILICA @ 40° & 70° - STKWK	67.5	71.5	4.0'	0.005	0.09		
73 7						75		75-76.5 FRAC'D 60-70 W/LIM HEM-CLAY	HEM-LIM-GEOT.-CLAY	71.5	76.5	5.0'	0.003	0.07		
79	95% >3" W/8 TOTAL	MOD	MED TO PALE GRN	76.5-82.8' FLOW-BANDED LATITIC LAPILLI ASH FLOW TUFF W/ HETEROLITHIC LAPILLI/ASH SIZE LITHIC CLASTS		80		76.5 APPARENT CONTACT ∡ @ 20°	MARKED DECREASE IN SILICIFICATION W/CLAY ALT. OF MATRIX & CLASTS	76.5	82.8	6.3'	0.002	0.02		
82 8	83 93% >3" W/17 TOTAL	MOD. HARD	LT. GRN TAN, PINK-PURPLE	82.8-116' SILICIFIED HOMOGENEOUS TUFF BRECCIA; MATRIX-SUPPORTED; CLASTS ARE ANGULAR TO SUBANG. LARGELY COMPRISED OF DEVITR. CLAY-ALT. PUMICE LAP. <1.0CM DIAM. ↓ TO ASH SIZE; G.M. F.G.-VITROCLASTIC		85		82.8' IRREGULAR-SHARP CONTACT @ 35°	PATHCY SILIC. LOCALLY GENERALLY WEAK TO MOD. SILIC.; OXID. & MOD CLAY ALT.	82.8	87	4.2'	0.003	0.07		
						90		HEM-LIM. LINED FRAC'S @ 70-80° & 35°	MINOR LT BLUE-GREY SILICA BANDING/VNING @ 88-89	87	92	5.0'	0.002	0.08		
92 9	93					95		93-103 FRAC'S W/ SiO_2+LIM+ CLAY @ 70 & 40° 4.3/FT	93.5' OPEN-SPACE F.G. Q+ LIM + CLEAR BAR XLS IN VNLT AT 60°	92	96	4.0'	0.002	0.10		

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%REC	RQD	LITHOLOGY				FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
	77% >3" w/13 TOTAL	MOD HD	YELLOW-GRN TAN, ORG, RED PURPLE	82.8-116' CONTINUED					95.6' LIM + MINOR Q + C. xln BAR VNLT 0.5" @ 70° LT. GRY F.G. Q VNLTS @ 70-85° 93-100' 100-101' OPEN-SPACE BAR W/LIM 100-101' LT BLUE-GREY F.G. & Bx STKWK	96	100	4.0'	0.004	0.23		
101 Box 10		MOD-MOD HD	PINKISH-TAN TO RUST W/LT GRN-GRY Bx FRAG'S			100		LIM + CLAY @ 55° @ 102 103.5' LIM + WHT CLAY @ 70°	INCIPIENT OXIDATION ZONE W/ PARTIAL FeOx REPLACEMENT OF SULFIDE MINERALS & FeOx STAINING; SILIC WEAK - LIMITED TO MINOR LOW & QTZ VNLTS @ 70-90° 104.8-4.9' LIM + CLAY + BAR + Q IN 1.0" VNLT @ 55° 105.8' BAR + LIM + CLAY + MINOR Q IN 0.2" VNLT @ 70° 106.25' S.A.A.	100	104	4.0'	0.002	0.10		
103	79% >3" w/15 TOTAL	MOD HD 105.8' black streak on hardness test	PINKISH TAN W/ GRN-GRY Bx FRAG'S			105			DISSEMINATED FeOx AFTER SULFIDE + DISSEM. SULF.	104	109	5.0'	0.003	0.11		
110 11						110			106-108' SULF. + F.G. Q MICROVNLTS @ 50° & 5° 108-114.5' SULF + WHT CLAY & Q @ 50° & 70° & 5°	109	114.5	5.5'	0.003	0.08		
113	70% >3" w/11 TOTAL			116-199' COARSE-GRAINED HETERO-LITHIC & POLYLITHIC TUFF BRECCIA; POORLY-SORTED CLASTS ASH SIZE UP TO 5.0 CM OR >; CONSISTING OF DIFFERING LITHOLOGIES AND COMMONLY COMPRISED OF MULTIPLE LITHOLOGIES; ANGULAR TO SUBROUNDED; FINE-GRAINED MATRIX COMPRISED OF SILIC.-SULF ASH-SIZE FRAGMENTS		115			KAOLINITE/SMECTITE-SULFIDATION 115-218' WEAK TO MOD. INTENSITY OF DISS. PY 115-123 MARC. PLATELETS + LT GREY F.G. Q + WHT CLAY + BAR IN < 0.1" VNLTS @ 80° & 45° @ 8.0/FT	114.5	120	5.5'	0.003	0.09		
119.5 12		MOD				120		120 SiO2 VNLT STKWK + MARC + OPEN-SPACE 121	120-122 VUGGY-STKWK SiO2 + MARC. IN VNTLS @ 75° 123.5' MINOR LIM ALT OF MARC. + Q IN VNLT @ 50°	120	125	5.0'	0.003	0.07		
123	62.5% >3" w/7 TOTAL	MOD HD				125			123-131 SULF-RICH Q + CLAY VNLTS @ 70° & 45° @ 4.7/FT 126.5 MINOR LIM STND F.G. Q ON VNLT @ 50°	125	130	5.0'	0.004	0.07		
129						130										

