60008538

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-431
AUTHOR	K. Allen; S. King; V. Reid; S. Viegut; D. White
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 69p.

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-431

6000 0538
4010

Hecla MINING COMPANY

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

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	RS-431	LOCATION	EAST, SURFACE
PAGE 1 OF 4		NORTHING	
DATE	03/29/98	EASTING	
LOGGED BY	HJM	ELEVATION	
SCALE	1"=10'	AZIMUTH	—
TOTAL DEPTH	800'	INCLINATION	-90°

REMARKS

TH.	OX/RED.	LITHOLOGY (CORE PT.: 580)	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
580.0-611.1 FG PORPHYRY	PINK	580.0-609.1': DULL FLESH PINK, FINELY PORPHYRITIC: APHANITIC, WKLY FLOW-BANDED GROUNDMASS IS FLECKED WITH CLAYSHOT, CREAM/TAN RELICT PHENOCRYSTS. THE ACICULAR TO PLATEY XTLS ARE 3-9mm LONG AND SUB-ALIGNED WITH FLOW BANDING. POSS. Bt OR AMPHS.	580, 590, 600, 610	50, 50, 60, 60, 15	599.7': GOUGY WHT CLY + MILLED GRIT IN UNHEALED OPEN FRAX.	580.0-604.7': MOD. GRY SILICA + MARC VNLTS +/- TR. LATE WHT CLAY. WK DISS'D PY BLEBBING. 599.7': STR. WHT CLAY. INCREAS- WHT CLAY +/- BARITE IN VUGS & VNS BELOW THIS PT. 604.7-~610': STR. SILICA + MARC +/- WHT CLAY VNLTS & BRECCIA VNS. STR. LATE BARITE. BARITE WK TO TR ON L. FRAX IN FAULT ZONE BELOW.
611.1-640.0 FAULT		610.6-611.1 611.1': SHARP CONTACT AT 60° TO C/A. SILICIFIED, HETERO-LITHIC FAULT BRECCIA BELOW THIS POINT. 611.1-616.9': HETEROLITHIC, MATRIX-SUPPORTED, RUBBLY MOSAIC BRECCIA. MIXED LBT & BUD FRAGMTS' STRLY ALTERED TO GRN CLAYS FLOAT IN A STRLY SILICIFIED GRN CLAY ALTERED ROCK FLOUR MATRIX (PSEUDOMATRIX?)	610	45, 5, 60, 15	610.6'-611.1': MILLED, HEALED FAULT BRECCIA W/IN FG PINK PORPHYRY UNIT. 615.0-615.8': WHT TO LT. GRN GOUGE + WALLROCK GRIT. UNHEALED.	610.6-611.1': WKLY/MOD'LY SILICIFIED BXA. MOD'LY ARGILLIZED IMMEDIATELY AT CONTACT W/O GOUGE. 611.1-616.9': STR. SILICIFICATION, MOD. GRN CLAY, MOD DISS'D MARCASITE.
		LOSS			LOSS	
		616.9-617.4': WHT-GRY TO GRY, SULFIDIC, UNHEALED GOUGE. MOD LY/STRLY SILICIFIED GRIT & FRAGMTS. 620.0-621.5': STRLY SILICIFIED, MIXED LITHOLOGY FAULT BRECCIA. MOD. DISS'D MARC, SOME GRY SULFIDIC SILICA ON JNT. MOD/STR, SEMI-HEALED, IRREGULAR, LATE FRAX W/ WHT CLAY. 621.5-623.5': CONT'D MILLED, SILICA-FLOODED, TEXTURE-OBSCURED BXA, GRADING DOWN INTO GRY, SILICA-FLOODED ROCK FLOUR. WK SULFIDES.	620, 630	65, 65	611.1-616.9': MUSHY GREEN SILICIFIED MATRIX. MATRIX-SUPPORTED FAULT BRECCIA. 616.9-617.4': UNHEALED GOUGE. BROKEN. 620-621.5': HETEROLITHIC MILLED MATRIX SUPPORTED 621.5-623.5': MILLED BXA ~~GRADING DOWN TO RK. FLOUR~~	616.9-617.4 STR. CLAY, STR/MOD. GRY SULFIDE. 620.0'-621.5': STR. SILICA CAMON, MOD. GRN CLAY. 621.5'-625.7': INTENSE TO TOTAL REPLACEMT SILICA MOD. GRY SULFIDES.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ac
580.0	585.1					
585.1	590.0					
590.0	595.1					
595.1	600.0					
600.0	604.7					
604.7	609.1					
609.1	611.1					
611.1	616.9					
616.9	617.4					
620.0	621.5					
621.5	623.5					
623.5	625.7					
625.7	628.5					
628.5	631.5					

