60000540

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 433
AUTHOR	K. Allen; S King; V. Reid; N. Jex; D. White
DATE OF DOC(S)	
MULTI_DIST Y / N? Additional Dist_Nos:	
QUAD_NAME	Sulphur 7.5'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine, Hecla Mining Co; Rosebud Project; Rosebud Mining Co. LLC
COMMODITY If not obvious	gold; silver
NOTES	drill logs; assay; geology; photographs; geochemistry; total depth 850'; invoices 63 p.

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 3/18/08
Initials Date
DB:
Initials Date
SCANNED:
Initials Date

Revised: 1/22/08

RS-433

6000 0540
4010

60000540

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

Quick Log

HOLE NUMBER RS-433
PAGE 1 OF 4
DATE 6/24/98
LOGGED BY RBA
TOTAL DEPTH 650' RUC PRE-COLLAR
850' CORE

LOCATION EAST ZONE
NORTHING
EASTING
ELEVATION
AZIMUTH VERT
INCLINATION -90

AREA EAST ZONE
DRILLING CO. EKLUND
RIG TYPE RUC
HOLE SIZE 5½"
DOWN HOLE SURVEY BY WELNAV

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 %	AC-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOISTURE	ANALYTICAL DAT: FROM	TO	W	Au
10		Col	Colluvium																		X																			
20		Col																		X																				
30		TCUT	FINE-GRAINED, PROPYLITIZED, LATITIC TO ANDESITIC VOLCANIC BRECCIA. Some intervals have a "Bub" APPEARANCE.																	X																				
40																				X																				
50																				X																				
60																				X																				
70																			X																				
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170																																								
180																																								
190																																								
200																																								

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

HOLE NUMBER RS-43.3
PAGE 2 OF 4
DATE
LOGGED BY
TOTAL DEPTH

LOCATION
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%	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 %	AG-SULF %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MERCURY	ANALYTICAL DA: FROM	TO	W	Au
210		TCLT																																						
220																																								
230																																								
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280																																								
290																																								
300																																								
310																																								
320																																								
330																																								
340	UTRD	UIT	FG- LT GREEN, CLAY ULTRAPHYRE																																					
350	UTRD	UIT																																						
360		FGPP	FINE-GRAINED, SLIGHTLY PORPHYRITIC, PINK FLOW OR SILL,																																					
370																																								
380																																								
390																																								
400																																								

Hecla MINING COMPANY

ROSEBUD PROJECT
DRILL LOG

HOLE NUMBER RS-433
PAGE 3 OF 4
DATE
LOGGED BY
TOTAL DEPTH

LOCATION
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

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

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION																	MINERALIZATION									METALLURGY				ANALYTICAL DA			
						SILICIFICATION					ARGILLIC				PROPYLITIC %		POTASSIC %		OXIDATION			VIENING		SULFIDES			PY	CPY	MAR	AC-SUL	SULFATE	BARITE	OXIDE	SULF	CARBON	MIXCURE	FROM	TO	W	Au
						5%	15%	+25%	MATRIX %	CLASTS %	5%	15%	+25%	TYPE	CHLORITE	CALCITE	K-SPAR	ALUNITE	5%	15%	+25%	%	TYPE	5%	15%	+25%	%	%	%	%	%	%								
410		FGPP																																						
420																																								
430																																								
	UITRO	UIT																																						
440		UBUD	FINE-GRAINED TO MODERATELY COARSE GRAINED, ASH-FLOW w/ POSSIBLE EPICLASTICS.																																					
450																																								
460																																								
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Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

HOLE NUMBER RS-433
PAGE 4 OF 4
DATE
LOGGED BY
TOTAL DEPTH

LOCATION
NORTHING
EASTING
ELEVATION
AZIMUTH
INCLINATION

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

FEET	GRAPHIC	ROCK TYPE	LITHOLOGY	HARDNESS	TEXTURE	ALTERATION																	MINERALIZATION									METALLURGY				ANALYTICAL DA			
						SILICIFICATION					ARGILLIC				PROPYLITIC %		POTASSIC %		OXIDATION			VIENING		SULFIDES			PY	CPY	MAR	AC-SULF	STIBNITE	BARITE	OXIDE	SULF	CARBON	MIDCURE	FROM	TO	W	Au
						5%	15%	+25%	MATRIX %	CLASTS %	5%	15%	+25%	TYPE	CHLORITE	CALCITE	K-SPAR	ALUNITE	5%	15%	+25%	%	TYPE	5%	15%	+25%	%	%	%	%	%	%								
		UBUD																																						
610		PABX																																						
620																																								
630																																								
640																																								
650																																								
			TD RDC PRE-COLLAR = 650'																																					

Hecla MINING COMPANY

- quartz, chalcedony, silicification
- faults, fractures
- FeOx / BARITE
- sulfide
- calcite, carbonate
- argillization, white clays
- propylitization
- potassic alteration
- chlorite, chloritic clays

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	RS-433	LOCATION	EAST, SURFACE
PAGE 1 OF 4		NORTHING	
DATE	04/07/98	EASTING	
LOGGED BY	WJM	ELEVATION	
SCALE	1"=10'	AZIMUTH	—
TOTAL DEPTH	850'	INCLINATION	-90°

REMARKS

LITH.	OX/RED.	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
650.0-678.2' CHOCOLATE BRECCIA		650.0'-678.2': VARIABLY GREEN CLAY ALTERED, MATRIX-SUPPORTED HETEROLITHIC BRECCIA. FRAGMENTS OF PLAG-BEARING, APHANITIC CHOCOLATE, LT. GRN PUNKY STR'LY ALTERED, V. APHANITIC POSSIBLE JUVENILES, & SOME SCORIACEOUS FRAGMTS. DARK GRN, CLAY ALTERED RK FLOUR MATRIX.	650 660			650-678.2': MOD./STR. PERVASIVE GRN CLAY ALTERATION AT CORE PT. DECREASES GRADUALLY DOWNWARDS TO WK/MOD. MOD. VEIN & DISS'D MARC/PY. WK DISS'D FINE PY. MOD. WHT CLAY & MILKY SILICA + MARC +/- WHT CLAY VNS. FINE WISPY MARC VNLTS COMMON. PY OVERGROWTHS ON MOST BLADED MARC.
		~670': ROCK IS HARDER AND BLCHED PINK-GRY WITH ONLY A FAINT LT. GRN TINGE LOCALIZED IN SOME FRAGMTS.	670		671-674': MILKY WHT SILICA CEMENTED CRACKLE BRECCIA OVERPRINTING VOLCANIC BRECCIA.	
		~678': GRADATIONAL, APPARENT DEPOSITIONAL CONTACT.				678.2'-689.5': STR. GRN CLAY ALTERATION. MOD. DISS'D MARC/PY & SILICA VNLT ASSOC'D MARC.
678.2'-689.5' BUD		678.2-689.5': SPECKLED DARK TO PALE GRN, MOD'LY CLAY ALTERED BUD. VARIABLY VCG SAND TO PEBBLE CONGLOMERATE. MODERATE ANASTOMOSING SHEAR FABRIC AT HIGH ∠S TO C/A FROM ~678.5'-680'. ROCK IS LIGHTLY BRECCIATED / TECTONICALLY DISRUPTED.	680		678.5'-680': MOD. BRAIDED SHEAR FABRIC.	
		689.5-689.7': IRREGULAR, FAULTED CONTACT	690		PYRARGERITE 687.5': SEMI-HEALED, FAULT-RELATED SHEAR/MYLONITE IN OVERLYING BUD.	686-689.5' WK PYRARGERITE + WHT CLAY, +/- SILICA VNS, MOD. WHT CLAY + SILICA VNLTS, +/- MARC.
689.5-706.0' FAULT		689.5'-697.0': DULL FLESH-BRN, HARD, APHANITIC LITH. FORMS A MONOLITHIC CRACKLE BRECCIA CEMENTED WITH GRY TO WHT SILICA, + CLAY. FROM ~693', BRECCIATN IS ≈ INCREASINGLY MILLED/CRUSHED LOOKING & INTENSIFYING. IRREGULAR, FAULTED OR AT LEAST FAULT-AFFECTED CONTACT AT 696.8-697.0'.			689.5-696.8': WK/MOD. UNMILLED, HEALED FAULT BRECCIATION.	689.5-693.9': MOD./STR. WHT CLAY + SILICA +/- PYRAGERITE VNS. MOD. DISS'D MARC/PY. WK/TR WALLROCK SiO_2 & ORNG-RD IN MATRIX, FAINT.
		696.8-700.4': LT. GRN CLAY ALTERED, MOD'LY TO WK'LY SILICIFIED FAULT ROCK FLOUR(?) NO ORIGINAL TEXTURE. MOD. STRANDS OF GRY-BLK SILICA-SULFIDE REPLACEMT.	700		696.5': UNHEALED, THIN WK'LY MILLED SHEAR X-CUTS FAULT ZONE AT 20° TO C/A	693.9-700.4': MOD. SILICA + MARC VNLTS. WK/MOD. DISS'D PY & SiO_2.
						696.8-698.6': MOD/STR. GRN CLAY ALTERATN

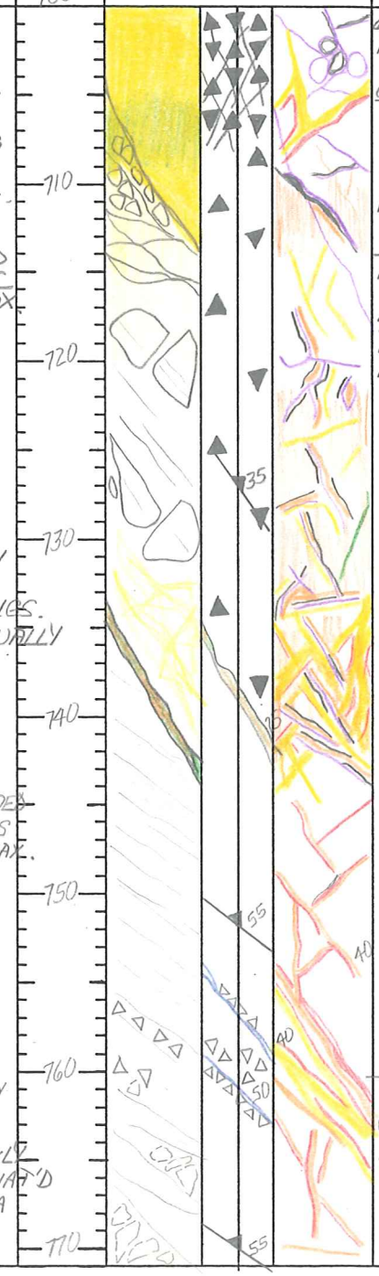
ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag
650.0	655.4					
655.4	660.0					
660.0	665.0					
665.0	670.0					
670.0	674.2					
674.2	678.3					
678.3	683.9					
683.9	689.5					
689.5	693.9					
693.9	696.8					
696.8	698.6					
698.6	700.4					

