60000549

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-439
AUTHOR	K. Allen; S King; D. White; V. Reid; M. Jex
DATE OF DOC(S)	1998
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.
COMMODITY If not obvious	gold; silver
NOTES	drill logs; assay; geology; photographs; geochemistry; total depth 800'; invoices 59p.

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 3/19/08
Initials Date
DB:
Initials Date
SCANNED:
Initials Date

Revised: 1/22/08

RS - 439

6000 0549
4010

6000 0549

Hecla MINING COMPANY

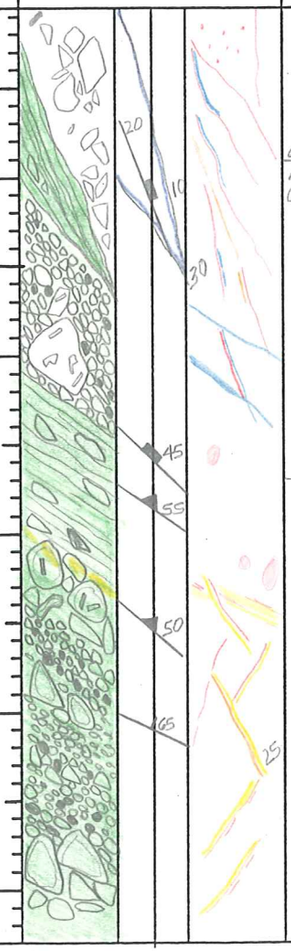
- quartz, chalcedony, silicification
- faults, fractures
- FeOx
- BARITE
- sulfide
- calcite, carbonate
- argillization, white clays
- propylitization
- potassic alteration
- chlorite, chloritic clays

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	RS-439	LOCATION	EAST, SURFACE	REMARKS	RC PILOT TO 600'
PAGE	1 OF 4	NORTHING			
DATE	04/26/98	EASTING			
LOGGED BY	ZBM	ELEVATION			
SCALE	1" = 10'	AZIMUTH	—		
TOTAL DEPTH	800'	INCLINATION	-90°		

LITH.	OX/RED.	LITHOLOGY (CORE POINT)	FT (600')	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
600.0-610.8 VITROPHYRIC BRECCIA ? OR BXAT'D FG PINK PORPHYRY		600.0-610.8': MONOLITHIC MOSAIC BRECCIA. FAINTLY GRNISH-CREAM SUB-ANGULAR FRAGMTS. INTERMITTENTLY RUDDY STAINED WITH VERY APHANITIC GROUNDMASS & MOD. FOLIATION OF MICROPHENOCRYST LATHS. RUDDY STAINED ROCK FLOUR MATRIX.				600.0-610.8': WK/MOD. PYRITE +/- WHT CLAY + CALCITE VNLTS. STRONG EARLIER RUDDY FeOx(?) STAINING. WK/MOD PERVASIVE ARG. OF FRAGMTS.
610.8'-616.2' VITROPHYRE		610.8': CONTACT? LOOKS MORE LIKE A SHEARED ALTERATION BOUNDARY. THE BRECCIA TEXTURE REMAINS ESSENTIALLY THE SAME ACROSS THE IRREGULAR BREAK EXCEPTING THAT IT IS FOLIATED SLIGHTLY // TO THE SHEAR FOLIATION WITHIN THE CLAY ALTERED ZONE. LT. BLUE-GRN & SLIGHTLY WAXY TO FRIABLE.	610		610.8-616.2': SHEAR FOLIATION AT LOW ∠'S TO C/A ~ 15°.	610.8-616.2': STRONG GRN-BLUE ~~GR~~ CLAY ALT'N. CONTD WK PYRITIC VNLTS +/- CALCITE. INCREASE CALCITE VNING ~ 614.'
616.2'-666.5' UBUD CONG.?		616.2'-621.4': SPECKLED RUDDY BRN & GRN PEBBLE-SIZED LITHIC LAPILLI TUFF WITH A WK SHEAR FABRIC.	620			616.2-621.4': MOD. GRN CLAY ALT'N. LOCAL MOD. SPARRY CALCITE, +/- PY. TR/WK DISS'D PYRITE.
		621.4'-628.5': STRONGLY SHEAR FOLIATED IN FINE-GRAINED, STR. GRN CLAY-ALTERED FRAGMTS. CONGLOMERATIC UBUD.			SOME FOLIATN // JNTING	621.4-628.5': STRONG GRN CLAY ALT'N. TR PY, RUDDY BRN MATRIX.
		628.5'-634.0': MED. GRN CONGLOMERATIC UBUD. COBBLE-SIZED FRAGMTS PRIMARILY SUB-ROUNDED, PLAG-BEARING CHOCOLATE TYPE FRAGMENTS.	630			628.5'-634: STR. GRN CLAY
		634.0-638.0': FINER PEBBLE- TO VCG SAND-SIZED BUD. MODLY TO WKLY BLCHED PALE GRN.				634'-638': STR. GRN CLAY ALT'N, WK BLCHING, MOD. QZ + MARC VNLTS, Py OVERPRINT ON MARC.
		638.0-663.8': MEDIUM-GRN, INTERMITTENTLY CONGLOMERATIC UBUD. LARGER COBBLE-SIZED FRAGMTS OF CHOCOLATE, PALE SCORIA ~~BEDS~~ & EITHER Tos OR BASAL TERTIARY SS.	640			638.0'-663.8': MOD/STR GRN CLAY ALT'N. MOD. DISS'D VNLT PY +/- QZ.
			650			

GRAPHIC LOG



ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag
600.0	605.8					
605.8	610.8					
610.8	616.2					
616.2	621.4					
621.4	625.2					
625.2	628.8					
628.8	633.8					
633.8	638.0					
638.0	643.0					
643.0	647.9					

HOLE NUMBER RS-439 PAGE 2 OF 4

LITH.	OX/RED.	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2
616.2-666.5' UBUD		663.8-666.5': WK TECTONIC & MOD/STR HYDROTHERMAL OVERPRINT ON GRN CLAY ALTERED UBUD, AS DESCRIBED P.1.	650			663.8-666.5': STRONG VUGGY, LEACHED IRREGULAR SILICA +/- MARC & WHT CLAY VNS. SOME DISS'D MARC/PY, & COBWEBBED SILICA VNLTS (SEMI-PERVASIVE)	647.9	652.9				
			660				652.9	658.4				
		666.5-674.8': HEALED, MATRIX-SUPPORTED, HETERO-LITHIC MOSAIC BRECCIA. NOT MILLED. SUB-ANGULAR TO SUB-ROUND FRAGMTS RANGE FROM LT. GRN & V. APHANITIC TO PINK-TAN & GRAINY IN TEXTURE, POSSIBLY DUE TO ALT'N. TAN RK FLOUR (?) MATRIX. POSSIBLE BLCHING OVERPRINT ACCTNG FOR PAINTNESS OF TEXTURE & COLOR. MAY BE WELDED UBUD (NON-TECTONIC)				666.5-674.8': MOD/WK SILICA + MARC/PY VNLTS. WK SiO_2 IN WALLRK. MOD WHT CLAY +/- PYRARGERITE.	658.4	663.8				
666.5'-698.5 SOUTH RIDGE FAULT? UBUD			670				663.8	666.5				
						~672: PYRARGERITE + WHT CLAY VNLT.	666.5	670.5				
		674.8-680.7': MOTTLED RUDDY BROWN & GRN PEBBLE-SIZED BRECCIA. LOOKS LIKE FAIRLY COARSE-GRAINED BUD. NOTE: INTACT PUNKY GRN CLAY ALTERED SCORIACEOUS FRAGMTS. = PRIMARY VOLCANIC BXA.				674.8-680.7': WK SiO_2 IN WALLRK. MOD. WISPY PY VNLTS. TR LATE WHT CLAY ON FRAX. PUNKY GRN CLAY ALT'N = FRAGMT SPECIFIC.	670.5	675.1				
			680				675.1	680.7				
680.7'-696.5' TRUE FAULT		BY 680.7' A CLEAR-CUT PERVASIVE TECTONIC OVERPRINT ON THE OVERLYING LITHOLOGY, + OTHERS.				680.7-682.9': MOD. TO STR. GRN CLAY ALT'N, SPOTTY SILICA FLOODING. MOD. DISS'D MARC/PY. TR WHT CLAY.	680.7	682.9				
		680.7-687.3': LAYERED TAN & PUNKY GRN MATERIAL W/O MUCH ORIGINAL LITHOLOGIC TEXTURE REMAINING. SPOTTY SILICIFIED, CONSISTENTLY ARGILLIZED.					682.9	684.0				
							684.0	687.3				
			690			682.9-684': AS ABOVE W/ STR. GRY SILICA & SOOTY SULFIDE FLOODING.	687.3	689.0				
							689.0	691.0				
							691.0	692.3				
		687.3'-689': GRY SILICA +/- MARC FLOODS & OVERPRINTS RUDDY BRN MOTTLED APHANITIC TAN UNIT (POSSIBLY ONCE PORPHYRITIC NOW FLECKED W/ MARC/PY).				684-687.3': WK/MOD. SiO_2 OVERPRINT, STR. VNLT & DISS'D MARC/PY.	692.3	694.1				
							694.1	695.5				
							695.5	696.5				
					LOSS	687.3-689': STR TO INT. GRY SILICA +/- MARC.						
698.5'-800.0' DOZER		689.0-691': >90% GRY SILICA +/- SOOTY SULFIDES.	700				698.5	701.0				
		691.0-692.3': MOTTLED WHT-GRY SILICA. 100%				689-691': >80% REPLACED W/ GRY SILICA, VFG SULFIDES						
		692.3'-694.1': STRLY SILICA-FLOODED, SPECKLED PINK-TAN LITHOLOGY. CRACKLE BRECCIATED A/O OVERPRINTED W/ MOSTLY LT. GRY SILICA				691'-692.3': 100% GRY TO WHT REPLACEMT SiO_2. W/O SULFIDE.	701.0	706.0				
		694.1-695.5': STRLY TO MODLY SILICIFIED DEFORMED GRN CLAY ALTERED ~~BUD~~ TOS? DERIVED TECTONIC BRECCIA.	710			692.3'-694.1': STR MILKY SILICA. WK/TR MARC.	706.0	711.0				
		695.5-696.5': BROKEN. MIXED LITHS. SOME BLK SILICA-SULFIDE MAT'L.				694.1-695.5': STR GRN CLAY ALT'N WK → STR SILICA, MOD/WK MARC/PY.	711.0	715.9				
		698.5'-701': PALE GRNISH CRM AUTOBXA'D DOZER WITH MOD/WK TECTONIC OVERPRINT.	720			698.5-701': WAXY GRN CLAY MATRIX TO TECTONIC BXA/STOCKWORKING.	715.9	721.0				