HOLE NUMBER RS-431 PAGE 2 OF 4

LITH.	OX/RED.	LITHOLOGY	FT 630	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
611.1 - 640.0 FAULT		623.5-625.7': >90% SILICA REPLACEMT IN RK FLOUR. 625.7'-628.5': MATRIX-SUPPORTED BXA. GRN CLAY ALTERED BUD FRAGMENTS IN GRY SILICA + FLOODED BUD-DERIVED ROCK FLOUR MATRIX. 628.5-631.5': HETEROLITHIC, MATRIX-SUPPORTED BXA. 640.0-640.6 GRY SILICA-FLOODED ROCK FLOUR BXA.	640		621.5-625.7': STR., MILLED FAULT ROCK FLOUR. 625.7-631.5': MOD., MATRIX SUPPORTED BRECCIA.	625.7-628.5': STR. SILICIFICATION OVER STR/MOD GRN CLAY ALTN. MOD/WK DISS'D MARC. 628.5-631.5': STR. SiO_2, WK PY.
640.0 - DOZER		631.5-634.8': TAN VERY APHANITIC FRAGMTS. MIXED LITH. STRLY/MODLY SILICIFIED RK FLOUR MATRIX. MOSAIC TO CRACKLE TEXTURE. 634.8'-638.0': MORE INTENSE BRECCIATION. FINE-GRAINED WKLY MILLED MOSAIC BXA. SAME APHANITIC TAN FRAGMT LITH. AS ABOVE. WK/MOD GRY SILICA MATRIX. 638.0-640.0': GRN CLAY ALTERED, TECTONICALLY DISRUPTED BUD. MOD. PERVASIVE SILICIFICATION OVERPRINT + STR. DIFFUSE GRY SILICA-SULFIDE VNS. 640.0-640.6': SHEARED ~~SILICIFIED~~ CLAY-ALTERED DOZER AT FAULT CONTACT. LT. GRN-TAN. 640.6'- : AUTOBRECCIATED LIGHT GRN-TAN DOZER.	650 660 670 680 690 700	60 90 35 0-20° 20 10	631.5-634.8': WKER, CRACKLE BXA. 634.8-638.0': STRLY BXAT'D. 640.-640.6': MODLY SHEARED DOZER.	631.5-638': MOD. TO STR. SiO_2. TR. ARGILLIC IN FRAGMTS. WK PY. 638.0-640.0': STR. GRN CLAY STR./MOD. SILICIFICATN STR. SILICA-SULFIDE VNS. STR./MOD. DISS'D MARC. 640.0-640.6': MOD. GRN CLAY STRINGERS & MATRIX MOD/WK DISS'D MARC. 640.6'-683.1': WK SILICA + MARC VNING. WK WHT CLAY ON FRAX. WK TO MOD. PY BLEBS IN WALLROCK, & MARCASITE INTERSTITIAL IN AUTOBXA RK FLOUR MATRIX. ~676': CALCITE REAPPEARS IN WK WHT CLAY + GRY SULFIDE SHEAR/VNLT. PYRARGERITE! 683.1-686.7': ~685': PYRARGERITE IN SPARRY CALCITE + WHT CLAY OVERPRINTING SILICA-MARC VEINLETS. MOSTLY LO %'S TO CIA. 686.7'-708.3': WK SILICA + MARCASITE +/- WHT CLAY ~~& CALCITE~~ VNING. MOD. MARC & PY IN WALLROCK AS BLEBS & INTERSTITIAL IN AUTOBXA MATRIX.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2
628.5	631.5				
631.5	634.8				
634.8	638.0				
638.0	640.6				
640.6	644.5				
644.5	650.0				
650.0	654.9				
654.9	660.0				
660.0	664.7				
664.7	670.0				
670.0	674.5				
674.5	679.3				
679.3	683.1				
683.1	686.7			12.05	
686.7	692.0				
692.0	696.1				
696.1	700.0				

