60000610

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. RS-489
AUTHOR	D. Schoorl; J.P Rogowski; V. Reid; K. Allen
DATE OF DOC(S)	2000
MULTI_DIST Y / N? Additional Dist_Nos:	
QUAD_NAME	Sulphur 7.5'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Rosebud Mining Co. LLC; North Equinox; Hecla Mining Co.
COMMODITY If not obvious	gold; silver
NOTES	drill logs; geology; assay; total depth 1915'; geochemistry 50p.

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 3/20/08
Initials Date
DB:
Initials Date
SCANNED:
Initials Date

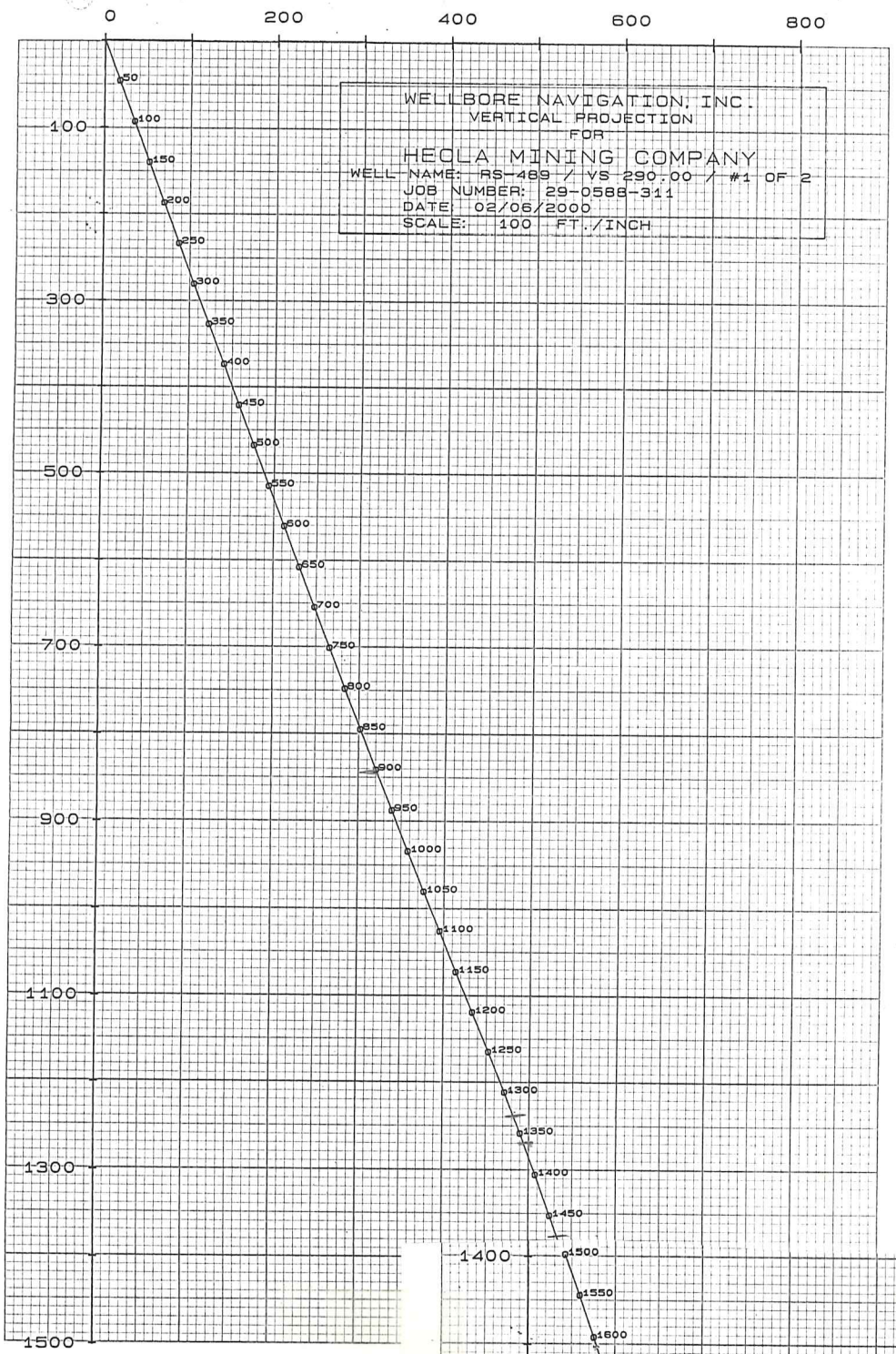
Revised: 1/22/08

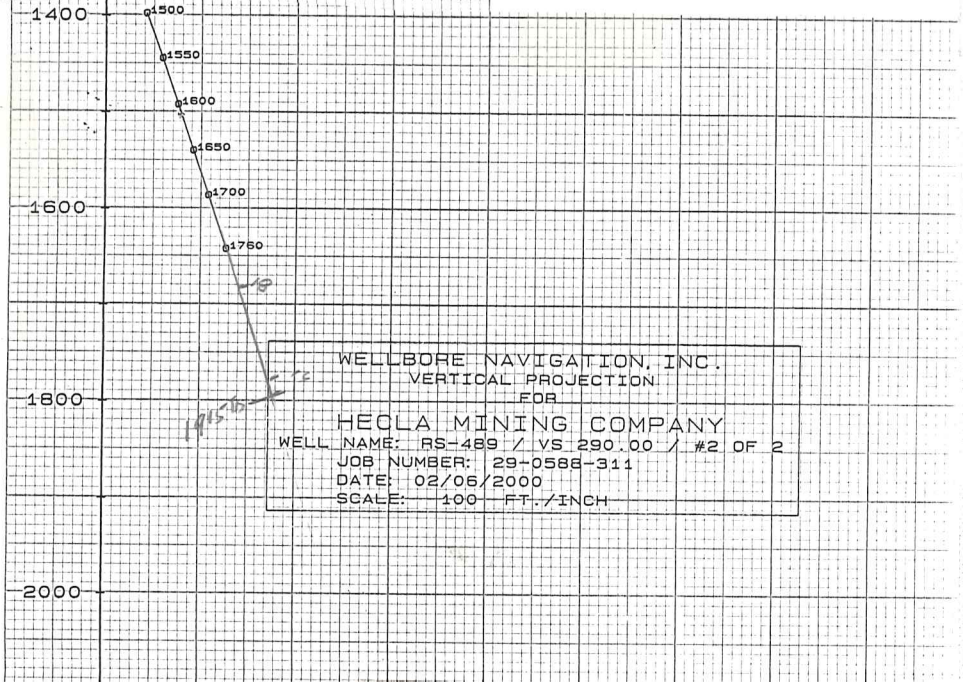
RS-489 2000

N. Equinox

6000 0610
4010

STARLIGHT PRINTING (801) 467-2841

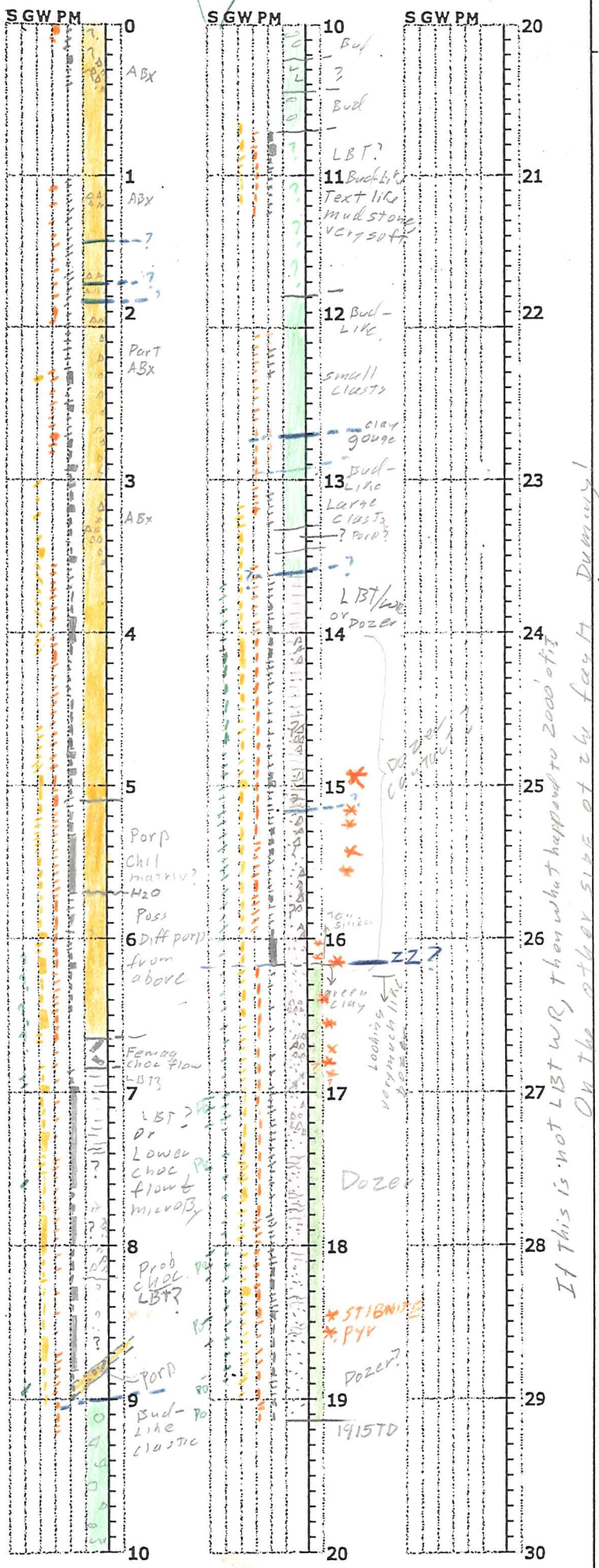




6000610

ROSEBUD MINING COMPANY, LLC.	HOLE # RS-489
START HOLE 25 Jan 2000	FINISH HOLE 7 Feb 2000
HOLE TYPE RC	LOGGED BY Rogowski
BEARING N17E	ANGLE -70°
PAGE 1 OF 21	SURVEYED TO Wel-Nav 1760
	T.D 1915
COLLAR COORDINATES (approx)	
NORTH 2,212,510	
EAST 478,620	
ELEV 6045	
DRILLING CO. Ekland	DRILLER Don Schoorl

Drilled on S. side of N. Equinox



ALTERATION INTENSITY

1 WEAK — 2 MODERATE — 3 STRONG

VERITHIN COLOR

737	SILICIFICATION
751	GREEN CLAY
747½	WHITE CLAY
755	PYRITE
757	MARCASITE

Po

GRAPHIC LOG

VERITHIN COLOR

	BRECCIA
741	FAULT 741
	CONTACT
737	QUARTZ VEIN
741½	CALCITE VEIN
747½	CLAY VEIN
755	PYRITE VEIN

Feld-Porphyry

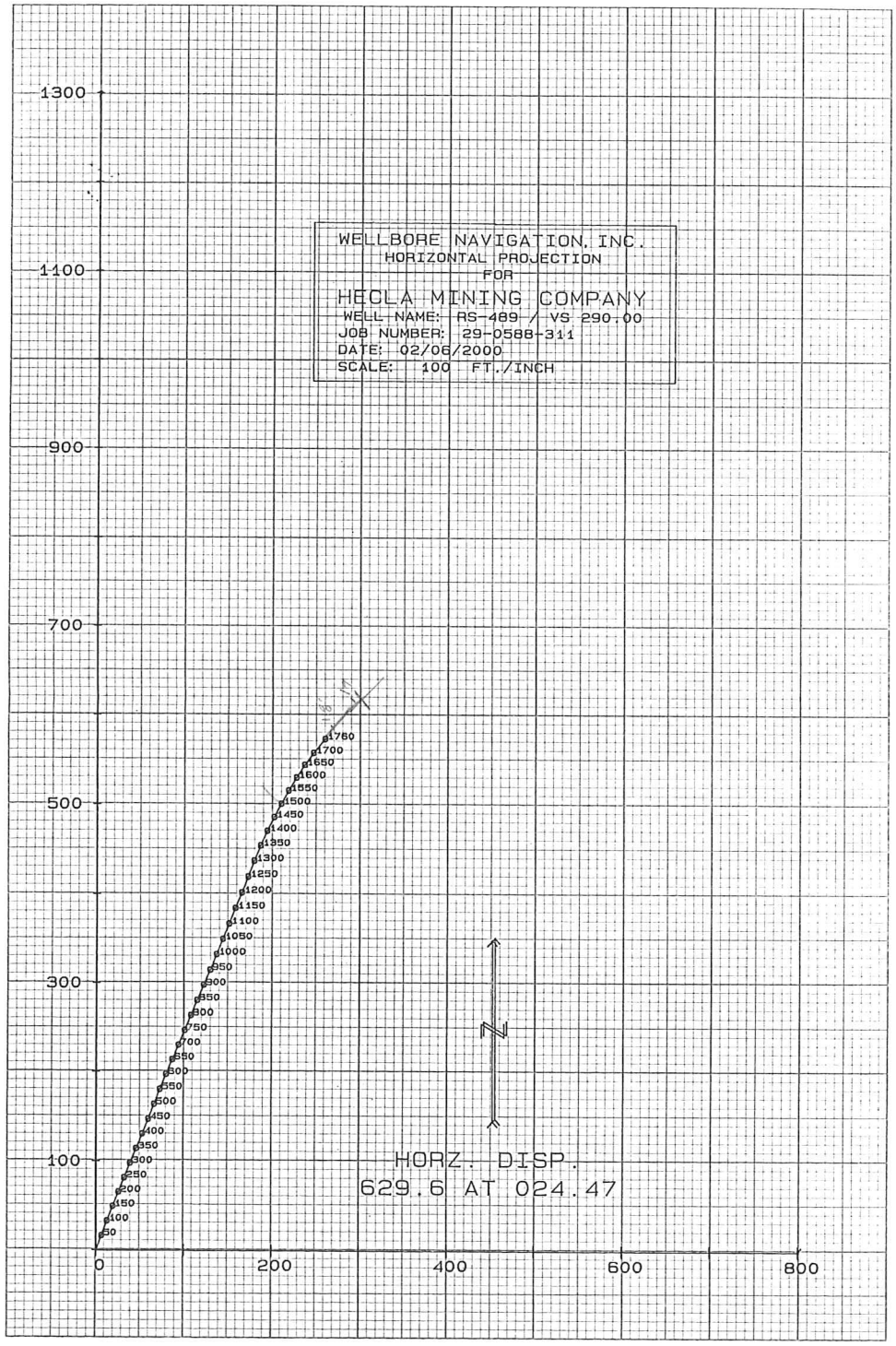
LBT/wR

BUD-LIKE UNITS

Pyrargyrite

Stibnite

Dozer


WELLBORE NAVIGATION, INC.
HORIZONTAL PROJECTION
FOR
HECLA MINING COMPANY
WELL NAME: RS-489 / VS 290.00
JOB NUMBER: 29-0588-311
DATE: 02/06/2000
SCALE: 100 FT./INCH
HORZ. DISP.
629.6 AT 024.47
N
1300
1100
900
700
500
300
100
0
200
400
600
800

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

INTENSITY
1 = WEAK
2 = MODERATE
3 = STRONG
or % by Vol

HOLE NUMBER RS-489
PAGE 2 OF 21
DATE 25 Jan to Feb 2000
LOGGED BY Rogowski
TOTAL DEPTH 1915

LOCATION ROSEBUD. NV
NORTHING 2,212,510
EASTING 478,620
ELEVATION 6045
AZIMUTH N 17E
INCLINATION -75°

AREA N. Equinox
DRILLING CO. Eklund
RIG TYPE RC
HOLE SIZE 6"
DOWN HOLE SURVEY BY Wel-Nav TO 1760'

0-100

2/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	15%	+25%	MAJOR QUARTZ	QUARTZ	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CHLOTE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	%	VIENING TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SUL %	SULFATE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
0		PORP	0-100 Fxln	MH	matrix is Fxln	1					Tr					3																								
10			matrix w/ Seri			1										1																									
			& Qt phenos			1										0																									
20			(RBQL?)	MH		1										0																									
		??	very strong	VH	VF xln	2										0																									
30		VFxln	oxidation, Flow	VH		Tr										1																									
		part ABx?	banded in part	MH	Fxln	Tr																																			
40						Tr												1																							
						1																																			
50		RBQL				?																																			
						Tr?					Tr																													
		ABx																																							
60		Flow bands									Tr					1																									
											1					0																									
70											1					Tr																									
											1					0																									
80											1																														
			90-100 - partial								1																														
90			bleach white.								1																														
											2																														
100				MH	FY	Tr					2					0																									