HOLE NUMBER RS-439 PAGE 3 OF 4

LITH.	OX/RED.	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
698.5-800.0 DOZER		698.5'-800' : LT GRN-TAN DOZER AUTOBRECCIA. TYPE AUTOBRECCIA: FAINT BACKGROUND MOSAIC. BXA IS X-CUT BY ALL OTHER FEATURES. FRAGMTS ARE PICKED OUT BY INTERIOR RIMS OF FAINT RUDDY FeOx (?) STAINING. BELOW 740.7': MOD. INCREASE IN FINESS OR INTENSITY OF BRECCIATION; TO ~ 763-765'. ~765': RETURN TO TIGHTLY-PACKED CRACKLE TO MOSAIC TEXTURED MONOMICT AUTOBXA. CLAST ARE ~~FG~~ APHANITIC CRM COLORED & FLOW BANDED, FINELY.	120 130 140 150 160 170 180 190	50 20 40 30 50	758': ~3" WHT CLAY GOUGE AND GRIT AT 40° TO C/A. 761.7-765.6': WKLY BROKEN LT. GRN GOUGE ON FRAX. 780.5': WHT CLAY + PYRARGERITE VNLT.	698.5-739.0: MOD. SILICA + MARCASITE VNING. WK LEACH VUGS IN SILICA FILLED WITH LATE WHT CLAY. WHT CLAY + CALCITE LATE VNLT FILL. CALCITE IN VUGS & VEINS BY ~705'. PRESENT BOTH AS VFG MAT'L W/ WHT CLAY & AS SPAR IN VNLTS. 739.0-740.7': 1-2" WHT CLAY VNS W/ PYRARGERITE + BLOCKY BARITE. FINE CALCITE 740.7-~748': PERVASIVE GRN CLAY ALT'N INCREASED FROM TRACE TO WK THRU THIS INTERVAL. ~748'-~756': SLIGHTLY ELEVATED RUDDY STAINING. 740.7'-760': CONT'D MOD. SILICA + WHT CLAY +/- CALCITE + MARC VNING. ~760-761.7': SILICA-FLOODED (MODLY). SILICA + MARC + WHT CLAY/CALCITE VNING. 761.7'-~768': MOD. GRN CLAY ALT'N ON FRAX, WK PERVASIVE. CONT'D MOD. WHT CLAY X CALCITE X MARC VNLTS. ~768-780': WK VNING ~780'-~790': WHT CLAY + CALCITE + MARC +/- SILICA VNLTS DENSITY BACK UP TO MODERATE.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2
715.9	721.0				
721.0	726.2				
726.2	731.0				
731.0	735.0				
735.0	739.0				
739.0	740.7				
740.7	744.1				
744.1	748.1				
748.1	752.0				
752.0	756.6				
756.6	761.7				
761.7	765.6				
765.6	771.0				
771.0	775.3				
775.1	779.8				
779.8	780.7				
780.7	785.1				
785.1	790.0				

HOLE NUMBER RS-439 PAGE 4 OF 4

LITH.	OX/RED.	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION	ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2
698.5-800.0 DOZER		~790'-800': MOTTLED LT. GRN & CRM AUTOBRECCIATED DOZER.	790			~790'-800': MOD. DISS'D MARC / PYRITE. WK WHT CLAY +/- CALCITE VNING.	790.0	795.3				
			800				795.3	800.0				
		T.D. 800'.										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-439 DATE: 04/26/98 LOGGED BY: HBM 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)
600.0	609.7	96.9	96.9	91.0										
609.7	615.7	95.0	95.0	55.0										
615.7	626.0	101.9	101.9	54.4										
626.0	636.0	102.0	102.0	67.0										
636.0	643.0	98.6	98.6	90.0										
643.0	650.0	104.3	104.3	64.3										
650.0	660.0	101.0	101.0	72.0										
660.0	670.0	99.0	99.0	78.0										
670.0	680.0	99.0	99.0	92.0										
680.0	690.0	93.0	93.0	70.0										
690.0	692.0	85.0	85.0	50.0										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-439 DATE: 04/26/98 LOGGED BY: HSM PAGE 2 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)
692.0	695.5	108.6	108.6	80.0										
695.5	698.5	33.3	33.3	0										
698.5	708.5	96.0	96.0	75.0										
708.5	718.8	97.1	97.1	97.1										
718.8	729.0	100.0	100.0	100.0										
729.0	739.0	100.0	100.0	100.0										
739.0	749.0	100.0	100.0	93.0										
749.0	759.3	99.0	99.0	94.2										
759.3	769.6	99.0	99.0	69.9										
769.6	779.8	100.0	100.0	100.0										
779.8	790.0	100.0	100.0	90.0										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-439 DATE: 04/26/98 LOGGED BY: HSM 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)
790.0	800.0	100.0	100.0	91.0										
	TD													

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048366

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Ph.(702) 356-0606, Fax.(702) 356-1413

HECLA MINING COMPANY

COPIES TO : KURT ALLEN

:

:

:

NS7

CLIENT REFERENCE No: RS-439 RECEIVED : 26 MAR 1998

No. SAMPLES : 60 REPORTED : 9 APR 1998

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(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 SP048366

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-439 000-010	<0.001		<0.02
RS-439 010-020	<0.001		0.04
RS-439 020-030	0.001		0.02
RS-439 030-040	0.001		<0.02
RS-439 040-050	<0.001		0.02
RS-439 050-060	<0.001		<0.02
RS-439 060-070	<0.001		<0.02
RS-439 070-080	<0.001		<0.02
RS-439 080-090	<0.001	<0.001	<0.02
RS-439 090-100	<0.001		<0.02
RS-439 100-110	<0.001		0.03
RS-439 110-120	<0.001		0.03
RS-439 120-130	<0.001		0.02
RS-439 130-140	<0.001	<0.001	<0.02
RS-439 140-150	<0.001		<0.02
RS-439 150-160	<0.001		<0.02
RS-439 160-170	<0.001		<0.02
RS-439 170-180	<0.001		<0.02
RS-439 180-190	<0.001		0.03
RS-439 190-200	<0.001		0.05
RS-439 200-210	<0.001		0.02
RS-439 210-220	<0.001		<0.02
RS-439 220-230	<0.001	<0.001	<0.02
RS-439 230-240	<0.001		<0.02
RS-439 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048366

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-439 250-260	<0.001		<0.02
RS-439 260-270	<0.001		<0.02
RS-439 270-280	<0.001		<0.02
RS-439 280-290	<0.001		<0.02
RS-439 290-300	<0.001		<0.02
RS-439 300-310	<0.001		<0.02
RS-439 310-320	<0.001		<0.02
RS-439 320-330	<0.001		<0.02
RS-439 330-340	0.005		0.09
RS-439 340-350	0.001	0.001	0.05
RS-439 350-360	0.001		0.03
RS-439 360-370	0.001		0.04
RS-439 370-380	0.001		0.07
RS-439 380-390	<0.001		0.02
RS-439 390-400	0.001		0.05
RS-439 400-410	0.006		0.08
RS-439 410-420	0.003		0.09
RS-439 420-430	0.002		0.06
RS-439 430-440	0.005		0.06
RS-439 440-450	0.002		0.04
RS-439 450-460	0.002		0.26
RS-439 460-470	0.002		0.06
RS-439 470-480	0.002		0.04
RS-439 480-490	0.002		0.04
RS-439 490-500	0.002		0.05

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048366

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-439 500-510	0.001		0.04
RS-439 510-520	0.004		0.04
RS-439 520-530	0.002		0.03
RS-439 530-540	0.001		0.03
RS-439 540-550	0.003		0.07
RS-439 550-560	0.003		0.05
RS-439 560-570	0.002		<0.02
RS-439 570-580	<0.001		<0.02
RS-439 580-590	0.002	0.002	0.07
RS-439 590-600	0.001		0.04

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048711

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HECLA MINING COMPANY

COPIES TO : KURT ALLEN

:

:

:

CLIENT REFERENCE No: RS-439 RECEIVED : 30 APR 1998

No. SAMPLES : 52 REPORTED : 13 MAY 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.

05/13/1998 11:17 7023561413 AMERICAN ASSAY LABS PAGE 01
7023561413

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048711

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)
RS-439 600.0-605.8	0.001			0.04
RS-439 605.8-610.8	0.003			0.08
RS-439 610.8-616.2	<0.001			0.02
RS-439 616.2-621.4	0.004			0.03
RS-439 621.4-625.2	<0.001			<0.02
RS-439 625.2-628.8	<0.001			0.03
RS-439 628.8-633.8	0.004			0.02
RS-439 633.8-638.0	0.036	0.038		0.04
RS-439 638-643	0.001			0.04
RS-439 643.0-647.9	0.001			0.03
RS-439 647.9-652.9	0.003			0.04
RS-439 652.9-658.4	0.013			0.04
RS-439 658.4-663.8	0.014			0.05
RS-439 663.8-666.5	0.011			0.43
RS-439 666.5-670.5	0.025	0.024		0.46
RS-439 670.5-675.1	0.102		0.097	3.17
RS-439 675.1-680.7	0.003			0.14
RS-439 680.7-682.9	0.005			0.08
RS-439 682.9-684.0A	0.010			0.17
RS-439 682.9-684.0B	0.004			0.07
RS-439 684.0-687.3	0.007			0.33
RS-439 687.3-689.0	0.029	0.028		3.56
RS-439 689-691	0.029			2.88
RS-439 691.0-692.3	0.019			0.37
RS-439 692.3-694.1 1.8'	0.776		0.401	0.78

6923 - 695.5 =
3.2' @
0.529 Au
0.53 Ag

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048711

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)	
RS-439 694.1-695.5 1.4	0.212		0.401	0.21	
RS-439 695.5-696.5	0.059			0.05	
RS-439 698.5-701.0	0.033			0.07	
RS-439 701-706	0.042			0.10	
RS-439 706-711	0.135		0.260	0.30	711 -721 = 10' @
RS-439 711.0-715.9 4.9'	0.176		0.300	0.51	0.19 Au
RS-439 715.9-721.0 5.1	0.205		0.199	1.05	0.79 Ag
RS-439 721.0-726.2	0.055		0.087	0.39	
RS-439 726.2-731.0	0.014			0.09	
RS-439 731-735	0.084		0.069	0.06	
RS-439 735-739	0.027	0.043		0.24	
RS-439 739.0-740.7	0.007			10.10	
RS-439 740.7-744.1	0.012			0.08	
RS-439 744.1-748.1	0.016			0.07	
RS-439 748.1-752.0	0.034			0.64	
RS-439 752.0-756.6	0.007			0.15	
RS-439 756.6-761.7	0.012			1.58	
RS-439 761.7-765.6	0.020			0.19	
RS-439 765.6-771.0	0.021			0.38	
RS-439 771.0-775.3	0.008			0.91	
RS-439 775.3-779.8	0.006			0.10	
RS-439 779.8-780.7	0.010			2.26	
RS-439 780.7-785.1	0.024			0.30	
RS-439 785.1-790.0	0.024			2.79	
RS-439 790.0-795.3	0.006			0.93	

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048711

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)
RS-439 795.3-800.0	0.002			0.07
31043	0.122			2.74

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

Quick Log

HOLE NUMBER: RS-439
PAGE: 1 OF 3
DATE: 6/25/97
LOGGED BY: EAA
TOTAL DEPTH: 600' RUC PRE-COLLAR, 800' CORE

LOCATION: EAST ZONE
NORTHING:
EASTING:
ELEVATION:
AZIMUTH: VERT
INCLINATION: -90

AREA: EAST ZONE
DRILLING CO.: ERLUND
RIG TYPE: RUC
HOLE SIZE: 5 1/2
DOWN HOLE SURVEY BY: WELWAU

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	MIXTURE	ANALYTICAL DA: FROM	TO	W	Au
10		col	Colluvium																		X																			
20		TC fg	Fine-Grained, bleached, latite to andesite flow?																		X																			
30																				X																				
40																				X																				
50																				X																				
60																				X																				
70																				X																				
80																			X																					
90																																								
100																																								
110		TCLT	Fine-grained, latitic to andesitic auto breccia or volcanic breccia																																					
120																																								
130																																								
140																																								
150																																								
160																																								
170																																								
180																																								
190																																								
200																																								