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%REC	RQD	LITHOLOGY				FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
Box 13	131	MOD HD	PINKISH TAN W/GRN GRY BX FRAGS	116 - 199' CONTINUED					131 - 151.5 WEAK TO MOD INTENSITY DISS. PY MOD. INTENSE SULF MICRO VNLTS @ PRIM, 50' < 70-80°; & 5-15'
	81% >3" W/ 9 TOTAL	black streak on hardness test from disseminated sulfide				135		136' CLAY SLICKS @ 25°	136-137' BAR + PLATEY MARC, + WHT CLAY @ 70° & 25° + V.F.G. OPEN-SPACE QTZ W/ MARC.
138	14					140			
	141							143-144' CLAY SLICKS @ 30°	144.2' C. XLN PLATEY MARC. + SiO_2 + WHT CLAY @ 50° W/ SURROUNDING INTENSE DISS. PY HALO & REPL. OF CLASTS. 146' C. XLN BAR. + MARC. + WHT CLAY @ 40°
	85% >3" W/12 TOTAL					145			
148	15								
	151.5	MOD				150		150.5-152' CLAY SLICKS @ 30° & BX'IATED BAR-MARC. - Q VNING	
	91% >3" W/10 TOTAL	MOD HD	REDDISH BRN & TAN INCLUDING BX FRAGS			155			151-151.5' C. XLN EUHEDRAL BAR + MARC. + CLAY + MINOR Q @ UNKN ∡ 151.5 - 166' MOD INTENSE DISS. SULFIDATION W/ INTENSE SULFIDATION OF THE GRN MASS & PREF. REPL. OF CLASTS AS FOLLOWS: 153.5 - 156.5' 158.5 - 159' 161 - 163' 151.5-166 SULF + WHT CLAY + MINOR SiO_2 PRIM. @ 70° W/ < @ 50° & 90°
156.5	16		LT. PINKISH TAN/ CREAM W/ GRN BX FRAGS			160			
	162					165			

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
130	135	5.0'	0.009	0.09		
135	140	5.0'	0.004	0.06		
140	145	5.0'	0.005	0.09		
145	150	5.0'	0.006	0.05		
150	153.5	3.5'	0.012	0.12		
153.5	156.5	3.0'	0.010	0.09	Au2 0.033	Au3 0.007
156.5	161	4.5'	0.001	0.06		
161	166	5.0'	0.003	0.09		

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%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
166 Box 17	77% >3" w/12 TOTAL	MOD TO MOD HD	PINK-TAN w/LT GRN FRAGS	116-199' CONTINUED				166.5' OPEN-SPACE BAR + MARC, ON FRAC'S @ 40'
								165-172' WEAK DISS. PY
								166-174' 1/Ft PY-MARC, ~ RICH + WHT CLAY VNLTS @ 70'
					170			170 MICRO VNLTS w/ PSEUDO HEXAGONAL MARC. + WHT CLAY @ 5-10°
	172 76% >3" w/13 TOTAL		CREAM LT GRY LT PINK LTGRN				SOFT FAULT CLAY & ANG. FRAGS	172-175 WEAK-MOD DISS PY
175 18				-174-191.5' MOD. INTENSE SILIC. + SULFIDATION OF BX FRAGS	175			174-193 WEAK TO MOD INTENSE SILIC + SULF ALT OF BX FRAG'S
								175-193 WEAK-MOD. INTENSE DISS. PY
								176-182' 3/Ft. PY ± MARC + WHT CLAY @ 70-80' 1-2/Ft S.A.A. @ 25-30'
50% 178-180				-179 SUBROUNDED CLAST w/ MARKED PLANAR-LAM + GRADED BDD	180		179-180 RUBBLE ZONE w/ WHT CLAY + BLADED SULF. DISCONT FRAC	
	182 82% >3" w/14 TOTAL						HIGH % CLAY WHT HAIRLINE ± SULF.	182-199 3-4/ft SULF + CLAY RICH STRINGERS @ 70-80' ± F.G. Q + 1/Ft 0-20° SULF-RICH MICROVNLT. S.a.a.
184 19					185		186-187 RUBBLE ZONE w/ WHT WAXY DISCONT. CLAY SLICKS @ 30° & 70°	185.2' 0.3" Q + F.G. PY/CPY @ 80' 186' 0.2" Q + SULF @ 70 & 90°
					190		190-193' CLAY-LINED FRAC'S @ 30° 2.0/FT	
193 20	192 64% >3" w/10 TOTAL							193-197 WEAK DISS PY
					195		COARSE XLN BAR IN VUGGY DISSOLUTION CLOTS	GRADATIONAL TRANSITION FROM ARGILLIC CLAY ALT. INTO PROPYLITIC CLAY ALTERATION OF BRECCIA FRAGMENTS
Rubble 200-202.5 = 2.9'				199' SHARP-PLANAR CONTACT @ 40°	200		199-203 RUBBLE	197-199' WEAK-MOD INTENSE DISS PY