HOLE NUMBER RS-432 PAGE 2 OF 4

LITH.	OX/RED.	LITHOLOGY
684.5-706.0 FAULT ZONE		700.4'-706': >80% ~~TOTA~~ TOTAL GRAY TO GRN-GRY REPLACEMT SILICA.
		700.4-701.2': TOTAL REPLACEMT GRY SILICA WITH STR. STRANDS OF BLK SILICA-SULFIDE.
706.0-777.8'		701.2'-703.2': TOTAL REPLACEMT GRY SILICA. LESS VFG SULFIDE.
		703.2'-706': BARITE-CEMENTED LATE BRECCIA IN REPLACEMT SILICA.
		706.0-709.1': LT. GRN STR'LY SILICIFIED. STR'LY SPOTTED WITH BLK SILICA-SULFIDE AND WHT SILICA+MARC VNLTS. BARITE + STIBNITE +/- WHT CLAY ON LATE FRAX.
		709.1-712': CRACKLE TO WKLY MILLED DOZER BRECCIA, CEMENTED WITH GRY SILICA + MARC.
		712-720': SLIGHTLY GRNISH, MOD'LY TO STR'LY SILICIFIED DOZER. SILICA-HEALED SHEARING & BOUDINAGE. OVERPRINTED BY WHT SILICA LEACHED VNLTS & VUGS, FILLED WITH WHT CLAY STIBNITE & BARITE.
		720'-~740: STR'LY SILICA VEINED TO CRACKLE BXA'D DOZER. LOCALLY BANDED WITH TEXTURE PICKED OUT BY RUDDY FeOx(?) STAINING. INCREASED VUGGINESS W/ STR. STIBNITE + WHT CLAY + BLOCKY BARITE LINING VUGS. VNING, VUG FILL & RUDDY STAINING DECREASE GRADUALLY DOWNWARD, PETERING OUT ~~BY~~ BELOW ~740'.
		738.5-739': PUNKY, BLCHED, GRNISH-TAN CLAY ZONE.
		739.0'-756.6': WEAKLY ARGILLIZED APHANITIC FLOW-BANDED GRY-TAN DOZER. MOD. TO WK RUDDY FeOx STAINING PICKS OUT FAINT BANDING. MOD. WHT CLAY + MARC/PY ON FRAX.
		756.6'-757.3': HEALED MONOLITHIC MOSAIC BXA.
		757.3-760.3': BROKEN WKLY FAULTED ZONE. STRONG GRY SILICA VEINING +/- MARCASITE/PY. LATE WHT CLAY IN OPEN FRAX VARIABLY GOUGY.
		760.3-775.6': FLOW-BANDED, MOD'LY VEINED DOZER. WKLY STAINED WITH RUDDY FeOx, LOCALLY FAINTLY AUTOBRECCIA'D MODERATE DISS'D MARCASITE INTERSTITIAL IN AUTOBXA MATRIX.

FT



GRAPHIC LOG

STRUCTURE
696.8'-709.1': HEALED, SiO_2 FLOODED FAULT ZONE.
697-701.5': STR'LY BROKEN
709.1-712.3': MOD. HEALED FAULT BXA.
712.3-720': WKER, TIGHTER HEALED FAULT BXA
~718'-~740': HYDROTHERMAL BRECCIATION OVERPRINTING UNMILLED RK
759.5-760': UNHEALED WHT CLAY + SILICIFIED GRIT. VN FLT. ~2" WIDE

ALTERATION AND MINERALIZATION
696.8-700.4': MOD. TO INTENSE SiO_2. LOCAL STR. BLK SILICA-SULFIDE. MOD. DISS'D MARC.
700.4-701.2': TOTAL REPLACEMT GRY SILICA. STR. SPOTTY BLK SILICA-SULFIDE. SOOTY ON FRAX.
701.2-706.0': >80%-TOTAL GRY REPLACEMT SILICA, OVERPRINTING & REPLACING GRN CLAY ALTERED PROTOLITH. SOOTY TO ACICULAR STIBNITE ON OPEN FRAX.
708.2-705.5': BARITE-CEMENTED ROUNDED SILICA REPLACEMT FRAGMTS. INTERSTITIAL STIBNITE.
706.0-709.1': MOD. GRN? STR TO INTENSE SILICIFICATN. STR. SILICA+SULFIDE VNS. LATE WHT CLY ON FRAX & VUGS.
709.1-712.8': MOD/STR. SILICA + MARC VNING W/ LATE BARITE + STIBNITE + WHT CLAY INFILL.
712.8-720.0': MOD/WK WAXY GRN CLY, PERVASIVE STR. SiO_2 OVERPRINT. BARITE LINED STIBNITE + WHT CLAY FILLED VUGS PICK UP AGAIN ~718.0'
720.0'-739': STR. SILICA +/- MARC VNS W/ STR. TO WK BARITE + STIBNITE + WHT CLAY LINING VUGS & ~~RE~~ UNHEALED FRAX. DISS'D MARC
738.5'-739': STR. ARGILLIZATION MOD. BLCHING. MOD/STR DISS'D MARC.
739.0'-756.6': MOD/WK PERVASIVE WALLROCK ARGILLIZATION. MOD/WK WHT CLAY + MARCASITE/PYRITE VNLTS
756.6-757.3': RUDDY FeOx STAINING IN BXA MATRIX, ALL ELSE AS ABOVE.
757.3'-760.3': STR. GRY SILICA +/- MARC +/- WHT CLAY VNS.

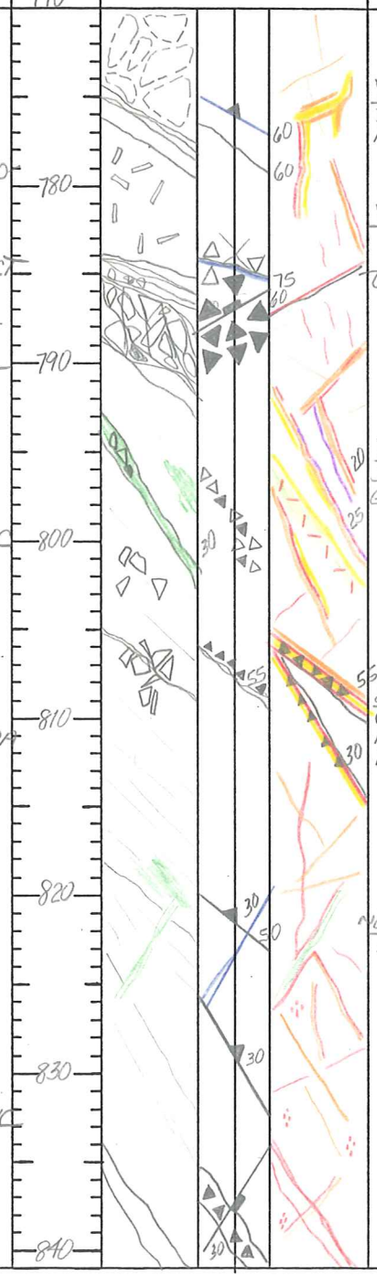
ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2
700.4	701.2				
701.2	703.2				
703.2	706.0				
706.0	709.1				
709.1	712.3				
712.3	717.1				
717.1	720.0				
720.0	725.0				
725.0	730.0				
730.0	734.2				
734.2	738.9				
738.9	744.5				
738.9	749.2				
749.2	753.3				
753.3	757.0				
757.0	760.7				
760.7	765.7				
765.7	770.9				

HOLE NUMBER RS-433 PAGE 3 OF 4

LITH.	OX/RED.	LITHOLOGY
706.0-777.8' DOZER		775.6'-777.8': HEALED MYLONITE TO MOSAIC BRECCIA IN DOZER. MONOLITHIC. RUDDY FeOx STAINING IN MATRIX ROCK FLOUR.
777.8-784.4' PORPHYRY DIKE		777.8'-784.4': PORPHYRITIC DIKE. APHANITIC LT. GRY FEATURELESS GROUNDMASS, FLECKED W/ WHT GLOMERD PORPHYRITIC PLAG PHENOS ~3/SQ. INCH.
784.4-793.7' BRECCIA (DOZER?)		784.4': SHARP UNHEALED GOUGE & BROKEN RK AT CONTACT. 784.4'-793.7': DIKE MARGIN BRECCIA. HEALED MONOLITHIC MOSAIC BRECCIA, IN DOZER (?) MOD'LY FRIABLE FRAGMENTS.
793.7'-850.0' DOZER		793.7'-800.8': MOD'LY/STR'LY VNED SILICA + MARC + WHT CLAY AT LOW ∠S TO CORE AXIS.
		800.8-808.4': INTERMITTENT HEALED BRECCIA, MONOLITHIC DOZER. MOSAIC-TEXTURED.
		808.4'-850.0': WEAKLY FLOW-BANDED LT. GRN-GRY SPOTTILY ARGILLIZED APHANITIC DOZER. MOD./STR. MARCASITE/PYRITE ON FRAX & VNLTS +/- GREASY WHITE CLAY. VN SILICA DIMINISHED MARKEDLY BELOW ~810'.
		837.7-838.7': SEMI-HEALED MONOLITHIC DOZER MOSAIC BRECCIA VEINLET.

FT



GRAPHIC LOG

STRUCTURE
775.6-777.8': BROKEN ZONE. OVERPRINTS EARLIER HEALED BRECCIA.
784.4'-793.7': HEALED BXA
798.3-798.8': PUNKY SHEAR AT 30° C/A. STR. GRN CLAY ALT'N.
807.3-808.4': MYLONITE/CATACLASTIC BXA FABRIC IN DOZER SURROUNDING 1.5" WIDE BXA VN.
~823.5': GRN CLAY ALTERED FRACTURE/GOUGE ZONE

ALTERATION AND MINERALIZATION
775.6-777.8': SILICA + WHT CLAY CEMENTED VN CRACKLE BRECCIA OVERPRINTS HEALED MYLONITE. WK MARC VNLTS. STR. RUDDY STAINING.
777.8-784.4': MOD/STR. WHT CLAY + SILICA + MARC VNS. MODERATE DISS'D MARCASITE.
784.4'-789.0': RUDDY STAIN LOCALLY IN MATRIX. MOD./STR. MARC/PY VNING, WK WHT CLAY ON FRAX.
789.0'-~807.0': WK/MOD. GRY SILICA + MARCASITE + WHT & WAXY GRN CLAY VNLTS. WK DISS'D PY.
~807-810.0': BLK SULFIDE-SILICA BRECCIA VNLTS.
~810'-823.2': WK TO MOD'LY SPOTTY ARGILLIZATION (GRN CLAY). MOD. PYRITE +/- WHT CLAY COATING FRAX & VNLTS. MARKED DECREASE IN QUARTZ & SWITCH FROM BLADED MARC TO BLOCKY PYRITE ~810'. NOTE: CONT'D FINE ANHEDRAL PY OVERPRINT. MODERATE PY BLEB IN GROUNDMASS.
823.2-823.9': MOD/STR. WKLY FRIABLE GRN CLAY ALT'N @ FAULT.
FROM 823.9'-850.0': CONT'D AS DESCRIBED FROM ~810'-823.2: WK PERVASIVE ARGILLIZATN, MOD. PY +/- WHT CLAY FRAX COATINGS & VNLTS.
837.7-838.7': RUDDY SEMI-HEALED BXA VN.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2
765.7	770.9				
770.9	775.6				
775.6	777.8				
777.8	781.0				
781.0	784.4				
784.4	789.0				
789.0	793.7				
793.7	798.8				
798.8	800.8				
800.8	804.7				
804.7	807.3				
807.3	808.4				
808.4	810.0				
810.0	813.0				
813.0	816.5				
816.5	820.0				
820.0	825.0				
825.0	830.0				
830.0	834.8				
834.8	840.0				

HOLE NUMBER RS-433 PAGE 4 OF 4

LITH.	OX/RED.	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2
793.7-850.0 DOZER		DESCRIPTIONS P.3					840.0	845.2				
							845.2	850.0				
		850.0' TD										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-433 DATE: 04/07/98 LOGGED BY: HM PAGE 1 OF 3