Hecla MINING COMPANY

ROSEBUD PROJECT
DRILL LOG

HOLE NUMBER RS-439
PAGE 2 OF 3
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	AG-SULF	SULFATE	BARITE	OXIDE	SULF	CARBON	MOISTURE	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%	%	%	%	%	%	%									
210		TCCLT																																						
220																																								
230																																								
240																																								
250																																								
260																																								
270																																								
280																																								
290																																								
300																																								
310																																								
320																																								
330																																								
340																																								
350																																								
360																																								
370		FGPD + UNITED																																						
380																																								
390																																								
400																																								

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

HOLE NUMBER RS-439
PAGE 3 OF 3
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	AG-SULF	SULFATE	BARITE	OXIDE	SULF	CARBON	MOISTURE	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 + Vitro																																						
420																																								
430		FGPP	Fine-Grained, slightly porphyritic sill. Possibly Rhyolitic? in composition.																																					
440																																								
450																																								
460																																								
470																																								
480																																								
490																																								
500																																								
510																																								
520																																								
530																																								
540																																								
550																																								
560																																								
570																																								
580																																								
590																																								
600																																								

TD = 600' RVC PRE-COLLAR

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 0048711-IN
INVOICE DATE: 05/12/98

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-439	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
7	Ag (ore grade) ANALYSES	5.00	35.00

86-5210-477
KDA

NET INVOICE:	1,493.00
LESS DISCOUNT:	298.60
FREIGHT:	.00
INVOICE TOTAL:	1,194.40

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048711

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-439 RECEIVED : 30 APR 1998

No. SAMPLES : 52 REPORTED : 13 MAY 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

ANALYSIS REPORT SP048711

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-439 600.0-605.8	0.001			0.04
RS-439 605.8-610.8	0.003			0.08
RS-439 610.8-616.2	<0.001			0.02
RS-439 616.2-621.4	0.004			0.03
RS-439 621.4-625.2	<0.001			<0.02
RS-439 625.2-628.8	<0.001			0.03
RS-439 628.8-633.8	0.004			0.02
RS-439 633.8-638.0	0.036	0.038		0.04
RS-439 638-643	0.001			0.04
RS-439 643.0-647.9	0.001			0.03
RS-439 647.9-652.9	0.003			0.04
RS-439 652.9-658.4	0.013			0.04
RS-439 658.4-663.8	0.014			0.05
RS-439 663.8-666.5	0.011			0.43
RS-439 666.5-670.5	0.025	0.024		0.46
RS-439 670.5-675.1	0.102		0.097	3.17
RS-439 675.1-680.7	0.003			0.14
RS-439 680.7-682.9	0.005			0.08
RS-439 682.9-684.0A	0.010			0.17
RS-439 682.9-684.0B	0.004			0.07
RS-439 684.0-687.3	0.007			0.33
RS-439 687.3-689.0	0.029	0.028		3.56
RS-439 689-691	0.029			2.88
RS-439 691.0-692.3	0.019			0.37
RS-439 692.3-694.1	0.776		0.401	0.78

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048711

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-439 694.1-695.5	0.212		0.401	0.21
RS-439 695.5-696.5	0.059			0.05
RS-439 698.5-701.0	0.033			0.07
RS-439 701-706	0.042			0.10
RS-439 706-711	0.135		0.260	0.30
RS-439 711.0-715.9	0.176		0.300	0.51
RS-439 715.9-721.0	0.205		0.199	1.05
RS-439 721.0-726.2	0.055		0.087	0.39
RS-439 726.2-731.0	0.014			0.09
RS-439 731-735	0.084		0.069	0.06
RS-439 735-739	0.027	0.043		0.24
RS-439 739.0-740.7	0.007			10.10
RS-439 740.7-744.1	0.012			0.08
RS-439 744.1-748.1	0.016			0.07
RS-439 748.1-752.0	0.034			0.64
RS-439 752.0-756.6	0.007			0.15
RS-439 756.6-761.7	0.012			1.58
RS-439 761.7-765.6	0.020			0.19
RS-439 765.6-771.0	0.021			0.38
RS-439 771.0-775.3	0.008			0.91
RS-439 775.3-779.8	0.006			0.10
RS-439 779.8-780.7	0.010			2.26
RS-439 780.7-785.1	0.024			0.30
RS-439 785.1-790.0	0.024			2.79
RS-439 790.0-795.3	0.006			0.93

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048711

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-439 795.3-800.0	0.002			0.07
31043	0.122			2.74

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048711

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-439 RECEIVED : 30 APR 1998

No. SAMPLES : 52 REPORTED : 13 MAY 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

ANALYSIS REPORT SP048711

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-439 600.0-605.8	0.001			0.04
RS-439 605.8-610.8	0.003			0.08
RS-439 610.8-616.2	<0.001			0.02
RS-439 616.2-621.4	0.004			0.03
RS-439 621.4-625.2	<0.001			<0.02
RS-439 625.2-628.8	<0.001			0.03
RS-439 628.8-633.8	0.004			0.02
RS-439 633.8-638.0	0.036	0.038		0.04
RS-439 638-643	0.001			0.04
RS-439 643.0-647.9	0.001			0.03
RS-439 647.9-652.9	0.003			0.04
RS-439 652.9-658.4	0.013			0.04
RS-439 658.4-663.8	0.014			0.05
RS-439 663.8-666.5	0.011			0.43
RS-439 666.5-670.5	0.025	0.024		0.46
RS-439 670.5-675.1	0.102		0.097	3.17
RS-439 675.1-680.7	0.003			0.14
RS-439 680.7-682.9	0.005			0.08
RS-439 682.9-684.0A	0.010			0.17
RS-439 682.9-684.0B	0.004			0.07
RS-439 684.0-687.3	0.007			0.33
RS-439 687.3-689.0	0.029	0.028		3.56
RS-439 689-691	0.029			2.88
RS-439 691.0-692.3	0.019			0.37
RS-439 692.3-694.1	0.776		0.401	0.78

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048711

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-439 694.1-695.5	0.212		0.401	0.21
RS-439 695.5-696.5	0.059			0.05
RS-439 698.5-701.0	0.033			0.07
RS-439 701-706	0.042			0.10
RS-439 706-711	0.135		0.260	0.30
RS-439 711.0-715.9	0.176		0.300	0.51
RS-439 715.9-721.0	0.205		0.199	1.05
RS-439 721.0-726.2	0.055		0.087	0.39
RS-439 726.2-731.0	0.014			0.09
RS-439 731-735	0.084		0.069	0.06
RS-439 735-739	0.027	0.043		0.24
RS-439 739.0-740.7	0.007			10.10
RS-439 740.7-744.1	0.012			0.08
RS-439 744.1-748.1	0.016			0.07
RS-439 748.1-752.0	0.034			0.64
RS-439 752.0-756.6	0.007			0.15
RS-439 756.6-761.7	0.012			1.58
RS-439 761.7-765.6	0.020			0.19
RS-439 765.6-771.0	0.021			0.38
RS-439 771.0-775.3	0.008			0.91
RS-439 775.3-779.8	0.006			0.10
RS-439 779.8-780.7	0.010			2.26
RS-439 780.7-785.1	0.024			0.30
RS-439 785.1-790.0	0.024			2.79
RS-439 790.0-795.3	0.006			0.93

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048711

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 13 MAY 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-439 795.3-800.0	0.002			0.07
31043	0.122			2.74

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 0048366-IN
INVOICE DATE: 04/09/98

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-439	DEVELOPMENT	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
60	SAMPLES RECEIVED	.00	.00
60	DRYING	1.00	60.00
60	EXCESSIVE WETNESS	1.00	60.00
60	JAW CRUSHING CHARGE	1.30	78.00
60	SPLITTING CHARGE	1.20	72.00
60	FINE MILLING CHARGE	2.00	120.00
60	Au (1 A.T. FIRE ASSAY)	8.00	480.00
60	HYDROCHLORIC/NITRIC DIGESTION	2.00	120.00
60	Ag ANALYSES	1.00	60.00

86-5210-477
RDA

NET INVOICE:	1,050.00
LESS DISCOUNT:	315.00
FREIGHT:	.00
INVOICE TOTAL:	735.00

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048366

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-439 RECEIVED : 26 MAR 1998

No. SAMPLES : 60 REPORTED : 9 APR 1998

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(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 SP048366

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-439 000-010	<0.001		<0.02
RS-439 010-020	<0.001		0.04
RS-439 020-030	0.001		0.02
RS-439 030-040	0.001		<0.02
RS-439 040-050	<0.001		0.02
RS-439 050-060	<0.001		<0.02
RS-439 060-070	<0.001		<0.02
RS-439 070-080	<0.001		<0.02
RS-439 080-090	<0.001	<0.001	<0.02
RS-439 090-100	<0.001		<0.02
RS-439 100-110	<0.001		0.03
RS-439 110-120	<0.001		0.03
RS-439 120-130	<0.001		0.02
RS-439 130-140	<0.001	<0.001	<0.02
RS-439 140-150	<0.001		<0.02
RS-439 150-160	<0.001		<0.02
RS-439 160-170	<0.001		<0.02
RS-439 170-180	<0.001		<0.02
RS-439 180-190	<0.001		0.03
RS-439 190-200	<0.001		0.05
RS-439 200-210	<0.001		0.02
RS-439 210-220	<0.001		<0.02
RS-439 220-230	<0.001	<0.001	<0.02
RS-439 230-240	<0.001		<0.02
RS-439 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048366

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-439 250-260	<0.001		<0.02
RS-439 260-270	<0.001		<0.02
RS-439 270-280	<0.001		<0.02
RS-439 280-290	<0.001		<0.02
RS-439 290-300	<0.001		<0.02
RS-439 300-310	<0.001		<0.02
RS-439 310-320	<0.001		<0.02
RS-439 320-330	<0.001		<0.02
RS-439 330-340	0.005		0.09
RS-439 340-350	0.001	0.001	0.05
RS-439 350-360	0.001		0.03
RS-439 360-370	0.001		0.04
RS-439 370-380	0.001		0.07
RS-439 380-390	<0.001		0.02
RS-439 390-400	0.001		0.05
RS-439 400-410	0.006		0.08
RS-439 410-420	0.003		0.09
RS-439 420-430	0.002		0.06
RS-439 430-440	0.005		0.06
RS-439 440-450	0.002		0.04
RS-439 450-460	0.002		0.26
RS-439 460-470	0.002		0.06
RS-439 470-480	0.002		0.04
RS-439 480-490	0.002		0.04
RS-439 490-500	0.002		0.05

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048366

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-439 500-510	0.001		0.04
RS-439 510-520	0.004		0.04
RS-439 520-530	0.002		0.03
RS-439 530-540	0.001		0.03
RS-439 540-550	0.003		0.07
RS-439 550-560	0.003		0.05
RS-439 560-570	0.002		<0.02
RS-439 570-580	<0.001		<0.02
RS-439 580-590	0.002	0.002	0.07
RS-439 590-600	0.001		0.04

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048366

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-439
No. SAMPLES : 60
MAIN SAMPLE TYPE : DRILL CUTTINGS

RECEIVED : 26 MAR 1998
REPORTED : 9 APR 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 SP048366