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
166	171	5.0'	0.016	0.09	Au2 0.058	Au3 0.032
171	176	5.0'	0.006	0.08	Au2 0.003	Au3 0.009
176	181	5.0'	0.006	0.12		
181	185	4.0'	0.002	0.07		
185	190	5.0'	0.004	0.09		
190	195	5.0'	0.012	0.09		
195	200	5.0'	0.007	0.09		

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%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
202.5 BOX 21	202.5 51% w/10 TOTAL	MOD-MOD HD	PALE GRN w/ PINK MATRIX	199-218' HOMOGENEOUS - CRACKLE BRECCIA; CLAST-SUPPORTED TO LOCALLY MATRIX-SUPPORTED; CLASTS PREDOMINATELY PALE GREEN CLAY - PROPYLITICALLY ALTERED FINE-GRAINED WATER-LAIN (?) TEPHRA IN A PINKISH TAN SULFIDE - RICH SILICEOUS MATRIX; ANGULAR TO SUBROUNDED FRAGMENTS	205 210 215		HIGH ∡ HAIRLINE WHT CLAY ± SULF. PARTINGS	199-218 WEAK DISS. PY w/ LOCAL MOD. INTENSE PY ADJACENT TO VNLTS MINOR SULF-RICH VNLTS @70 203' Q + PY + CLAY 0.75" @30' HIGH Z PY + MINOR CPY 206' Q + PY + CLAY 0.75" @75'
213 22	212.5 73% >3" w/15 TOTAL		LT TO MED GRN	218' SHARP - IRREGULAR CONTACT @ 30° 218-242.8' FINE-GRAINED WATERLAIN (?) TEPHRA; GENERALLY MASSIVE w/ LOCAL FAINT WHISPY FINE-LAMINATIONS	220		218-221 FRAC-SLICKS w/ DK GRN CHL. + BRASSY PY + $CaCO_3$ @ 70 ∡ 30° @ 4.0/FT 221-222 FRAC'S @ >20/FT @30° @70° w/SLICKS 222-226 FRAC'S @ 5/FT @30° & 70° w/SLICKS	209-213' Q + SULF-RICH MICRO-VNLTS @ 0-10' X-CUT BY 70° SULF-RICH VNLTS 200-222': 22' @ 218' ↓ CARBONATE ± SULF ~~± BAR~~ ± CHL ± ARG ALT. ZONE 218-222' WEAK - MOD INTENSITY OF PY'IZATION - DISS 219-220' $CaCO_3$ + MINOR SULF @ 20° 222-242' WEAK DISS. PY
223 23	223 80% >3" w/11 TOTAL	MOD HD TO HD			225 230 235		226-234' MINOR FRAC'S w SLICKS 234-235 SEVERAL FRAC'S @ 40° w/ NO SLICKS - POSS. OR JOINTING	226' $CaCO_3$ + MINOR SULF @ 20° $CaCO_3$ + MINOR SULF STRINGERS @ 70-80° ∡ 1.0/FT ↓ 242 233 HIGH Z YELLOW PY ON SLICKS - FRAC'S @ HIGH ∡ BDDING
232 24	233							

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
200	206	6.0'	0.155	0.36	0.158	Au3 (grav) 0.167 avg .160
206	211	5.0'	0.056	0.23	(grav) 0.053	avg .055
211	215	4.0'	0.054	0.26	(grav) 0.054	avg .054
215	218	3.0'	0.087	0.39	(grav) 0.080	avg .084
218	222	4.0'	0.117	0.32	(grav) 0.125	avg .121
222	226	4.0'	0.011	0.06		
226	230	4.0	0.011	0.06		
230	235	5.0'	0.010	0.03		