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

INTENSITY
1 = WEAK
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3 = STRONG
or % by Vol

HOLE NUMBER RS-489
PAGE 3 OF 21
DATE
LOGGED BY
TOTAL DEPTH

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA N. Equinox
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

1-200

3/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE Color	ALTERATION: SILICIFICATION 5%	15%	+25%	MAUVE %	QUARTZ %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SLF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
100			100-200	M H		1					IV					0																								
				TO																																				
110			Sanidine-Qt	S							1																														
		ABx	porph (RB QL)																																						
120			strongly bleached																																						
			(clay alt) down to																																						
130			135'. Very strongly		F x In porph white & Pink																																				
			oxidized. Has Hem,			1					1																														
140			Jaro & prob alunite			1																																			
		F? gouge	throughout. Some																																						
150			Auto or flow Bx								1-2																														
			& rare flow bands								1																														
160																																									
		ABx																																							
170		F? gouge			F x In porp Diker & veinlets																																				
180																		1																							
190		gouge F?									1																														
		ABx or crushed									2																														
200			Bx			1					1					0																									

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

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or % by Vol

HOLE NUMBER RS-489
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DATE
LOGGED BY
TOTAL DEPTH

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

Z-300

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SUL %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOISTURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
200		PBx	200-300 Strong	MH		1					Tr					Tr											0														
210			to weak Auto or flow			2.1										0																									
			Bx (matrix supported)			1																																			
220			Porphyry (RBQL)			1																																			
						1																																			
230						2																					0														
			← Clear silica w/Py			2																					Tr														
240			Matrix varies			1																					0														
			from glassy to			1																																			
250			m.xln			1																																			
						2																																			
260			← Brn Qtstgr			1																																			
						1																																			
270						1																																			
						1																																			
280						1										0																									
			← poss contam frag is very etter			2					Tr					2																									
290						2										0																									
						3										0																									
300				MH		2					Tr					0											0														

Rosebud Quartz Latite (RBQL)
Strong to weak Auto or flow Bx

Fx in matrix w/ Sanid, Qt & equant Feld Phenos <1mm

Strongly oxidized, see Jarv & drv
Brn oxide on fract.

Hecla MINING COMPANY
ROSEBUD PROJECT DRILL LOG

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HOLE NUMBER: RS-489
PAGE 5 OF 21
DATE
LOGGED BY
TOTAL DEPTH

LOCATION: ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA: 3-400
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
300		Prob Rhyolitic (RBQL?) Flow	3-400 — one of the Porphyrys that occurs within the Chocolate (prob. RBQL). Has numerous equant clay alt. feld. (K-spar?) in a Reddish Brn to greyish brown matrix. Poss traces of Biot Sanidine but is very alt.	VH	Porphy w/ vf xls in matrix — Reddish Brn & wt
310			← clast support in part.		
320	ABy		300-310 silica encap Py (gray SiO2) 310-320 Py encap in red silica		
330					
340					
350					
360					
370					
380					
390					
400				V.H	Reddish Brn & wt

ALTERATION

FEET	SILICIFICATION 5%	15%	+25%	MAG %	QUARTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	%	VIENING TYPE
300	3					Tr					0							
310	2					1												
	2?					1												
320	3					Tr												
	2					Tr												
330	2					Tr												
	2																	
340	1																	
	2																	
350	2																	
	3					Tr												
360	1					1												
	2																	
370	1																	
	Tr																	
380	1-2																	
	2																	
390	2					1												
	3					Tr												
400	3					Tr					0							

← phenos
← matrix
← phenos.

MINERALIZATION

FEET	SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SLF %	STIBNITE %	BARITE %
300				2	— silica encap Py & Py				
310				1					
				1					
320				Tr					
				Tr					
330				Tr					
				Tr	← very fine xls				
340				Tr					
				Tr					
350				2	— In gray & Brn SiO2				
				1	cubic Py A				
360				Tr					
				1					
370				Tr					
				Tr					
380				Tr					
				1					
390				1					
				Tr					
400				Tr					

METALLURGY: OXIDE | SULF | CARBON | MOISTURE

Pyrite that is encap in SiO2

ANALYTICAL DATA: FROM | TO | W | Au | Ag

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

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TOTAL DEPTH

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA 4-500
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
400		Rhyolitic Feld Porphyry Iron red, yellow & white	4-500 Appears to be a very fine matrix, Feld Porp. Has equant, clay alt (white) feld. Some flow Bx or auto Bx in parts. In a few places — 440 to 450 There could be glmop. clusters of plag. Most py is as very fine xls encap in silica, both gry-clear & Hem Rel. No clear sanj. Long sanj xl	VH	Porphyry — clay alt feldspars & silicified matrix
410					
420					
430					
440					
450					
460					
470					
480					
490					
500				VH	

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	QUARTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALBITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE
400	3					tr					0							
410	2					tr												
	1					2												
420	1					1												
	1																	
430	1																	
	1																	
440	1																	
	2																	
450	2																	
	2																	
460	2																	
	2																	
470	2																	
	2																	
480	3					1												
	2					1												
490	2					1												
	3					tr												
500	2					tr					0							

FEET	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SUL %	SULFATE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOISTURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
400				1								Mix of Py & very strong Hem w/ Jarosite						
410				tr														
				1														
420				tr														
				0														
430																		
440				0														
				1														
450				0														
				tr		Bot limo dve Red.												
460				0														
				1														
470				tr														
				1														
480				1														
				2														
490				1														
				3														
500				4														

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

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TOTAL DEPTH

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA 5-600
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

7/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	QUARTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SUL %	SILBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
500			5-505																																						
			Rhyo Porp as above	H to M.H.		2					2					0											1	Cubes &												
510			505-600 still porp			1					2																5	Py H												
			but only a few			1					2																3													
520			phenos, matrix			2					1																3	Py h												
		FBx	part is very fine			3					1																3													
530			& gen. silicified			2					2																1													
		?	Minor Py			1					1																1													
540			throughout w/			2					1																2													
		?	poss. traces of	VH		3					1																1													
550			Marcasite			3					1																2													
						3					1																3													
560		? Rhyo Porp	Because of the			3					1																3													
			strong alt. I		Lt gray w/ Brn + white	3					Tr																3	Py H + Anhedral												
570		H_2O	can't tell which	VH		2					1																2													
			porphyry but	MH		2					Tr																1													
580			brob of Chocolate			1					2																1													
			group			1					2																3	Cubes,												
590		?	NOTE: 505-600 except for			2					2																3													
			Rare phenos + this could			2					1																3													
600			~~poss for LBT/LR~~	MH		1					2					0											5													

Hecla MINING COMPANY

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HOLE NUMBER RS-489
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TOTAL DEPTH

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA 6-700
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
600			600–665 Some hints	H	
			← gray min		
610			~~of FBT but~~ can't		
		FBy	be certain due to		
620		Vn? Fault?	alt. Is mottled		
			wt & Lt Brown, see		
630			orca phenoltelt-equant		diff to tell.
		←	~~FBT~~		
640			Poss Flow banding		
650		FBy			
660					
			665–685 Femag	H	mottled wt & Lt Brown not many phenos if any
670			porp flow, strong	MH	
			Hem stain		
680		Femag porp.			
			685–700 prob ~~layer~~	MH	
690			Don't know	H	
		FPy			
700				H	

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MASSIVE %	QUARTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE
600	1					2					0							
610	1					2												
	1 to 2					2												
620	3					1												
	2					1												
630	2					1												
	2					1												
640	2					1												
	2					1												
650	1					2												
	1					2												
660	1					2												
	1					2												
670	0					tr												
	0					tr												
680	0					tr												
	0					tr												
690	1					2												
	2					1												
700	3					Tr					0							

FEET	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SLF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
600				1														
610				3			← Poss			gray sulfide								
620				5		?												
				7														
630				4		1		gray sulfide						specks				
				3		?												
640				2		?												
				3		?												
650				2		?												
				4		?		— gray sulfide										
660				5	— Bot	?		— gray sulfide										
				Tr		?												
670				1		?												
				0														
680				0														
				0														
690				0														
				1														
700				3		1												
				7		1												

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

INTENSITY
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HOLE NUMBER RS-489
PAGE 9 OF 21
DATE
LOGGED BY
TOTAL DEPTH

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA 7-800
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	15%	+25%	MAJPOL	QUARTS	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOISTURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
700		LBT	700-800 - A chance	H		3					Tr					0											3														
		LBT	This is all alt			3																					1														
710			LBT/WR. Is mottled			3																					3														
			like porp. but			3																					2														
720		LBT	do not see phenos			2																					3														
			has very rare Flowbands			3																					7														
730		LBT	occ wt clay			3																					4														
			on fract & poss			3					Tr																5														
740		QT VN LBT	as Feld Replace.			2					1																3														
		Flow BY	Most py is			2					1																1														
750		micro BX	pyritohedrons			2					1																1	Tr													
			but there are			3																					3														
760			some cubes.			2																					3														
		FBY				2																					2														
770			LBT/WR. Flow bandes ? ? ? ?			2																					3														
						2					twtclay on fract															2														
780		FBY Tr				3																					5														
		micro BX				2					1																5														
790						3					1																3														
800				H		2					1					0											7														

Silica is mn. to dk Brown. Poss. Adu.?

Mo TT/wt & Lt Brown

Hecla MINING COMPANY
ROSEBUD PROJECT DRILL LOG

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HOLE NUMBER RS489
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DATE
LOGGED BY
TOTAL DEPTH

LOCATION ROSEBUD. NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA 8-900
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

10/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
800			800-900 - very strong	H	Mottled - Brown, V.Fxln silica & LT gray tuffaceous softer + hard Brown.
810		FBx matrix support	alt ? LBT/wR ?		
		FBx	Diss cubic & Pyritohedrons throughout.		
820		FBx			
		F.Bx	poss. some marcasite		
830		LBT	but very small x/s		
			& hard to be certain		
		LBT?	Some py in micro		
840			vnlets.		
			Brecciation as		
850			in auto or flow Bx		
			(matrix support)		
860			consid Lt Brn		
			silicification		
870					
880			875-890 - partially Porp +/- 80% vFxln (LBT/wR ?)		
		FBx	890-900		
890			occa see gray min		
			on py or mar		
900				H	

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MAR %	QSTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CLORE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SUL %	SULFATE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
800	2					Tr					0											4														
	2					1																2														
	2					1																2														
820	2					Tr																1														
	2					Tr																1														
830	3					Tr																3				gray	min			cont	Py					
	3					Tr																2				11				11						
840	2					1																2														
	2					Tr																3														
850	3																					2														
	3																					4														
860	3																					1														
	3																					4														
870	3																					6														
	2					1																5														
880	3					1																2														
	3				wt clay	1																1														
890	2					1																2														
	2					1																3		Tr												
900	2					1					0											1														

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

INTENSITY
1 = WEAK
2 = MODERATE
3 = STRONG
or % by Vol

HOLE NUMBER RS-489
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INCLINATION

AREA 9-1000
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

11/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
900		? ?	900-905 pass Fault or contact w/ Bud like unit - green wax w/ Bio	S	Clastic Arkosic
910			905-940 Typical bud like vol-Epiclastic ← Devit rings rolclast with wax like pale green clay that contains num Broken bio phenos		
920					
930		Clastic - Vol + Epi			
940				S	
			940-980 - very soft hem stained unit w/ broken bio & abt 20% hard rhyo clasts - almost like a red mudstone Is part of Bud-like unit	VS	
950					
960					
970					
980				VS	
			980-1005 Bud-like - Red & green soft matrix Brkn Bio	VS	
990					
1000				V.	

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	X-SLF %	SULFATE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
900	0					3					Tr											0														
910						2					1																									
						1					1																									
920						Tr					1																									
						?					2																									
930						?					2																									
											2																									
940											2											0														
											1																									
950											1																									
											1																									
960											1																									
											Tr																									
970											Tr																									
											Tr																									
980											1																									
											1																									
990											1																									
											1																									
1000	0					?					1											0														

Note: This Bud-like unit has a matrix that could pass for a mudstone

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AREA
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

10-1100

12/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SUL %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1000		clasts	1000-1005 same as 980-1000	VS		0					?					1											0														
1010			1005-1025 Bud-like unit - pale green matrix w/ broken bio.													tr																									
1020																																									
1030			1025-1045 same but gray colored matrix & rare bio could be Rhyo-flow							very soft						tr																									
1040																1																									
1050			similar to 1005-10																								0						Hem stain								
1060			1025 - increase in clay & lt tpy													tr											tr														
1070						0					?					1											1														
1080			1070-1100 prob LBT/wp - really looks like it. cubic Py	VH		2					1					tr											4														
1090		spider tex Part		VH		3					1					0											5 - some Py Fracs														
				VH		2					1																tr														
				H		1					2																3														
			← some micro Bx text.	H		1					2																3														
1100				H	Rhyo flow Lt Brn to gray	1					2					0											2														
																											1														

Hecla MINING COMPANY

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AREA 11-1200
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
1100		LBT? Rhyo w/spider text	micro Bxed ?LBT/WR? w/spider text.. Lt Brn	5 to 4	clastic or matrix fract
1110			silicification in matrix clasts are soft & white		
1120			Reddish Brown matrix w/clast micro Bx		
1130		Fine ash or mud stone text	1125 to 1180 silty or mudstone looking vol. dk gray to hem-reddish soft to med hard	5	mudstone or Fine ash or Poss a lt flow (hot sand)
1140					
1150			Flow? - poss Rhyo but too soft,		
1160			poss a fine ash		
1170			Has some devit rings & is granular under Hi power		
1180			Could also be a lt LBT		
1190		Bud-like	1180-1200 - Bud like unit - Lt green matrix w/rhyoclasts - Brown bio in matrix	5	clastic
1200					

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALBITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE
1100	14					2					0							
	2 ← matrix						- clasts only											
1110																		
											0							
1120											tr							
	1					2					0							
1130	0					0 + tr					2							
											1							
1140											1							
											1							
1150											1							
											tr							
1160											tr							
											1							
1170											0							
1180																		
1190											0							
											tr							
											1							
1200	0					0 + tr					1							

FEET	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SLF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOISTURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1100				3														
1110				2														
				3														
1120				tr														
				0														
1130																		
1140																		
1150																		
1160																		
1170																		
1180																		
1190																		
1200				0														

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12-1300

14/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
1200		Vol/Epi Clastic Bud Like	1180-1265 — med to dk green matrix BUD-LIKE Vol/epi clastic not well alt but matrix is very soft & wax like Has num broken bios.	S	CLASTIC
1210					
1220					
1230					
1240					
1250					
1260					
1270		F	CLAY GOUGE mix w Bud-like Prob fault	VS	
			similar to 1180-1265 but more pale green matrix & prob larger clasts. Clasts are 90% Rhyo both drk gray & hem red. NOTE: @ 1285 tripped twice for tricone & plugged tricone	S	
1280					
1290		F?	Prob minor struct. w/wt clay gouge		
1300				S	

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MASSIVE	QUARTZ %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SLF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDENITE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1200	0					1					1											0														
1210																																				
1220																																				
1230																																				
1240																																				
1250																																				
1260																																				
1270						1					2																									
						2?					1																									
1280						2?					1																									
1290																																				
1300	0					2?					1											0														

(1) matrix only
clasts are unalt

Pale grn matrix only

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13-1400

15/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MASSIVE	SILICIFICATION QUARTZ	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	X-SUL %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1300		CLASTIC Poss TOS.	1300 – 1325 Bud-like clastic dark to pale green matrix	MS	Clastic Pale green matrix	0					??	matrix			1									0																	
1310															1									0																	
						0									1									0																	
1320			NOTE: Poss some ALS Blk phyllite clasts – very small			1					1				2									Tr				PyC													
						2?					1				0									2																	
1330				MS		2?					1				0									1				cubic fract Py													
		? Porph? – Lt Brn	1330 to 1345 poss clastic but looks like Rhyo flow – Not sure	MH	?						0				tr									4																	
1340			This could be one of the porphyrys but alt makes for an uncertain call	MH	?										0									2				PyC													
																								2																	
1350		Clastic	1345 – 1360 Similar to 1300-1325	MS	Clastic																			3																	
																								Tr																	
1360				MS							0				0									5																	
	?	?	1360 – 1400 ???	MH	Poss (Tol) Reddish to Lt gray white variegated matrix	1					1	mix Rock Type			1									2																	
1370		Poss Rhyo flow Could be LBT/WR or Tol	would guess LBT/WR But could be Dozer Rhyolite			1					2				0									4				cubic Fract fill													
						2	silicon stgr w/ clot w/ Py				2				tr									5																	
1380			Is auto Bx w/matrix being more silicified & Lt to drk Brn color			1					1				Tr									2																	
			most Py in matrix or as Fract fill			3					1?				0									4																	
1390			Partial Auto Bx; most silicification in matrix			1					2-3													3				cubic													
			(poss flow banded)			1?					2													2				?													
1400			micro Bxel mono Lithic	MH		2?					2				0									3				?													