HOLE NUMBER RS-431 PAGE 3 OF 4

LITH.	OX/RED	LITHOLOGY	FT (700)	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
640.0-DOZER	755.6	FROM 640.6': CONT'D LT. GRN-GRY AUTOBRECCIA'D DOZER. FAINT RUDDY BRN STAINING HILITES FRAGMENT POPULATION.	710, 720, 730, 740, 750, 760, 770	30, 40, 35, 30, 20, 30, 60, 60, 60, 60	NONE.	CONTINDED TRACE GRN CLAY IN GROUNDMASS.
						708.3-713.7': STR. SILICA + MARCASITE + CLY + CALCITE VNS W/D VISIBLE PYRARGERITE. SILICA-RICH.
						713.7'-736.5': WK MARC +/- SILICA VNLTS. WK DISS'D MARC & BLEBBED PY IN WALLROCK.
						729.5': 1.5" SILICA + PYRITE BRECCIA VN
						736.5'-742.0': MOD./STR. GRY SILICA + MARCASITE + CALCITE/WHT CLAY. 737' = 1" GRY SILICA + PY BXA VN
		FROM ~748': INCREASED AUTOBXA OR FINE STOCKWORKING: APPARENT INCREASED CRACKLE BXA/STOCKWORK OF BOTH FINE SILICA + MARC VNLTS & RUDDY BRN FeOx STAINING.				742.0 - ~748': WK SILICA + MARC + CALCITE +/- WHT CLAY VNLTS. WK DISS'D Py.
						~748.0'-755.6': MODERATE SILICA + MARCASITE + CALCITE +/- WHT CLAY VNS. SLIGHTLY INCREASED RUDDINESS.
754.5-759.5 BRECCIA		754.5'-755.6' 754.5'-759.5': FULLY HEALED MYLONITIC SHEAR ZONE IN DOZER (?) AT DIKE MARGIN. HIGH ∠ TO C/A. SHEAR STRANDS ARE VARIABLY PICKED OUT BY GRN CLAY OR STR. RUDDY BRN FeOx STAINING. MOD. X-CUTTING PY VNLTS.			754.5'-759.5': FULLY HEALED MYLONITIC SHEAR ZONE AT DIKE MARGIN.	755.6'-759.5': STRONG RUDDY STAINING. MOD. GRN CLAY VNING, MOD. PY VNING.
759.5'-762.7 PORPHYRY DIKE		759.5-762.7': LT. GRN, APHANITIC GROUNDMASS. GLOMERO PORPHYRITIC, WHT CLAY-ALTERED PLAG PHENOCRYSTS. HEALED INTRUSIVE MOSAIC TO RUBBLE AUTOBXA.			80 762.7-766.7': MILLED, WKLY MYLONITIC BXA/DIKE BRECCIA. LOOKS LIKE INTERNAL BXAT'N IN INTRUSIVE.	759.5-762.7': MOD. SILICA + MARCASITE + CALCITE VNS
762.7-766.7 BRECCIA		762.7-766.7': SHATTERED ~~RU~~ WKLY MILLED DIKE MARGIN BRECCIA. SOMEWHAT MILLED ROCK FLOURY MATRIX MAY BE DIKE DERIVED. SOME PORTION OF FRAGMENT POPULATION IS PORPHYRITIC DIKE, POSSIBLY NOT ALL.				762.7-766.7': MOD/WK DISS'D GRN CLAY. MOD. PY/MARC VNLTS +/- WK SILICA, RUDDY SELVAGES.
766.7-773.4 BXAT'D PORPHYRY DIKE						766.7-773.4': WK/MOD Py & SILICA + PY/MARC VNLTS

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2
700.0	704.7				
704.7	708.3				
708.3	713.7				
713.7	718.3				
718.3	723.8				
723.8	729.1				
729.1	730.5				
730.5	736.5				
736.5	742.0			16.82	
742.0	747.0				
747.0	751.8				
751.8	755.6				
755.6	759.5				
759.5	762.7				
762.7	766.7				

HOLE NUMBER RS-431 PAGE 4 OF 4

LITH.	OX/RED.	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
755.6 - 777.7 BRECCIA & DK & BRECCIA DIKE		766.7'- 773.4': PERVASIVELY WKLY MILLED LT. GRN DIKE MATERIAL (PROBABLY). FELD VISIBLE GLOMERO-PORPHYRITIC PLAG PHENDS. ENDS IN A STRONG SILICA-SULFIDE CEMENTED BXA VEIN AT 20° TO C/A.	770		766.7- 773.4': WK MILLED TEXTURE.	
					773.4'- 777.7': STRONG SILICA-CEMENTED MOSAIC BRECCIA!	773.4 - 777.7': GRY SILICA CEMENTED BRECCIA VN + PYRARGERITE. LATE WHT CLAY +/- CALCITE CROSS-VEINING.
777.7- 800.0 DOZER/WILD-ROSE		777.7- 800.0': FINELY FLOW-BANDED, CREAM-TAN TIGHTLY PACKED CRACKLE AUTOBXA. MONOLITHIC DOZER (?) OR WILDROSE UNIT.	780			
			790			~790 - 796.3': MOD. WHT CLY + CALCITE +/- MARC/PY & PLAIN MARC/PY VNING.
		798.3'- 800.0': WKLY MILLED BXA.			796.3'- ~798': SEMI-HEALED WKLY MILLED BRECCIA.	796.3- ~798': MOD./STR. DISS'D PY & INTERSTITIAL PY/MARC IN BXA.
		800' T.D.	800			
			810			
			820			
			830			