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-439 000-010	<0.001		<0.02
RS-439 010-020	<0.001		0.04
RS-439 020-030	0.001		0.02
RS-439 030-040	0.001		<0.02
RS-439 040-050	<0.001		0.02
RS-439 050-060	<0.001		<0.02
RS-439 060-070	<0.001		<0.02
RS-439 070-080	<0.001		<0.02
RS-439 080-090	<0.001	<0.001	<0.02
RS-439 090-100	<0.001		<0.02
RS-439 100-110	<0.001		0.03
RS-439 110-120	<0.001		0.03
RS-439 120-130	<0.001		0.02
RS-439 130-140	<0.001	<0.001	<0.02
RS-439 140-150	<0.001		<0.02
RS-439 150-160	<0.001		<0.02
RS-439 160-170	<0.001		<0.02
RS-439 170-180	<0.001		<0.02
RS-439 180-190	<0.001		0.03
RS-439 190-200	<0.001		0.05
RS-439 200-210	<0.001		0.02
RS-439 210-220	<0.001		<0.02
RS-439 220-230	<0.001	<0.001	<0.02
RS-439 230-240	<0.001		<0.02
RS-439 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048366

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-439 250-260	<0.001		<0.02
RS-439 260-270	<0.001		<0.02
RS-439 270-280	<0.001		<0.02
RS-439 280-290	<0.001		<0.02
RS-439 290-300	<0.001		<0.02
RS-439 300-310	<0.001		<0.02
RS-439 310-320	<0.001		<0.02
RS-439 320-330	<0.001		<0.02
RS-439 330-340	0.005		0.09
RS-439 340-350	0.001	0.001	0.05
RS-439 350-360	0.001		0.03
RS-439 360-370	0.001		0.04
RS-439 370-380	0.001		0.07
RS-439 380-390	<0.001		0.02
RS-439 390-400	0.001		0.05
RS-439 400-410	0.006		0.08
RS-439 410-420	0.003		0.09
RS-439 420-430	0.002		0.06
RS-439 430-440	0.005		0.06
RS-439 440-450	0.002		0.04
RS-439 450-460	0.002		0.26
RS-439 460-470	0.002		0.06
RS-439 470-480	0.002		0.04
RS-439 480-490	0.002		0.04
RS-439 490-500	0.002		0.05

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048366

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-439

REPORTED : 9 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-439 500-510	0.001		0.04
RS-439 510-520	0.004		0.04
RS-439 520-530	0.002		0.03
RS-439 530-540	0.001		0.03
RS-439 540-550	0.003		0.07
RS-439 550-560	0.003		0.05
RS-439 560-570	0.002		<0.02
RS-439 570-580	<0.001		<0.02
RS-439 580-590	0.002	0.002	0.07
RS-439 590-600	0.001		0.04

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-439

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/24/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

WATER CONTACT= 557'