DRILL RUN		SOLID CORE RECOVERY (%)	TOTAL CORE RECOVERY (%)	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO				DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY /FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
650.0	660.0	102.0	102.0	47.0										
660.0	670.0	101.0	101.0	61.0										
670.0	680.0	103.0	103.0	83.0										
680.0	690.0	102.0	102.0	77.0										
690.0	700.0	100.0	100.0	43.0										
700.0	704.5	100.0	100.0	24.4										
704.5	712.0	100.0	100.0	61.3										
712.0	720.0	98.8	98.8	90.0										
720.0	730.0	100.0	100.0	85.0										
730.0	740.0	100.0	100.0	85.0										
740.0	750.0	105.0	105.0	52.0										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-432 DATE: 04/08/98 LOGGED BY: ABM PAGE 2 OF 13

DRILL RUN		SOLID CORE RECOVERY (%)	TOTAL CORE RECOVERY (%)	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO				DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
750.0	760.0	99.0	99.0	29.0										
760.0	770.0	100.0	100.0	60.0										
770.0	776.0	93.3	93.3	55.0										
776.0	777.0	70.0	70.0	50.0										
777.0	787.0	105.0	105.0	59.0										
787.0	794.0	90.0	90.0	57.1										
794.0	800.0	103.3	103.3	51.7										
800.0	810.0	105.0	105.0	85.0										
810.	820.0	100.0	100.0	60.0										
820.0	830.0	103.0	103.0	64.0										
830.0	840.0	100.0	100.0	82.0										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-433 DATE: 04/08/98 LOGGED BY: HDM PAGE 3 OF 3

DRILL RUN		SOLID CORE RECOVERY (%)	TOTAL CORE RECOVERY (%)	RQD	ROCK STRENGTH		FRACTURE DATA				DENSITY DATA			
FROM	TO				DOWNHOLE DEPTH	POINT LOAD INDEX (psi)	FRACTURE DENSITY/FT.	AVG. ANGLE TO C.A.	ROUGHNESS	INFILL	DOWNHOLE DEPTH	SAMPLE WEIGHT (g)	DISPLACEMENT (cc)	DENSITY (g/cc)
840.0	850.0	103.0	103.0	54.0										
	T.D.													

6000 0540

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048518

PO BOX 11530
RENO NV, USA
Ph.(702) 356-0606, Fax.(702) 356-1413

HECLA MINING COMPANY

COPIES TO : KURT ALLEN

:

:

:

CLIENT REFERENCE No: RS-433 RECEIVED : 14 APR 1998

No. SAMPLES : 52 REPORTED : 27 APR 1998

MAIN SAMPLE TYPE : DRILL CORE

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

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
AuGRAV	GRAV	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048518

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 27 APR 1998

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)	
RS-433 650.0-655.4	0.004			0.05	
RS-433 655.4-660.0	0.008			0.10	
RS-433 660-665	0.005			0.09	
RS-433 665-670	0.005			0.08	
RS-433 670.0-674.2	0.015	0.015		0.14	
RS-433 674.2-678.3	0.019			0.06	
RS-433 678.3-683.9	0.005			0.03	
RS-433 683.9-689.5	0.006			1.28	
RS-433 689.5-693.9	0.016	0.019		12.80	
RS-433 693.9-696.8	0.006			0.50	
RS-433 696.8-698.6	0.004			0.18	
RS-433 698.6-700.4	0.004			0.10	
RS-433 700.4-701.2	0.004			1.17	
RS-433 701.2-703.2	0.008			0.53	709.1 – 730 =
RS-433 703.2-706.0	0.021			0.46	20.9' @
RS-433 706.0-709.1	0.105		0.069	0.52	
RS-433 709.1-712.3 3.2	0.205		0.220	0.24	0.144 Au
RS-433 712.3-717.1 4.8	0.099			0.15	0.27 Ag
RS-433 717.1-720.0 2.9	0.185		0.173	0.29	
RS-433 720-725 5	0.039			0.27	
RS-433 725-730 5	0.229		0.218	0.40	
RS-433 730.0-734.2	0.035			0.57	
RS-433 734.2-738.9	0.092		0.104	0.33	
RS-433 738.9-744.5	0.019			0.07	
RS-433 744.5-749.2	0.009			0.12	

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048518

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 27 APR 1998

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)
RS-433 749.2-753.3	0.004			0.09
RS-433 753.3-757.0	0.005			0.12
RS-433 757.0-760.7	0.019	0.018		2.03
RS-433 760.7-765.7	0.007			0.18
RS-433 765.7-770.9	0.007			0.13
RS-433 770.9-775.6	0.019			0.09
RS-433 775.6-777.8	0.012			0.13
RS-433 777.8-781.0	0.057		0.067	0.19
RS-433 781.0-784.4	0.015			0.54
RS-433 784.4-789.0	0.018			0.14
RS-433 789.0-793.7	0.044	0.036		0.17
RS-433 793.7-798.8	0.019			0.12
RS-433 798.8-800.8	0.005			0.08
RS-433 800.8-804.7	0.006			0.06
RS-433 804.7-807.3	0.011			0.07
RS-433 807.3-808.4	0.016			0.08
RS-433 808.4-810.0	0.031			0.30
RS-433 810-813	0.009			0.13
RS-433 813.0-816.5	0.031			0.53
RS-433 816.5-820.0	0.113		0.095	2.27
RS-433 820-825	0.096		0.112	0.32
RS-433 825-830	0.013			0.10
RS-433 830.0-834.8	0.006			0.18
RS-433 834.8-840.0	0.011			0.22
RS-433 840.0-845.2	0.010			0.24

04/27/1998 13:04 7023561413 AMERICAN ASSAY LABS PAGE 06

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048518

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 27 APR 1998

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)
RS-433 845.2-850.0	0.005			0.09
31003	0.542			4.81

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048322

PO BOX 11530
RENO NV.USA
Ph.(702) 356-0606, Fax.(702) 356-1413

HECLA MINING COMPANY

COPIES TO : KURT ALLEN

:

:

:

NSI

CLIENT REFERENCE No: RS-433 RUC

RECEIVED : 19 MAR 1998

No. SAMPLES : 65

REPORTED : 30 MAR 1998

MAIN SAMPLE TYPE : DRILL CORE

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

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048322

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-433 000-010	<0.001		<0.02
RS-433 010-020	<0.001		<0.02
RS-433 020-030	<0.001		<0.02
RS-433 030-040	<0.001		<0.02
RS-433 040-050	<0.001		<0.02
RS-433 050-060	<0.001		<0.02
RS-433 060-070	<0.001		0.02
RS-433 070-080	0.003		0.10
RS-433 080-090	0.003		0.19
RS-433 090-100	0.004		0.52
RS-433 100-110	0.003	0.003	0.15
RS-433 110-120	0.004		0.35
RS-433 120-130	0.003		0.12
RS-433 130-140	0.002		0.11
RS-433 140-150	<0.001		<0.02
RS-433 150-160	<0.001		<0.02
RS-433 160-170	0.003		0.11
RS-433 170-180	<0.001		0.02
RS-433 180-190	0.001		0.04
RS-433 190-200	<0.001		0.02
RS-433 200-210	<0.001	<0.001	0.04
RS-433 210-220	<0.001		<0.02
RS-433 220-230	<0.001		<0.02
RS-433 230-240	<0.001		<0.02
RS-433 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048322

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-433 250-260	0.001		0.09
RS-433 260-270	<0.001		0.02
RS-433 270-280	<0.001		0.03
RS-433 280-290	<0.001		<0.02
RS-433 290-300	0.003		0.14
RS-433 300-310	<0.001		0.02
RS-433 310-320	<0.001		<0.02
RS-433 320-330	<0.001		<0.02
RS-433 330-340	<0.001		<0.02
RS-433 340-350	<0.001	<0.001	0.05
RS-433 350-360	0.001		0.05
RS-433 360-370	0.002		0.05
RS-433 370-380	0.001		0.03
RS-433 380-390	<0.001		0.04
RS-433 390-400	0.002		0.08
RS-433 400-410	0.002		0.08
RS-433 410-420	0.003		0.05
RS-433 420-430	<0.001		0.02
RS-433 430-440	<0.001		<0.02
RS-433 440-450	0.001	0.001	0.04
RS-433 450-460	<0.001		0.03
RS-433 460-470	0.001		0.04
RS-433 470-480	0.001		0.05
RS-433 480-490	0.002		0.05
RS-433 490-500	0.002		0.03

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048322

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-433 500-510	<0.001		0.02
RS-433 510-520	<0.001		<0.02
RS-433 520-530	<0.001		<0.02
RS-433 530-540	0.003		0.03
RS-433 540-550	0.001		0.03
RS-433 550-560	0.002		0.09
RS-433 560-570	0.007	0.008	0.12
RS-433 570-580	0.006		0.12
RS-433 580-590	0.007		0.94
RS-433 590-600	0.009	0.006	0.27
RS-433 600-610	0.007		0.26
RS-433 610-620	0.010		0.08
RS-433 620-630	0.009		0.06
RS-433 630-640	0.005		0.08
RS-433 640-650	0.002		0.08

American Assay Laboratories

INVOICE

Remit To: P.O. Box11530
Reno, Nevada 89510
Phone NO.: 702-356-0606
Fax No.: 702-356-1413

AMERICAN ASSAY LABORATORIES
1500 GLENDALE AVE.
SPARKS, NV 89431

(702) 356-0606

INVOICE NO: SP 0048518-IN
INVOICE DATE: 04/27/98

INVOICE TO:
THE ROSEBUD MINING CO., LLC
HECLA MINING COMPANY, OPERATOR
P.O. BOX 2610
WINNEMUCCA NV 89446

THE ROSEBUD MINING CO., LLC
HECLA MINING COMPANY, OPERATOR
P.O. BOX 2610
WINNEMUCCA NV 89446

CUSTOMER P.O.	PROJECT	TERMS
RS-433	DEVELOPMENT	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
52	SAMPLES RECEIVED	.00	.00
51	JAW CRUSHING CHARGE	2.60	132.60
51	COARSE MILLING CHARGE	9.00	459.00
51	SPLITTING CHARGE	2.40	122.40
51	RING MILLING CHARGE	2.00	102.00
52	Au (1 A.T. FIRE ASSAY)	8.00	416.00
8	Au ANALYSES/GRAVIMETRIC	8.75	70.00
52	HYDROCHLORIC/NITRIC DIGESTION	2.00	104.00
52	Ag ANALYSES	1.00	52.00
3	Ag (ore grade) ANALYSES	5.00	15.00

86-5110-477
EAA

NET INVOICE:	1,473.00
LESS DISCOUNT:	294.60
FREIGHT:	.00
INVOICE TOTAL:	1,178.40

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ANALYSIS REPORT SP048518

American Assay Laboratories

PO BOX 11530
RENO NV,USA
Ph.(702) 356-0606, Fax.(702) 356-1413

HECLA MINING COMPANY

COPIES TO : KURT ALLEN

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:

CLIENT REFERENCE No: RS-433 RECEIVED : 14 APR 1998

No. SAMPLES : 52 REPORTED : 27 APR 1998

MAIN SAMPLE TYPE : DRILL CORE

NEVADA LEGISLATIVE DISCLAIMER :-
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ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
AuGRAV	GRAV	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048518