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2
766.7	773.4				
773.4	777.7			12.88	
777.7	781.2				
781.2	786.4				
786.4	791.6				
791.6	796.3				
796.3	800.0				

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-431 DATE 03/29/98 LOGGED BY: HLM PAGE 1 OF 3

DRILL RUN FROM	DRILL RUN TO	SOLID CORE RECOVERY (%)	TOTAL CORE RECOVERY (%)	RQD	ROCK STRENGTH DOWNHOLE DEPTH	ROCK STRENGTH POINT LOAD INDEX (psi)	FRACTURE DATA FRACTURE DENSITY /FT.	FRACTURE DATA AVG. ANGLE TO C.A.	FRACTURE DATA ROUGHNESS	FRACTURE DATA INFILL	DENSITY DATA DOWNHOLE DEPTH	DENSITY DATA SAMPLE WEIGHT (g)	DENSITY DATA DISPLACEMENT (cc)	DENSITY DATA DENSITY (g/cc)
580.0	590.0	90.0	90.0	84.0										
590.0	600.0	102.0	102.0	73.0										
600.0	610.0	102.0	102.0	60.0										
610.0	620.0	71.0	74.0	16.0										
620.0	626.5	100.0	100.0	16.9										
626.5	636.5	104.0	104.0	78.0										
636.5	644.5	94.0	96.3	60.0										
644.5	650.0	105.5	105.5	78.2										
650.0	660.0	102.0	102.0	67.0										
660.0	670.0	100.0	100.0	92.0										
670.0	680.0	99.0	99.0	92.0										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-471 DATE 03/30/98 LOGGED BY: HDM 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)
680.0	690.0	100.0	100.0	90.0										
690.0	700.0	100.0	100.0	86.0										
700.0	710.0	102.0	102.0	94.0										
710.0	720.0	99.0	99.0	92.0										
720.0	730.0	99.0	99.0	94.0										
730.0	740.0	102.0	102.0	96.0										
740.0	750.0	97.0	97.0	97.0										
750.0	760.0	100.0	100.0	95.0										
760.0	770.0	99.0	99.0	90.0										
770.0	780.0	94.0	94.0	67.0										
780.0	790.0	102.0	102.0	99.0										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-431 DATE: 03/30/98 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	96.0										
	TD													

Hecla MINING COMPANY
ROSEBUD PROJECT DRILL LOG

Quick LOG

HOLE NUMBER RS-431
PAGE 1 OF 3
DATE 6/24/98
LOGGED BY KBA
TOTAL DEPTH RDC PRE-COLLAR: 580'
CORE = 800'

LOCATION EAST ZONE
NORTHING
EASTING
ELEVATION
AZIMUTH VERT
INCLINATION -90

AREA EAST ZONE
DRILLING CO. EKLUND
RIG TYPE RVC
HOLE SIZE 6 1/2
DOWN HOLE SURVEY BY WELGAN

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
0–20		Col	Colluvium																		X																			
20–30		Col																			X																			
30–200		TC86	FINE-GRAINED, LATITIC to ANDESITIC FLOW																X																					
40																			X																					
50																				X																				
60																				X																				
70																				X																				
80																				X																				
90																			X																					
100																			X																					
110																																								
120																																								
130																																								
140																																								
150																																								
160																																								
170																																								
180																																								
190																																								
200																																								

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

HOLE NUMBER RS-431
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	STIBNITE	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%	%	%	%	%	%	%									
210		TCFG																																						
220																																								
230																																								
240																																								
250																																								
260		TCLT	FINE-GRAINED, LATITIC to ANDESITIC Auto BRECCIA or Volcanic BRECCIA																																					
270																																								
280																																								
290																																								
300																																								
310																																								
320																																								
330																																								
340																																								
350																																								
360																																								
370																																								
380																																								
390																																								
400																																								

Hecla MINING COMPANY

ROSEBUD PROJECT DRILL LOG

HOLE NUMBER RS-431
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: 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	MOISTURE	ANALYTICAL DA: FROM	TO	W	Au
410		TCLLT																																						
420																																								
430																																								
440																																								
450																																								
460																																								
470																																								
480																																								
490																																								
500																																								
510																																								
520		FGPP	FINE-GRAINED, SLIGHTLY PORPHYRITIC PINK PORPHYRY																																					
530																																								
540																																								
550																																								
560																																								
570																																								
580																																								
			ROC PRE-COLLAR TD = 580'																																					