****
***** 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-439

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	-0.03	-0.022	-89.91	180.45	0.04 S	0.00 W	0.18	0.09	0.04	AT 180.45	062.19
100.0	100.00	0.18	-0.122	-89.42	308.45	0.08 N	0.20 W	1.28	0.64	0.21	AT 291.63	062.66
150.0	150.00	0.50	-0.268	-89.75	287.69	0.27 N	0.50 W	0.71	0.36	0.57	AT 298.27	062.95
200.0	200.00	0.86	-0.280	-89.37	338.14	0.56 N	0.71 W	1.02	0.51	0.90	AT 308.26	063.16
250.0	249.99	1.51	-0.125	-89.09	340.76	1.19 N	0.94 W	0.56	0.28	1.51	AT 321.63	063.32
300.0	299.98	2.44	0.079	-88.73	337.30	2.07 N	1.28 W	0.73	0.37	2.44	AT 328.22	063.32
350.0	349.97	3.64	0.318	-88.46	337.77	3.21 N	1.75 W	0.54	0.27	3.65	AT 331.34	063.54
400.0	399.95	5.01	0.603	-88.33	338.41	4.51 N	2.28 W	0.26	0.13	5.05	AT 333.21	063.58
450.0	449.92	6.66	0.800	-87.86	329.11	5.98 N	3.02 W	1.12	0.56	6.70	AT 333.20	063.77
500.0	499.87	8.95	0.909	-86.88	329.06	7.95 N	4.20 W	1.96	0.98	8.99	AT 332.15	064.01
550.0	549.76	12.22	0.678	-85.57	317.55	10.55 N	6.20 W	3.01	1.51	12.24	AT 329.53	065.28
600.0	599.61	16.04	-0.000	-85.52	315.04	13.35 N	8.89 W	0.40	0.20	16.04	AT 326.35	065.48

```
*************************************************************
*                         ********                          *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                         ********                          *
*   600.0 FEET EQUALS     16.04   FEET AT   326.35          *
*                         ********                          *
*************************************************************
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WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-439 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/24/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00
WATER CONTACT= 557'

****
****** 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-439 / 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	0.022	-89.91	180.45	0.04 S	0.00 W	0.18	0.09	0.04	AT 180.45	062.19
100.0	100.00	-0.05	-0.208	-89.42	308.45	0.08 N	0.20 W	1.28	0.64	0.21	AT 291.63	062.66
150.0	150.00	-0.07	-0.565	-89.75	287.69	0.27 N	0.50 W	0.71	0.36	0.57	AT 298.27	062.95
200.0	200.00	0.05	-0.899	-89.37	338.14	0.56 N	0.71 W	1.02	0.51	0.90	AT 308.26	063.16
250.0	249.99	0.43	-1.451	-89.09	340.76	1.19 N	0.94 W	0.56	0.28	1.51	AT 321.63	063.32
300.0	299.98	0.96	-2.242	-88.73	337.30	2.07 N	1.28 W	0.73	0.37	2.44	AT 328.22	063.32
350.0	349.97	1.62	-3.275	-88.46	337.77	3.21 N	1.75 W	0.54	0.27	3.65	AT 331.34	063.54
400.0	399.95	2.39	-4.448	-88.33	338.41	4.51 N	2.28 W	0.26	0.13	5.05	AT 333.21	063.58
450.0	449.92	3.17	-5.909	-87.86	329.11	5.98 N	3.02 W	1.12	0.56	6.70	AT 333.20	063.77
500.0	499.87	4.10	-8.003	-86.88	329.06	7.95 N	4.20 W	1.96	0.98	8.99	AT 332.15	064.01
550.0	549.76	5.08	-11.131	-85.57	317.55	10.55 N	6.20 W	3.01	1.51	12.24	AT 329.53	065.28
600.0	599.61	5.84	-14.939	-85.52	315.04	13.35 N	8.89 W	0.40	0.20	16.04	AT 326.35	065.48

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   600.0 FEET EQUALS     16.04   FEET AT   326.35          *
*                          ********                         *
*************************************************************
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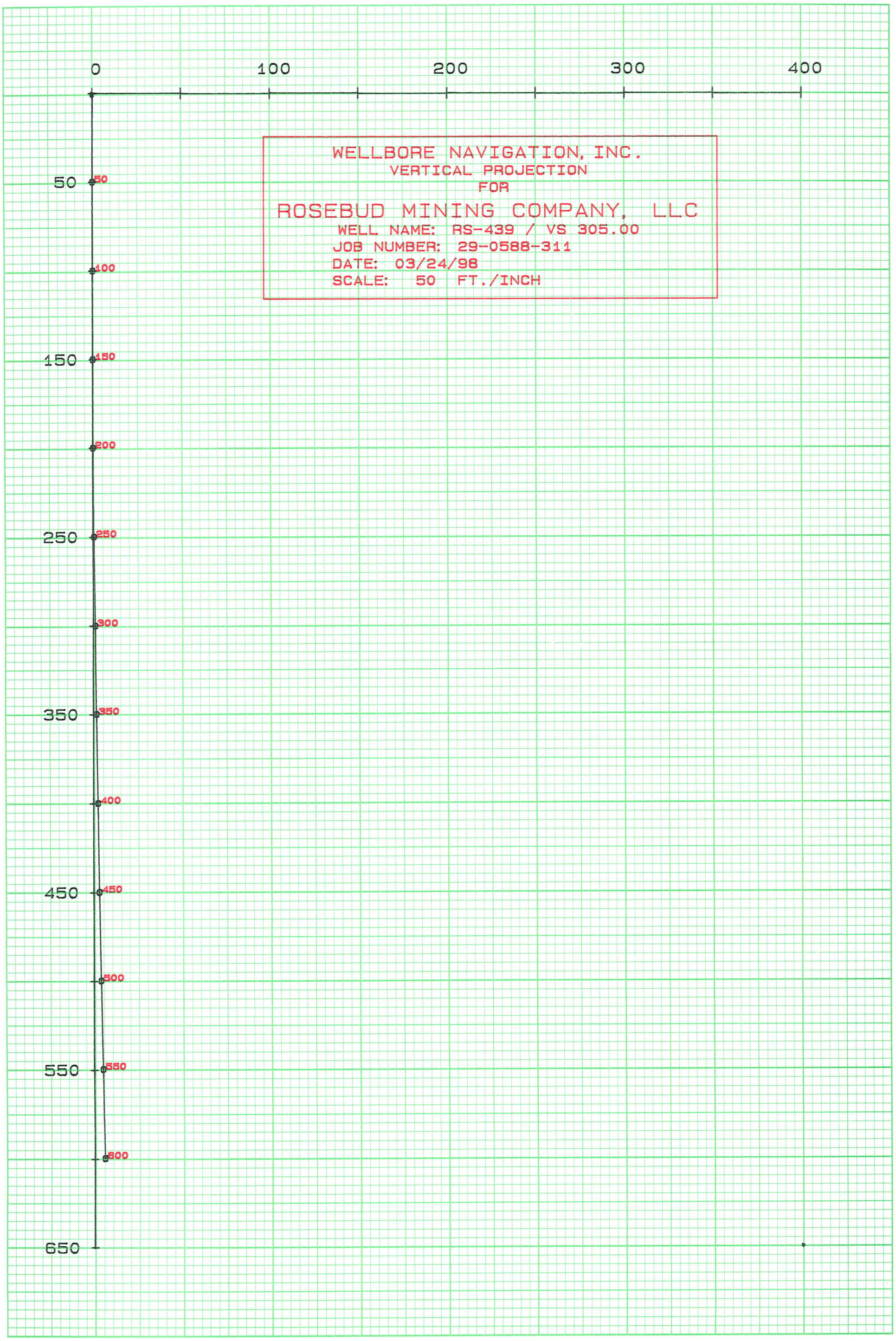

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-439 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/24/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00
WATER CONTACT= 557'

****
****** 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-439 / 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	0.02	0.032	-89.91	180.45	0.04 S	0.00 W	0.18	0.09	0.04	AT 180.45	062.19
100.0	100.00	-0.21	0.049	-89.42	308.45	0.08 N	0.20 W	1.28	0.64	0.21	AT 291.63	062.66
150.0	150.00	-0.56	0.067	-89.75	287.69	0.27 N	0.50 W	0.71	0.36	0.57	AT 298.27	062.95
200.0	200.00	-0.90	-0.051	-89.37	338.14	0.56 N	0.71 W	1.02	0.51	0.90	AT 308.26	063.16
250.0	249.99	-1.45	-0.433	-89.09	340.76	1.19 N	0.94 W	0.56	0.28	1.51	AT 321.63	063.32
300.0	299.98	-2.24	-0.962	-88.73	337.30	2.07 N	1.28 W	0.73	0.37	2.44	AT 328.22	063.32
350.0	349.97	-3.28	-1.621	-88.46	337.77	3.21 N	1.75 W	0.54	0.27	3.65	AT 331.34	063.54
400.0	399.95	-4.45	-2.386	-88.33	338.41	4.51 N	2.28 W	0.26	0.13	5.05	AT 333.21	063.58
450.0	449.92	-5.91	-3.169	-87.86	329.11	5.98 N	3.02 W	1.12	0.56	6.70	AT 333.20	063.77
500.0	499.87	-8.00	-4.105	-86.88	329.06	7.95 N	4.20 W	1.96	0.98	8.99	AT 332.15	064.01
550.0	549.76	-11.13	-5.079	-85.57	317.55	10.55 N	6.20 W	3.01	1.51	12.24	AT 329.53	065.28
600.0	599.61	-14.94	-5.839	-85.52	315.04	13.35 N	8.89 W	0.40	0.20	16.04	AT 326.35	065.48

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   600.0 FEET EQUALS    16.04   FEET AT   326.35           *
*                          ********                         *
*************************************************************
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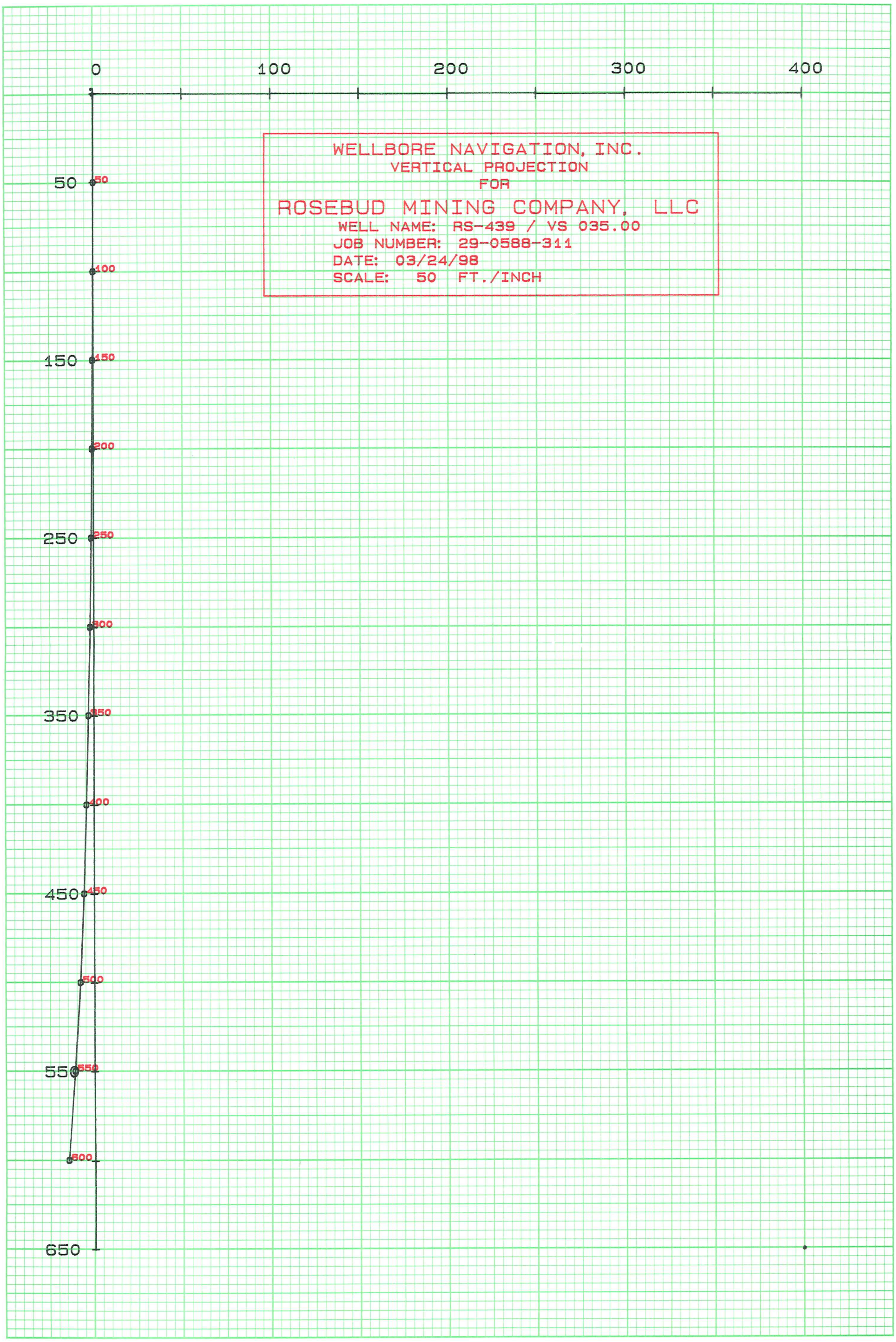
STARLIGHT PRINTING (801) 467-2841



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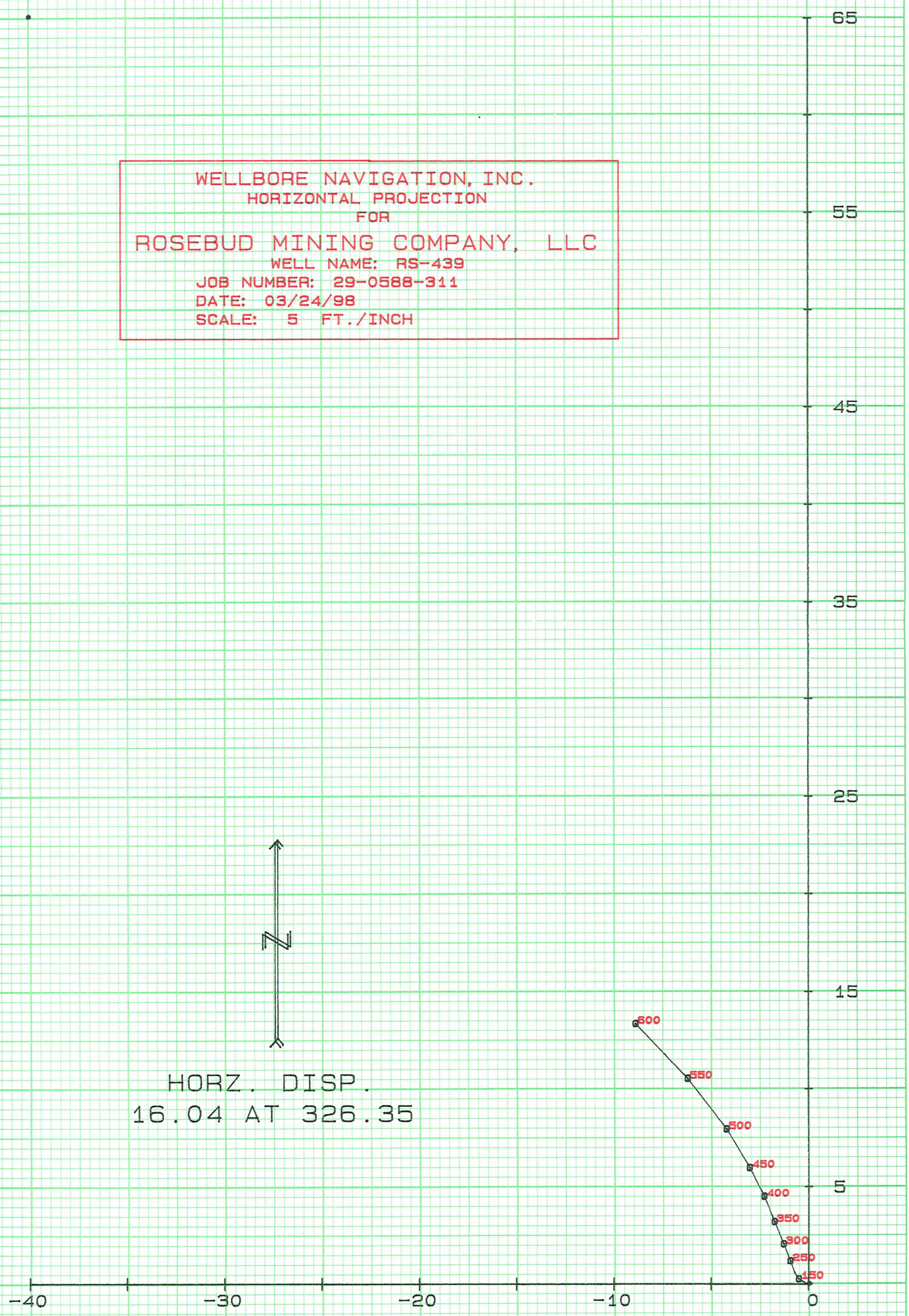
WELLBORE NAVIGATION, INC.
HORIZONTAL PROJECTION
FOR
ROSEBUD MINING COMPANY, LLC
WELL NAME: RS-439
JOB NUMBER: 29-0588-311
DATE: 03/24/98
SCALE: 5 FT./INCH

HORZ. DISP.
16.04 AT 326.35



WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-439

LOCATION: ROSEBUD MINE

SURVEY DATE: 04/15/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
***** MIKE JEX *****

****
****
*** 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-439

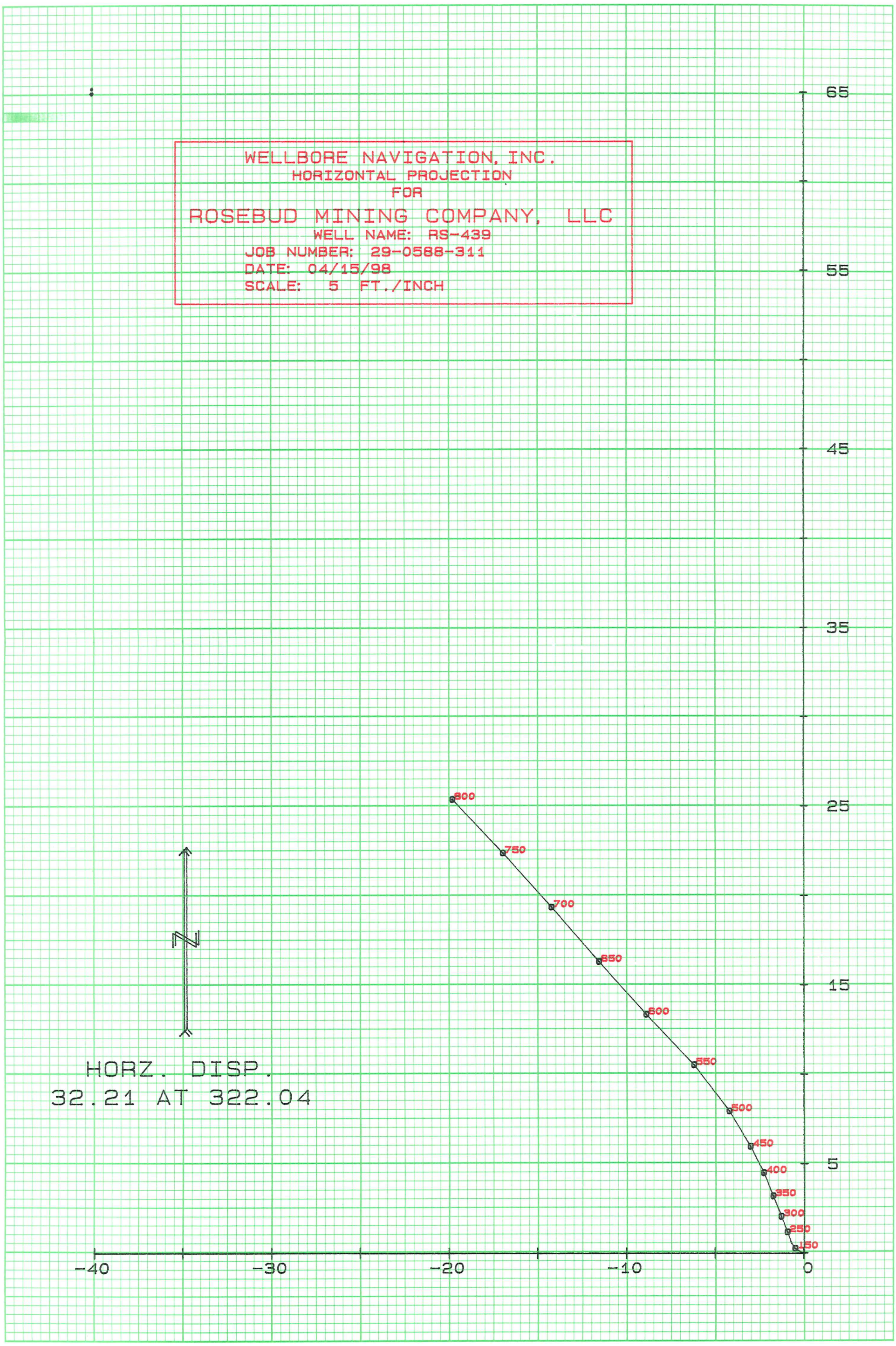
INRUN SURVEY
BY MINIMUM CURVATURE

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	-0.03	-0.024	-89.91	180.45	0.04 S	0.00 W	0.18	0.09	0.04	AT 180.45
100.0	100.00	0.18	-0.108	-89.42	308.45	0.08 N	0.20 W	1.28	0.64	0.21	AT 291.63
150.0	150.00	0.52	-0.229	-89.75	287.69	0.27 N	0.50 W	0.71	0.36	0.57	AT 298.27
200.0	200.00	0.87	-0.215	-89.37	338.14	0.56 N	0.71 W	1.02	0.51	0.90	AT 308.25
250.0	249.99	1.51	-0.011	-89.09	340.76	1.19 N	0.94 W	0.56	0.28	1.51	AT 321.63
300.0	299.98	2.43	0.262	-88.73	337.30	2.07 N	1.29 W	0.73	0.37	2.44	AT 328.21
350.0	349.97	3.61	0.590	-88.46	337.77	3.21 N	1.75 W	0.54	0.27	3.65	AT 331.34
400.0	399.95	4.95	0.978	-88.33	338.41	4.51 N	2.28 W	0.26	0.13	5.05	AT 333.21
450.0	449.92	6.58	1.298	-87.86	329.11	5.98 N	3.02 W	1.12	0.56	6.70	AT 333.20
500.0	499.87	8.85	1.579	-86.88	329.06	7.95 N	4.20 W	1.96	0.98	8.99	AT 332.15
550.0	549.76	12.13	1.594	-85.57	317.55	10.55 N	6.20 W	3.01	1.51	12.23	AT 329.53
600.0	599.61	15.99	1.205	-85.52	315.04	13.35 N	8.89 W	0.40	0.20	16.04	AT 326.35
650.0	649.45	19.97	0.932	-85.32	321.05	16.32 N	11.55 W	1.04	0.52	19.99	AT 324.71
700.0	699.28	24.03	0.719	-85.35	317.01	19.39 N	14.21 W	0.66	0.33	24.04	AT 323.75
750.0	749.12	28.10	0.401	-85.28	318.14	22.40 N	16.97 W	0.23	0.12	28.10	AT 322.86
800.0	798.94	32.21	-0.002	-85.24	314.73	25.40 N	19.82 W	0.57	0.28	32.21	AT 322.04