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 27 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-433 650.0-655.4	0.004			0.05
RS-433 655.4-660.0	0.008			0.10
RS-433 660-665	0.005			0.09
RS-433 665-670	0.005			0.08
RS-433 670.0-674.2	0.015	0.015		0.14
RS-433 674.2-678.3	0.019			0.06
RS-433 678.3-683.9	0.005			0.03
RS-433 683.9-689.5	0.006			1.28
RS-433 689.5-693.9	0.016	0.019		12.80
RS-433 693.9-696.8	0.006			0.50
RS-433 696.8-698.6	0.004			0.18
RS-433 698.6-700.4	0.004			0.10
RS-433 700.4-701.2	0.004			1.17
RS-433 701.2-703.2	0.008			0.53
RS-433 703.2-706.0	0.021			0.46
RS-433 706.0-709.1	0.105		0.069	0.52
RS-433 709.1-712.3	0.205		0.220	0.24
RS-433 712.3-717.1	0.099			0.15
RS-433 717.1-720.0	0.185		0.173	0.29
RS-433 720-725	0.039			0.27
RS-433 725-730	0.229		0.218	0.40
RS-433 730.0-734.2	0.035			0.57
RS-433 734.2-738.9	0.092		0.104	0.33
RS-433 738.9-744.5	0.019			0.07
RS-433 744.5-749.2	0.009			0.12

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048518

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PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 27 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-433 749.2-753.3	0.004			0.09
RS-433 753.3-757.0	0.005			0.12
RS-433 757.0-760.7	0.019	0.018		2.03
RS-433 760.7-765.7	0.007			0.18
RS-433 765.7-770.9	0.007			0.13
RS-433 770.9-775.6	0.019			0.09
RS-433 775.6-777.8	0.012			0.13
RS-433 777.8-781.0	0.057		0.067	0.19
RS-433 781.0-784.4	0.015			0.54
RS-433 784.4-789.0	0.018			0.14
RS-433 789.0-793.7	0.044	0.036		0.17
RS-433 793.7-798.8	0.019			0.12
RS-433 798.8-800.8	0.005			0.08
RS-433 800.8-804.7	0.006			0.06
RS-433 804.7-807.3	0.011			0.07
RS-433 807.3-808.4	0.016			0.08
RS-433 808.4-810.0	0.031			0.30
RS-433 810-813	0.009			0.13
RS-433 813.0-816.5	0.031			0.53
RS-433 816.5-820.0	0.113		0.095	2.27
RS-433 820-825	0.096		0.112	0.32
RS-433 825-830	0.013			0.10
RS-433 830.0-834.8	0.006			0.18
RS-433 834.8-840.0	0.011			0.22
RS-433 840.0-845.2	0.010			0.24

AMERICAN ASSAY LABORATORIES

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RS-433 845.2-850.0	0.005			0.09
31003	0.542			4.81

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ANALYSIS REPORT SP048518

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HECLA MINING COMPANY

COPIES TO : KURT ALLEN

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CLIENT REFERENCE No: RS-433 RECEIVED : 14 APR 1998

No. SAMPLES : 52 REPORTED : 27 APR 1998

MAIN SAMPLE TYPE : DRILL CORE

NEVADA LEGISLATIVE DISCLAIMER :-
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Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
AuGRAV	GRAV	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048518

American Assay Laboratories

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SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
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RS-433 689.5-693.9	0.016	0.019		12.80
RS-433 693.9-696.8	0.006			0.50
RS-433 696.8-698.6	0.004			0.18
RS-433 698.6-700.4	0.004			0.10
RS-433 700.4-701.2	0.004			1.17
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AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048518

American Assay Laboratories

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REFERENCE : RS-433

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RS-433 765.7-770.9	0.007			0.13
RS-433 770.9-775.6	0.019			0.09
RS-433 775.6-777.8	0.012			0.13
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RS-433 784.4-789.0	0.018			0.14
RS-433 789.0-793.7	0.044	0.036		0.17
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RS-433 798.8-800.8	0.005			0.08
RS-433 800.8-804.7	0.006			0.06
RS-433 804.7-807.3	0.011			0.07
RS-433 807.3-808.4	0.016			0.08
RS-433 808.4-810.0	0.031			0.30
RS-433 810-813	0.009			0.13
RS-433 813.0-816.5	0.031			0.53
RS-433 816.5-820.0	0.113		0.095	2.27
RS-433 820-825	0.096		0.112	0.32
RS-433 825-830	0.013			0.10
RS-433 830.0-834.8	0.006			0.18
RS-433 834.8-840.0	0.011			0.22
RS-433 840.0-845.2	0.010			0.24

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048518

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 27 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-433 845.2-850.0	0.005			0.09
31003	0.542			4.81

American Assay Laboratories

INVOICE

Remit To: P.O. Box11530
Reno, Nevada 89510
Phone NO.: 702-356-0606
Fax No.: 702-356-1413

AMERICAN ASSAY LABORATORIES
1500 GLENDALE AVE.
SPARKS, NV 89431

(702) 356-0606

INVOICE NO: SP 0048322-IN
INVOICE DATE: 03/31/98

INVOICE TO:
THE ROSEBUD MINING CO., LLC
HECLA MINING COMPANY, OPERATOR
P.O. BOX 2610
WINNEMUCCA NV 89446

THE ROSEBUD MINING CO., LLC
HECLA MINING COMPANY, OPERATOR
P.O. BOX 2610
WINNEMUCCA NV 89446

CUSTOMER P.O.	PROJECT	TERMS
RS-433	DEVELOPMENT	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
65	SAMPLES RECEIVED	.00	.00
65	DRYING	1.00	65.00
65	EXCESSIVE WETNESS	1.00	65.00
65	JAW CRUSHING CHARGE	1.30	84.50
65	SPLITTING CHARGE	1.20	78.00
65	FINE MILLING CHARGE	2.00	130.00
65	Au (1 A.T. FIRE ASSAY)	8.00	520.00
65	HYDROCHLORIC/NITRIC DIGESTION	2.00	130.00
65	Ag ANALYSES	1.00	65.00

86-5210-477

NET INVOICE:	1,137.50
LESS DISCOUNT:	341.25
FREIGHT:	.00
INVOICE TOTAL:	796.25

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048322

American Assay Laboratories

PO BOX 11530
RENO NV,USA
Ph.(702) 356-0606, Fax.(702) 356-1413

HECLA MINING COMPANY

COPIES TO : KURT ALLEN

:

:

:

CLIENT REFERENCE No: RS-433 RECEIVED : 19 MAR 1998

No. SAMPLES : 65 REPORTED : 30 MAR 1998

MAIN SAMPLE TYPE : DRILL CORE

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

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048322

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-433 000-010	<0.001		<0.02
RS-433 010-020	<0.001		<0.02
RS-433 020-030	<0.001		<0.02
RS-433 030-040	<0.001		<0.02
RS-433 040-050	<0.001		<0.02
RS-433 050-060	<0.001		<0.02
RS-433 060-070	<0.001		0.02
RS-433 070-080	0.003		0.10
RS-433 080-090	0.003		0.19
RS-433 090-100	0.004		0.52
RS-433 100-110	0.003	0.003	0.15
RS-433 110-120	0.004		0.35
RS-433 120-130	0.003		0.12
RS-433 130-140	0.002		0.11
RS-433 140-150	<0.001		<0.02
RS-433 150-160	<0.001		<0.02
RS-433 160-170	0.003		0.11
RS-433 170-180	<0.001		0.02
RS-433 180-190	0.001		0.04
RS-433 190-200	<0.001		0.02
RS-433 200-210	<0.001	<0.001	0.04
RS-433 210-220	<0.001		<0.02
RS-433 220-230	<0.001		<0.02
RS-433 230-240	<0.001		<0.02
RS-433 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048322

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-433 250-260	0.001		0.09
RS-433 260-270	<0.001		0.02
RS-433 270-280	<0.001		0.03
RS-433 280-290	<0.001		<0.02
RS-433 290-300	0.003		0.14
RS-433 300-310	<0.001		0.02
RS-433 310-320	<0.001		<0.02
RS-433 320-330	<0.001		<0.02
RS-433 330-340	<0.001		<0.02
RS-433 340-350	<0.001	<0.001	0.05
RS-433 350-360	0.001		0.05
RS-433 360-370	0.002		0.05
RS-433 370-380	0.001		0.03
RS-433 380-390	<0.001		0.04
RS-433 390-400	0.002		0.08
RS-433 400-410	0.002		0.08
RS-433 410-420	0.003		0.05
RS-433 420-430	<0.001		0.02
RS-433 430-440	<0.001		<0.02
RS-433 440-450	0.001	0.001	0.04
RS-433 450-460	<0.001		0.03
RS-433 460-470	0.001		0.04
RS-433 470-480	0.001		0.05
RS-433 480-490	0.002		0.05
RS-433 490-500	0.002		0.03

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048322

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-433 500-510	<0.001		0.02
RS-433 510-520	<0.001		<0.02
RS-433 520-530	<0.001		<0.02
RS-433 530-540	0.003		0.03
RS-433 540-550	0.001		0.03
RS-433 550-560	0.002		0.09
RS-433 560-570	0.007	0.008	0.12
RS-433 570-580	0.006		0.12
RS-433 580-590	0.007		0.94
RS-433 590-600	0.009	0.006	0.27
RS-433 600-610	0.007		0.26
RS-433 610-620	0.010		0.08
RS-433 620-630	0.009		0.06
RS-433 630-640	0.005		0.08
RS-433 640-650	0.002		0.08

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048322

American Assay Laboratories

PO BOX 11530
RENO NV,USA
Ph.(702) 356-0606, Fax.(702) 356-1413

HECLA MINING COMPANY

COPIES TO : KURT ALLEN

:

:

:

CLIENT REFERENCE No: RS-433

No. SAMPLES : 65

MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 19 MAR 1998

REPORTED : 30 MAR 1998

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

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048322

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-433 000-010	<0.001		<0.02
RS-433 010-020	<0.001		<0.02
RS-433 020-030	<0.001		<0.02
RS-433 030-040	<0.001		<0.02
RS-433 040-050	<0.001		<0.02
RS-433 050-060	<0.001		<0.02
RS-433 060-070	<0.001		0.02
RS-433 070-080	0.003		0.10
RS-433 080-090	0.003		0.19
RS-433 090-100	0.004		0.52
RS-433 100-110	0.003	0.003	0.15
RS-433 110-120	0.004		0.35
RS-433 120-130	0.003		0.12
RS-433 130-140	0.002		0.11
RS-433 140-150	<0.001		<0.02
RS-433 150-160	<0.001		<0.02
RS-433 160-170	0.003		0.11
RS-433 170-180	<0.001		0.02
RS-433 180-190	0.001		0.04
RS-433 190-200	<0.001		0.02
RS-433 200-210	<0.001	<0.001	0.04
RS-433 210-220	<0.001		<0.02
RS-433 220-230	<0.001		<0.02
RS-433 230-240	<0.001		<0.02
RS-433 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048322

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-433 250-260	0.001		0.09
RS-433 260-270	<0.001		0.02
RS-433 270-280	<0.001		0.03
RS-433 280-290	<0.001		<0.02
RS-433 290-300	0.003		0.14
RS-433 300-310	<0.001		0.02
RS-433 310-320	<0.001		<0.02
RS-433 320-330	<0.001		<0.02
RS-433 330-340	<0.001		<0.02
RS-433 340-350	<0.001	<0.001	0.05
RS-433 350-360	0.001		0.05
RS-433 360-370	0.002		0.05
RS-433 370-380	0.001		0.03
RS-433 380-390	<0.001		0.04
RS-433 390-400	0.002		0.08
RS-433 400-410	0.002		0.08
RS-433 410-420	0.003		0.05
RS-433 420-430	<0.001		0.02
RS-433 430-440	<0.001		<0.02
RS-433 440-450	0.001	0.001	0.04
RS-433 450-460	<0.001		0.03
RS-433 460-470	0.001		0.04
RS-433 470-480	0.001		0.05
RS-433 480-490	0.002		0.05
RS-433 490-500	0.002		0.03