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AREA 14-1500
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

16/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	SILICIFICATION 15%	SILICIFICATION +25%	SILICIFICATION MATRIX %	SILICIFICATION CLASTS %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VIENING %	VIENING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	K-SLF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1400			From 1360 TO 1480			2					2					0											5	PyH	?											
			suspect up hole																																						
1410			Contamination			2					2																3		?												
		FB	see a lot of unalt																																						
		ABx	Bud-like mixed			2					2	wt clay															2		2												
1420			w/ strong clay alt																																						
			& punctured LBT WR			1					2																5		2		—		poss a gray sulfide							
		FB																																							
			monolithic Bx			1					2					0											3		1												
1430						1					2					1											2		1		—		gray sulfide?							
			1400 to 1500																																						
			shows very strong			1					2					Tr											2		2												
			flow bands																																						
1440						2					1					0											1		2		-		Poss gray sulfide							
			1420-1430 - mix of																																						
			Bud & LBT/WR & poss tal			1					2					1											2		2												
			prob caving from up hole																																						
1450						Tr					2					0											2		2		—		gray sulfide							
						1					2					tr											1		1												
1460			After 1480, contam			1					2					0											1		3												
		FB	becomes less & less																																						
						1					2					1											1		1												
1470			(1360 to 1500 is prob			1					2					0											1		1												
			LBT/WR [Dozer Looking]			1					2					Tr											2		2				gray coating on py							
1480			with varying amts			1					2					0											2		1												
			of up hole contam			1					2																2		3				gray sulfide							
1490			from Bud-like rock)			1					2					0											1		1												
		ABx				2					2					Tr											1		Tr				gray coating on pyrite							
1500			* Pyrargyrite on silici LBT vugs w/ Qtz Xls			2+ 3					2					0											3		1	1		*	Large piece of pyrargyrite							

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RIG TYPE
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17/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
1500				MH	
			Gray suff on Mar-enca in silica	P	
1510		?	Pyrargyrite xls & specs in silification trs/veins		
			Bx clast support.		
1520		micro Bx			
			Pyr w/cubic Py & mar		
		micro Bx			
1530		micro Bx	spider text		
			Serious contam from uphole @ 1540 to 1550		
1540					
1550		LBT/wR	1500-1600		Granular to Porphyry like in hite / Lt Brown
			Not sure what this		
1560			unit is, has a		
			Porp. text but		
1570		?? Poss	no phenos.		
			I've seen LBT/wR		
1580			that alters like		
			this. Some flow		
1590			banding. Consid		
			micro bx in part. (prob		
1600			flow Bx)	MH	

Flow bands

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE
1500	1					2					0							
1510	Tr					2-3					0							
1520	1					2					0							
1530	1					2					0							
1540	Tr					2					Tr							
1550	Tr					2					Tr							
1560	2					1					Tr							
1570	2					1					0							
1580	2					1												
1590	1					1												
1600	1					1												
	1					1												
	1					1												
	1					1												
	1					2												
	Tr					2												
	2					1												
	1					1												
	1					1												
	1					1												
	2					1												

FEET	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	K-SLF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLSURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1500				3	Py	✓												
1510				4	Py	H. ✓ on fract												
1520				2		✓	✓											
1530				2		✓												
1540				4		Tr ✓												
1550				1	Py	H?												
				Tr		Tr												
1560				Tr		?												
				1		?												
				2		1												
				2		?												
				4		? Py on micro fract												
				1		✓												
				4		✓												
				3		✓												
				3		✓												
				3		✓												
				2		✓												
				3		✓												
			÷	3		✓												

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AREA
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

18/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE
1600		*	1600 to 1615 - gray min coatings & Tr's of pyrargyrite	H	Lt Brown
1610		*	1600-1700 Not sure which Fm could be Dozer or LBT LBT would fit better. Do not see much flow banding. slor dom.	H	
		ZZ Fault		H	
1620		* Pyr	clay dom	Sto	Lt. Green
		*		MS	
1630					
1640		* Pyr By	strong micro By		
1650		By			
		*	* Pyrargyrite on rim Mar stgr poss rep by Py		
1660					Pale green to Lt gray
1670		By	Breccia		
		*	Pyr on fract		
		By			
1680		*	Pyrargyrite on frag very small particle		
		?	- green clay on fract.		
		*	on fract & coating Py		
1690			Green silica By red stgrs.		
		?	green clay		
			green clay Po?	S to MS	
1700					

FEET	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE
1600	3					0					0							
1610	3					0												
	3					0												
1620	1					2					0							
	1					2					Tr							
1630	1					2					0							
	1					2												
1640	2					2												
	Tr					2					0							
1650	Tr					2					1							
	Tr					2												
1660	1					2												
	Tr					2												
1670	Tr					1-2					1							
	Tr					2-3					2							
1680	Tr					2					1							
	?					2												
1690	Tr					2												
	1					2												
1700	1					2					1							

FEET	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	AS-SLF %	SILBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1600				2		Tr												
1610				3														
				2			* = Pyrargyrite usually in minor amounts. often Rimming Py											
1620				2														
				1										NOTE				
1630				4														
				1										Kent Allen thinks the rock below 1615 is Dozer				
1640				3														
				3														
1650				3														
				2														
1660				1		veinlets												
				1.														
1670				1														
				1														
1680				1														
				1														
1690				2														
				Tr														
1700				Tr														

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

INTENSITY
1 = WEAK
2 = MODERATE
3 = STRONG
or % by Vol

HOLE NUMBER RS-489
PAGE 19 OF 21
DATE
LOGGED BY
TOTAL DEPTH

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	X-SUL %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1700		Rhyolite Flow	Po	M-H	granular, flow bands in part (Dozer Like)	1					2	grn & wt				2								Po tr			Py tr		?											
1710			Po			1					1	grn & wt				1											1		?											
			* Pyrrhotite x's Hex?			1					2	grn				1								Po tr			2		?											
1720						1					2	grn															3		?											
			1700-1800			1					2	wt				1								?			4		tr											
1730			blahed white,			1-2					2	wt				2											3		"											
			granular & looks			1					2	grn				1											3		"											
1740			more like LBT/WR			1					1																4		"											
			than Dozer			tr					2																2		"											
1750						1					2													?			1		?											
						tr					2																1		?											
1760						tr					2-3																1		?											
						tr					2																1		?											
1770						tr					2					1											2		1											
			Flow Bands			tr					1-2					2											1													
1780		Looks like LBT/WR or perhaps Dozer				tr					2					2											Tr													
						1					1					2											?		←			Coatam								
1790						1					1					tr											tr		1											
						1					1					0											1		tr											
1800				M-H		1					1					0											1		1											

* = Pyrargyrite

18 - 1900

Hecla MINING COMPANY
ROSEBUD PROJECT
DRILL LOG

INTENSITY
1 = WEAK
2 = MODERATE
3 = STRONG
or % by Vol

HOLE NUMBER RS489
PAGE 20 OF 21
DATE
LOGGED BY
TOTAL DEPTH

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA Wildrose South (N. Equinox) 20/21
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	15%	+25%	MATRIX %	CLASTS %	ARGILLIC 5%	15%	+25%	TYPE	CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	AS-SLF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOLYBDE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1800			1800 - 1900	H		1					1					1								Po ?		1		tr												
1810		LDT	Pale green to white	H		1					1					1										1		1													
			Fxln Rhyo...	VH		2					1					1								1		1		1													
1820			flow... occasec...			2					1					2								1		tr		tr													
			flow text but in			2					1					1								tr		1		tr													
1830			general is granular		w/	1					2													tr		4		1													
		LDT?	+ looks very much		Rhyolite	1					2															2		1													
1840			like Dozer		flow text	?					2															1		tr													
						tr					2-3					1								?		1		1													
		⇐	Stibnite several pieces			2-3					1					tr										1		1													
1850						3					tr					0										1		1?													
		LBT ?	* Pyro			2					2					0								?		Tr		2													
1860						2					1															3		1													
						1					2															1		1													
1870						2					1															2		1													
						2					1															1		1													
1880						2					1															1		1													
				H		1					2					0								?		2		?													
1890				S		1					2					tr								?		1		?													
1900				H		1					2					2								Po 2		1		?													

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

INTENSITY
1 = WEAK
2 = MODERATE
3 = STRONG
or % by Vol

HOLE NUMBER RS-489
PAGE 21 OF 21
DATE
LOGGED BY
TOTAL DEPTH 1915

LOCATION ROSEBUD, NV
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

AREA
DRILLING CO.
RIG TYPE
HOLE SIZE
DOWN HOLE SURVEY BY

21/21

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION: SILICIFICATION 5%	15%	+25%	MASSIVE	QUARTZ %	ARGILLIC 5%	15%	+25%	TYPE	PROPYLITIC % CHLORITE	CALCITE	POTASSIC % K-SPAR	ALUNITE	OXIDATION 5%	15%	+25%	VIENING %	TYPE	MINERALIZATION: SULFIDES 5%	15%	+25%	PY %	CPY %	MAR %	AC-SUL %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOISTURE	ANALYTICAL DATA: FROM	TO	W	Au	Ag
1900		Rhyolite pale green	Hard but prob not silicified	H	Fxls	2 or 3	?				1					2									Pyr		0		0												
10				H		2	?				1					2									Tr		0		0												
				H		2	?				1					2									tr		0		0												
	1915 TD																																								
20			1900-1915																																						
			Hard, pale green																																						
30			don't think it is																																						
			strongly silicified																																						
40			but hard to tell																																						
			No flow bands																																						
50			& certainly looks																																						
			like dozer																																						
60																																									
70																																									
80																																									
90																																									
00																																									