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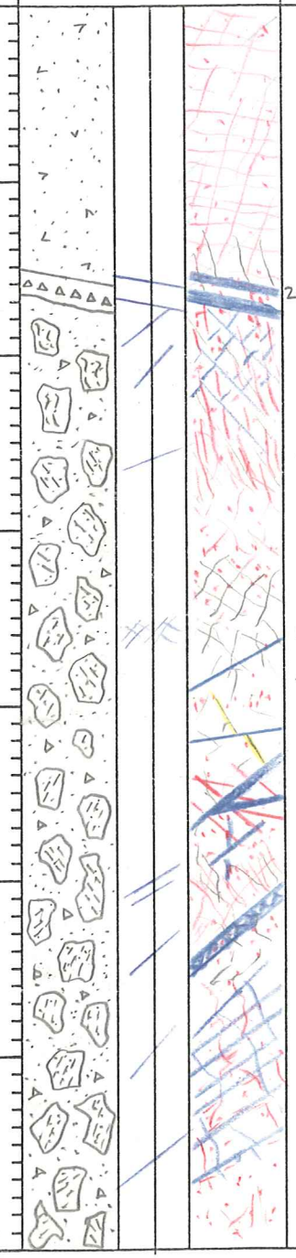
%REC	RQD	LITHOLOGY	FT	STRUCTURE	ALTERATION AND MINERALIZATION	FROM	TO	W	Au	Ag	Au2	Ag2
	80% >3" w/13 TOTAL	MOD TO MOD HD; LT-MED GRN			238-242 SULF + $CaCO_3$ + CHL ± WHT CLAY @ 80° & 20° 10/Ft. MICRO VNLTS	235	239	4.0'	0.002	0.06		
			240		240' MINOR WEAK LIM STN	239	242.8	3.8'	0.002	0.03		
242 BOX 25	243	SOFT MOD HD; MOD HD TO HD; MOTTLED & BANDED LT GRN & LT PINK — 242.8-243.6 FAULT		242.8-243.6 LOW ANGLE FAULT @ 80° w/ $CaCO_3$ VEINS ENCLOSING TECTONIC ANGULAR FRAGMENTS IN CLAY GOUGE	243.6'-246' $CaCO_3$ + SULF VNLT STKWK @ 50° (X-CUTTING) 40°; WHT CLAY HAIRLINE FRAC'S ± MINOR SULF @ 40° HAIRLINE SULF-CHL @ 5-20° ON BDD LAM'S	242.8	243.6	0.8'	0.002	<0.02		
	95% >3" w/12 TOTAL	243.6-300.2' LAMINATED WATERLAIN TEPHRA BRECCIA; CLAST- & MATRIX-SUPPORTED; FINE-PLANAR LAM.; MARKED GRADED-VARVED BEDDING LAM'S @ 20-50° FRAG'S ROTATED TO SLIGHTLY ROTATED; LAM'S SLIGHTLY TO NON-CONTORTED	245	246-250 PLANAR-LAM'S @ 20°	246-248' S.AA. w/out $CaCO_3$	243.6	248	4.4'	0.024	0.06	0.024	
					248-252' MASSIVE BX w/ FAINT DISCONT. SULF-CHL HAIRLINE STR.; LOC. MOD. INT. DISS. PY CLOTTS.	248	251	3.0'	<.001	<0.02		
251	26		250		252-253.5' WHT CLAY STKWK (FRAC'D & DISPLACED) ARG. ALT.							
	253			RUBBLY + INTENSE ARGILLIC ALT. MOD. ARGILLIC ALT ↓ 263		251	255	4.0'	0.006	0.02		
	90% >3" w/10 TOTAL		255		254' 1.0" $CaCO_3$ @ 60° C. XLN X-CUTTING 0.2" $CaCO_3$ + WHT CLAY @ 30'							
					256' 0.5 $CaCO_3$ @ 85° X-CUTTING 0.2" CREAM COLORED CLAY + $CaCO_3$ + SiO_2 ALT. HALO (0.2") @ 30° YELLOW/ORANGE TARNISHED PY	255	260	5.0'	0.004	0.02		
260.5	27		260		257.5-258' 7.5" C. XLN $CaCO_3$ @ 50-80° X-CUTTING 0.01" SULF. STRINGERS @ OPPOSING 50°						Au2	Au3
	263				259.2' 1.0" C. XLN $CaCO_3$ @ 50° X-CUTTING $CaCO_3$ + SULF @ 5°	260	265	5.0'	0.018	0.03	0.070	0.022
	95% >3" w/9 TOTAL		265		261.3" 6.0" C. XLN OPEN-SPACE $CaCO_3$ @ 50° W/ MINOR V.F.G. SULF PRECIP. ON DOG'S TOOTH XL'S 263.4-268' 0.15-1.5" $CaCO_3$ + WHT CLAY + SULF @ 40-60° IN VN SWARM	265	270	5.0'	0.004	0.03		
270			270									