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048322

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-433

REPORTED : 30 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-433 500-510	<0.001		0.02
RS-433 510-520	<0.001		<0.02
RS-433 520-530	<0.001		<0.02
RS-433 530-540	0.003		0.03
RS-433 540-550	0.001		0.03
RS-433 550-560	0.002		0.09
RS-433 560-570	0.007	0.008	0.12
RS-433 570-580	0.006		0.12
RS-433 580-590	0.007		0.94
RS-433 590-600	0.009	0.006	0.27
RS-433 600-610	0.007		0.26
RS-433 610-620	0.010		0.08
RS-433 620-630	0.009		0.06
RS-433 630-640	0.005		0.08
RS-433 640-650	0.002		0.08

SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

Sparks Office
1500 Glendale Ave.
Nevada 89431
Box 11530
Reno, NV 89510
Telephone
(702) 356-0606
Fax
(702) 356-1413

Tucson Office
2775 E. Ganley
Tucson, AZ 85706
Telephone
(520) 294-8078
Fax
(520) 294-6352

Elko Office
2320 Last Chance Rd.
Nevada 89801
Box 2908
Elko, NV 89801
Telephone
(702) 738-9100
Fax
(702) 738-2594

Mazatlan Office
Telephone/Fax
011-52-69-170035

Other Offices
Lima, Peru
Santiago, Chile
Mendoza, Argentina

Company: ROSEBUD MINING CO. LLT

Address: P.O. BOX 2610

City WINNEMUCCA State NV Zip 89820

Telephone Number: (702) 623-6912 Fax Number: (702) 623-6967

Project Name: DEVELOPMENT Purchase Order Number:

Date Submitted: 03/19/98 Number of Samples: SEE BELOW

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

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
RS-434 0→10' TO 690'-700'	RC	AU-AG ACCORDING TO ROSEBUD
(70 SAMPLES)		& MINE PROTOCOL
RS-435 0'→10' TO 690'-700'		
(70 SAMPLES)		

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

Results to:

KURT ALLEN

Comments:

CLIENT FILE COPY

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* ROSEBUD MINING COMPANY, LLC *
****

JOB NUMBER: 29-0588-311

WELL NAME: RS-433

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/20/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
***** NORM JEX *****

PROJECTED F/820' T/850'.

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

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0588-311 WELL NAME: RS-433

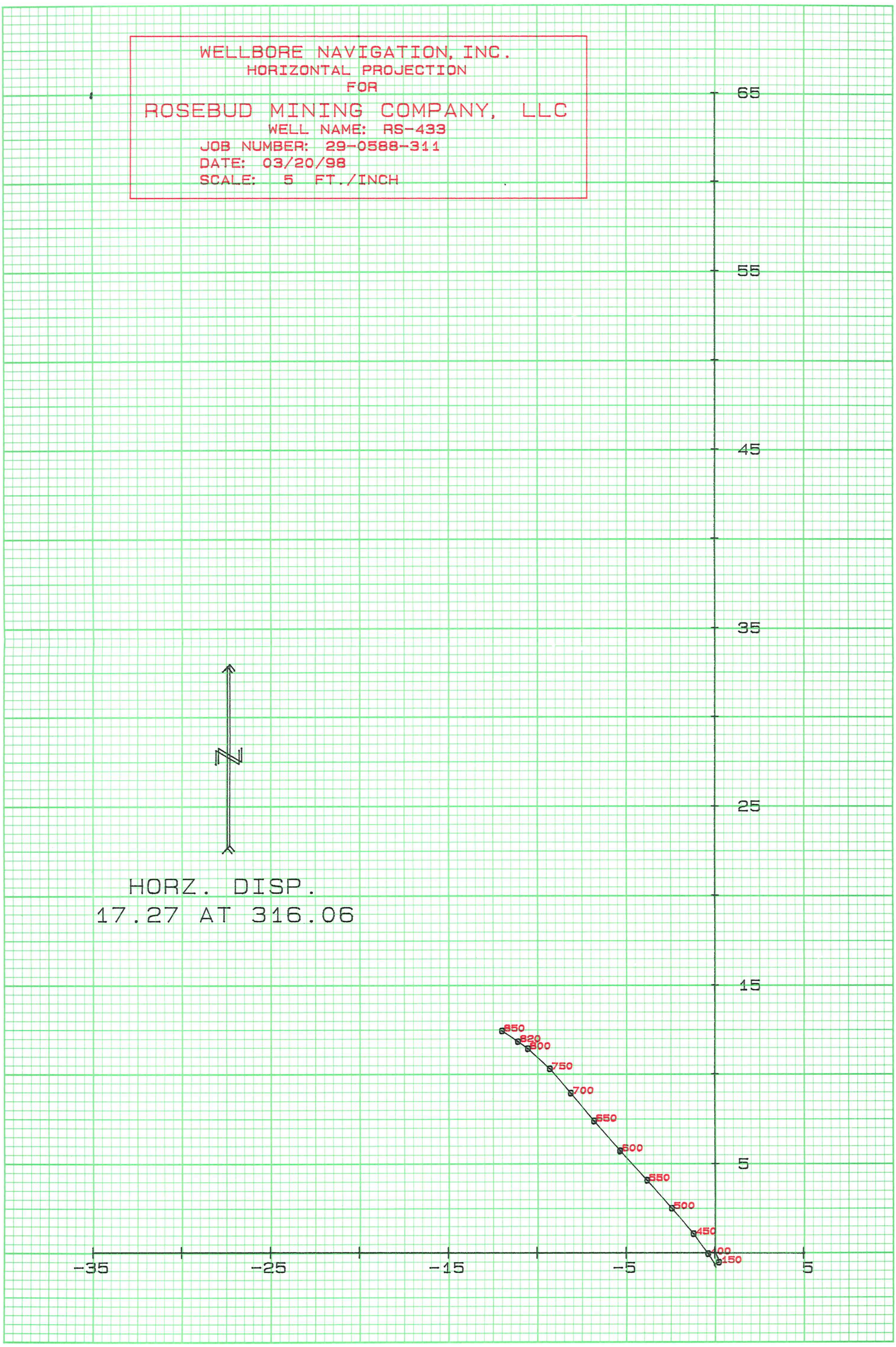
INRUN SURVEY
BY MINIMUM CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	L/R CLOS.	INCL HORZ	BEARING AZIMUTH	COORDINATES LATITUDE	COORDINATES DEPARTURE	D-LEG /100	D-LEG /CL	STATION DISP.	DISPLACEMENT DIRECTION
50.0	50.00	-0.10	-0.010	-89.76	141.66	0.08 S	0.06 E	0.48	0.24	0.10	AT 141.66
100.0	100.00	-0.35	-0.101	-89.63	165.89	0.32 S	0.17 E	0.36	0.18	0.36	AT 152.18
150.0	150.00	-0.54	-0.207	-89.87	163.29	0.53 S	0.22 E	0.48	0.24	0.58	AT 157.07
200.0	200.00	-0.48	-0.320	-89.68	277.43	0.57 S	0.10 E	0.78	0.39	0.58	AT 169.74
250.0	250.00	-0.48	-0.499	-89.68	176.97	0.69 S	0.03 W	0.98	0.49	0.69	AT 182.35
300.0	300.00	-0.63	-0.541	-89.85	087.78	0.83 S	0.04 E	0.70	0.35	0.83	AT 176.92
350.0	350.00	-0.48	-0.461	-89.55	325.37	0.66 S	0.00 W	1.09	0.55	0.66	AT 180.14
400.0	399.99	0.24	-0.310	-88.78	328.96	0.04 S	0.39 W	1.54	0.77	0.39	AT 263.45
450.0	449.97	1.62	-0.135	-88.01	319.78	1.07 N	1.22 W	1.62	0.81	1.63	AT 311.30
500.0	499.94	3.49	-0.024	-87.69	319.16	2.50 N	2.44 W	0.64	0.32	3.49	AT 315.66
550.0	549.89	5.60	0.058	-87.48	317.51	4.07 N	3.84 W	0.44	0.22	5.60	AT 316.66
600.0	599.84	7.84	0.127	-87.38	318.10	5.73 N	5.35 W	0.21	0.10	7.84	AT 316.99
650.0	649.79	10.05	0.228	-87.55	319.31	7.39 N	6.81 W	0.36	0.18	10.05	AT 317.36
700.0	699.75	12.06	0.369	-87.84	320.95	8.94 N	8.10 W	0.59	0.30	12.06	AT 317.81
750.0	749.72	13.86	0.470	-88.01	317.46	10.31 N	9.28 W	0.42	0.21	13.87	AT 318.00
800.0	799.69	15.54	0.358	-88.12	306.68	11.44 N	10.52 W	0.76	0.38	15.54	AT 317.38
820.0	819.68	16.21	0.226	-87.95	303.46	11.83 N	11.09 W	1.01	0.20	16.21	AT 316.86
850.0	849.66	17.27	-0.001	-87.91	304.40	12.44 N	11.99 W	0.17	0.05	17.27	AT 316.06

```
*************************************************************
*                        ********                           *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                        ********                           *
*   850.0 FEET EQUALS     17.27    FEET AT   316.06         *
*                        ********                           *
*************************************************************
```

STARLIGHT PRINTING (801) 467-2841

WELLBORE NAVIGATION, INC.
HORIZONTAL PROJECTION
FOR
ROSEBUD MINING COMPANY, LLC
WELL NAME: RS-433
JOB NUMBER: 29-0588-311
DATE: 03/20/98
SCALE: 5 FT./INCH



WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* ROSEBUD MINING COMPANY, LLC *
****

JOB NUMBER: 29-0588-311

WELL NAME: RS-433 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/20/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00

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

COMMENTS: ** BOART LONGYEAR **
***** NORM JEX *****

PROJECTED F/820' T/850'.