```
*************************************************************
*                         ********                          *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                         ********                          *
*   800.0 FEET EQUALS     32.21    FEET AT   322.04         *
*                         ********                          *
*************************************************************
```

STARLIGHT PRINTING (801) 467-2841

WELLBORE NAVIGATION, INC.
HORIZONTAL PROJECTION
FOR
ROSEBUD MINING COMPANY, LLC
WELL NAME: RS-439
JOB NUMBER: 29-0588-311
DATE: 04/15/98
SCALE: 5 FT./INCH



HORZ. DISP.
32.21 AT 322.04

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-439 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 04/15/98

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 **
***** MIKE JEX *****

****
****
*** 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-439 / 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	0.022	-89.91	180.45	0.04 S	0.00 W	0.18	0.09	0.04	AT 180.45
100.0	100.00	-0.05	-0.208	-89.42	308.45	0.08 N	0.20 W	1.28	0.64	0.21	AT 291.63
150.0	150.00	-0.07	-0.565	-89.75	287.69	0.27 N	0.50 W	0.71	0.36	0.57	AT 298.27
200.0	200.00	0.05	-0.899	-89.37	338.14	0.56 N	0.71 W	1.02	0.51	0.90	AT 308.25
250.0	249.99	0.43	-1.452	-89.09	340.76	1.19 N	0.94 W	0.56	0.28	1.51	AT 321.63
300.0	299.98	0.96	-2.242	-88.73	337.30	2.07 N	1.29 W	0.73	0.37	2.44	AT 328.21
350.0	349.97	1.62	-3.275	-88.46	337.77	3.21 N	1.75 W	0.54	0.27	3.65	AT 331.34
400.0	399.95	2.39	-4.448	-88.33	338.41	4.51 N	2.28 W	0.26	0.13	5.05	AT 333.21
450.0	449.92	3.17	-5.909	-87.86	329.11	5.98 N	3.02 W	1.12	0.56	6.70	AT 333.20
500.0	499.87	4.10	-8.003	-86.88	329.06	7.95 N	4.20 W	1.96	0.98	8.99	AT 332.15
550.0	549.76	5.08	-11.131	-85.57	317.55	10.55 N	6.20 W	3.01	1.51	12.23	AT 329.53
600.0	599.61	5.84	-14.939	-85.52	315.04	13.35 N	8.89 W	0.40	0.20	16.04	AT 326.35
650.0	649.45	6.74	-18.822	-85.32	321.05	16.32 N	11.55 W	1.04	0.52	19.99	AT 324.71
700.0	699.28	7.73	-22.764	-85.35	317.01	19.39 N	14.21 W	0.66	0.33	24.04	AT 323.75
750.0	749.12	8.62	-26.750	-85.28	318.14	22.40 N	16.97 W	0.23	0.12	28.10	AT 322.86
800.0	798.94	9.44	-30.798	-85.24	314.73	25.40 N	19.82 W	0.57	0.28	32.21	AT 322.04

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   800.0 FEET EQUALS     32.21    FEET AT   322.04         *
*                          ********                         *
*************************************************************
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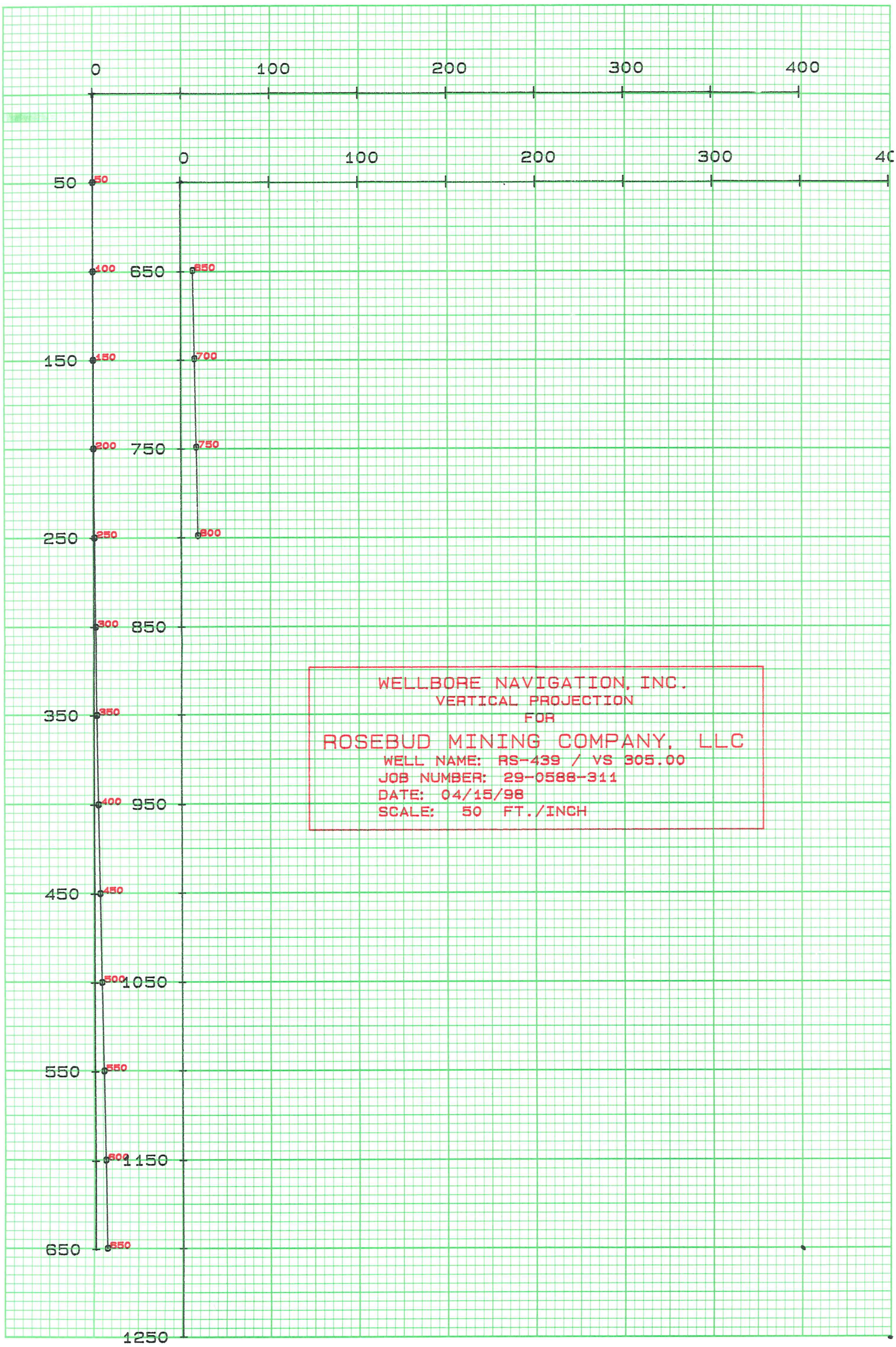

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-439 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 04/15/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

WELNAV

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00

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

COMMENTS: ** BOART LONGYEAR **
***** MIKE JEX *****

****
****
*** 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-439 / 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	0.02	0.032	-89.91	180.45	0.04 S	0.00 W	0.18	0.09	0.04	AT 180.45
100.0	100.00	-0.21	0.049	-89.42	308.45	0.08 N	0.20 W	1.28	0.64	0.21	AT 291.63
150.0	150.00	-0.56	0.067	-89.75	287.69	0.27 N	0.50 W	0.71	0.36	0.57	AT 298.27
200.0	200.00	-0.90	-0.051	-89.37	338.14	0.56 N	0.71 W	1.02	0.51	0.90	AT 308.25
250.0	249.99	-1.45	-0.433	-89.09	340.76	1.19 N	0.94 W	0.56	0.28	1.51	AT 321.63
300.0	299.98	-2.24	-0.962	-88.73	337.30	2.07 N	1.29 W	0.73	0.37	2.44	AT 328.21
350.0	349.97	-3.28	-1.621	-88.46	337.77	3.21 N	1.75 W	0.54	0.27	3.65	AT 331.34
400.0	399.95	-4.45	-2.386	-88.33	338.41	4.51 N	2.28 W	0.26	0.13	5.05	AT 333.21
450.0	449.92	-5.91	-3.169	-87.86	329.11	5.98 N	3.02 W	1.12	0.56	6.70	AT 333.20
500.0	499.87	-8.00	-4.105	-86.88	329.06	7.95 N	4.20 W	1.96	0.98	8.99	AT 332.15
550.0	549.76	-11.13	-5.079	-85.57	317.55	10.55 N	6.20 W	3.01	1.51	12.23	AT 329.53
600.0	599.61	-14.94	-5.839	-85.52	315.04	13.35 N	8.89 W	0.40	0.20	16.04	AT 326.35
650.0	649.45	-18.82	-6.744	-85.32	321.05	16.32 N	11.55 W	1.04	0.52	19.99	AT 324.71
700.0	699.28	-22.76	-7.729	-85.35	317.01	19.39 N	14.21 W	0.66	0.33	24.04	AT 323.75
750.0	749.12	-26.75	-8.619	-85.28	318.14	22.40 N	16.97 W	0.23	0.12	28.10	AT 322.86
800.0	798.94	-30.80	-9.437	-85.24	314.73	25.40 N	19.82 W	0.57	0.28	32.21	AT 322.04