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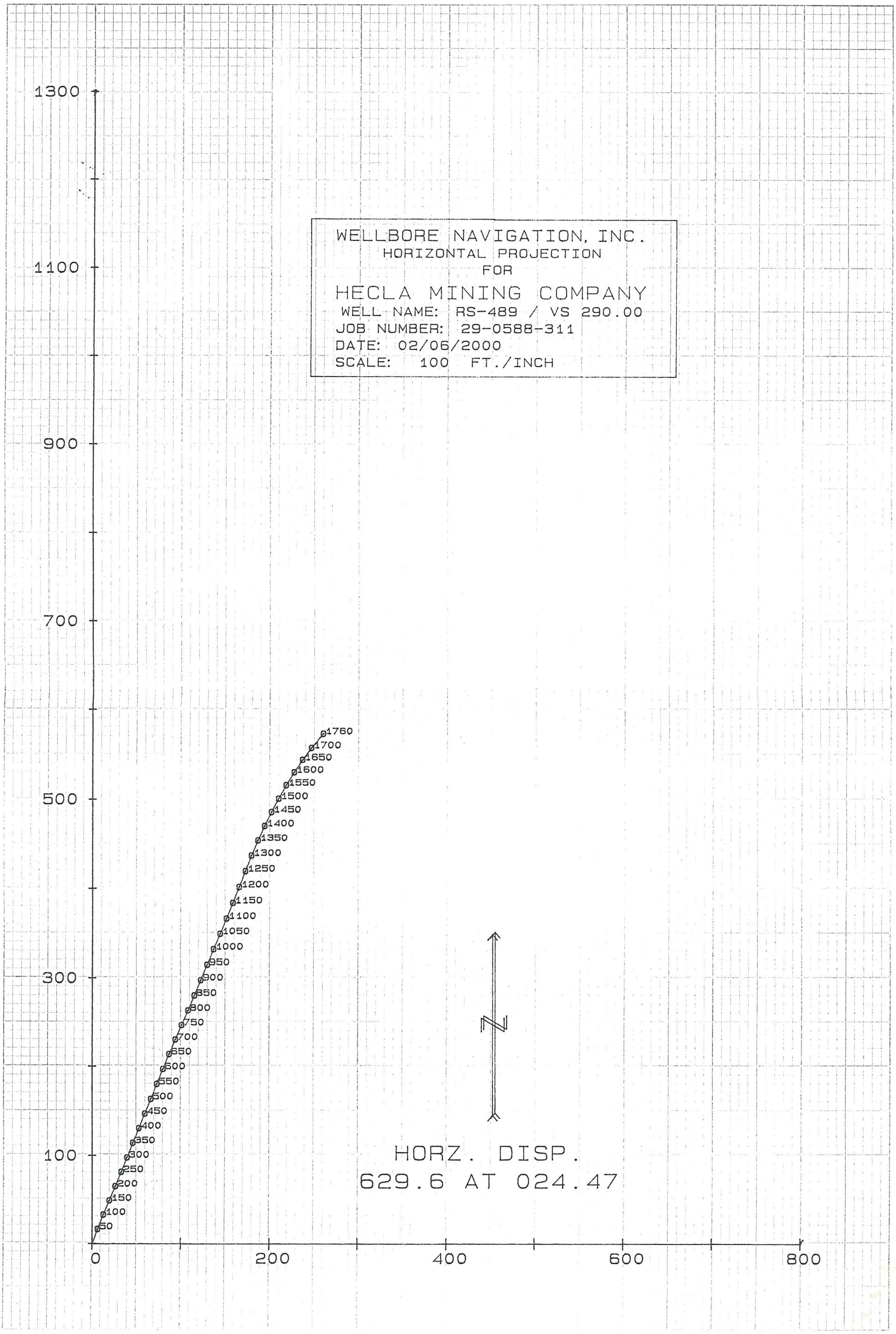
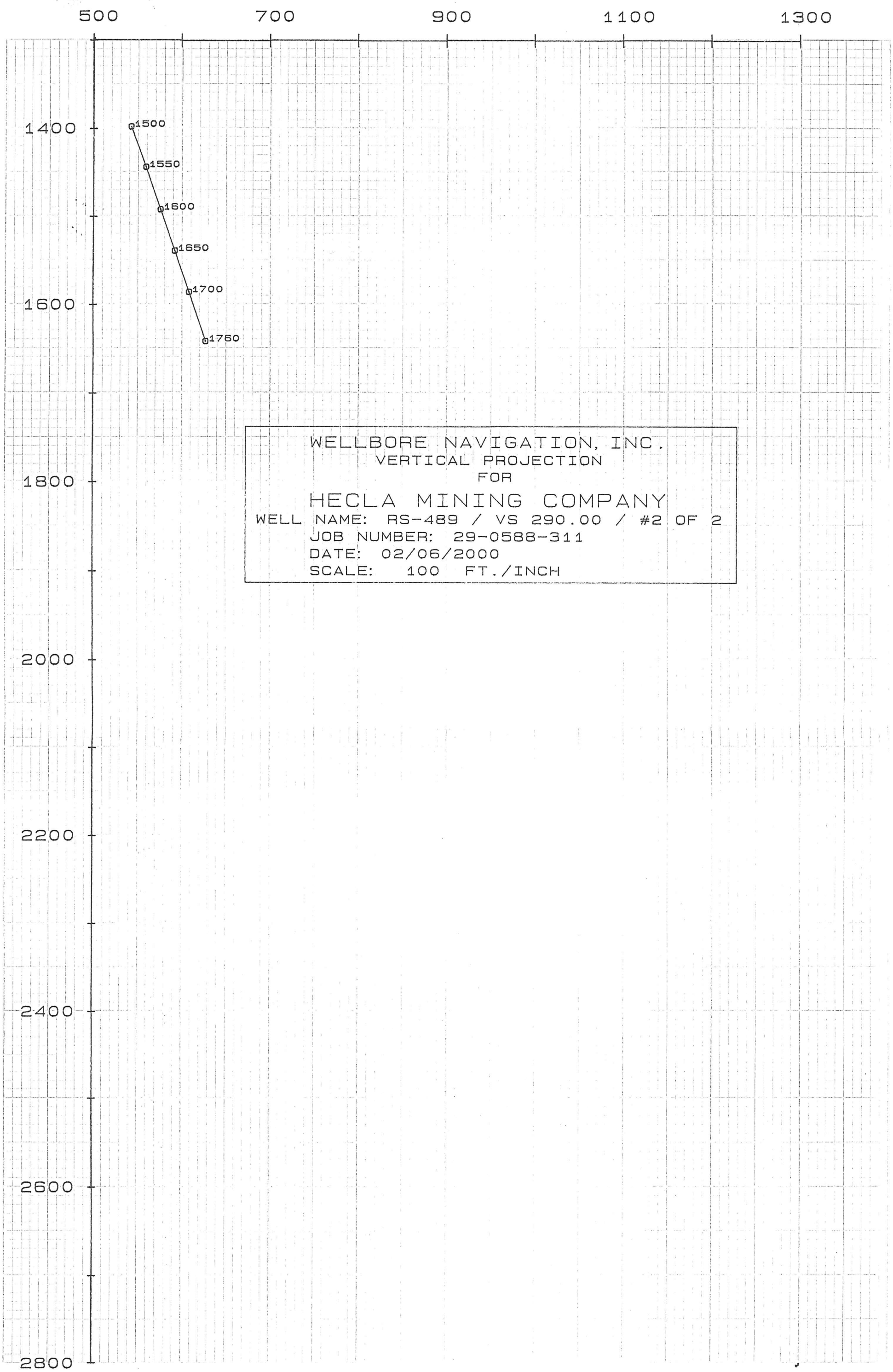
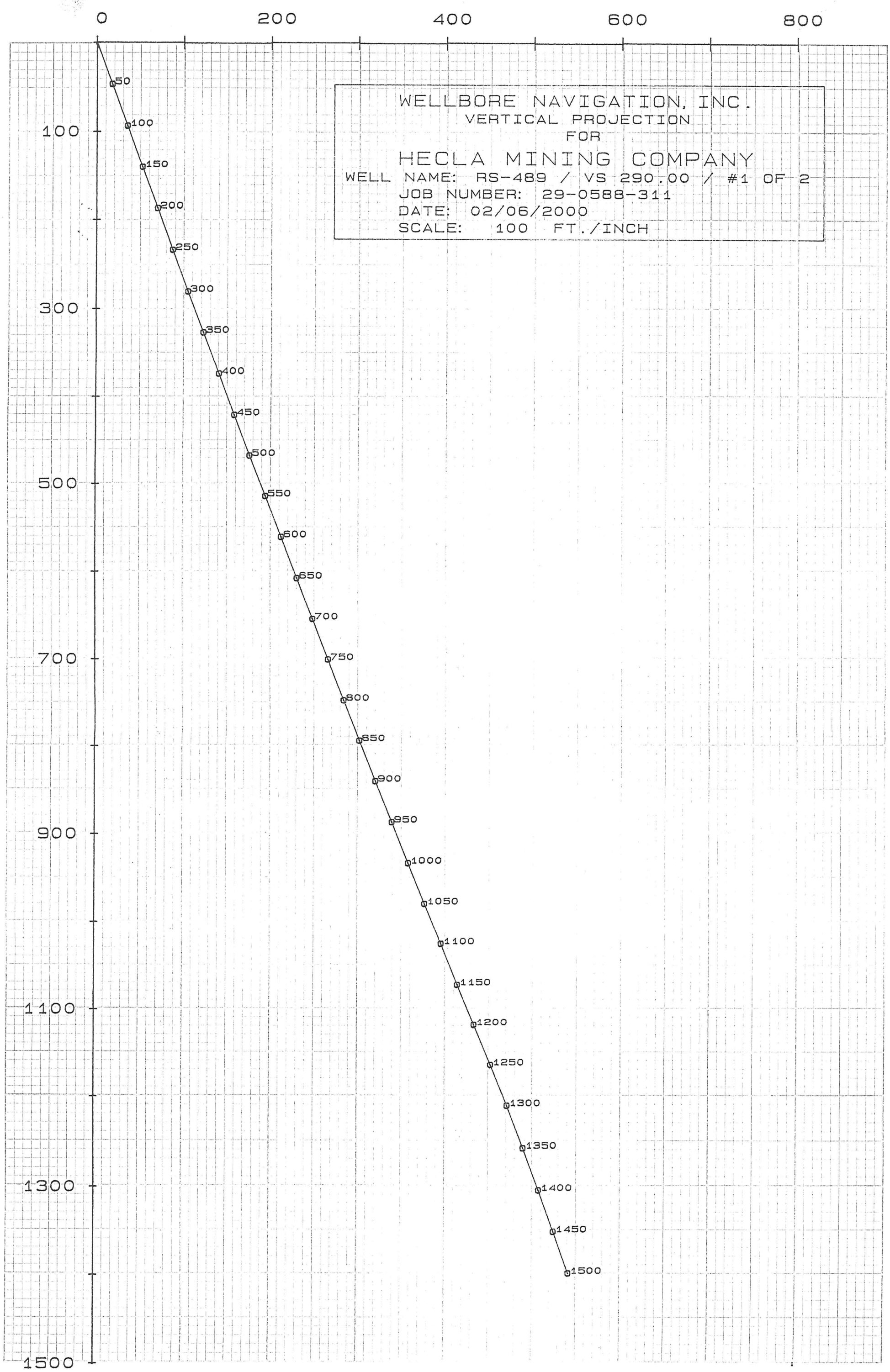
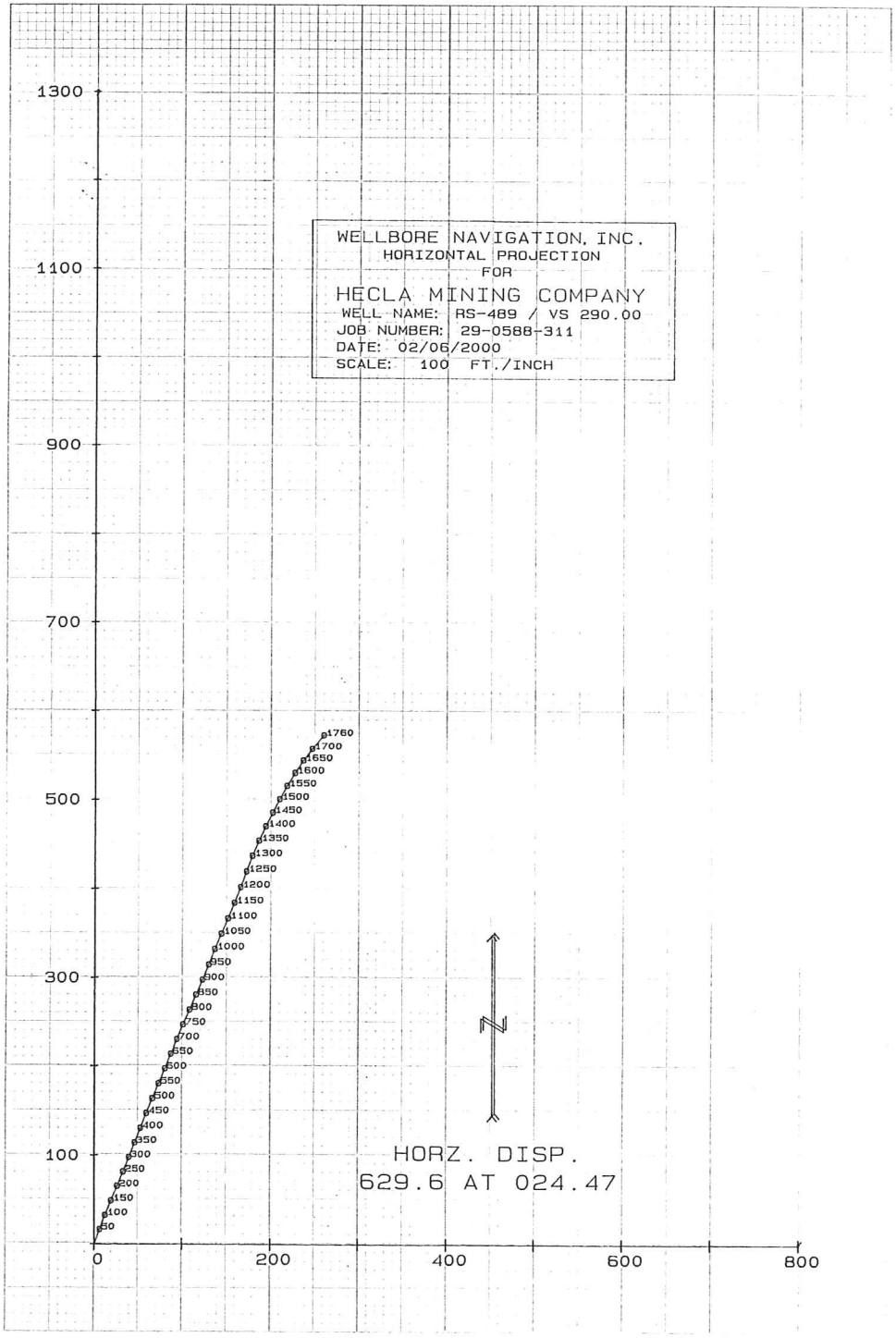


STARLIGHT PRINTING (801) 467-2841



STARLIGHT PRINTING (801) 467-2841




WELLBORE NAVIGATION, INC.
HORIZONTAL PROJECTION
FOR
HECLA MINING COMPANY
WELL NAME: RS-489 / VS 290.00
JOB NUMBER: 29-0588-311
DATE: 02/06/2000
SCALE: 100 FT./INCH
HORZ. DISP.
629.6 AT 024.47
N
1300
1100
900
700
500
300
100
0
200
400
600
800

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0588-311 WELL NAME: RS-489 / VS 290.00

INRUN SURVEY
BY MINIMUM CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	L/R PROP.	INCL HORZ	BEARING AZIMUTH	COORDINATES LATITUDE	COORDINATES DEPARTURE	D-LEG /100	D-LEG /CL	STATION DISP.	DISPLACEMENT DIRECTION
1760.0	1642.55	627.69	49.043	-69.97	041.24	573.06 N	260.77 E	2.22	0.22	629.60	AT 024.47