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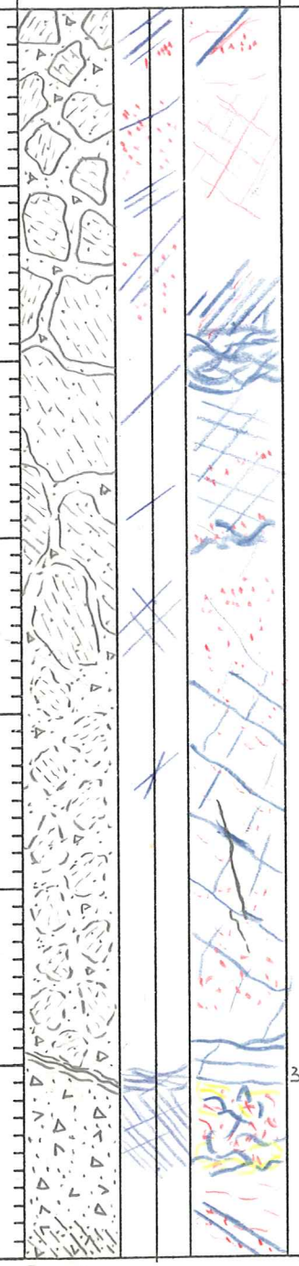
%REC	RQD	LITHOLOGY	FT	STRUCTURE	ALTERATION AND MINERALIZATION
BOX 28	273 97% >3" W/13 TOTAL	MOD HD – HD; MOTTLED & BANDED LT GRN & LT PINK	275		271' 2.4" C. XLN OPEN-SPACE $CaCO_3$ VN @ 40° W/ SULF-RICH BAND 0.5" FROM FOOTWALL; 273-276' SULF-CHL ± $CaCO_3$ STKWK @ 30 & 50° PRIM. SOFT F.G. TARNISHED PLATES PY ON FRAC'S W/ BLK STREAK
279 29		– 278-289' MINOR FRAG-ROTATION – CRACKLE-BRECCIA IN PART	280		278-279.2' 0.2-1.0" $CaCO_3$ + SULF VN STKWK – SWARM @ 40°; 279.2-281' C. XLN – OPEN-SPACE $CaCO_3$ VN STKWK ± SULF
	283 95% >3" W/14 TOTAL		285		281-285' 0.05-1.5" $CaCO_3$ + SULF VN STKWK 15/FT. @ PRIM. 40 & 70°
288 30		HD; PINK-TAN-CREAM W/ LOC LT GRN MOTTLED; WEAK TO MOD BLK STREAK	290		289-301' 2.0/FT. $CaCO_3$ + BRASSY PY @ 30 & 60'
	293 91% 14 TOTAL		295		293-295.5 0.15" FRAC @ 0-5' W/ WHT CLAY + $CaCO_3$ @ BOT ↑ INTO WHT CLAY ↑ INTO PALE GRN CLAY
298 31			300	300.2' WAVY-LAMINATED SHARP CONTACT @ 70°	
	303 90% 17 TOTAL	MOD; LT TO MED GRN W/ MOTTLED PINK FRAGS	305		300.2-303' Bx'iation $CaCO_3$ ± SULF ± F.G. Q STKWK; 304-307 0.1-1.0" $CaCO_3$ + SULF CLOTS @ 60

300.2-310.3' COARSE-GRAINED HETEROLITHIC LATITIC ASH FLOW TUFF BRECCIA & FLOW-LAMINATED TUFF; FLOW-LAM. DEVITRIFIED PUMICE LAPILLI @ 40° W/ FLATTENING RATIO'S ~10:1 FROM 304-306'

GRAPHIC LOG



ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
270	275	5.0'	0.011	0.03		
275	278	3.0'	0.002	0.04		
278	281	3.0'	0.002	0.03		
281	286	5.0'	<0.001	0.04		
286	289	3.0'	0.001	0.06		
289	293	4.0'	0.005	0.06		
293	295.5	2.5'	<0.001	0.04		
295.5	300.2	4.7'	0.001	0.04		
300.2	303	2.8'	0.026	0.15		
303	305	2.0'	0.005	0.06		