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 0048420-IN
INVOICE DATE: 04/16/98

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-431	DEVELOPMENT	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
53	SAMPLES RECEIVED	.00	.00
53	DRYING	2.00	106.00
53	JAW CRUSHING CHARGE	2.60	137.80
53	COARSE MILLING CHARGE	9.00	477.00
53	SPLITTING CHARGE	2.40	127.20
53	RING MILLING CHARGE	2.00	106.00
53	Au (1 A.T. FIRE ASSAY)	8.00	424.00
3	Au ANALYSES/GRAVIMETRIC	8.75	26.25
53	HYDROCHLORIC/NITRIC DIGESTION	2.00	106.00
53	Ag ANALYSES	1.00	53.00
5	Ag (ore grade) ANALYSES	5.00	25.00

86-5210-477
DA

NET INVOICE:	1,588.25
LESS DISCOUNT:	317.65
FREIGHT:	.00
INVOICE TOTAL:	1,270.60

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048420

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-431 RECEIVED : 2 APR 1998

No. SAMPLES : 53 REPORTED : 9 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

ANALYSIS REPORT SP048420

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 9 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-431 580.0-585.1	0.005			0.08
RS-431 585.1-590.0	0.003			0.08
RS-431 590.0-595.1	0.006	0.007		0.67
RS-431 595.1-600.0	0.003			0.14
RS-431 600.0-604.7	0.006			0.10
RS-431 604.7-609.1	0.012			0.12
RS-431 609.1-611.1	0.006			0.15
RS-431 611.1-616.9	0.006			0.96
RS-431 616.9-617.4	0.011			1.51
RS-431 620.0-621.5	0.018			1.20
RS-431 621.5-623.5	0.014			0.14
RS-431 623.5-625.7	0.007			0.06
RS-431 625.7-628.5	0.020			0.08
RS-431 628.5-631.5A	0.025			0.27
RS-431 628.5-631.5B	0.029			0.10
RS-431 631.5-634.8	0.015			0.16
RS-431 634.8-638.0	0.075		0.081	0.30
RS-431 638.0-640.6	0.020			0.12
RS-431 640.6-644.5	0.017			0.06
RS-431 644.5-650.0	0.047	0.034		0.05
RS-431 650.0-654.9	0.036			0.03
RS-431 654.9-660.0	0.006			0.03
RS-431 660.0-664.7	0.018			0.05
RS-431 664.7-670.0	0.067		0.076	0.15
RS-431 670.0-674.5	0.003			0.04

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ANALYSIS REPORT SP048420

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PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

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SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-431 674.5-679.3	0.010			0.05
RS-431 679.3-683.1	0.003			0.05
RS-431 683.1-686.7	0.016	0.023		12.05
RS-431 686.7-692.0	0.002			0.10
RS-431 692.0-696.1	0.004			0.10
RS-431 696.1-700.0	0.005			0.07
RS-431 700.0-704.7	0.002			0.05
RS-431 704.7-708.3	0.015			0.08
RS-431 708.3-713.7	0.025	0.031		2.50
RS-431 713.7-718.3	0.009			0.07
RS-431 718.3-723.8	0.005			0.06
RS-431 723.8-729.1	0.001			0.05
RS-431 729.1-730.5	0.138		0.133	0.24
RS-431 730.5-736.5	0.013			0.39
RS-431 736.5-742.0	0.011			16.82
RS-431 742-747	0.005			0.22
RS-431 747.0-751.8	0.003			0.13
RS-431 751.8-755.6	0.015			0.09
RS-431 755.6-759.5	0.001			0.06
RS-431 759.5-762.7	<0.001			0.05
RS-431 762.7-766.7	0.002			0.21
RS-431 766.7-773.4	0.002			0.18
RS-431 773.4-777.7	0.035	0.031		12.88
RS-431 777.7-781.2	0.022			0.12
RS-431 781.2-786.4	0.016			0.08

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048420

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 9 APR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-431 786.4-791.6	0.008			0.10
RS-431 791.6-796.3	0.013			0.09
RS-431 796.3-800.0	0.006			0.07

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ANALYSIS REPORT SP048420

American Assay Laboratories

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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-431

No. SAMPLES : 53

MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 2 APR 1998

REPORTED : 9 APR 1998

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ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
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SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

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RS-431 628.5-631.5A	0.025			0.27
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RS-431 660.0-664.7	0.018			0.05
RS-431 664.7-670.0	0.067		0.076	0.15
RS-431 670.0-674.5	0.003			0.04

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AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048420

American Assay Laboratories

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PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 9 APR 1998

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AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048420

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HECLA MINING COMPANY

COPIES TO : KURT ALLEN

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CLIENT REFERENCE No: RS-431 RECEIVED : 2 APR 1998

No. SAMPLES : 53 REPORTED : 9 APR 1998

MAIN SAMPLE TYPE : DRILL CORE

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SIGNATORY : Susan King M.S.