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*  1760.0 FEET EQUALS      629.60   FEET AT   024.47        *
*                          ********                         *
*************************************************************
```

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0588-311

WELL NAME: RS-489 / VS 290.00

INRUN SURVEY
BY MINIMUM CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	L/R PROP.	INCL HORZ	BEARING AZIMUTH	COORDINATES LATITUDE	COORDINATES DEPARTURE	D-LEG /100	D-LEG /CL	STATION DISPLACEMENT DISP.	STATION DISPLACEMENT DIRECTION
0.0	0.00	0.00	0.000	-69.48	019.88	0.00 N	0.00 E	0.00		0.00	AT 000.00
50.0	46.82	17.55	0.129	-69.43	020.96	16.44 N	6.12 E	0.76	0.38	17.55	AT 020.42
100.0	93.68	34.98	0.593	-69.74	022.10	32.67 N	12.52 E	1.01	0.50	34.98	AT 020.97
150.0	140.54	52.41	1.323	-69.43	022.69	48.79 N	19.17 E	0.74	0.37	52.42	AT 021.45
200.0	187.34	69.98	2.167	-69.37	022.81	65.02 N	25.97 E	0.15	0.07	70.01	AT 021.77
250.0	234.15	87.53	2.907	-69.49	022.02	81.26 N	32.67 E	0.60	0.30	87.58	AT 021.90
300.0	280.94	105.16	3.556	-69.18	022.19	97.60 N	39.31 E	0.63	0.32	105.22	AT 021.94
350.0	327.66	122.96	4.219	-69.09	022.08	114.10 N	46.02 E	0.20	0.10	123.03	AT 021.97
400.0	374.36	140.80	4.911	-69.06	022.36	130.63 N	52.77 E	0.21	0.10	140.89	AT 022.00
450.0	421.08	158.61	5.632	-69.17	022.28	147.12 N	59.54 E	0.23	0.11	158.71	AT 022.03
500.0	467.79	176.43	6.303	-69.05	022.03	163.63 N	66.26 E	0.30	0.15	176.54	AT 022.05
550.0	514.42	194.47	6.999	-68.62	022.39	180.35 N	73.09 E	0.90	0.45	194.59	AT 022.06
600.0	561.00	212.62	7.787	-68.77	022.58	197.13 N	80.04 E	0.33	0.17	212.76	AT 022.10
650.0	607.63	230.65	8.666	-68.89	023.00	213.78 N	87.03 E	0.39	0.19	230.81	AT 022.15
700.0	654.30	248.54	9.627	-69.11	023.15	230.26 N	94.05 E	0.45	0.23	248.73	AT 022.22
750.0	700.97	266.48	10.671	-68.78	023.51	246.76 N	101.17 E	0.71	0.35	266.69	AT 022.29
800.0	747.56	284.59	11.707	-68.68	023.04	263.42 N	108.33 E	0.40	0.20	284.83	AT 022.36
850.0	794.08	302.88	12.673	-68.34	023.01	280.28 N	115.50 E	0.68	0.34	303.14	AT 022.40
900.0	840.52	321.39	13.666	-68.12	023.13	297.34 N	122.77 E	0.45	0.22	321.68	AT 022.43
950.0	886.86	340.13	14.607	-67.80	022.62	314.62 N	130.06 E	0.75	0.37	340.45	AT 022.46
1000.0	933.21	358.89	15.455	-68.09	022.56	331.96 N	137.27 E	0.58	0.29	359.22	AT 022.47
1050.0	979.56	377.60	16.409	-67.89	023.27	349.22 N	144.57 E	0.67	0.33	377.96	AT 022.49
1100.0	1025.92	396.31	17.336	-68.11	022.40	366.48 N	151.84 E	0.79	0.39	396.69	AT 022.50
1150.0	1072.23	415.16	18.134	-67.56	022.45	383.92 N	159.03 E	1.10	0.55	415.55	AT 022.50
1200.0	1118.42	434.28	18.837	-67.43	021.76	401.65 N	166.23 E	0.59	0.29	434.69	AT 022.48
1250.0	1164.59	453.45	19.279	-67.46	020.88	419.51 N	173.21 E	0.68	0.34	453.86	AT 022.43
1300.0	1210.87	472.39	19.761	-68.01	022.05	437.14 N	180.14 E	1.41	0.71	472.80	AT 022.40
1350.0	1257.31	490.88	20.768	-68.52	024.21	454.17 N	187.40 E	1.90	0.95	491.32	AT 022.42
1400.0	1304.03	508.62	22.269	-69.76	025.50	470.33 N	194.88 E	2.64	1.32	509.10	AT 022.51
1450.0	1351.02	525.59	24.164	-70.28	027.26	485.63 N	202.47 E	1.59	0.79	526.15	AT 022.63
1500.0	1398.02	542.51	26.471	-69.79	028.26	500.74 N	210.42 E	1.19	0.60	543.15	AT 022.79
1550.0	1444.98	559.43	29.313	-70.06	030.83	515.67 N	218.88 E	1.84	0.92	560.20	AT 023.00
1600.0	1492.01	576.05	32.774	-70.24	032.70	530.10 N	227.82 E	1.32	0.66	576.98	AT 023.26
1650.0	1539.06	592.48	36.837	-70.18	035.08	544.15 N	237.26 E	1.62	0.81	593.62	AT 023.56
1700.0	1586.11	608.64	41.852	-70.23	039.40	557.62 N	247.50 E	2.93	1.46	610.08	AT 023.93
1750.0	1633.15	624.51	47.795	-70.14	041.66	570.50 N	258.51 E	1.54	0.77	626.34	AT 024.38

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* HECLA MINING COMPANY *
****

JOB NUMBER: 29-0588-311

WELL NAME: RS-489 / VS 290.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 02/06/2000

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 020.00

N. 2,212,510
E 478 620
El 6045

****
****** DEPTH MEASURED IN FEET *******
****

COMMENTS: **** EKLUND ****
** DON SCHOORL **

****
****
*** THIS DIRECTIONAL SURVEY REPORT IS ****
** CORRECT TO THE BEST OF MY KNOWLEDGE ***
* AND IS SUPPORTED BY ACTUAL FIELD DATA! *
**
**
** ********** **
** COMPANY REPRESENTATIVE **
****
****

SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

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Box 11530
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Elko, NV 89801
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(702) 738-9100
Fax
(702) 738-2594

Zacatecas Office
Telephone/Fax
011-52-49-234530

Other Offices
Lima, Peru
Santiago, Chile
Mendoza, Argentina

Company: Rosebud Mining, LLC

Address: PO Box 2610

City Winnemucca State NV Zip 89446

Telephone Number: (775) 623-6912 Fax Number: (775) 623-6967

Project Name: North Equinox Purchase Order Number:

Date Submitted: 9 Feb 2000 Number of Samples: 383

RESULTS REPORTED IN: ppm [ ] ppb [✓] opt [✓]

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
RS-489 0 to 1915	RC	Au & Ag – Use Rosebud
		exploration protocol for
		sample prep & assays
NOTE: Please make up 20 foot composits of the		
sample pulps for		ICP + Se Trace elements.
1 (one) pulp – Rosebud production		
standard at end of run		

COARSE REJECTS (Normally Discarded After 60 Days)

[ ] Return COD after analysis complete

PULPS (Normally Stored Free For One Month)

[ ] Discard after one month

[✓] Return COD after one month

RESULTS AND INVOICES TO BE SENT TO:

Invoice to:

Kurt Allen
PO Box 2610
Winnemucca NV 89446

Results to:

Kurt Allen
Same

Comments:

Please Rush these samples.

CLIENT FILE COPY

AMERICAN ASSAY LABORATORIES
1500 GLENDALE AVE.
SPARKS, NV 89431
PHONE: (775) 356-0606
FAX: (775) 356-1413

CLIENT: *HECLA MINING CO.*
CLIENT REF: KURT ALLEN
AAL REF: Sp56013
METHOD: AAL03-0

ELEMENT / SAMPLES	Ag ppb	Al %	As ppm	Au ppb	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppb	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	S %	Sb ppm	Se ppm	Sr ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
RS-489 0000-0020	58	0.6	16	3.3	9	41.1	0.23	0.17	0.3	0.5	7.2	17.05	1.91	3.4	464	0.07	22.1	0.06	127	2.03	0.077	3.6	0.008	20.23	0.08	7.94	0.5	29.8	< .02	10.6	0.008	0.03	2.1	25	0.6	28.1
RS-489 0020-0040	51	0.4	7.3	1.8	< 1	63.8	0.07	0.43	0.21	0.8	6.5	14.11	1.76	2.8	325	0.05	23.6	0.02	138	2.07	0.017	4.1	0.016	22.07	0.05	8.17	0.3	22.4	< .02	13.4	0.013	0.03	4.6	26	1.3	49.3
RS-489 0040-0060	54	0.46	5.2	0.9	< 1	100.5	0.06	0.88	0.36	1	9.6	11.86	1.95	3.1	184	0.13	27.3	0.03	319	2.34	0.02	4.9	0.02	25.31	0.06	6.19	0.4	24.9	< .02	13.4	0.018	0.08	3.6	18	1.5	88.9
RS-489 0060-0080	171	0.59	7.7	1.3	< 1	69.8	0.05	0.37	0.26	1.3	6.2	17.35	1.88	3.9	614	0.17	30.8	0.02	312	2.03	0.019	3.9	0.015	62.39	0.02	6.03	0.3	13.9	< .02	14.5	0.015	0.08	3.3	10	1.3	147.8
RS-489 0080-0100	73	0.61	12.8	1.1	< 1	49.9	1.06	0.11	0.14	0.3	6.7	10.6	1.76	3.4	577	0.15	26.8	0.01	151	1.47	0.016	3.5	0.013	22.29	0.01	6.34	0.6	28.2	< .02	13.9	0.004	0.08	3	10	0.5	73.8
RS-489 0100-0120	171	0.67	29.1	7.8	< 1	143.5	0.13	0.07	0.09	0.1	6.8	10.98	1.61	2.9	1068	0.12	18.1	0.01	122	2.08	0.008	3.8	0.014	16.39	0.1	16.06	1	59.6	< .02	10	0.002	0.02	1.9	8	2.6	33.4
RS-489 0120-0140	72	0.61	12.4	2.3	< 1	71.7	0.03	0.08	0.02	< .1	3.7	8.13	1.46	3.2	429	0.23	24.3	0.01	63	1.28	0.009	2.1	0.017	18.65	0.24	9	0.7	50.6	< .02	14.3	0.001	0.06	2.8	8	0.3	22.8
RS-489 0140-0160	86	0.6	22.8	11.1	< 1	107.4	0.04	0.18	0.03	< .1	5.9	9.58	2.17	3.4	540	0.24	21.5	0.01	69	1.97	0.012	2.7	0.012	17.81	0.26	14.12	2.2	35.6	< .02	13.8	0.001	0.07	4.1	7	0.4	23.6
RS-489 0160-0180	78	0.36	9.9	4.2	< 1	64.7	0.05	0.05	0.1	< .1	4.9	7.33	1.87	3.8	638	0.11	26.9	0.01	38	1.21	0.008	2	0.007	17.89	0.05	9.48	0.9	16	< .02	14.2	0.001	0.07	2.8	7	0.3	9.4
RS-489 0180-0200	60	0.48	25.2	17.3	< 1	141.3	0.04	0.05	0.18	1.7	7.5	14.32	1.72	3.3	972	0.07	20.4	0.01	69	2.4	0.006	3	0.008	24.65	0.07	14.07	2.6	34.7	< .02	10.6	0.001	0.18	15.9	9	0.6	31.9
RS-489 0200-0220	138	0.74	107.9	48.8	< 1	118	0.03	0.06	0.03	0.2	10.8	21.32	2.46	5.8	1316	0.15	18.4	0.01	133	6.2	0.016	4.9	0.007	20.73	0.06	23.28	2.4	19.8	< .02	12.1	0.002	0.18	3.3	8	0.4	13.1
RS-489 0220-0240	391	1.3	84.1	40.2	< 1	115	0.04	0.06	0.07	0.2	10.8	26.89	2.62	6.6	1745	0.21	20.6	0.01	134	6.61	0.016	5.4	0.019	17.75	0.2	27.8	2.9	41.6	< .02	11.5	0.002	0.22	3	7	0.6	20.5
RS-489 0240-0260	385	1.09	33.1	52.9	< 1	122.2	0.04	0.02	0.06	0.1	8	26.14	2.4	6.9	944	0.22	20.5	0.01	128	4.23	0.018	4.6	0.01	16.56	0.14	22.41	3.9	22	< .02	11	0.002	0.15	2	5	0.6	17.1
RS-489 0260-0280	131	0.93	14.3	13.7	< 1	99.8	0.04	0.01	0.05	< .1	5.1	17.81	1.94	5.4	111	0.14	23	0.01	51	2.49	0.005	2.3	0.013	19.56	0.17	16.6	1.4	14.9	< .02	11.8	0.001	0.06	1.5	3	0.3	15.3
RS-489 0280-0300	330	0.93	28.2	55.4	< 1	165	0.03	0.01	0.08	< .1	6.7	28.86	2.35	6.2	3893	0.31	23.1	0.01	89	2.73	0.015	3.4	0.013	32.54	0.36	16.5	4	15.9	< .02	11.9	0.001	0.13	1.3	4	0.3	29.7
RS-489 0300-0320	516	0.98	72.1	56.6	< 1	90.3	0.04	0.02	0.13	1.1	9.9	41.99	2.6	6.3	1815	0.2	19.6	0.01	144	4.07	0.01	5.5	0.013	18.41	1.12	21.27	2.7	15.7	< .02	9.7	0.002	0.31	1.8	6	0.9	37.1
RS-489 0320-0340	462	1.29	26.4	35.9	< 1	29.8	0.03	0.02	0.05	0.4	10	35.62	2.16	6.2	1702	0.16	18	< .01	130	3.01	0.004	5.1	0.01	18.13	0.43	14.6	2.6	12.3	< .02	8.7	0.002	0.13	1.1	6	0.7	23
RS-489 0340-0360	285	0.9	21.1	79.6	< 1	100.2	< .02	0.01	0.04	0.4	8.6	30.46	2.1	4.3	1244	0.25	20.7	< .01	130	2.74	0.007	4.5	0.013	13.69	0.73	14.41	7.2	10.2	< .02	10.2	0.001	0.22	1.3	6	0.7	20.4
RS-489 0360-0380	287	0.78	24.9	65.1	< 1	153.2	0.02	0.01	0.03	0.2	6.9	13.17	2.12	3.8	536	0.18	21.3	< .01	107	2.43	0.005	3.4	0.011	12.91	0.46	23.38	5.6	7	< .02	10.8	0.001	0.13	1.1	5	0.7	13.9
RS-489 0380-0400	673	1.2	36.6	40.1	< 1	72.5	0.02	0.01	0.1	2.4	13.1	50.26	2.77	4.7	2067	0.12	18.1	< .01	161	4.45	0.005	6.5	0.009	15.29	1.48	19.65	3.3	6.7	< .02	9	0.002	0.27	6.8	6	1.7	41.4
RS-489 0400-0420	266	1.6	26.6	18.5	< 1	105.6	< .02	0.01	0.04	0.8	12.5	46.11	3.31	6	733	0.25	19.4	< .01	166	4.69	0.005	6	0.011	14.43	0.8	12.78	1.5	7.8	< .02	10.1	0.002	0.11	1.6	6	1.6	33.3
RS-489 0420-0440	214	1.17	23.1	55.5	< 1	274.8	0.02	0.01	0.08	< .1	7.3	37.84	4.6	6.2	92	0.28	21.9	0.01	112	3.87	0.009	3.4	0.019	17.35	0.28	11.14	3.6	23.3	< .02	12.9	0.002	0.13	1.2	5	0.5	42.7
RS-489 0440-0460	263	1	69	48.1	< 1	167.6	0.02	0.02	0.02	0.1	9.4	41.45	2.92	5.8	686	0.23	20.7	0.01	1073	4.46	0.02	4.9	0.019	11.6	0.25	44.36	3.1	24.6	< .02	12.5	0.002	2.03	1.4	5	3.7	88.8
RS-489 0460-0480	466	0.93	69.3	66.6	1	127.3	0.03	0.02	0.09	0.7	10.1	43.37	3.06	5.3	2301	0.18	19.4	0.01	628	4.46	0.016	5.8	0.015	14.2	0.65	42.11	4.4	17.2	< .02	11	0.002	1.04	1.2	6	3.3	74.3
RS-489 0480-0500	348	1.23	42	34.6	3	130.7	0.04	0.02	0.17	1	8.8	44.17	2.48	6.4	7014	0.18	22.3	0.01	136	2.76	0.018	4.4	0.012	26.16	1.49	18.14	5.6	14.9	< .02	11.8	0.002	0.3	1.5	5	1	42.1