HOLE NUMBER 94-297 C PAGE 10 OF 12

%REC	RQD	LITHOLOGY	FT	STRUCTURE	ALTERATION AND MINERALIZATION
307 Box 32		MOD MED GRN TOS 310.3 – 318.3' COARSE-GRAINED LITHIC (HETEROLITHIC) MOD-SORTED LATITIC LAPILLI FLOW-LAMINATED ASH FLOW TUFF; FLOW-LAMINATED DEVITR. LAPILLI @ 40° W/ FLATTING RATIO'S UP TO 10:1 (2:1 – 5:1 COMMON)	310	306-310.3 TECTONIC BX 310.3' SHARP PLANAR $CaCO_3$ VEINED CONTACT @ 30°	306-310.3' Brciated $CaCO_3$ VNLTS IN TECTONIC BX IRREG. PATCHY GRY-BRN SILIC.; THIN DISCONT. WHT CLAY ANGULAR FRAGS
313	86% 14 TOTAL	MOD-MOD HD LT-MED. GRN			312.7 - 313.7' $CaCO_3$ + Py VNLT @ 15° 0.6"; Py BRASSY - TARNISHED
316 33			315		316' 0.01" SULF MICROVNLT @ 40° X-CUT BY $CaCO_3$ VNLT STKWK 0.1 – 0.8" @ 15°, 30°, & 80° 314-317
323	94% 12 TOTAL	MOD SOFT TO MOD MED GRN 318.5 – 323.3' COARSE-GRAINED, MODERATELY-WELL SORTED, PORPHYRITIC TUFF BRECCIA W/ BRIGHT WHITE SOFT CLAY ALT. EQUANT SUBHEDRAL FELDSPAR XL FRAGMENTS; CLASTS ANGULAR TO SUBROUNDED; MATRIX TO CLAST-SUPPORTED	320	318.5' GRADATIONAL TRANSITION 319-320.5' TECTONICALLY BX'ATED CONTORTED, FRAGMENTED $CaCO_3$ VNTS 323.3' SHARP BEDDED CONTACT @ 20-30°	317-319' $CaCO_3$ + SULF VNLTS 0.1-0.2" SLIGHTLY SHEARED - IRREG. 317-320.5 IRREG. DISCONT. WHT CLAY VNLTS
326 34		MOD-MOD HD BRNISH GRN-GRY 323.3 – 327.4' COARSE-GRAINED, CLAST-SUPPORTED POORLY-SORTED HETEROLITHIC CLASTIC TUFF BRECCIA SILICEOUS & ARGILLACEOUS ALT. MOTTLED & MOD. INTENSE ANGULAR SILIC. FRAG'S IN GRY CLAY GOUGE @ 324 & 327'; ANGULAR TO SUBANG. CLASTS	325	ARG. + SILIC + WK SULF. ALT ZONE ↓ TO 357.5' 327.4' BEDDED SHARP 30° CONTACT	323.3 – 327.4 MOD TO INTENSE ARG. ALT; MOD SULFIDATION; MOD INTENSITY SILIC.; V. WK CARBONATE DISCT. ARG. CLAY STR @ 5-15' MASSIVE & MAGASCOPIC MICRO HAIRLINE SiO_2 STKWK W/ INTER-VNLT AREAS - ARG. ALT & SULF (CUBIC)
		MOD SOFT MED-DK GRN MATRIX MOD-MOD HD 327.4 – 329.5' COARSE-GRAINED, MOD.-WELL-SORTED PORPHYRITIC TUFF BRECCIA S.A. 318.5 – 323.3'	330	329.5' GRADATIONAL TRANSITION	329.5 – 332.5 0.1 – 0.15" WHT ARG. CLAY MICROVNLTS @ 5-15' W/ ASSOC. WK ARG ALT.
333 90% 335 35	92% 13 TOTAL	329.5 – 338.2' COARSE-GRAINED, POORLY-SORTED, CLAST-SUPPORTED, HETEROLITHIC CLASTIC TUFF BRECCIA; ANGULAR TO SUBROUNDED CLASTS 338.2 – 340.2' COARSE-GRAINED, MOD.-WELL TO POORLY SORTED, GRADED BEDDED RE-WORKED TUFF BRECCIA (EPICLASTIC SEDIMENT); GRADED-BDD @ 50°; WHITE CLAY ALT. FELDSPAR GRAINS; SUBANG. / RND GRAINS	335		334.5 – 335' MOD. INT. ARG. ALT 334.9' IRREG. PATCHY INTENSE Py (CUBIC)
		MOD HD BRNISH GRN-GRY	340	338.2' BEDDED (SUBOLE) CONTACT @ 50° 340-340.5' WHITE CLAY FILLED TECTONIC BX STKWK @ 15°	338 - 340.2 WHT ARG. CLAY 0.05 - 0.15" VNLTS @ 30°, 70° & 15° X-CUTTING GRADED BDD.

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
305.2	310.3	5.1'	0.011	0.06		
310.3	313.7'	3.4'	0.006	0.06		
313.7	317	3.3'	0.018	0.06		
317	320.5	3.5'	0.009	0.07		
320.5	323.3	2.8'	<0.001	0.02		
323.3	327.4	4.1'	<0.001	0.06		
327.4	332.5	5.1'	0.001	0.03		
332.5	334.5	2.0'	0.001	0.04		
334.5	335.5	1.0'	0.001	0.09		
335.5	338	2.5'	<0.001	0.02		
338	341.2	3.2'	0.002	0.06		