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

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0588-311 WELL NAME: RS-433 / VS 305.00

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
50.0	50.00	-0.03	0.100	-89.76	141.66	0.08 S	0.06 E	0.48	0.24	0.10	AT 141.66
100.0	100.00	-0.17	0.323	-89.63	165.89	0.32 S	0.17 E	0.36	0.18	0.36	AT 152.18
150.0	150.00	-0.31	0.489	-89.87	163.29	0.53 S	0.22 E	0.48	0.24	0.58	AT 157.07
200.0	200.00	-0.41	0.410	-89.68	277.43	0.57 S	0.10 E	0.78	0.39	0.58	AT 169.74
250.0	250.00	-0.58	0.372	-89.68	176.97	0.69 S	0.03 W	0.98	0.49	0.69	AT 182.35
300.0	300.00	-0.65	0.510	-89.85	087.78	0.83 S	0.04 E	0.70	0.35	0.83	AT 176.92
350.0	350.00	-0.54	0.378	-89.55	325.37	0.66 S	0.00 W	1.09	0.55	0.66	AT 180.14
400.0	399.99	-0.26	-0.292	-88.78	328.96	0.04 S	0.39 W	1.54	0.77	0.39	AT 263.45
450.0	449.97	0.18	-1.618	-88.01	319.78	1.07 N	1.22 W	1.62	0.81	1.63	AT 311.30
500.0	499.94	0.65	-3.434	-87.69	319.16	2.50 N	2.44 W	0.64	0.32	3.49	AT 315.66
550.0	549.89	1.13	-5.484	-87.48	317.51	4.07 N	3.84 W	0.44	0.22	5.60	AT 316.66
600.0	599.84	1.63	-7.671	-87.38	318.10	5.73 N	5.35 W	0.21	0.10	7.84	AT 316.99
650.0	649.79	2.15	-9.819	-87.55	319.31	7.39 N	6.81 W	0.36	0.18	10.05	AT 317.36
700.0	699.75	2.67	-11.761	-87.84	320.95	8.94 N	8.10 W	0.59	0.30	12.06	AT 317.81
750.0	749.72	3.12	-13.514	-88.01	317.46	10.31 N	9.28 W	0.42	0.21	13.87	AT 318.00
800.0	799.69	3.33	-15.182	-88.12	306.68	11.44 N	10.52 W	0.76	0.38	15.54	AT 317.38
820.0	819.68	3.33	-15.867	-87.95	303.46	11.83 N	11.09 W	1.01	0.20	16.21	AT 316.86
850.0	849.66	3.31	-16.951	-87.91	304.40	12.44 N	11.99 W	0.17	0.05	17.27	AT 316.06

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   850.0 FEET EQUALS     17.27    FEET AT   316.06         *
*                          ********                         *
*************************************************************
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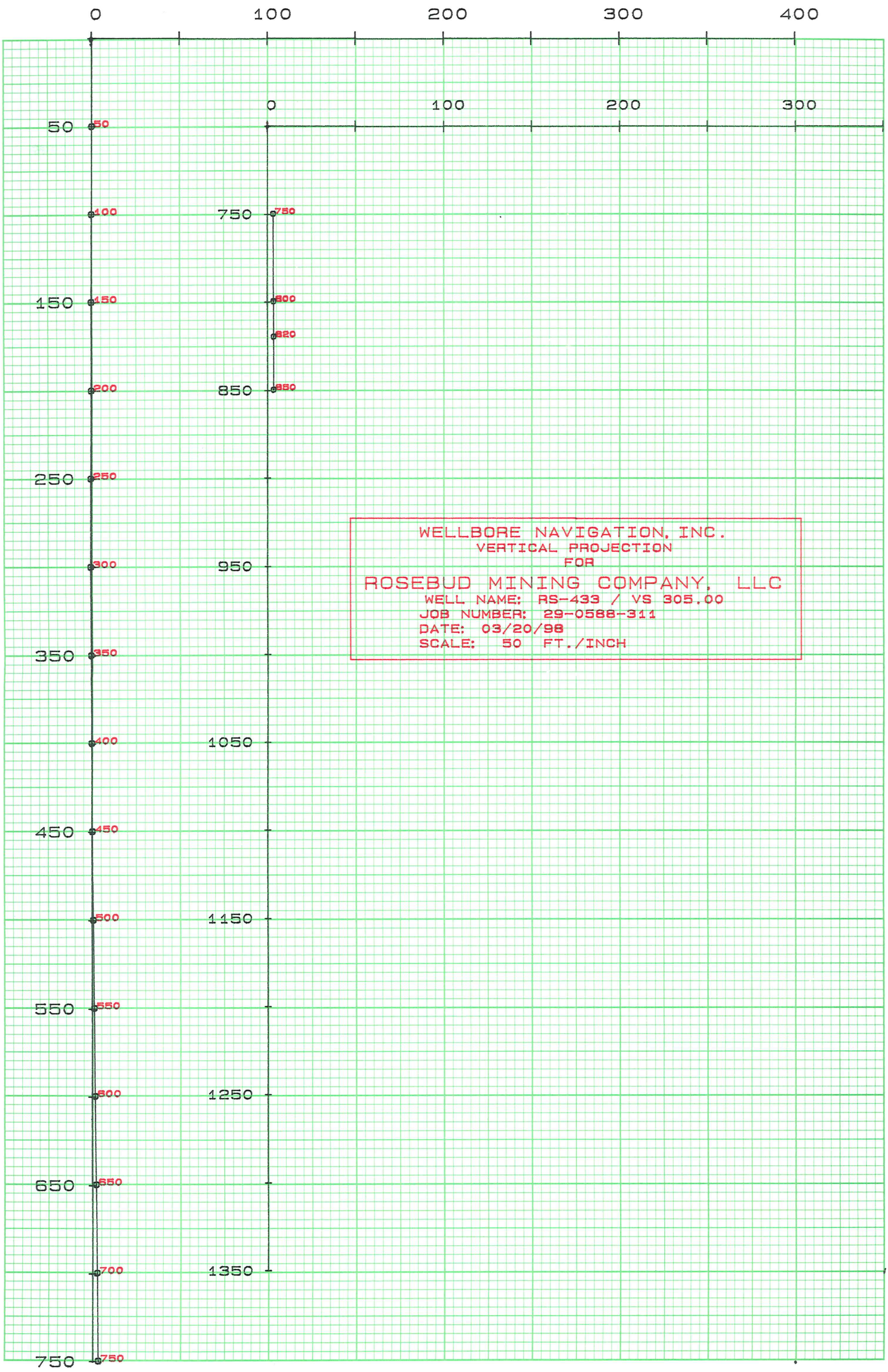
STARLIGHT PRINTING (801) 467-2841



WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* ROSEBUD MINING COMPANY, LLC *
****

JOB NUMBER: 29-0588-311

WELL NAME: RS-433 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/20/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00

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

COMMENTS: ** BOART LONGYEAR **
***** NORM JEX *****

PROJECTED F/820' T/850'.

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

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0588-311 WELL NAME: RS-433 / VS 035.00

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
50.0	50.00	0.10	0.030	-89.76	141.66	0.08 S	0.06 E	0.48	0.24	0.10	AT 141.66
100.0	100.00	0.32	0.166	-89.63	165.89	0.32 S	0.17 E	0.36	0.18	0.36	AT 152.18
150.0	150.00	0.49	0.307	-89.87	163.29	0.53 S	0.22 E	0.48	0.24	0.58	AT 157.07
200.0	200.00	0.41	0.406	-89.68	277.43	0.57 S	0.10 E	0.78	0.39	0.58	AT 169.74
250.0	250.00	0.37	0.581	-89.68	176.97	0.69 S	0.03 W	0.98	0.49	0.69	AT 182.35
300.0	300.00	0.51	0.651	-89.85	087.78	0.83 S	0.04 E	0.70	0.35	0.83	AT 176.92
350.0	350.00	0.38	0.543	-89.55	325.37	0.66 S	0.00 W	1.09	0.55	0.66	AT 180.14
400.0	399.99	-0.29	0.259	-88.78	328.96	0.04 S	0.39 W	1.54	0.77	0.39	AT 263.45
450.0	449.97	-1.62	-0.179	-88.01	319.78	1.07 N	1.22 W	1.62	0.81	1.63	AT 311.30
500.0	499.94	-3.43	-0.647	-87.69	319.16	2.50 N	2.44 W	0.64	0.32	3.49	AT 315.66
550.0	549.89	-5.48	-1.131	-87.48	317.51	4.07 N	3.84 W	0.44	0.22	5.60	AT 316.66
600.0	599.84	-7.67	-1.628	-87.38	318.10	5.73 N	5.35 W	0.21	0.10	7.84	AT 316.99
650.0	649.79	-9.82	-2.152	-87.55	319.31	7.39 N	6.81 W	0.36	0.18	10.05	AT 317.36
700.0	699.75	-11.76	-2.675	-87.84	320.95	8.94 N	8.10 W	0.59	0.30	12.06	AT 317.81
750.0	749.72	-13.51	-3.121	-88.01	317.46	10.31 N	9.28 W	0.42	0.21	13.87	AT 318.00
800.0	799.69	-15.18	-3.332	-88.12	306.68	11.44 N	10.52 W	0.76	0.38	15.54	AT 317.38
820.0	819.68	-15.87	-3.332	-87.95	303.46	11.83 N	11.09 W	1.01	0.20	16.21	AT 316.86
850.0	849.66	-16.95	-3.312	-87.91	304.40	12.44 N	11.99 W	0.17	0.05	17.27	AT 316.06

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*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   850.0 FEET EQUALS    17.27   FEET AT  316.06            *
*                          ********                         *
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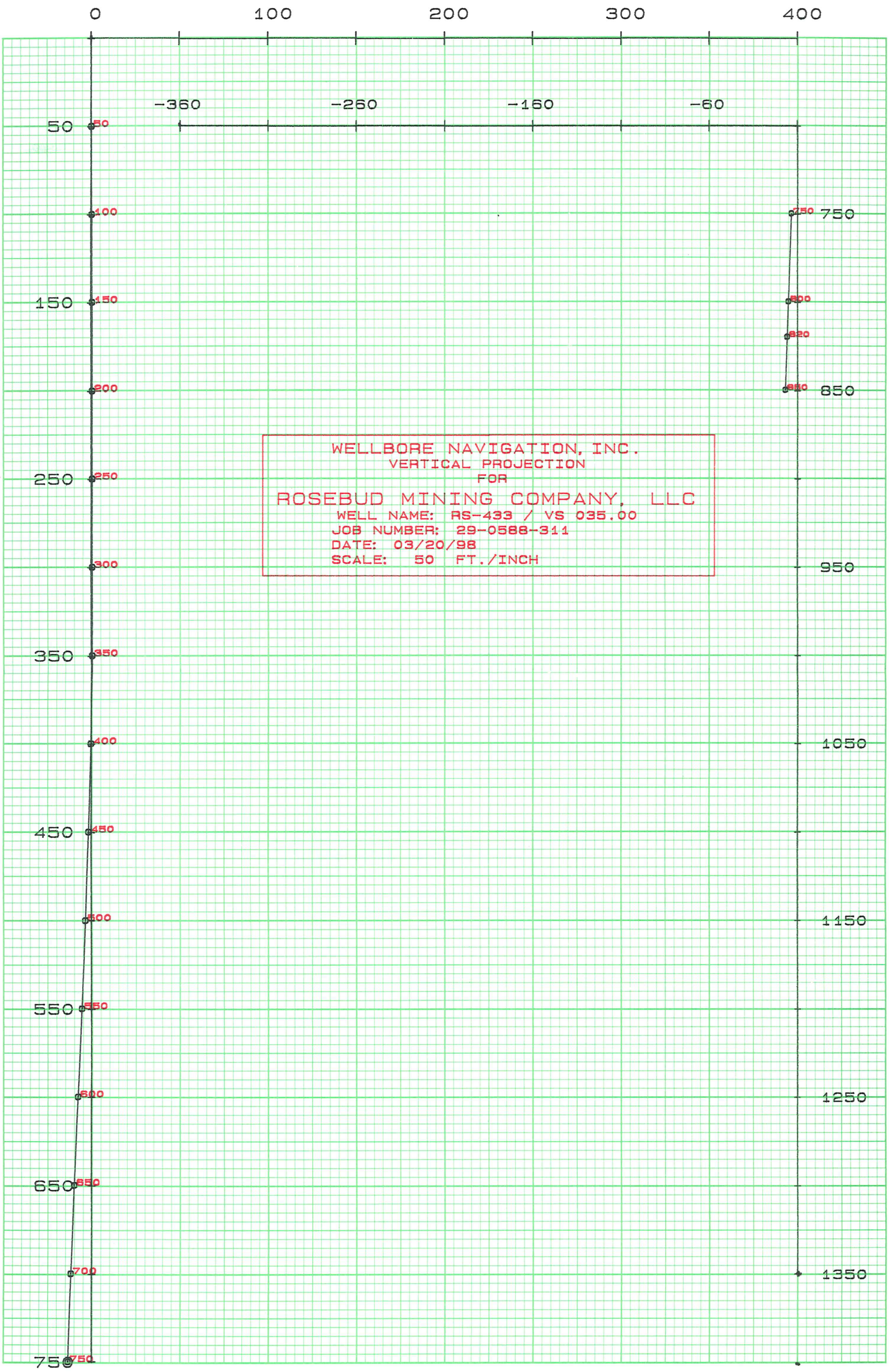