RS-489 0500-0520	131	1.31	11.8	23.1	1	96.1	0.03	0.01	0.24	4	5.9	43.14	1.93	5.3	793	0.16	23.2	0.01	68	2.31	0.011	3.8	0.007	16.47	2.28	12.19	3.7	10.5	< .02	11.7	0.001	0.49	4.7	3	0.5	81
RS-489 0520-0540	129	1.29	13	24.6	1	89.4	0.03	0.02	0.31	2.3	5.6	46.59	1.78	4.7	1015	0.16	21.5	0.01	84	2.18	0.016	4.1	0.007	16.9	1.74	10.99	3.2	9.5	< .02	10.9	0.002	0.36	5.4	4	0.7	115.6
RS-489 0540-0560	348	1.16	42	65.5	1	67.7	0.04	0.03	0.4	2.7	24.5	52.29	2.35	5.2	1980	0.17	20.6	0.01	113	3.72	0.018	6.1	0.007	18.61	2.06	15.9	2.1	15.4	< .02	10.2	0.002	0.41	9.1	6	1.6	97.9
RS-489 0560-0580	244	1.05	25	45	< 1	70.7	0.03	0.04	0.23	2.8	11.5	50.1	2.48	4.5	1345	0.17	23.3	0.01	152	3.89	0.02	6.4	0.007	30.79	1.84	14.64	3.6	9.6	< .02	11.6	0.003	0.47	4.4	6	1	89
RS-489 0580-0600	96	0.88	8.1	8.9	1	67.7	< .02	0.02	0.1	2.1	4.2	9.83	1.79	3.1	379	0.16	22.2	0.01	71	1.97	0.019	2.6	0.008	26.85	1.66	7.82	2.2	6.3	< .02	10.7	0.001	0.26	3.1	3	0.5	69.9
RS-489 0600-0620	136	1.09	20.2	46.3	< 1	74.5	0.03	0.01	0.26	3.1	7	16.03	2.49	3.6	368	0.17	20.7	0.01	93	3.3	0.018	3.9	0.008	27.13	2.31	13.21	7	11.6	< .02	10.1	0.002	0.67	3.7	4	0.9	73
RS-489 0620-0640	531	1.56	30.5	145.3	1	62.7	0.02	0.02	1.36	3.1	11.2	21	2.38	4.8	893	0.07	17.7	0.01	123	3.73	0.008	4.8	0.007	27.31	1.89	17.21	7.9	14.8	< .02	8.6	0.001	0.71	4.5	5	1.1	86.2
RS-489 0640-0660	174	1.15	11.8	24.7	< 1	82	0.03	0.01	0.36	2.4	5.8	11.97	1.65	3.4	500	0.13	20.4	0.01	106	2.31	0.012	2.8	0.008	32.9	1.44	10.41	2.1	11.5	< .02	10	0.002	0.36	2.5	3	0.5	53.4
STANDARD DS2	227	1.8	58.2	201.3	< 1	165.5	11.17	0.56	10.9	12.1	163.1	132.68	3.14	6.5	238	0.17	17.3	0.63	871	14.84	0.032	36.7	0.096	32.5	0.03	9.8	2.3	29.1	1.9	3.8	0.097	1.84	19.5	77	6.6	169.4
RS-489 0660-0680	97	1.08	4.6	5.9	5	110.3	0.02	0.02	0.08	0.7	5.8	9.68	1.53	3.9	185	0.18	24	0.01	118	2.58	0.019	2	0.01	20.43	0.21	5.36	0.7	11.3	< .02	11.8	0.022	0.13	1.6	5	1.3	28.6

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CLIENT: *HECLA MINING CO.*
CLIENT REF: KURT ALLEN
AAL REF: Sp56013
METHOD: AAL03-0

ELEMENT SAMPLES	Ag ppb	Al %	As ppm	Au ppb	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppb	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	S %	Sb ppm	Se ppm	Sr ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
RS-489 0680-0700	228	1.28	12.8	37.6	4	76.7	0.02	0.02	0.41	2.8	5.9	10.28	1.7	4	497	0.17	18.9	0.01	90	2.31	0.016	2.6	0.005	14.31	0.85	9.62	3.5	6.2	< .02	9.1	0.012	0.39	2.3	4	1	95.1
RS-489 0700-0720	333	1.04	39.4	54	3	73.3	0.03	0.01	0.45	3.1	15.5	34.29	3.25	3.7	1882	0.18	16.3	< .01	187	5.87	0.019	7.3	0.005	32.98	1.81	17.41	5.9	7.3	< .02	8.5	0.003	0.56	3.2	6	1	97.6
RS-489 0720-0740	165	0.6	20.7	27.6	1	67.7	0.02	0.01	0.26	3.1	10.3	23.64	2.43	2.1	998	0.11	18	< .01	158	4.01	0.014	6.3	0.004	13.63	1.63	10.24	5.2	4.8	< .02	9	0.002	0.3	2.4	6	0.8	67.5
RS-489 0740-0760	161	0.86	25.7	27.9	2	52.6	< .02	0.01	0.18	1.7	9.2	17.24	2.41	2.8	1022	0.11	20.7	< .01	120	3.36	0.01	4.5	0.005	16.79	1.72	12.84	4.2	6.6	< .02	9.2	0.002	0.35	2	5	0.7	47.4
RS-489 0760-0780	179	0.82	32.7	26.3	1	63.6	< .02	0.01	0.18	2.1	10.1	21.14	2.59	2.5	2271	0.11	17.6	< .01	135	4.2	0.01	5.1	0.004	15.7	1.7	14.82	3.3	5.3	< .02	8.2	0.002	0.38	2.7	5	0.8	85.5
RS-489 0780-0800	196	0.96	8.7	68.9	1	62.4	< .02	0.01	0.28	3.6	6.8	12.22	2.23	2.6	682	0.13	18.1	< .01	83	2.6	0.008	3.2	0.005	11.97	1.97	14.22	5.8	8.9	< .02	8.1	0.002	0.56	3.1	3	0.3	73.7
RS-489 0800-0820	118	1.04	17.2	34.7	< 1	49.4	< .02	0.01	0.27	2.9	7.9	16.9	2.46	2.9	1226	0.13	14.8	< .01	135	3.16	0.011	4.6	0.004	12.44	1.77	14.52	4.7	8.3	< .02	7.4	0.002	0.88	2.7	5	0.4	52.9
RS-489 0820-0840	556	0.72	39.1	95.9	< 1	57.3	< .02	0.01	1.1	3.8	16	23.29	2.83	2.2	1301	0.17	18.6	< .01	137	4.47	0.012	5.9	0.005	19.37	2.06	21.18	5.3	12.3	< .02	8.6	0.002	0.59	4.4	5	0.6	52.5
RS-489 0840-0860	334	0.55	26	45.2	< 1	36.8	0.03	0.01	0.36	3.6	11.3	31.51	2.76	1.8	1311	0.1	15.4	< .01	168	5.28	0.007	6.8	0.004	15.96	1.7	19.9	3.4	9.6	< .02	7.7	0.002	0.54	1.5	6	0.5	76.4
RS-489 0860-0880	608	0.67	37.3	77	< 1	32.3	0.02	0.01	0.46	3.9	13.7	28.9	3.42	2.1	1670	0.08	15.6	< .01	191	5.2	0.005	8.7	0.008	16.3	2.22	27.11	5.8	26.5	< .02	6.9	0.002	0.84	1.1	7	0.6	84
RS-489 0880-0900	482	0.65	68.4	32.1	1	111.6	0.05	0.03	0.24	1.9	13.9	33.33	2.86	2.3	2128	0.13	16.7	0.01	181	6.47	0.011	7	0.007	16.22	1.63	26.07	2.6	23.7	< .02	7.1	0.002	0.74	1.2	6	0.6	83.8
RS-489 0900-0920	154	1.71	4.3	4.9	< 1	577.2	0.24	2.54	1.09	2.6	5.3	5.27	1.73	4.5	261	0.23	29.1	0.23	1525	0.56	0.056	1.6	0.047	21.84	0.11	1.43	0.6	583.1	0.05	4.7	0.002	0.14	1	6	< .2	126.5
RS-489 0920-0940	109	1.68	1.4	0.7	< 1	117.1	0.19	2.7	0.8	6.1	5.3	8.02	2.13	5	109	0.25	20.3	0.27	1635	0.96	0.036	2.5	0.046	14.22	0.04	0.36	0.3	211.9	0.03	4.4	0.002	0.11	0.8	9	< .2	77
RS-489 0940-0960	89	1.41	2.9	1.5	< 1	196.5	0.22	1.81	0.44	1.5	7.2	15.47	2.68	4.5	116	0.26	27.7	0.21	970	2.69	0.038	3.8	0.042	15.6	0.02	0.51	0.4	186	0.02	6.6	0.003	0.09	1.7	6	0.2	46.5
RS-489 0960-0980	80	1.42	3	1.2	1	178.6	0.22	1.76	0.29	1.1	7.5	13.46	2.15	4.1	120	0.29	30.2	0.18	839	2.28	0.036	3.3	0.04	15.21	0.02	0.75	0.3	200.9	0.02	7.2	0.002	0.1	1.7	4	< .2	36.2
RS-489 0980-1000	70	1.6	1.6	1.1	1	135.3	0.19	1.64	0.24	1.4	6.6	7.63	2.14	4.6	68	0.36	26.8	0.23	798	1.49	0.031	1.8	0.041	16.2	0.01	0.51	0.1	169.6	0.02	6.9	0.004	0.11	1.3	7	< .2	49
RS-489 1000-1020	79	1.6	1.5	1.1	1	234	0.24	2.12	0.28	1.6	3.4	5.83	1.8	5	56	0.33	29	0.21	832	1.11	0.027	1.6	0.04	22.06	0.03	0.49	0.2	155.8	0.02	6.7	0.003	0.1	1	5	< .2	61.9
RS-489 1020-1040	92	1.39	2.2	1.4	< 1	259.8	0.17	3.85	0.36	1.9	4.4	6.45	1.71	4.7	82	0.25	28.8	0.16	1424	0.95	0.022	2.1	0.052	24.38	0.04	0.94	0.2	205.9	0.02	4.7	0.013	0.08	1.2	8	< .2	84.6
RS-489 1040-1060	106	0.89	4.4	3.1	1	212.8	0.23	2.69	0.28	2.3	5.2	5.62	1.65	3.6	242	0.23	26.8	0.09	1425	1.12	0.019	1.6	0.054	19.03	0.82	2.15	0.7	156.4	0.02	4.6	0.005	0.19	1	5	< .2	77.6
RS-489 1060-1080	11902	0.98	61.7	131.2	1	54.4	0.21	0.28	0.18	2.2	7.4	23.41	3.89	3.6	495	0.21	18.1	0.03	220	4.4	0.01	4.2	0.049	21.03	4.04	29.16	17.1	37.6	< .02	4.5	0.002	1.07	0.9	4	0.3	73.3
RS-489 1080-1100	2000	1.11	41	89	1	49.8	0.08	0.31	0.18	2.3	7.6	13.23	3.47	4.1	459	0.27	21.3	0.04	368	3.2	0.017	2.6	0.048	20.73	4.22	20.41	10.2	46.2	< .02	6.3	0.001	0.72	1	3	0.4	83.1
RS-489 1100-1120	803	1.37	21.5	50	1	67	0.04	0.49	0.2	2.9	5.4	12.66	3.37	5	684	0.32	21	0.05	1672	3.31	0.017	2.3	0.059	22.76	3.11	16.93	4.9	47.7	< .02	6.7	0.002	0.59	0.9	4	0.4	98.3
RS-489 1120-1140	216	1.47	3.2	2.1	< 1	424.6	0.36	1.86	0.24	1.8	7.7	6.96	2.3	5	104	0.3	29.2	0.09	993	1.25	0.021	1.7	0.056	19.65	0.23	1.81	0.2	164.1	< .02	7.3	0.008	0.09	2.3	5	0.3	59.4
RS-489 1140-1160	86	1.64	1.2	3	< 1	54.7	0.19	2.12	0.14	2.2	4.4	2.48	1.89	5.3	29	0.17	26.8	0.26	940	0.69	0.043	1	0.053	14.42	< .01	0.27	< .1	243.5	0.02	4.2	0.002	0.03	1	2	< .2	72.2
RS-489 1160-1180	73	1.44	1	1.4	< 1	63.6	0.27	1.66	0.22	2.1	4	2.99	1.93	5.6	30	0.22	30.2	0.19	645	0.6	0.052	1.1	0.055	16.34	< .01	0.27	< .1	189.6	< .02	4.1	0.005	0.05	0.8	3	< .2	71.9
RS-489 1180-1200	129	1.51	2.3	2	1	660.6	0.17	1.85	0.43	2.6	6.2	6.56	2.04	5.4	52	0.3	27.8	0.23	1037	1.54	0.046	2.2	0.053	14.21	0.08	0.51	0.2	194.1	0.02	5.5	0.004	0.1	1.5	6	< .2	87.3
RS-489 1200-1220	154	1.31	1	0.8	1	116.8	0.32	1.73	0.3	2.9	6.3	7.84	2.01	4.7	31	0.32	31.2	0.24	962	1.68	0.049	3.3	0.056	12.04	< .01	0.26	0.1	181.6	0.02	5.5	0.003	0.08	0.6	8	< .2	72
RS-489 1220-1240	72	0.86	1.2	0.7	1	187.4	0.16	0.96	0.15	1.8	5.6	8.23	1.71	3.2	20	0.36	29.8	0.12	526	1.72	0.042	2.8	0.056	9.86	0.01	0.52	< .1	125.5	< .02	5.1	0.005	0.1	0.7	8	< .2	57.6
RS-489 1240-1260	90	0.89	1.6	0.6	1	93.6	0.22	1.18	0.21	1.6	6.2	9.89	1.8	3.4	26	0.38	30	0.11	544	1.85	0.043	3.4	0.05	14.57	0.01	0.4	< .1	126	< .02	5	0.004	0.11	0.7	6	< .2	51.7
RS-489 1260-1280	194	1.25	3.2	3.2	1	679.4	0.28	1.74	0.3	2.2	5.8	6.09	1.57	3.9	82	0.32	31	0.15	846	1.24	0.036	2.6	0.047	15.46	0.14	0.93	0.4	186	0.02	5.4	0.003	0.14	1.4	4	< .2	98.4
RS-489 1280-1300	179	1.32	3.4	1.1	1	684.3	0.32	1.86	0.29	2.1	4.7	6.98	1.6	3.9	66	0.33	31.4	0.14	1036	1.1	0.025	2.1	0.043	20.04	0.16	0.73	0.3	217.9	0.02	4.4	0.001	0.13	1.3	3	< .2	98.9
RS-489 1300-1320	96	0.85	2.9	0.7	1	429.3	0.21	2.28	0.21	1.6	5.2	7.6	1.61	2.7	168	0.36	27.7	0.07	1622	1.66	0.019	2.2	0.045	16.86	0.33	1.48	0.2	151.6	< .02	5.1	0.003	0.2	1.6	4	0.4	84.5
STANDARD DS2	229	1.74	57.6	212	2	148.8	11.71	0.54	11.01	11.1	163.5	127.72	3.05	6	268	0.16	16.6	0.61	848	14.71	0.033	35.8	0.091	32.52	0.03	9.15	2.2	28.6	1.92	3.8	0.092	1.87	19.1	74	6.7	161.5
RS-489 1320-1340	2186	0.61	45.3	119.1	1	62.2	0.27	0.44	0.27	1.1	4.3	16.66	2.38	2	428	0.28	16.9	0.04	237	2.06	0.012	2.7	0.033	21.65	2.68	14.22	9.5	79.8	< .02	4.5	0.001	0.66	2	2	0.3	66.5
RS-489 1340-1360	657	0.71	16.4	36.4	1	69	0.11	0.58	0.6	2	3.3	9.68	2.1	2.2	1219	0.25	18.7	0.06	254	2.38	0.013	2.3	0.029	20.36	2.22	8.71	3.9	112.7	< .02	4.3	0.001	0.44	1.6	2	0.4	134.4

AMERICAN ASSAY LABORATORIES
1500 GLENDALE AVE.
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PHONE: (775) 356-0506
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CLIENT: *HECLA MINING CO.*
CLIENT REF: KURT ALLEN
AAL REF: Sp56013
METHOD: AAL03-0

ELEMENT SAMPLES	Ag ppb	Al %	As ppm	Au ppb	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppb	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	S %	Sb ppm	Se ppm	Sr ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
RS-489 1360-1380	250	0.73	17.2	28.4	< 1	61.2	0.16	0.92	0.22	1.2	4.3	7.01	2.36	2.4	203	0.26	18.8	0.05	593	1.63	0.014	2.7	0.03	22.16	2.67	7.42	1.6	109.8	< .02	4.6	0.001	0.33	1.3	< 2	0.5	53.7
RS-489 1380-1400	1748	1	20.2	63.4	< 1	43.3	0.06	0.45	0.28	1.6	4.6	9.78	3.27	3.5	246	0.36	20.3	0.04	193	1.63	0.013	2.6	0.047	21.37	4.16	17.91	11.6	93.7	< .02	5.7	0.001	0.92	0.9	2	0.5	81
RS-489 1400-1420	446	0.75	11.7	43.7	< 1	44.2	0.05	0.46	0.24	1	5.6	8.81	2.89	2.6	314	0.3	18.1	0.04	207	1.77	0.011	2.5	0.031	21.08	3.69	12.86	6.8	86.1	< .02	4.9	0.001	1.02	0.8	2	0.5	77.6
RS-489 1420-1440	1005	0.98	24.5	50.4	< 1	57.4	0.08	0.61	0.36	2.4	7.2	12.76	2.87	3.3	304	0.3	18.7	0.08	263	3.13	0.012	4	0.037	24.06	2.65	9.06	11.4	103.4	< .02	4.6	0.001	0.57	1.6	4	0.5	92.5
RS-489 1440-1460	1651	0.88	46.1	62.2	< 1	30.7	0.06	0.49	0.32	2.1	6.2	10.14	2.99	2.9	270	0.33	16.2	0.06	260	2.41	0.011	2.5	0.04	26.19	4	16.13	11.8	81.8	< .02	4.1	0.001	0.78	1.7	3	0.4	96.4
RS-489 1460-1480	2991	0.93	104.1	87.8	< 1	31.3	0.12	0.56	0.34	2.5	6.5	11.88	3.16	3	170	0.32	16.2	0.07	278	2.69	0.012	3.3	0.037	24.4	3.34	13.39	17.3	93.3	< .02	3.8	0.001	0.49	2.2	3	0.3	106.2
RS-489 1480-1500	99999	0.78	103	165.9	< 1	48.6	0.08	0.46	0.7	2.3	5	73.96	2.29	2.6	1069	0.33	16.4	0.05	184	1.64	0.01	1.8	0.038	23.33	2.62	286.16	136.6	76.1	0.02	4.4	0.001	0.52	1.6	2	0.3	106.3
RS-489 1500-1520	44037	0.82	22.2	66	< 1	66.7	0.08	0.52	0.35	1.9	5	12.19	2.12	2.8	476	0.31	18.7	0.06	226	1.53	0.011	2.2	0.039	21.67	2.33	37.11	19.9	89.8	< .02	4.8	0.001	0.66	1.4	2	0.4	91.9
RS-489 1520-1540	18202	0.77	3.8	27.7	< 1	94.2	0.04	0.48	0.29	2	4.9	7.6	1.63	2.7	310	0.36	21	0.05	773	1.41	0.013	1.9	0.042	14.73	1.86	18.15	6.9	74.4	< .02	5.4	0.001	0.5	1.7	2	0.3	75.9