HOLE NUMBER 94-297C PAGE 11 OF 12

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
344 BOX 36	343 85% 12 TOTAL	MOD W/ MOD HD FRAGS	DK GRN LT GRN MATRIX / DK GRN MATRIX	340.2 - 342.9' COARSE-GRAINED, POORLY-SORTED CLAST-SUPPORTED HETEROLITHIC LAPILLI TUFF BRECCIA; SLIGHTLY PORPHYRITIC (CLAY ALT, FELDSPAR CRYSTAL FRAGS); LAPILLI-RICH @ TOP W/ FLATTENING RATIO'S OF 5:1 to 8:1 342.9 - 344.7' COARSE-GRAINED, POORLY-SORTED, MATRIX-SUPPORTED, HETEROLITHIC TUFF BRECCIA; F. G. VITROCLASTIC MATRIX IS FLOW-LAMINATED (CONTORTED) @ 55°; COARSE CLAY ALT FELD'S/ PUMICE FRAG'S; ANGULAR CLASTS	345		340.2' BEDDED CONTACT (NON-DISTICT/SHARP) @ 55° 342.9' SHARP FLOW-LAM. 30° CONTACT 344.7' SHARP FLOW-LAM. 60° CONTACT MINOR DARK GRY-BLK SILIC. ANGU.-RND LITHIC FRAGS ↓ IMBRICATION OF LAP. @50-70	343-348' MINOR 0.05" WHT ARG. CLAY STR. @ 5-15' ∓30°
353 37	353 95% 10 TOTAL >3"	MOD-MOD HD SOFT SOFT MOD HD	SLTLY BLEACHED DK GRN MATRIX / LT to MED GRN F.G. MATRIX	344.7 - 400' COARSE-GRAINED, POORLY-SORTED, CLAST-SUPPORTED, PORPH., HETEROLITHIC, FLOW-IMBRICATED TUFF BRECCIA, W/ LAPILLI FLATTENING RATIO'S OF 4:1 to 9:1 IMBRIC. @50-70'; ANGULAR TO SUBRND CLASTS (LITHIC'S) AND ELONGATED FLATTENED PUMICE LAPILLI (FIAMME)	350 355			348-352.5 WHT. ARG. CLAY 0.02-0.25" VNLT STKWK @ 5-15°; 30°, ∓ 70-80° MOD TO INTENSE ARG. ALT 350-352.5' + WK SILIC. 352-352.5 ARG. ALT + $CaCO_3$ + MINOR SULF @ 70 ∓ 45° STKWK C; XLN @ OPEN-SPACE 352.5-356 $CaCO_3$ VN-STKWK 50% OF INTERVAL NO PREF'D ORIENTATION; ASSOC. MINOR SULF; MINOR WHT ARGILLIC CLAY STRINGERS (DISCONT) W/ ASSOC. MOD. STRONG ARG. ALT OF WALL RX
363 38	363 96% 11 TOTAL >3"	SOFT MOD-MOD HD			360 365		360.7' FLOW BREAK @ 55° 362.3-362.6' TECTONICALLY BX'IATE FLOW BREAK @ 70° TOP ∓ 90° BASE 366.7' SHARP DIST. FLOW BREAK - SLICKS @ 70°	357' ↓ WEAK CARBONATE VEINING; V. WEAK SILIC.; MOD TO MOD INTENSE ARGILLIC ALT TO TD (400') + WK SULFIDATION MINOR SLICKS ± LIM STN CLAY ↓ 370'
372 39	373 93% 13 TOTAL >3"				370 375		369.7' SLICKED FLOW-BREAK - LAM. OF LAPILLI @45°	

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
341.2	342.9	1.7'	0.001	0.02		
342.9	344.5	1.6'	0.120	0.02	Au2 0.140	Au3 0.082
344.5	348	3.5'	0.002	0.02		
348	352.5	4.5'	0.001	0.03		
352.5	357	4.5'	<0.001	<0.02		
357	362	5.0'		0.02		
362	367	5.0'		0.02		
367	372	5.0'		0.03		
372	377	5.0'		0.03		

HOLE NUMBER 94-297 C PAGE 12 OF 12

%REC	RQD	LITHOLOGY			FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
		MOD-MOD HD	LT-MED GRN					
381 Box 40	383 95% 15 TOTAL	SOFT SOFT	SLTLY BLEACHED ARG. ALT		380			380.5-382.5 $CaCO_3$ VNLT + MINOR ARG WHT CLAY STRINGERS
					385			382.5-386' MINOR HIGH % $CaCO_3$ ± WHT ARG. CLAY @5-15°; ASSOC. MOD INTENSE ARG. ALT.
390 41		MOD-MOD HD	DK GRN CHL/GLUOC-RICH MATRIX	—389—399 V. C. CLAST SIZE > CORE DIAM. & INCLUDING DK GRY-BLK LITHICS (JTr)? SILIC. FLOW-BANDED RHYOLITE? RHYOLITE BX, LACKS IMBRICATION OF LAPILLI	390			DK GRN GLUOC.-CHL RICH MATRIX ↓
	393 85% 11 TOTAL >3"	SOFT			395			
399 42 400	400	MOD-MOD HD			400			
		400' EOH						

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
377	382	5.0'	<0.001	0.02		
382	386	4.0'		0.03		
386	390	4.0'		0.02		
390	395	5.0'		0.02		
395	400	5.0'		0.03		

ANALYSIS REPORT

American Assay Laboratories Inc.

P.O. BOX 71060
RENO, NV,,U.S.A.,
Ph.1-702-356-0606, Fax.1-702-356-1413
Telex:

HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF

:

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:

CLIENT REFERENCE No: 94-297C

LABORATORY JOB No. : SP029598

SAMPLE TYPE :