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* ROSEBUD MINING COMPANY *
****

JOB NUMBER: 29-0588-311

WELL NAME: RS-433

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/16/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

WATER CONTACT= 553'

WELNAV

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

COMMENTS: ***** EKLUND *****
** DENNIS WHITE **

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

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0588-311 WELL NAME: RS-433

INRUN SURVEY
BY MINIMUM CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	L/R CLOS.	INCL HORZ	BEARING AZIMUTH	COORDINATES LATITUDE	COORDINATES DEPARTURE	D-LEG /100	D-LEG /CL	STATION DISP.	DISPLACEMENT DIRECTION	TEMP. DEG F
50.0	50.00	-0.10	-0.008	-89.76	141.66	0.08 S	0.06 E	0.48	0.24	0.10	AT 141.66	066.11
100.0	100.00	-0.35	-0.093	-89.63	165.89	0.32 S	0.17 E	0.36	0.18	0.36	AT 152.18	066.41
150.0	150.00	-0.54	-0.195	-89.87	163.29	0.53 S	0.22 E	0.48	0.24	0.58	AT 157.07	066.47
200.0	200.00	-0.49	-0.309	-89.68	277.43	0.57 S	0.10 E	0.78	0.39	0.58	AT 169.74	066.56
250.0	250.00	-0.49	-0.488	-89.68	176.97	0.69 S	0.03 W	0.98	0.49	0.69	AT 182.35	066.31
300.0	300.00	-0.64	-0.527	-89.85	087.78	0.83 S	0.04 E	0.70	0.35	0.83	AT 176.92	066.10
350.0	350.00	-0.49	-0.450	-89.55	325.37	0.66 S	0.00 W	1.09	0.55	0.66	AT 180.15	066.03
400.0	399.99	0.23	-0.315	-88.78	328.96	0.04 S	0.39 W	1.54	0.77	0.39	AT 263.45	065.74
450.0	449.97	1.62	-0.172	-88.01	319.78	1.07 N	1.22 W	1.62	0.81	1.63	AT 311.30	065.69
500.0	499.94	3.49	-0.103	-87.69	319.16	2.50 N	2.44 W	0.64	0.32	3.49	AT 315.66	065.65
550.0	549.89	5.60	-0.069	-87.48	317.51	4.07 N	3.84 W	0.44	0.22	5.60	AT 316.65	063.93
600.0	599.84	7.84	-0.051	-87.38	318.10	5.73 N	5.35 W	0.21	0.10	7.84	AT 316.98	065.13
650.0	649.79	10.05	-0.000	-87.55	319.31	7.39 N	6.81 W	0.36	0.18	10.05	AT 317.36	065.98

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*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   650.0 FEET EQUALS     10.05    FEET AT  317.36          *
*                          ********                         *
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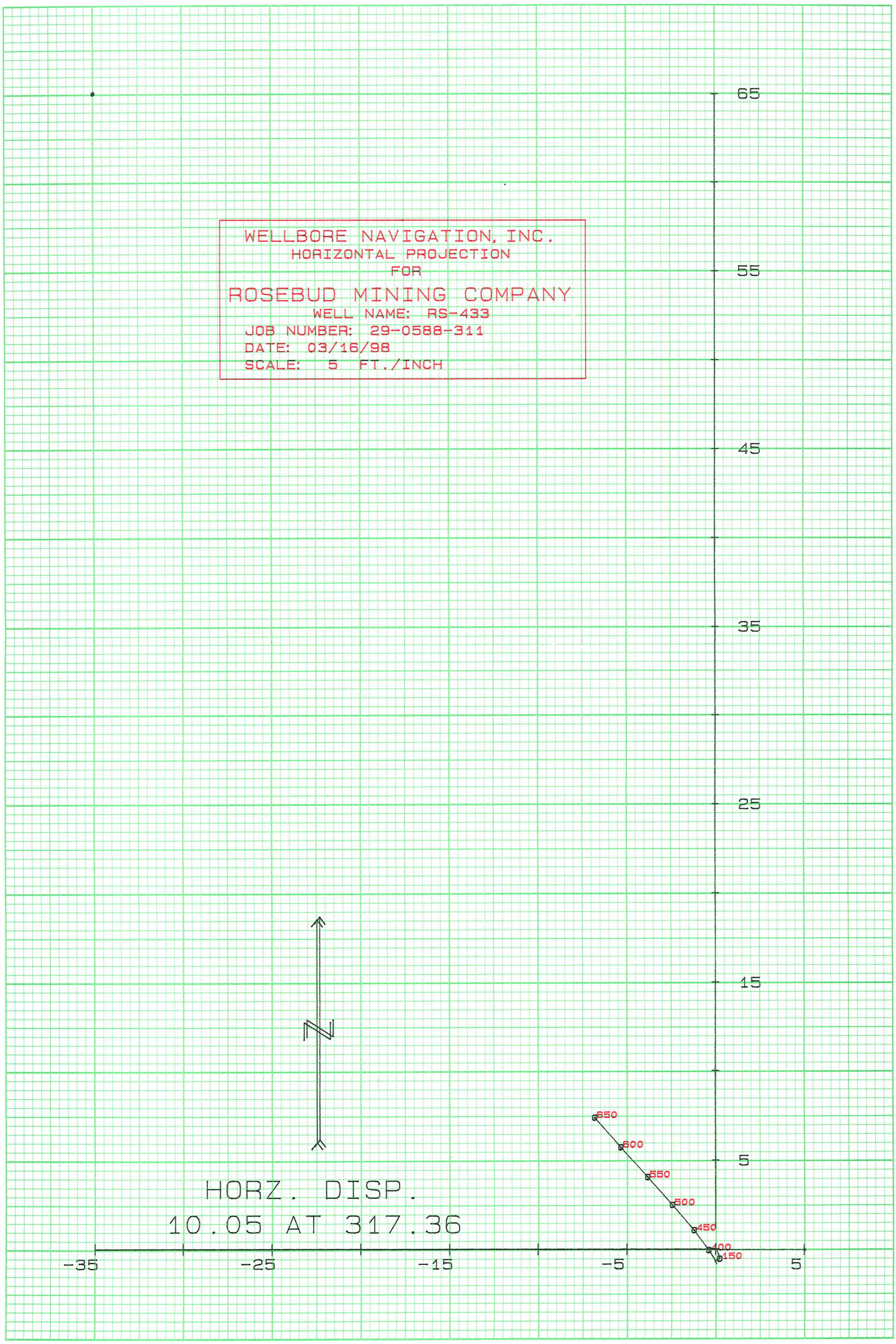

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* ROSEBUD MINING COMPANY *
****

JOB NUMBER: 29-0588-311

WELL NAME: RS-433 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/16/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

WELNAV

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00
WATER CONTACT= 553'

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

COMMENTS: ***** EKLUND *****
** DENNIS WHITE **

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

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0588-311 WELL NAME: RS-433 / VS 305.00

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	TEMP. DEG F
50.0	50.00	-0.03	0.100	-89.76	141.66	0.08 S	0.06 E	0.48	0.24	0.10	AT 141.66	066.11
100.0	100.00	-0.17	0.323	-89.63	165.89	0.32 S	0.17 E	0.36	0.18	0.36	AT 152.18	066.41
150.0	150.00	-0.31	0.489	-89.87	163.29	0.53 S	0.22 E	0.48	0.24	0.58	AT 157.07	066.47
200.0	200.00	-0.41	0.410	-89.68	277.43	0.57 S	0.10 E	0.78	0.39	0.58	AT 169.74	066.56
250.0	250.00	-0.58	0.372	-89.68	176.97	0.69 S	0.03 W	0.98	0.49	0.69	AT 182.35	066.31
300.0	300.00	-0.65	0.510	-89.85	087.78	0.83 S	0.04 E	0.70	0.35	0.83	AT 176.92	066.10
350.0	350.00	-0.54	0.378	-89.55	325.37	0.66 S	0.00 W	1.09	0.55	0.66	AT 180.15	066.03
400.0	399.99	-0.26	-0.292	-88.78	328.96	0.04 S	0.39 W	1.54	0.77	0.39	AT 263.45	065.74
450.0	449.97	0.18	-1.618	-88.01	319.78	1.07 N	1.22 W	1.62	0.81	1.63	AT 311.30	065.69
500.0	499.94	0.65	-3.434	-87.69	319.16	2.50 N	2.44 W	0.64	0.32	3.49	AT 315.66	065.65
550.0	549.89	1.13	-5.485	-87.48	317.51	4.07 N	3.84 W	0.44	0.22	5.60	AT 316.65	063.93
600.0	599.84	1.63	-7.671	-87.38	318.10	5.73 N	5.35 W	0.21	0.10	7.84	AT 316.98	065.13
650.0	649.79	2.15	-9.819	-87.55	319.31	7.39 N	6.81 W	0.36	0.18	10.05	AT 317.36	065.98