RS-489 1540-1560	9604	0.89	25.8	41	< 1	72.6	0.06	0.51	0.36	2	6.3	10.78	2.15	3	226	0.33	22.4	0.07	547	1.98	0.014	2.8	0.04	19.08	2.09	12.54	6.6	85.6	< .02	5.8	0.001	0.55	1.6	3	0.3	88.3
RS-489 1560-1580	6211	0.56	110.9	89.4	< 1	77.2	0.05	0.29	0.15	1.3	8	10.41	1.95	1.8	163	0.27	18.6	0.03	166	2.69	0.007	2.8	0.024	21.49	2.24	12.8	11.2	49.9	< .02	4.4	< .001	0.34	0.8	2	0.5	59.9
RS-489 1580-1600	6831	0.58	155.8	179.9	< 1	66.5	0.02	0.29	0.09	0.9	8	11.17	2.18	2.3	737	0.26	15.3	0.02	178	2.88	0.006	2.9	0.024	21.93	2.8	16.73	16.2	42.5	< .02	3.7	< .001	0.4	0.6	2	0.4	59.2
RS-489 1600-1620	21326	0.45	291.6	283.3	< 1	85.5	0.03	0.28	0.17	0.8	7.7	19.87	2.17	2	921	0.24	17.5	0.02	263	3.68	0.006	4.7	0.016	21.27	2.01	35.2	23.5	32.5	< .02	4.6	< .001	0.49	0.6	3	0.9	56.8
RS-489 1620-1640	6735	0.47	71.3	104.7	< 1	86	0.03	0.27	0.11	0.3	8	13.95	2.06	1.8	128	0.31	41.1	0.02	309	3.33	0.008	3.8	0.01	29.14	2.1	16.13	14.3	36.3	< .02	9.7	< .001	0.28	0.9	3	0.4	82.9
RS-489 1640-1660	1799	0.61	7.2	9	< 1	96.6	< .02	0.98	0.16	0.2	8.1	10.03	1.67	2.4	86	0.45	44.2	0.02	836	2.09	0.023	2.6	0.008	28.13	1.56	4.04	2.8	74.3	< .02	10.4	< .001	0.21	0.8	2	0.2	80.6
RS-489 1660-1680	5160	0.44	45.9	24.6	< 1	109.1	< .02	1.34	0.12	0.8	7.5	10.01	1.68	1.7	106	0.33	36.9	0.02	1028	3.42	0.02	3.3	0.008	27.51	1.5	8.56	6	83.5	< .02	8.7	< .001	0.17	0.8	2	0.4	91.5
RS-489 1680-1700	1453	0.56	6.8	5.5	< 1	127.4	0.05	1.13	0.11	0.4	8.2	12.13	1.68	2.3	57	0.42	46.9	0.02	948	3.03	0.012	3.6	0.008	23.93	0.86	4.3	1.8	73.2	< .02	11.6	< .001	0.21	1	3	0.3	75.1
RS-489 1700-1720	906	0.42	6.9	4.7	< 1	50.3	0.07	0.89	0.08	0.4	8.9	15.08	1.98	2	50	0.34	41.5	0.01	644	3.82	0.029	4.9	0.007	19.83	1.03	3.51	1.8	60.6	< .02	11	< .001	0.14	0.7	3	0.4	67.9
RS-489 1720-1740	4712	0.46	77.8	119.4	< 1	35.7	< .02	0.83	0.11	0.2	8.4	12.73	2.48	1.7	90	0.3	25.7	0.01	616	6.16	0.008	4.2	0.006	43.49	2.72	14.74	26.9	62.1	< .02	7	< .001	0.23	0.6	2	0.8	88.8
RS-489 1740-1760	1587	0.53	14.8	16.4	< 1	59.9	0.02	0.66	0.13	0.2	7.8	10.46	1.83	2.1	64	0.39	39.4	0.01	636	3.12	0.032	4.1	0.007	24.54	1.85	5.9	4.9	57.7	< .02	10.7	< .001	0.19	0.9	2	0.4	76.7
RS-489 1760-1780	1107	0.53	15.9	21.6	< 1	89.3	< .02	0.72	0.07	0.2	5.9	8.21	1.54	2	51	0.37	40	0.02	533	3.05	0.022	2.4	0.008	22.32	1.62	5.28	4.8	62	< .02	10.3	< .001	0.18	1	2	< .2	76
RS-489 1780-1800	7206	0.59	25.1	24.5	1	120.8	0.04	0.31	0.21	0.7	8.9	14.28	1.89	2.1	201	0.33	37.9	0.04	341	2.9	0.01	4.4	0.012	24.95	1.33	12.2	6.6	53.5	< .02	9.2	0.001	0.36	0.8	4	0.3	79
RS-489 1800-1820	2662	0.37	13.4	10.9	< 1	93	0.03	1.31	0.04	0.3	10.3	16.21	2.02	1.5	98	0.37	36.9	0.01	1435	4.15	0.011	4.8	0.007	22.27	1.37	8.13	2.3	68.6	< .02	9.3	< .001	0.27	0.5	3	0.8	70.9
RS-489 1820-1840	1574	0.51	20	19	< 1	81.7	0.03	0.88	0.06	0.3	10.3	17.8	2.42	2	97	0.36	33	0.01	1034	4.7	0.008	5.2	0.008	32.95	2.25	9.12	7.7	54.5	< .02	8.4	< .001	0.27	0.5	3	0.5	86.7
RS-489 1840-1860	49986	0.37	67.9	159.1	< 1	80.1	0.03	0.16	0.32	0.3	8.3	18.11	1.95	1.4	187	0.24	34.4	0.01	209	5.63	0.005	3.9	0.006	28.4	1.77	645.86	143.5	29.9	< .02	8.7	< .001	0.36	0.8	3	0.5	70.8
RS-489 1860-1880	5420	0.39	29.8	64.6	< 1	16.4	0.03	0.14	0.23	0.2	7.6	11.35	1.67	1.3	52	0.28	44.4	0.01	147	3.75	0.006	3.3	0.006	26.22	1.86	141.23	36.8	35.1	< .02	11.4	< .001	0.33	0.9	2	0.5	64.3
RS-489 1880-1900	5268	0.36	23.1	33.2	< 1	36.6	0.04	0.34	0.24	0.2	8.4	12.17	1.83	1.3	74	0.3	36.7	0.01	377	5.56	0.007	3.8	0.006	30.66	1.84	66.75	20	48.3	< .02	10.5	< .001	0.23	2.2	2	0.5	67
RS-489 1900-1915	702	0.65	4.4	2.7	1	35.9	0.02	1.29	0.11	0.3	10	13.77	1.97	3	45	0.44	57.9	0.01	734	3.07	0.037	4.3	0.008	21.88	0.2	9.92	2.2	73.8	< .02	15.6	0.001	0.08	1.2	3	0.3	59
89677	34381	0.86	70.9	2134.6	1	84.1	0.62	0.91	0.27	2.7	23.8	11.37	1.8	2.7	234	0.4	16.6	0.08	276	9.29	0.029	11.8	0.068	21.66	1.92	12.22	18.1	84.5	0.04	3.2	0.001	0.3	0.7	3	0.4	79.6
STANDARD DS2	255	1.69	57.5	190.1	< 1	143.4	10.4	0.52	9.93	11.6	154.4	121.14	2.93	6.2	232	0.15	15.4	0.59	808	13.95	0.03	35.3	0.084	31.63	0.03	8.77	2.2	28.2	1.75	3.7	0.089	1.71	19.7	72	6.3	157.3

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP056013

PO BOX 11530
RENO NV,USA
Ph.(775) 356-0606, Fax.(775) 356-1413

HECLA MINING COMPANY

COPIES TO : KURT ALLEN
:
:
:

CLIENT REFERENCE No: RS-489 RECEIVED : 10 FEB 2000

No. SAMPLES : 384 REPORTED : 18 FEB 2000

MAIN SAMPLE TYPE : DRILL CUTTINGS

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	FA30	15%	ppb	5
Au(R)	FA30	15%	ppb	5
Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
Ag	D210	10%	ppm	0.5
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Leonard E. Mackedon B.S.

02/18/2000 15:42 7753561413 AMERICAN ASSAY LABS PAGE 01
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AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP056013

CLIENT : HECLA MINING COMPANY
PROJECT : NORTH EQUINOX
REFERENCE : RS-489

REPORTED : 18 FEB 2000

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 0000-0005	9	7	<0.001	<0.001	<0.5	<0.02
RS-489 0005-0010	8		<0.001		<0.5	<0.02
RS-489 0010-0015	10		<0.001		<0.5	<0.02
RS-489 0015-0020	11		<0.001		<0.5	<0.02
RS-489 0020-0025	5		<0.001		<0.5	<0.02
RS-489 0025-0030	<5		<0.001		<0.5	<0.02
RS-489 0030-0035	<5		<0.001		<0.5	<0.02
RS-489 0035-0040	<5		<0.001		<0.5	<0.02
RS-489 0040-0045	<5		<0.001		<0.5	<0.02
RS-489 0045-0050	<5		<0.001		<0.5	<0.02
RS-489 0050-0055	<5		<0.001		<0.5	<0.02
RS-489 0055-0060	<5		<0.001		<0.5	<0.02
RS-489 0060-0065	<5		<0.001		<0.5	<0.02
RS-489 0065-0070	<5	<5	<0.001	<0.001	<0.5	<0.02
RS-489 0070-0075	<5		<0.001		<0.5	<0.02
RS-489 0075-0080	<5		<0.001		<0.5	<0.02
RS-489 0080-0085	<5		<0.001		<0.5	<0.02
RS-489 0085-0090	<5		<0.001		<0.5	<0.02
RS-489 0090-0095	<5		<0.001		<0.5	<0.02
RS-489 0095-0100	7		<0.001		<0.5	<0.02
RS-489 0100-0105	<5		<0.001		<0.5	<0.02
RS-489 0105-0110	8		<0.001		<0.5	<0.02
RS-489 0110-0115	18		<0.001		0.6	<0.02
RS-489 0115-0120	7		<0.001		<0.5	<0.02
RS-489 0120-0125	8		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP056013

CLIENT : HECLA MINING COMPANY
PROJECT : NORTH EQUINOX
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REPORTED : 18 FEB 2000

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 0125-0130	<5		<0.001		<0.5	<0.02
RS-489 0130-0135	<5		<0.001		<0.5	<0.02
RS-489 0135-0140	<5		<0.001		<0.5	<0.02
RS-489 0140-0145	10		<0.001		<0.5	<0.02
RS-489 0145-0150	9		<0.001		<0.5	<0.02
RS-489 0150-0155	<5		<0.001		<0.5	<0.02
RS-489 0155-0160	<5		<0.001		<0.5	<0.02
RS-489 0160-0165	<5		<0.001		<0.5	<0.02
RS-489 0165-0170	<5	<5	<0.001	<0.001	<0.5	<0.02
RS-489 0170-0175	<5		<0.001		<0.5	<0.02
RS-489 0175-0180	<5		<0.001		<0.5	<0.02
RS-489 0180-0185	18		<0.001		<0.5	<0.02
RS-489 0185-0190	37		0.001		<0.5	<0.02
RS-489 0190-0195	8		<0.001		<0.5	<0.02
RS-489 0195-0200	10		<0.001		<0.5	<0.02
RS-489 0200-0205	75		0.002		<0.5	<0.02
RS-489 0205-0210	71		0.002		<0.5	<0.02
RS-489 0210-0215	39		0.001		<0.5	<0.02
RS-489 0215-0220	35		0.001		<0.5	<0.02
RS-489 0220-0225	29		<0.001		<0.5	<0.02
RS-489 0225-0230	60		0.002		0.8	0.02
RS-489 0230-0235	68	72	0.002	0.002	0.7	0.02
RS-489 0235-0240	39		0.001		<0.5	<0.02
RS-489 0240-0245	60		0.002		0.8	0.02
RS-489 0245-0250	61		0.002		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 0250-0255	13		<0.001		<0.5	<0.02
RS-489 0255-0260	112		0.003		0.7	0.02
RS-489 0260-0265	53		0.002		<0.5	<0.02
RS-489 0265-0270	14		<0.001		<0.5	<0.02
RS-489 0270-0275	7		<0.001		<0.5	<0.02
RS-489 0275-0280	10		<0.001		<0.5	<0.02
RS-489 0280-0285	40		0.001		<0.5	<0.02
RS-489 0285-0290	44	64	0.001	0.002	<0.5	<0.02
RS-489 0290-0295	63		0.002		<0.5	<0.02
RS-489 0295-0300	110		0.003		1.0	0.03
RS-489 0300-0305	75		0.002		<0.5	<0.02
RS-489 0305-0310	96		0.003		0.7	0.02
RS-489 0310-0315	62		0.002		0.5	<0.02
RS-489 0315-0320	63		0.002		0.5	<0.02
RS-489 0320-0325	65		0.002		1.1	0.03
RS-489 0325-0330	38		0.001		<0.5	<0.02
RS-489 0330-0335	37		0.001		<0.5	<0.02
RS-489 0335-0340	69		0.002		<0.5	<0.02
RS-489 0340-0345	41		0.001		<0.5	<0.02
RS-489 0345-0350	170		0.005		0.6	<0.02
RS-489 0350-0355	154		0.004		0.5	<0.02
RS-489 0355-0360	DTF		DTF		<0.5	<0.02
RS-489 0360-0365	142		0.004		<0.5	<0.02
RS-489 0365-0370	27		<0.001		<0.5	<0.02
RS-489 0370-0375	35		0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP056013

CLIENT : HECLA MINING COMPANY
PROJECT : NORTH EQUINOX
REFERENCE : RS-489

REPORTED : 18 FEB 2000

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 0375-0380	106		0.003		0.8	0.02
RS-489 0380-0385	40		0.001		1.2	0.04
RS-489 0385-0390	35		0.001		0.5	<0.02
RS-489 0390-0395	37		0.001		0.7	0.02
RS-489 0395-0400	44		0.001		1.0	0.03
RS-489 0400-0405	30		<0.001		0.5	<0.02
RS-489 0405-0410	35		0.001		<0.5	<0.02
RS-489 0410-0415	15		<0.001		<0.5	<0.02
RS-489 0415-0420	<5		<0.001		<0.5	<0.02
RS-489 0420-0425	7		<0.001		<0.5	<0.02
RS-489 0425-0430	14	20	<0.001	<0.001	<0.5	<0.02
RS-489 0430-0435	50		0.001		<0.5	<0.02
RS-489 0435-0440	100		0.003		<0.5	<0.02
RS-489 0440-0445	25		<0.001		<0.5	<0.02
RS-489 0445-0450	43		0.001		<0.5	<0.02
RS-489 0450-0455	75		0.002		<0.5	<0.02
RS-489 0455-0460	88		0.003		<0.5	<0.02
RS-489 0460-0465	62		0.002		1.0	0.03
RS-489 0465-0470	45		0.001		<0.5	<0.02
RS-489 0470-0475	95		0.003		<0.5	<0.02
RS-489 0475-0480	67		0.002		0.5	<0.02
RS-489 0480-0485	10		<0.001		<0.5	<0.02
RS-489 0485-0490	15		<0.001		<0.5	<0.02
RS-489 0490-0495	33		<0.001		0.5	<0.02
RS-489 0495-0500	64		0.002		0.8	0.02

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CLIENT : HECLA MINING COMPANY
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REFERENCE : RS-489

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 0500-0505	16		<0.001		<0.5	<0.02
RS-489 0505-0510	<5		<0.001		<0.5	<0.02
RS-489 0510-0515	27	36	<0.001	0.001	<0.5	<0.02
RS-489 0515-0520	26		<0.001		<0.5	<0.02
RS-489 0520-0525	20		<0.001		<0.5	<0.02
RS-489 0525-0530	23		<0.001		<0.5	<0.02
RS-489 0530-0535	17		<0.001		<0.5	<0.02
RS-489 0535-0540	35		0.001		<0.5	<0.02
RS-489 0540-0545	68		0.002		<0.5	<0.02
RS-489 0545-0550	74		0.002		<0.5	<0.02
RS-489 0550-0555	64		0.002		<0.5	<0.02
RS-489 0555-0560	52		0.002		0.5	<0.02
RS-489 0560-0565	72		0.002		<0.5	<0.02
RS-489 0565-0570	83		0.002		<0.5	<0.02
RS-489 0570-0575	22		<0.001		<0.5	<0.02
RS-489 0575-0580	26		<0.001		<0.5	<0.02
RS-489 0580-0585	5	9	<0.001	<0.001	<0.5	<0.02
RS-489 0585-0590	17		<0.001		<0.5	<0.02
RS-489 0590-0595	14		<0.001		<0.5	<0.02
RS-489 0595-0600	11		<0.001		<0.5	<0.02
RS-489 0600-0605	10		<0.001		<0.5	<0.02
RS-489 0605-0610	28		<0.001		<0.5	<0.02
RS-489 0610-0615	27		<0.001		<0.5	<0.02
RS-489 0615-0620	135		0.004		<0.5	<0.02
RS-489 0620-0625	290		0.008		1.4	0.04

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REFERENCE : RS-489

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 0625-0630	108	132	0.003	0.004	0.5	<0.02
RS-489 0630-0635	132		0.004		0.7	0.02
RS-489 0635-0640	43		0.001		<0.5	<0.02