RECEIVED : 17/06/94

REPORTED : 29/06/94

No. SAMPLES : 91

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA60	15%	OPT	0.001
Au(RZ)	FA60	15%	OPT	0.001
Au RZ2	FA60	15%	OPT	0.001
AuGRAV	GRAV	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Sue Faircloth M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-297C
JOB NUMBER : SP029598
REPORTED : 29/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Au RZ2 FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
94-297C 17-22	0.002				0.09
94-297C 22-27	0.002				0.14
94-297C 27-32.5	0.001				0.17
94-297C 32.5-37	0.003				0.22
94-297C 37-42	0.001				0.10
94-297C 42-45	0.004	0.004			0.07
94-297C 45-48	<0.001				0.05
94-297C 48-53	<0.001				0.03
94-297C 53-58	0.001				0.03
94-297C 58-61	0.001				0.03
94-297C 61-67.5	0.002				0.05
94-297C 67.5-71.5	0.005				0.09
94-297C 71.5-76.5	0.003				0.07
94-297C 76.5-82.8	0.002				0.02
94-297C 82.8-87	0.003				0.07
94-297C 87-92	0.002				0.08
94-297C 92-96	0.002				0.10
94-297C 96-100	0.004				0.23
94-297C 100-104	0.002				0.10
94-297C 104-109	0.003				0.11
94-297C 109-114.5	0.003				0.08
94-297C 114.5-120	0.003				0.09
94-297C 120-125	0.003				0.07
94-297C 125-130	0.004				0.07
94-297C 130-135	0.009				0.09

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-297C
JOB NUMBER : SP029598
REPORTED : 29/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Au RZ2 FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
94-297C 135-140	0.004				0.06
94-297C 140-145	0.005				0.09
94-297C 145-150	0.006				0.05
94-297C 150-153.5	0.012				0.12
94-297C 153.5-156.5	0.010	0.033	0.007		0.09
94-297C 156.5-161	0.001				0.06
94-297C 161-166	0.003				0.09
94-297C 166-171	0.016	0.058	0.032		0.09
94-297C 171-176	0.006	0.003	0.009		0.08
94-297C 176-181	0.006				0.12
94-297C 181-185	0.002				0.07
94-297C 185-190	0.004				0.09
94-297C 190-195	0.012				0.09
94-297C 195-200	0.007				0.09
94-297C 200-206	0.155	0.158		0.167	0.36
94-297C 206-211	0.056			0.053	0.23
94-297C 211-215	0.054			0.054	0.26
94-297C 215-218	0.087			0.080	0.39
94-297C 218-222	0.117			0.125	0.32
94-297C 222-226	0.011				0.06
94-297C 226-230	0.011				0.06
94-297C 230-235	0.010				0.03
94-297C 235-239	0.002				0.06
94-297C 239-242.8	0.002				0.03
94-297C 242.8-243.6	0.002				<0.02

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-297C
JOB NUMBER : SP029598
REPORTED : 29/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Au RZ2 FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
94-297C 243.6-248	0.024	0.024			0.06
94-297C 248-251	<0.001				<0.02
94-297C 251-255	0.006				0.02
94-297C 255-260	0.004				0.02
94-297C 260-265	0.018	0.070	0.022		0.03
94-297C 265-270	0.004				0.03
94-297C 270-275	0.011				0.03
94-297C 275-278	0.002				0.04
94-297C 278-281	0.002				0.03
94-297C 281-286	<0.001				0.04
94-297C 286-289	0.001				0.06
94-297C 289-293	0.005				0.06
94-297C 293-295.5	<0.001				0.04
94-297C 295.5-300.2	0.001				0.04
94-297C 300.2-303	0.026				0.15
94-297C 303-305.2	0.005				0.06
94-297C 305.2-310.3	0.011				0.06
94-297C 310.3-313.7	0.006				0.06
94-297C 313.7-317	0.018				0.06
94-297C 317-320.5	0.009				0.07
94-297C 320.5-323.3	<0.001				0.02
94-297C 323.3-327.4	<0.001				0.06
94-297C 327.4-332.5	0.001				0.03
94-297C 332.5-334.5	0.001				0.04
94-297C 334.5-335.5	0.001				0.09

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT

American Assay Laboratories Inc.

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : 94-297C
JOB NUMBER : SP029598
REPORTED : 29/06/94

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	Au RZ2 FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
94-297C 335.5-338	<0.001				0.02
94-297C 338-341.2	0.002				0.06
94-297C 341.2-342.9	0.001				0.02
94-297C 342.9-344.5	0.120	0.140	0.082		0.02
94-297C 344.5-348	0.002				0.02
94-297C 348-352.5	0.001				0.03
94-297C 352.5-357	<0.001				<0.02
94-297C 357-362	<0.001				0.02
94-297C 362-367	<0.001				0.02
94-297C 367-372	<0.001				0.03
94-297C 372-377	<0.001				0.03
94-297C 377-382	<0.001				0.02
94-297C 382-386	<0.001				0.03
94-297C 386-390	<0.001				0.02
94-297C 390-395	<0.001				0.02
94-297C 395-400	<0.001				0.03

297C

WELL
DEPTH 100'
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

297C

WELL
DEPTH 35'
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

297C

WELL
DEPTH 300'
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

297C

WELL
DEPTH 200'
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

297C

WELL
DEPTH 100'
PICTURE NO.
INCLINATION
OBS. DIR.
COR. DIR.
TOOL FACE
RUN BY
DATE
CHECKED BY

NL SPERRY-SUN

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