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*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   650.0 FEET EQUALS     10.05    FEET AT  317.36          *
*                          ********                         *
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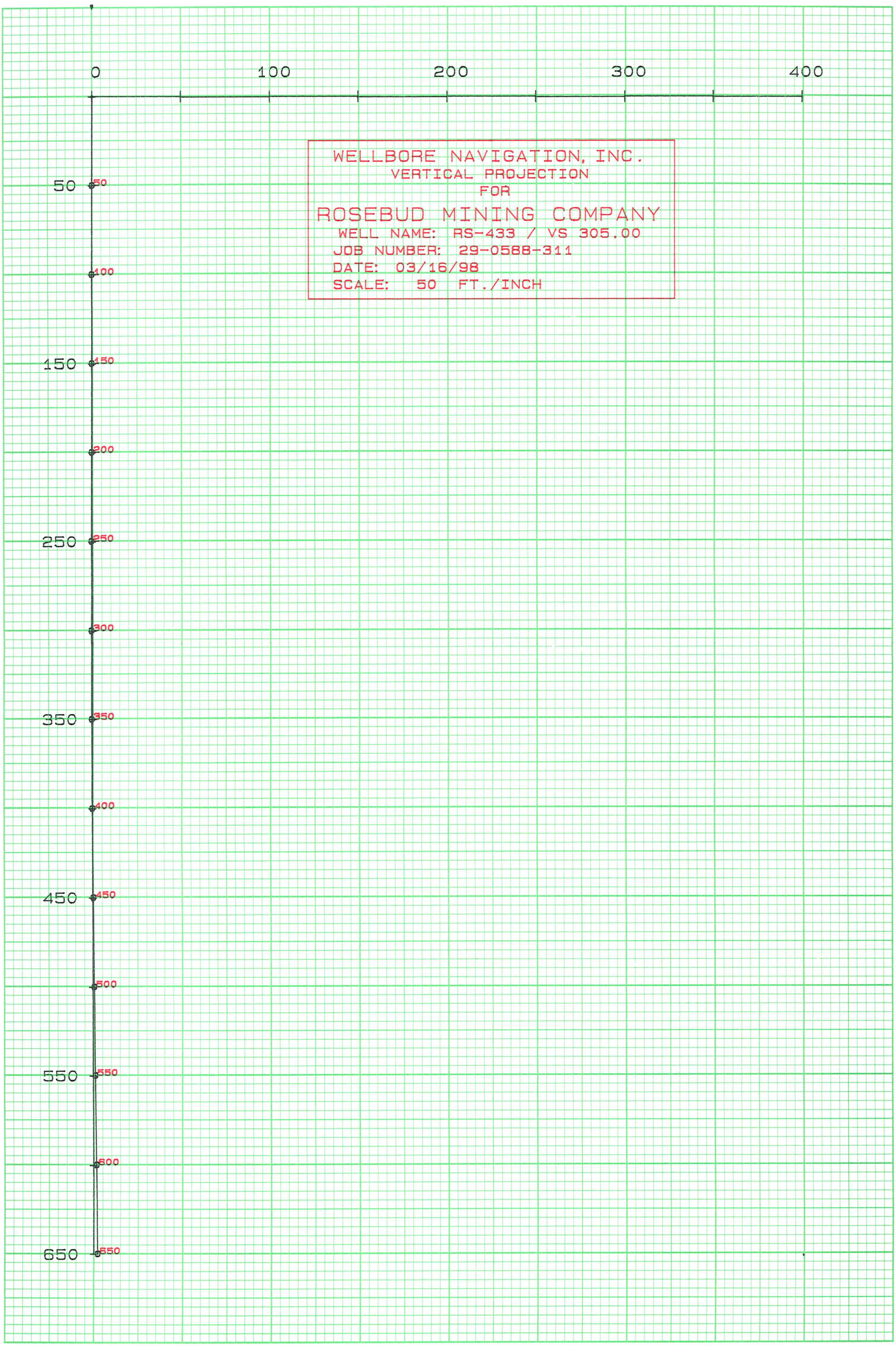

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

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GYRO REFERENCE BEARING: TRUE NORTH

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PROPOSAL DIRECTION OF: 125.00
WATER CONTACT= 553'

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

COMMENTS: ***** EKLUND *****
** DENNIS WHITE **

****
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*** THIS DIRECTIONAL SURVEY REPORT IS ****
** CORRECT TO THE BEST OF MY KNOWLEDGE ***
* AND IS SUPPORTED BY ACTUAL FIELD DATA! *
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** COMPANY REPRESENTATIVE **
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WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0588-311 WELL NAME: RS-433 / VS 035.00

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	TEMP. DEG F
50.0	50.00	0.10	0.030	-89.76	141.66	0.08 S	0.06 E	0.48	0.24	0.10	AT 141.66	066.11
100.0	100.00	0.32	0.166	-89.63	165.89	0.32 S	0.17 E	0.36	0.18	0.36	AT 152.18	066.41
150.0	150.00	0.49	0.307	-89.87	163.29	0.53 S	0.22 E	0.48	0.24	0.58	AT 157.07	066.47
200.0	200.00	0.41	0.406	-89.68	277.43	0.57 S	0.10 E	0.78	0.39	0.58	AT 169.74	066.56
250.0	250.00	0.37	0.581	-89.68	176.97	0.69 S	0.03 W	0.98	0.49	0.69	AT 182.35	066.31
300.0	300.00	0.51	0.651	-89.85	087.78	0.83 S	0.04 E	0.70	0.35	0.83	AT 176.92	066.10
350.0	350.00	0.38	0.543	-89.55	325.37	0.66 S	0.00 W	1.09	0.55	0.66	AT 180.15	066.03
400.0	399.99	-0.29	0.259	-88.78	328.96	0.04 S	0.39 W	1.54	0.77	0.39	AT 263.45	065.74
450.0	449.97	-1.62	-0.179	-88.01	319.78	1.07 N	1.22 W	1.62	0.81	1.63	AT 311.30	065.69
500.0	499.94	-3.43	-0.647	-87.69	319.16	2.50 N	2.44 W	0.64	0.32	3.49	AT 315.66	065.65
550.0	549.89	-5.48	-1.131	-87.48	317.51	4.07 N	3.84 W	0.44	0.22	5.60	AT 316.65	063.93
600.0	599.84	-7.67	-1.628	-87.38	318.10	5.73 N	5.35 W	0.21	0.10	7.84	AT 316.98	065.13
650.0	649.79	-9.82	-2.151	-87.55	319.31	7.39 N	6.81 W	0.36	0.18	10.05	AT 317.36	065.98

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*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   650.0 FEET EQUALS     10.05    FEET AT   317.36         *
*                          ********                         *
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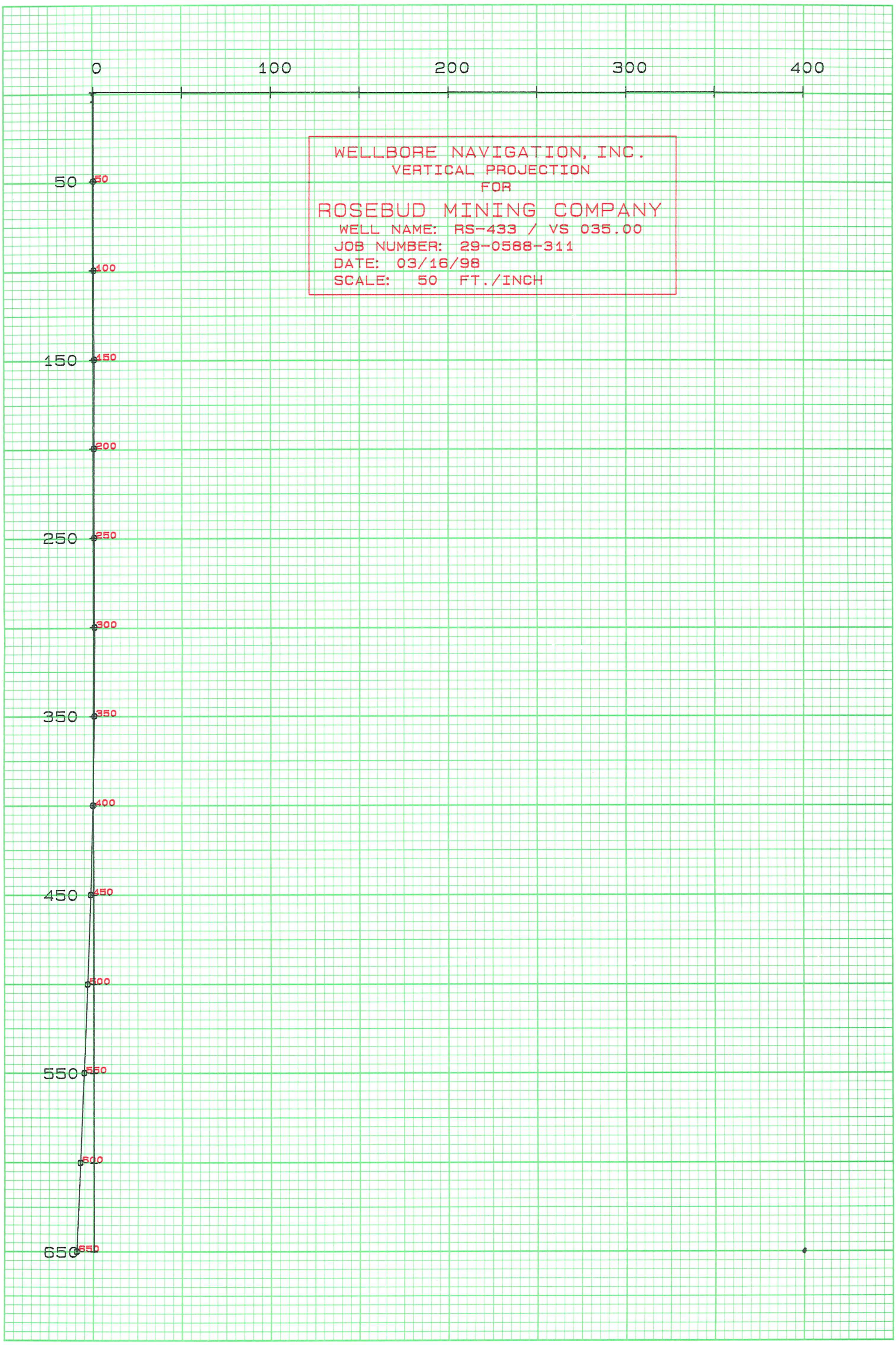

SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

Sparks Office
1500 Glendale Ave.
Nevada 89431
Box 11530
Reno, NV 89510
Telephone
(702) 356-0606
Fax
(702) 356-1413

Tucson Office
2775 E. Ganley
Tucson, AZ 85706
Telephone
(520) 294-8078
Fax
(520) 294-6352

Elko Office
2320 Last Chance Rd.
Nevada 89801
Box 2908
Elko, NV 89801
Telephone
(702) 738-9100
Fax
(702) 738-2594

Mazatlan Office
Telephone/Fax
011-52-69-170035

Other Offices
Lima, Peru
Santiago, Chile
Mendoza, Argentina

Company: ROSEBUD MINING CO. LTD

Address: P.O. BOX 2610

City WINNEMUCCA State NV Zip 89820

Telephone Number: (702) 623-6912 Fax Number: (702) 623-6967

Project Name: DEVELOPMENT Purchase Order Number:

Date Submitted: 03/17/98 Number of Samples: 65

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

RS-433 SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
	RC	Au-Ag ACCORDING TO ROSEBUD
0'→10' TO 640'-650' (65 SAMPLES)		MINE PROTOCOL

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

Results to:

KURT ALLEN

Comments:

CLIENT FILE COPY

RS- 433 BOX 1
DEPTH - 650. - 659.

RS- 433 BOX 2
DEPTH - 659. - 667.5

RS- 433 BOX 3
DEPTH - 667.5 - 676.5

680
RS- 433 BOX 4
DEPTH - 676.5 - 685.5

690
RS- 433 BOX 5
DEPTH - 685.5 - 694.

700
RS- 433 BOX 6
DEPTH - 694. - 702.5

RS- 433 BOX 7
DEPTH - 702.5 - 711.

RS- 433 BOX 8
DEPTH - 711. - 720.

RS - 433 BOX 9
DEPTH - 720. - 728.

730
RS – 433
BOX 10
DEPTH - 728. - 737.

740
RS – 433
BOX 11
DEPTH - 737. - 746.

750
RS – 433
BOX 12
DEPTH - 746. - 755.

760
RS - 433
BOX 13
DEPTH - 755. - 764.

770
RS - 433
BOX 14
DEPTH - 764. - 773.

776
RS - 433
BOX 15
DEPTH - 773. - 782.

787
RS - 433 BOX 16
DEPTH - 782. - 791.

RS - 433 BOX 17
DEPTH - 791. - 800.

RS - 433 BOX 18
DEPTH - 800. - 809.5

RS – 433 BOX 19
DEPTH - 809.5 - 817.5

RS – 433 BOX 20
DEPTH - 817.5 - 827.

RS – 433 BOX 21
DEPTH - 827. - 836.

840
RS – 433
BOX 22
DEPTH - 836. - 845.

RS – 433
BOX 23
DEPTH - 845. - 850. TD