```
*************************************************************
*                        ********                           *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                        ********                           *
*   800.0 FEET EQUALS     32.21   FEET AT  322.04           *
*                        ********                           *
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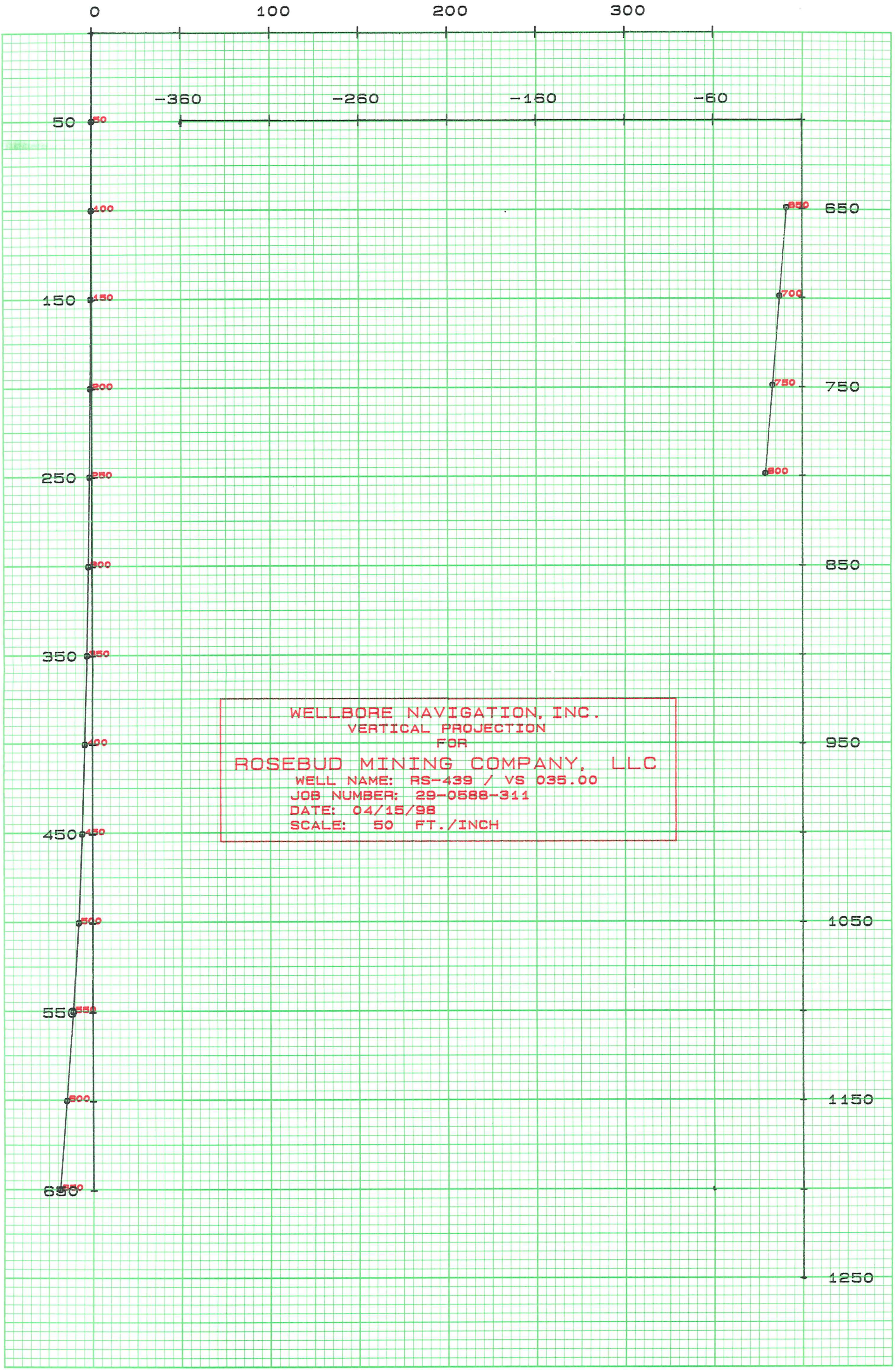
STARLIGHT PRINTING (801) 467-2841



SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

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Fax
(702) 738-2594

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

Other Offices
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Santiago, Chile
Mendoza, Argentina

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Address: P.O. BOX 2610

City WINNEMUCCA State NV Zip 89446

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

Project Name: DEVELOPMENT Purchase Order Number:

Date Submitted: 04/29/98 Number of Samples: 50

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

RS-439 SAMPLE IDENTIFICATION			TYPE	ELEMENTS REQUIRED
600.0-605.8	670.5-675.1		CORE	Au-Ag ACCORDING TO ROSEBUD
605.8-610.8	675.1-680.7			MINE PROTOCOLS
610.8-616.2	680.7-682.9	715.9-721.0		771.0-775.3
616.2-621.4	682.9-684.0	721.0-726.2		775.3-779.8
621.4-625.2	684.0-687.3	726.2-731.0		779.8-780.7
625.2-628.8	687.3-689.0	731.0-735.0		780.7-785.1
628.8-633.9	689.0-691.0	735.0-739.0		785.1-790.0
633.8-638.0	691.0-692.3	739.0-740.7		790.0-795.3
638.0-643.0	692.3-694.1	740.7-744.1		795.3-800.0
643.0-647.9	694.1-695.5	744.1-748.1		
647.9-652.9	695.5-696.5	748.1-752.0		
652.9-658.4	698.5-701.0	752.0-756.6		
658.4-663.8	701.0-706.0	756.6-761.7		
663.8-666.5	706.0-711.0	761.7-765.6		
666.5-670.5	711.0-715.9	765.6-771.0		

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 439
BOX 1
DEPTH- 600. - 609.5

RS 439
BOX 2
DEPTH- 609.5 - 619.

RS 439
BOX 3
DEPTH- 619. - 627.5

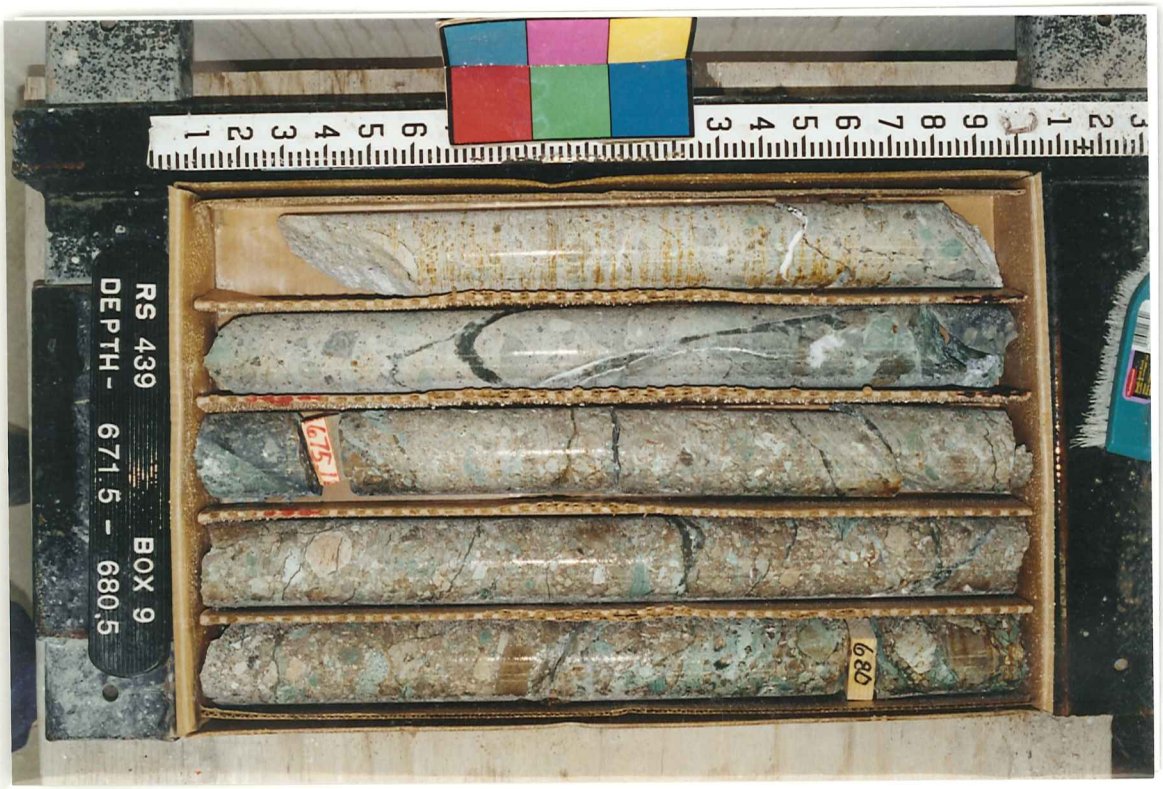
RS 439 BOX 4
DEPTH- 627.5 - 636.

RS 439 BOX 5
DEPTH- 636. - 646.

RS 439 BOX 6
DEPTH- 646. - 654.

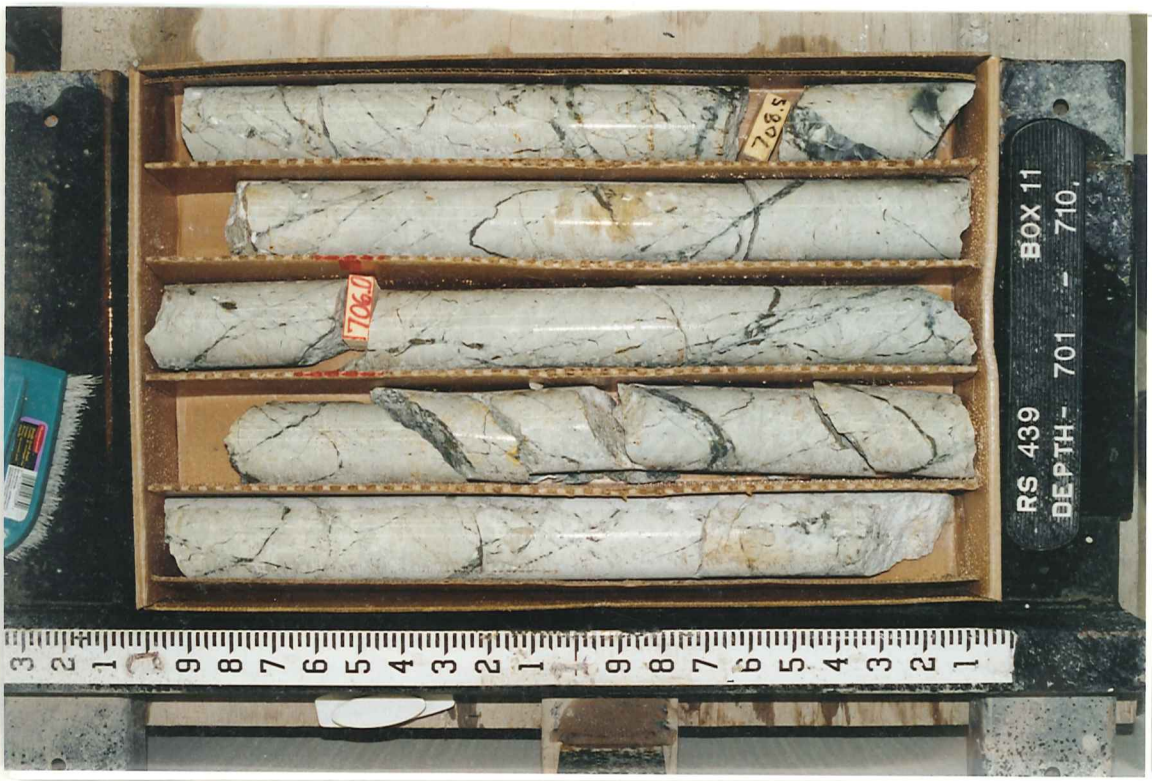
658.4
660
RS 439
BOX 7
DEPTH- 654. - 663.