RS-489 0640-0645	22		<0.001		<0.5	<0.02
RS-489 0645-0650	38		0.001		<0.5	<0.02
RS-489 0650-0655	27		<0.001		<0.5	<0.02
RS-489 0655-0660	<5		<0.001		<0.5	<0.02
RS-489 0660-0665	16		<0.001		<0.5	<0.02
RS-489 0665-0670	23		<0.001		<0.5	<0.02
RS-489 0670-0675	8		<0.001		<0.5	<0.02
RS-489 0675-0680	6		<0.001		<0.5	<0.02
RS-489 0680-0685	8	10	<0.001	<0.001	<0.5	<0.02
RS-489 0685-0690	7		<0.001		<0.5	<0.02
RS-489 0690-0695	43		0.001		<0.5	<0.02
RS-489 0695-0700	119		0.003		1.2	0.04
RS-489 0700-0705	90		0.003		0.8	0.02
RS-489 0705-0710	60		0.002		<0.5	<0.02
RS-489 0710-0715	74		0.002		0.5	<0.02
RS-489 0715-0720	42		0.001		<0.5	<0.02
RS-489 0720-0725	38		0.001		<0.5	<0.02
RS-489 0725-0730	34		<0.001		<0.5	<0.02
RS-489 0730-0735	36		0.001		<0.5	<0.02
RS-489 0735-0740	73		0.002		<0.5	<0.02
RS-489 0740-0745	61	70	0.002	0.002	<0.5	<0.02
RS-489 0745-0750	48		0.001		<0.5	<0.02

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 0750-0755	13		<0.001		<0.5	<0.02
RS-489 0755-0760	28		<0.001		<0.5	<0.02
RS-489 0760-0765	13		<0.001		<0.5	<0.02
RS-489 0765-0770	36		0.001		<0.5	<0.02
RS-489 0770-0775	42		0.001		<0.5	<0.02
RS-489 0775-0780	40		0.001		<0.5	<0.02
RS-489 0780-0785	30		<0.001		<0.5	<0.02
RS-489 0785-0790	42		0.001		<0.5	<0.02
RS-489 0790-0795	180		0.005		<0.5	<0.02
RS-489 0795-0800	73	76	0.002	0.002	<0.5	<0.02
RS-489 0800-0805	81		0.002		<0.5	<0.02
RS-489 0805-0810	34		<0.001		<0.5	<0.02
RS-489 0810-0815	38		0.001		<0.5	<0.02
RS-489 0815-0820	43		0.001		<0.5	<0.02
RS-489 0820-0825	85		0.002		<0.5	<0.02
RS-489 0825-0830	103	100	0.003	0.003	1.0	0.03
RS-489 0830-0835	110		0.003		1.4	0.04
RS-489 0835-0840	117		0.003		0.6	<0.02
RS-489 0840-0845	40		0.001		<0.5	<0.02
RS-489 0845-0850	39		0.001		0.6	<0.02
RS-489 0850-0855	104		0.003		1.3	0.04
RS-489 0855-0860	58		0.002		<0.5	<0.02
RS-489 0860-0865	113		0.003		1.3	0.04
RS-489 0865-0870	99		0.003		1.3	0.04
RS-489 0870-0875	90		0.003		0.8	0.02

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 0875-0880	72		0.002		<0.5	<0.02
RS-489 0880-0885	62		0.002		0.8	0.02
RS-489 0885-0890	72		0.002		1.7	0.05
RS-489 0890-0895	36		0.001		1.5	0.04
RS-489 0895-0900	32		<0.001		1.5	0.04
RS-489 0900-0905	11		<0.001		1.5	0.04
RS-489 0905-0910	5		<0.001		1.2	0.04
RS-489 0910-0915	<5		<0.001		3.0	0.09
RS-489 0915-0920	<5		<0.001		14.2	0.41
RS-489 0920-0925	<5		<0.001		<0.5	<0.02
RS-489 0925-0930	<5		<0.001		<0.5	<0.02
RS-489 0930-0935	<5	<5	<0.001	<0.001	<0.5	<0.02
RS-489 0935-0940	<5		<0.001		<0.5	<0.02
RS-489 0940-0945	<5		<0.001		<0.5	<0.02
RS-489 0945-0950	<5		<0.001		<0.5	<0.02
RS-489 0950-0955	<5		<0.001		<0.5	<0.02
RS-489 0955-0960	<5		<0.001		<0.5	<0.02
RS-489 0960-0965	<5		<0.001		<0.5	<0.02
RS-489 0965-0970	<5		<0.001		<0.5	<0.02
RS-489 0970-0975	<5		<0.001		<0.5	<0.02
RS-489 0975-0980	<5		<0.001		<0.5	<0.02
RS-489 0980-0985	<5		<0.001		<0.5	<0.02
RS-489 0985-0990	<5		<0.001		<0.5	<0.02
RS-489 0990-0995	<5		<0.001		<0.5	<0.02
RS-489 0995-1000	<5		<0.001		<0.5	<0.02

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 1000-1005	<5		<0.001		<0.5	<0.02
RS-489 1005-1010	<5		<0.001		<0.5	<0.02
RS-489 1010-1015	<5		<0.001		<0.5	<0.02
RS-489 1015-1020	<5		<0.001		<0.5	<0.02
RS-489 1020-1025	<5		<0.001		<0.5	<0.02
RS-489 1025-1030	<5		<0.001		<0.5	<0.02
RS-489 1030-1035	7		<0.001		2.2	0.06
RS-489 1035-1040	<5		<0.001		0.5	<0.02
RS-489 1040-1045	<5		<0.001		0.5	<0.02
RS-489 1045-1050	6		<0.001		1.7	0.05
RS-489 1050-1055	<5		<0.001		1.0	0.03
RS-489 1055-1060	11		<0.001		0.8	0.02
RS-489 1060-1065	92		0.003		2.2	0.06
RS-489 1065-1070	208		0.006		32.7	0.95
RS-489 1070-1075	188		0.005		7.2	0.21
RS-489 1075-1080	173		0.005		8.4	0.25
RS-489 1080-1085	155		0.005		6.2	0.18
RS-489 1085-1090	143		0.004		2.7	0.08
RS-489 1090-1095	63		0.002		1.0	0.03
RS-489 1095-1100	66		0.002		2.3	0.07
RS-489 1100-1105	77		0.002		2.4	0.07
RS-489 1105-1110	52		0.002		1.4	0.04
RS-489 1110-1115	26		<0.001		0.5	<0.02
RS-489 1115-1120	16		<0.001		<0.5	<0.02
RS-489 1120-1125	6		<0.001		5.6	0.16

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 1125-1130	<5		<0.001		<0.5	<0.02
RS-489 1130-1135	<5		<0.001		<0.5	<0.02
RS-489 1135-1140	<5		<0.001		<0.5	<0.02
RS-489 1140-1145	<5		<0.001		<0.5	<0.02
RS-489 1145-1150	<5		<0.001		<0.5	<0.02
RS-489 1150-1155	<5		<0.001		<0.5	<0.02
RS-489 1155-1160	<5		<0.001		<0.5	<0.02
RS-489 1160-1165	<5		<0.001		<0.5	<0.02
RS-489 1165-1170	<5		<0.001		<0.5	<0.02
RS-489 1170-1175	<5		<0.001		<0.5	<0.02
RS-489 1175-1180	<5		<0.001		<0.5	<0.02
RS-489 1180-1185	<5		<0.001		<0.5	<0.02
RS-489 1185-1190	<5		<0.001		0.7	0.02
RS-489 1190-1195	<5		<0.001		<0.5	<0.02
RS-489 1195-1200	<5		<0.001		<0.5	<0.02
RS-489 1200-1205	6		<0.001		<0.5	<0.02
RS-489 1205-1210	7		<0.001		<0.5	<0.02
RS-489 1210-1215	5		<0.001		<0.5	<0.02
RS-489 1215-1220	<5		<0.001		<0.5	<0.02
RS-489 1220-1225	5		<0.001		<0.5	<0.02
RS-489 1225-1230	<5		<0.001		0.5	<0.02
RS-489 1230-1235	<5		<0.001		<0.5	<0.02
RS-489 1235-1240	<5		<0.001		<0.5	<0.02
RS-489 1240-1245	<5		<0.001		<0.5	<0.02
RS-489 1245-1250	<5		<0.001		<0.5	<0.02

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 1250-1255	<5		<0.001		<0.5	<0.02
RS-489 1255-1260	<5		<0.001		<0.5	<0.02
RS-489 1260-1265	<5		<0.001		<0.5	<0.02
RS-489 1265-1270	7		<0.001		<0.5	<0.02
RS-489 1270-1275	11		<0.001		<0.5	<0.02
RS-489 1275-1280	8		<0.001		<0.5	<0.02
RS-489 1280-1285	6		<0.001		<0.5	<0.02
RS-489 1285-1290	<5		<0.001		<0.5	<0.02
RS-489 1290-1295	<5		<0.001		<0.5	<0.02
RS-489 1295-1300	<5		<0.001		<0.5	<0.02
RS-489 1300-1305	<5		<0.001		<0.5	<0.02
RS-489 1305-1310	<5		<0.001		<0.5	<0.02
RS-489 1310-1315	<5		<0.001		<0.5	<0.02
RS-489 1315-1320	6		<0.001		0.5	<0.02
RS-489 1320-1325	10		<0.001		<0.5	<0.02
RS-489 1325-1330	164		0.005		2.2	0.06
RS-489 1330-1335	211		0.006		4.1	0.12
RS-489 1335-1340	160		0.005		2.7	0.08
RS-489 1340-1345	80		0.002		1.4	0.04
RS-489 1345-1350	21		<0.001		0.7	0.02
RS-489 1350-1355	30		<0.001		<0.5	<0.02
RS-489 1355-1360	34		<0.001		<0.5	<0.02
RS-489 1360-1365	17		<0.001		<0.5	<0.02
RS-489 1365-1370	24		<0.001		<0.5	<0.02
RS-489 1370-1375	45		0.001		<0.5	<0.02

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 1375-1380	18		<0.001		<0.5	<0.02
RS-489 1380-1385	66		0.002		1.5	0.04
RS-489 1385-1390	118		0.003		4.0	0.12
RS-489 1390-1395	50		0.001		0.5	<0.02
RS-489 1395-1400	44		0.001		<0.5	<0.02
RS-489 1400-1405	29	30	<0.001	<0.001	<0.5	<0.02
RS-489 1405-1410	71		0.002		<0.5	<0.02
RS-489 1410-1415	52		0.002		0.6	<0.02
RS-489 1415-1420	61		0.002		0.7	0.02
RS-489 1420-1425	21		<0.001		0.9	0.03
RS-489 1425-1430	80		0.002		0.8	0.02
RS-489 1430-1435	63		0.002		1.1	0.03
RS-489 1435-1440	60		0.002		0.9	0.03
RS-489 1440-1445	21		<0.001		<0.5	<0.02
RS-489 1445-1450	55		0.002		1.0	0.03
RS-489 1450-1455	70		0.002		1.7	0.05
RS-489 1455-1460	135		0.004		3.1	0.09
RS-489 1460-1465	62		0.002		1.8	0.05
RS-489 1465-1470	59		0.002		1.0	0.03
RS-489 1470-1475	84		0.002		1.7	0.05
RS-489 1475-1480	238		0.007		5.0	0.15
RS-489 1480-1485	130	138	0.004	0.004	3.6	0.11
RS-489 1485-1490	62		0.002		1.2	0.04
RS-489 1490-1495	51	44	0.001	0.001	6.0	0.18
RS-489 1495-1500	297		0.009		1858.0	54.20

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 1500-1505	90		0.003		109.1	3.18
RS-489 1505-1510	49		0.001		30.6	0.89
RS-489 1510-1515	63		0.002		49.9	1.46
RS-489 1515-1520	68		0.002		20.0	0.58
RS-489 1520-1525	50		0.001		11.7	0.34
RS-489 1525-1530	23		<0.001		19.2	0.56
RS-489 1530-1535	9		<0.001		13.8	0.40
RS-489 1535-1540	16		<0.001		11.9	0.35
RS-489 1540-1545	DTF		DTF		15.5	0.45
RS-489 1545-1550	11		<0.001		3.1	0.09
RS-489 1550-1555	73		0.002		5.7	0.17
RS-489 1555-1560	96		0.003		1.7	0.05
RS-489 1560-1565	78		0.002		6.8	0.20
RS-489 1565-1570	77		0.002		4.5	0.13
RS-489 1570-1575	164	184	0.005	0.005	8.2	0.24
RS-489 1575-1580	94		0.003		3.0	0.09
RS-489 1580-1585	137		0.004		3.3	0.10
RS-489 1585-1590	140		0.004		3.6	0.11
RS-489 1590-1595	250		0.007		6.0	0.18
RS-489 1595-1600	234		0.007		13.9	0.41
RS-489 1600-1605	200		0.006		13.4	0.39
RS-489 1605-1610	202	168	0.006	0.005	13.0	0.38
RS-489 1610-1615	560		0.016		26.6	0.78
RS-489 1615-1620	270		0.008		32.9	0.96
RS-489 1620-1625	134		0.004		18.0	0.53

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP056013

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PROJECT : NORTH EQUINOX
REFERENCE : RS-489

REPORTED : 18 FEB 2000

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 1625-1630	121		0.004		2.7	0.08
RS-489 1630-1635	307		0.009		6.3	0.18
RS-489 1635-1640	135		0.004		1.8	0.05
RS-489 1640-1645	20		<0.001		3.3	0.10
RS-489 1645-1650	23		<0.001		0.9	0.03
RS-489 1650-1655	69		0.002		0.9	0.03
RS-489 1655-1660	14		<0.001		1.6	0.05
RS-489 1660-1665	20		<0.001		10.9	0.32
RS-489 1665-1670	21		<0.001		3.8	0.11
RS-489 1670-1675	29		<0.001		2.3	0.07
RS-489 1675-1680	66		0.002		1.2	0.04
RS-489 1680-1685	16		<0.001		4.0	0.12
RS-489 1685-1690	12		<0.001		1.0	0.03
RS-489 1690-1695	6		<0.001		0.8	0.02
RS-489 1695-1700	7		<0.001		0.6	<0.02
RS-489 1700-1705	15	16	<0.001	<0.001	0.9	0.03
RS-489 1705-1710	16		<0.001		0.8	0.02
RS-489 1710-1715	14		<0.001		0.6	<0.02
RS-489 1715-1720	21		<0.001		1.0	0.03
RS-489 1720-1725	141		0.004		5.8	0.17
RS-489 1725-1730	90		0.003		4.1	0.12
RS-489 1730-1735	58	48	0.002	0.001	2.7	0.08
RS-489 1735-1740	160		0.005		4.4	0.13
RS-489 1740-1745	27		<0.001		3.4	0.10
RS-489 1745-1750	20		<0.001		0.8	0.02

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RS-489 1750-1755	14		<0.001		0.9	0.03
RS-489 1755-1760	51		0.001		1.8	0.05
RS-489 1760-1765	24		<0.001		1.1	0.03
RS-489 1765-1770	25		<0.001		1.4	0.04
RS-489 1770-1775	20		<0.001		0.7	0.02
RS-489 1775-1780	26		<0.001		<0.5	<0.02
RS-489 1780-1785	97		0.003		29.6	0.86
RS-489 1785-1790	35		0.001		1.8	0.05
RS-489 1790-1795	32		<0.001		0.9	0.03
RS-489 1795-1800	23		<0.001		<0.5	<0.02
RS-489 1800-1805	27		<0.001		2.9	0.08
RS-489 1805-1810	20		<0.001		1.1	0.03
RS-489 1810-1815	11		<0.001		<0.5	<0.02
RS-489 1815-1820	31		<0.001		2.0	0.06
RS-489 1820-1825	23		<0.001		0.9	0.03
RS-489 1825-1830	53		0.002		2.0	0.06
RS-489 1830-1835	67		0.002		1.1	0.03
RS-489 1835-1840	35		0.001		0.8	0.02
RS-489 1840-1845	137		0.004		74.2	2.16
RS-489 1845-1850	176		0.005		123.9	3.61
RS-489 1850-1855	246		0.007		32.2	0.94
RS-489 1855-1860	321	344	0.009	0.010	16.3	0.48
RS-489 1860-1865	72		0.002		13.9	0.41
RS-489 1865-1870	86		0.003		2.9	0.08
RS-489 1870-1875	65		0.002		2.0	0.06

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SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-489 1875-1880	83		0.002		5.0	0.15
RS-489 1880-1885	75		0.002		2.8	0.08
RS-489 1885-1890	76		0.002		15.4	0.45
RS-489 1890-1895	76		0.002		3.7	0.11
RS-489 1895-1900	102		0.003		0.7	0.02
RS-489 1900-1905	28		<0.001		1.8	0.05
RS-489 1905-1910	15		<0.001		0.5	<0.02
RS-489 1910-1915	8		<0.001		<0.5	<0.02
89577	1943		0.057		35.3	1.03