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RS-431 660.0-664.7		0.018		0.05
RS-431 664.7-670.0	0.076	0.067		0.15
RS-431 670.0-674.5		0.003		0.04

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048420

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SAMPLES	AuGRAV	Au(OZ)	Au(RZ)	Ag(OZ)
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RS-431 679.3-683.1		0.003		0.05
RS-431 683.1-686.7		0.016	0.023	12.05
RS-431 686.7-692.0		0.002		0.10
RS-431 692.0-696.1		0.004		0.10
RS-431 696.1-700.0		0.005		0.07
RS-431 700.0-704.7		0.002		0.05
RS-431 704.7-708.3		0.015		0.08
RS-431 708.3-713.7		0.025	0.031	2.50
RS-431 713.7-718.3		0.009		0.07
RS-431 718.3-723.8		0.005		0.06
RS-431 723.8-729.1		0.001		0.05
RS-431 729.1-730.5	0.133	0.138		0.24
RS-431 730.5-736.5		0.013		0.39
RS-431 736.5-742.0		0.011		16.82
RS-431 742-747		0.005		0.22
RS-431 747.0-751.8		0.003		0.13
RS-431 751.8-755.6		0.015		0.09
RS-431 755.6-759.5		0.001		0.06
RS-431 759.5-762.7		<0.001		0.05
RS-431 762.7-766.7		0.002		0.21
RS-431 766.7-773.4		0.002		0.18
RS-431 773.4-777.7		0.035	0.031	12.88
RS-431 777.7-781.2		0.022		0.12
RS-431 781.2-786.4		0.016		0.08

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048420

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

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SAMPLES	AuGRAV	Au(OZ)	Au(RZ)	Ag(OZ)
RS-431 786.4-791.6		0.008		0.10
RS-431 791.6-796.3		0.013		0.09
RS-431 796.3-800.0		0.006		0.07

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048296

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HECLA MINING COMPANY

COPIES TO : KURT ALLEN

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CLIENT REFERENCE No: RS-431 RECEIVED : 16 MAR 1998

No. SAMPLES : 59 REPORTED : 24 MAR 1998

MAIN SAMPLE TYPE : DRILL CUTTINGS

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
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048296

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 24 MAR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-431 000-010	<0.001	<0.001	<0.02
RS-431 010-020	<0.001		<0.02
RS-431 020-030	0.001		0.02
RS-431 030-040	0.002		0.03
RS-431 040-050	0.001		0.03
RS-431 050-060	0.001		0.04
RS-431 060-070	<0.001		0.06
RS-431 070-080	0.001		0.41
RS-431 080-090	<0.001		0.02
RS-431 090-100	<0.001		0.03
RS-431 100-110	<0.001		<0.02
RS-431 110-120	<0.001		<0.02
RS-431 120-130	<0.001		<0.02
RS-431 130-140	<0.001		<0.02
RS-431 140-150	<0.001	<0.001	<0.02
RS-431 150-160	<0.001		<0.02
RS-431 160-170	<0.001		<0.02
RS-431 170-180	<0.001		<0.02
RS-431 180-190	<0.001		<0.02
RS-431 190-200	<0.001		<0.02
RS-431 200-210	<0.001		<0.02
RS-431 210-220	<0.001		<0.02
RS-431 220-230	<0.001		<0.02
RS-431 230-240	<0.001		<0.02
RS-431 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048296

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 24 MAR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-431 250-260	<0.001		0.03
RS-431 260-270	<0.001		0.08
RS-431 270-280	0.001		0.11
RS-431 280-290	0.003		0.14
RS-431 290-300	0.003		0.13
RS-431 300-310	0.002		0.12
RS-431 310-320	0.001		0.09
RS-431 320-330	<0.001		0.03
RS-431 330-340	<0.001	0.001	0.06
RS-431 340-350	<0.001		0.03
RS-431 350-360	<0.001		<0.02
RS-431 360-370	<0.001		<0.02
RS-431 370-380	<0.001		<0.02
RS-431 380-390	<0.001		0.05
RS-431 390-400	<0.001		0.07
RS-431 400-410	<0.001		<0.02
RS-431 410-420	<0.001		<0.02
RS-431 420-430	<0.001		<0.02
RS-431 430-440	<0.001		<0.02
RS-431 440-450	<0.001		<0.02
RS-431 450-460	0.001		0.07
RS-431 460-470	0.001		0.05
RS-431 470-480	0.003		0.08
RS-431 480-490	0.002		0.06
RS-431 490-500	0.001		0.12