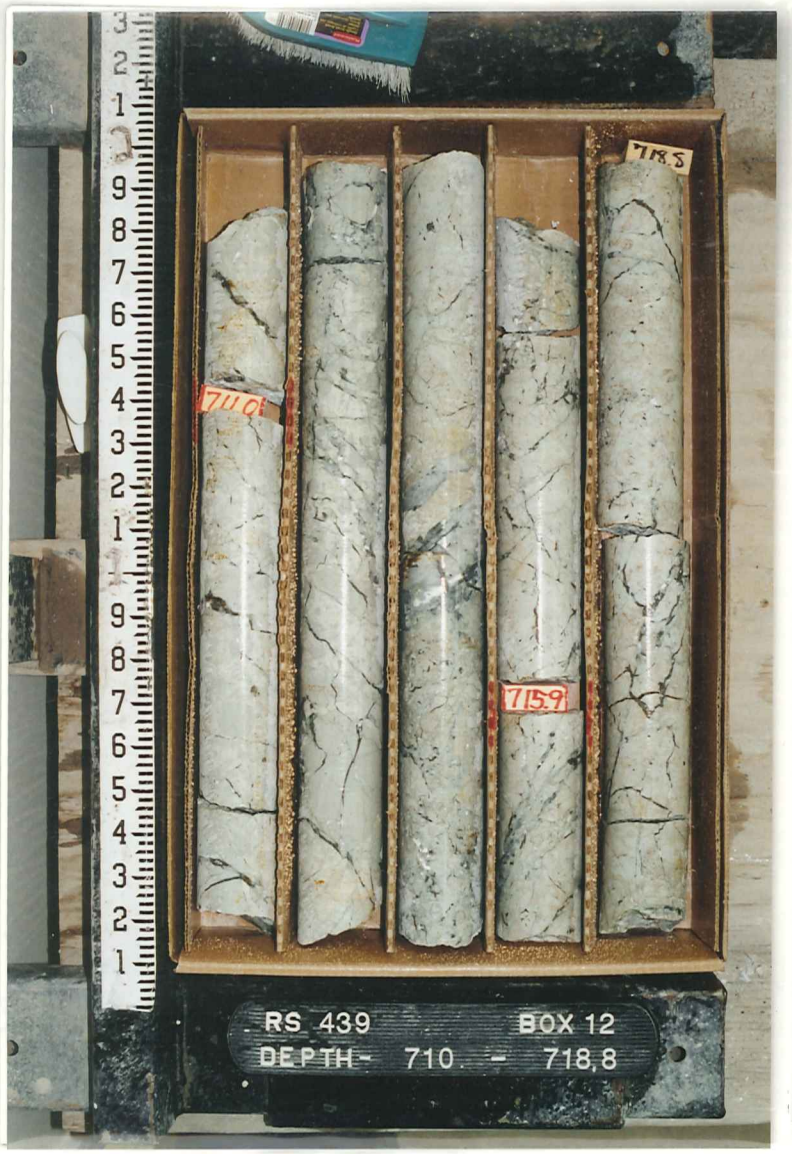
663.8
670.5
666.5
670
RS 439
BOX 8
DEPTH- 663. - 671.5


675.1
680
RS 439
BOX 9
DEPTH- 671.5 - 680.5

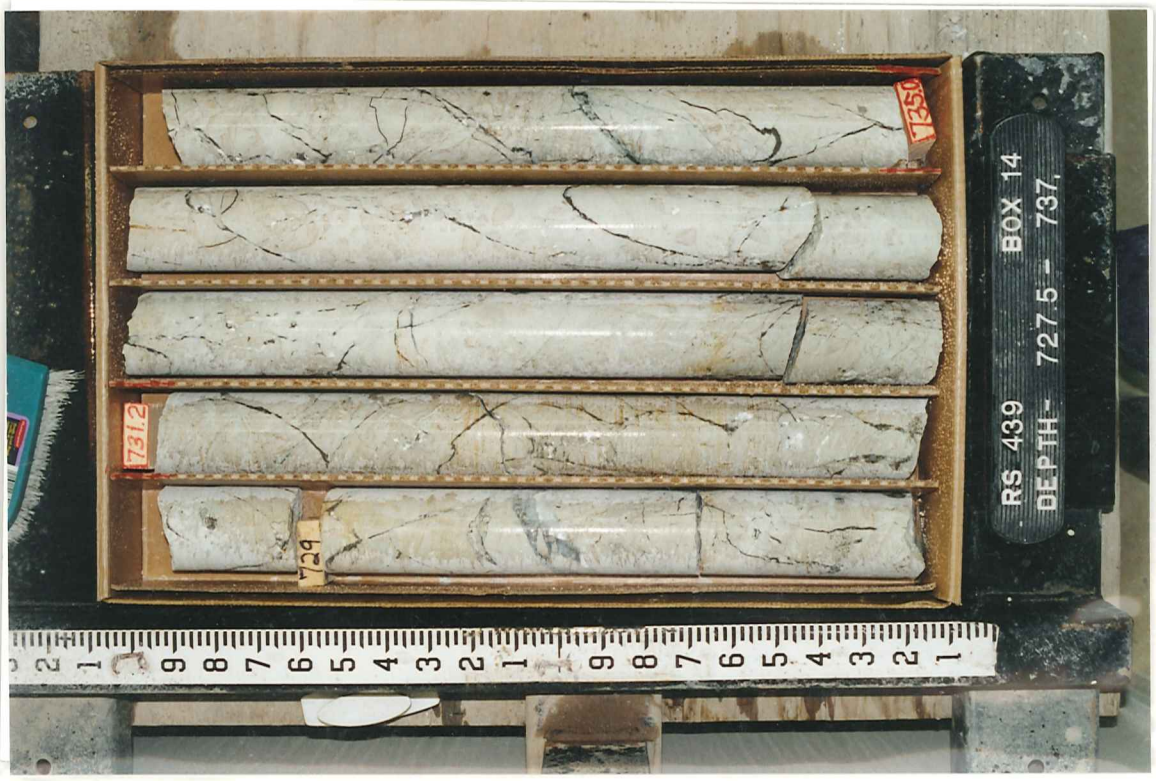
690
682.9
689.0
687.3
680.7
684.1
RS 439 BOX 10
DEPTH- 680.5 - 690.

695.3
701.0
691.0
698.5
LOSS
696.5
692.3
RS 439 BOX 11
DEPTH- 690. - 701.


708.5
706.0
RS 439 BOX 11
DEPTH- 701 - 710.


710.0
715.9
718.5
RS 439
BOX 12
DEPTH - 710 - 718,8

721.0
726.2
RS 439
BOX 13
DEPTH - 718.8 - 727,5


RS 439
BOX 14
DEPTH - 727.5 - 737,
731.2
729
725.0

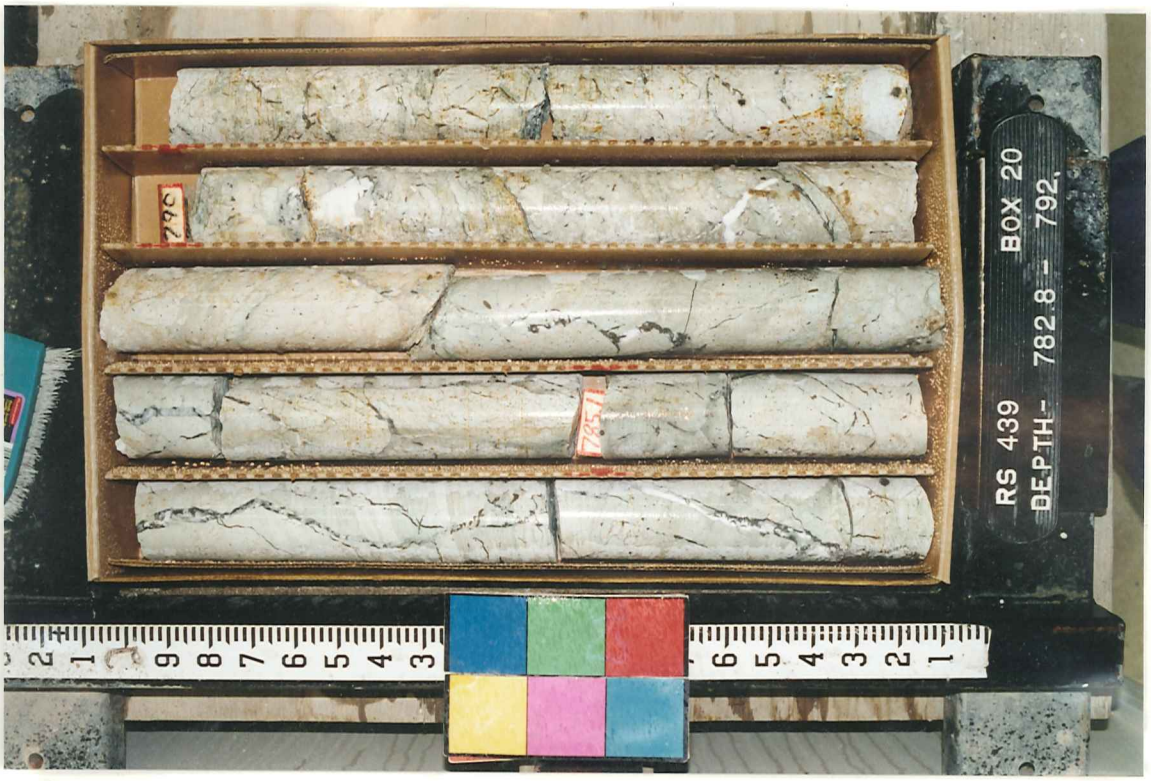
739
740.1
744.1
RS 439
BOX 15
DEPTH- 737. - 745.

749
748.1
RS 439
BOX 16
DEPTH- 745. - 754.

760.1
RS 439
BOX 17
DEPTH- 754. - 763.

771.0
767.6
765.6
RS 439
BOX 18
DEPTH- 763. - 772.

778
775.3
780.7
RS 439
BOX 19
DEPTH- 772. - 782.8


792.
785.7
RS 439
BOX 20
DEPTH- 782.8 - 792.

RS 439
BOX 21
DEPTH- 792 - 800 TD