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SPU48296

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 24 MAR 1998

SAMPLES	Au(OZ)	Au(RZ)	Ag(OZ)
RS-431 500-510	0.003		0.11
RS-431 510-520	0.003	0.002	0.06
RS-431 520-530	0.002		0.08
RS-431 530-540	0.005		0.64
RS-431 540-550	0.007		0.08
RS-431 550-560	0.002		0.07
RS-431 560-570	0.006		0.18
RS-431 570-580	0.009		0.33
27783	0.117		2.92

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP0438420

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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-431 RECEIVED : 2 APR 1998

No. SAMPLES : 53 REPORTED : 9 APR 1998

MAIN SAMPLE TYPE : DRILL CORE

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SIGNATORY : Susan King M.S.

04/09/1998 13:08 7023561413 AMERICAN ASSAY LABS PAGE 01
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AMERICAN ASSAY LABORATORIES

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RS-431 590.0-595.1		0.006	0.007	
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REFERENCE : RS-431

REPORTED : 9 APR 1998

SAMPLES	AuGRAV	Au(OZ)	Au(RZ)	Ag(OZ)
RS-431 674.5-679.3		0.010		
RS-431 679.3-683.1		0.003		
RS-431 683.1-686.7		0.016	0.023	
RS-431 686.7-692.0		0.002		
RS-431 692.0-696.1		0.004		
RS-431 696.1-700.0		0.005		
RS-431 700.0-704.7		0.002		
RS-431 704.7-708.3		0.015		
RS-431 708.3-713.7		0.025	0.031	
RS-431 713.7-718.3		0.009		
RS-431 718.3-723.8		0.005		
RS-431 723.8-729.1		0.001		
RS-431 729.1-730.5	0.133	0.138		
RS-431 730.5-736.5		0.013		
RS-431 736.5-742.0		0.011		
RS-431 742-747		0.005		
RS-431 747.0-751.8		0.003		
RS-431 751.8-755.6		0.015		
RS-431 755.6-759.5		0.001		
RS-431 759.5-762.7		<0.001		
RS-431 762.7-766.7		0.002		
RS-431 766.7-773.4		0.002		
RS-431 773.4-777.7		0.035	0.031	
RS-431 777.7-781.2		0.022		
RS-431 781.2-786.4		0.016		

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP048420

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 9 APR 1998

SAMPLES	AuGRAV	Au(OZ)	Au(RZ)	Ag(OZ)
RS-431 786.4-791.6		0.008		
RS-431 791.6-796.3		0.013		
RS-431 796.3-800.0		0.006		

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 0048296-IN
INVOICE DATE: 03/24/98

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-431	DEVELOPMENT	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
59	SAMPLES RECEIVED	.00	.00
58	DRYING	1.00	58.00
58	EXCESSIVE WETNESS	1.00	58.00
58	JAW CRUSHING CHARGE	1.30	75.40
58	SPLITTING CHARGE	1.20	69.60
58	FINE MILLING CHARGE	2.00	116.00
59	Au (1 A.T. FIRE ASSAY)	8.00	472.00
59	HYDROCHLORIC/NITRIC DIGESTION	2.00	118.00
59	Ag ANALYSES	1.00	59.00

86-5210-477
SA

NET INVOICE:	1,026.00
LESS DISCOUNT:	307.80
FREIGHT:	.00
INVOICE TOTAL:	718.20

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048296

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-431 RECEIVED : 16 MAR 1998

No. SAMPLES : 59 REPORTED : 24 MAR 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 SP048296

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 24 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-431 000-010	<0.001	<0.001	<0.02
RS-431 010-020	<0.001		<0.02
RS-431 020-030	0.001		0.02
RS-431 030-040	0.002		0.03
RS-431 040-050	0.001		0.03
RS-431 050-060	0.001		0.04
RS-431 060-070	<0.001		0.06
RS-431 070-080	0.001		0.41
RS-431 080-090	<0.001		0.02
RS-431 090-100	<0.001		0.03
RS-431 100-110	<0.001		<0.02
RS-431 110-120	<0.001		<0.02
RS-431 120-130	<0.001		<0.02
RS-431 130-140	<0.001		<0.02
RS-431 140-150	<0.001	<0.001	<0.02
RS-431 150-160	<0.001		<0.02
RS-431 160-170	<0.001		<0.02
RS-431 170-180	<0.001		<0.02
RS-431 180-190	<0.001		<0.02
RS-431 190-200	<0.001		<0.02
RS-431 200-210	<0.001		<0.02
RS-431 210-220	<0.001		<0.02
RS-431 220-230	<0.001		<0.02
RS-431 230-240	<0.001		<0.02
RS-431 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048296

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 24 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-431 250-260	<0.001		0.03
RS-431 260-270	<0.001		0.08
RS-431 270-280	0.001		0.11
RS-431 280-290	0.003		0.14
RS-431 290-300	0.003		0.13
RS-431 300-310	0.002		0.12
RS-431 310-320	0.001		0.09
RS-431 320-330	<0.001		0.03
RS-431 330-340	<0.001	0.001	0.06
RS-431 340-350	<0.001		0.03
RS-431 350-360	<0.001		<0.02
RS-431 360-370	<0.001		<0.02
RS-431 370-380	<0.001		<0.02
RS-431 380-390	<0.001		0.05
RS-431 390-400	<0.001		0.07
RS-431 400-410	<0.001		<0.02
RS-431 410-420	<0.001		<0.02
RS-431 420-430	<0.001		<0.02
RS-431 430-440	<0.001		<0.02
RS-431 440-450	<0.001		<0.02
RS-431 450-460	0.001		0.07
RS-431 460-470	0.001		0.05
RS-431 470-480	0.003		0.08
RS-431 480-490	0.002		0.06
RS-431 490-500	0.001		0.12

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048296

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 24 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-431 500-510	0.003		0.11
RS-431 510-520	0.003	0.002	0.06
RS-431 520-530	0.002		0.08
RS-431 530-540	0.005		0.64
RS-431 540-550	0.007		0.08
RS-431 550-560	0.002		0.07
RS-431 560-570	0.006		0.18
RS-431 570-580	0.009		0.33
27783	0.117		2.92

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048296

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-431 RECEIVED : 16 MAR 1998

No. SAMPLES : 59 REPORTED : 24 MAR 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 SP048296

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 24 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-431 000-010	<0.001	<0.001	<0.02
RS-431 010-020	<0.001		<0.02
RS-431 020-030	0.001		0.02
RS-431 030-040	0.002		0.03
RS-431 040-050	0.001		0.03
RS-431 050-060	0.001		0.04
RS-431 060-070	<0.001		0.06
RS-431 070-080	0.001		0.41
RS-431 080-090	<0.001		0.02
RS-431 090-100	<0.001		0.03
RS-431 100-110	<0.001		<0.02
RS-431 110-120	<0.001		<0.02
RS-431 120-130	<0.001		<0.02
RS-431 130-140	<0.001		<0.02
RS-431 140-150	<0.001	<0.001	<0.02
RS-431 150-160	<0.001		<0.02
RS-431 160-170	<0.001		<0.02
RS-431 170-180	<0.001		<0.02
RS-431 180-190	<0.001		<0.02
RS-431 190-200	<0.001		<0.02
RS-431 200-210	<0.001		<0.02
RS-431 210-220	<0.001		<0.02
RS-431 220-230	<0.001		<0.02
RS-431 230-240	<0.001		<0.02
RS-431 240-250	<0.001		<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048296

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-431

REPORTED : 24 MAR 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-431 250-260	<0.001		0.03
RS-431 260-270	<0.001		0.08
RS-431 270-280	0.001		0.11
RS-431 280-290	0.003		0.14
RS-431 290-300	0.003		0.13
RS-431 300-310	0.002		0.12
RS-431 310-320	0.001		0.09
RS-431 320-330	<0.001		0.03
RS-431 330-340	<0.001	0.001	0.06
RS-431 340-350	<0.001		0.03
RS-431 350-360	<0.001		<0.02
RS-431 360-370	<0.001		<0.02
RS-431 370-380	<0.001		<0.02
RS-431 380-390	<0.001		0.05
RS-431 390-400	<0.001		0.07
RS-431 400-410	<0.001		<0.02
RS-431 410-420	<0.001		<0.02
RS-431 420-430	<0.001		<0.02
RS-431 430-440	<0.001		<0.02
RS-431 440-450	<0.001		<0.02
RS-431 450-460	0.001		0.07
RS-431 460-470	0.001		0.05
RS-431 470-480	0.003		0.08
RS-431 480-490	0.002		0.06
RS-431 490-500	0.001		0.12

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP048296

American Assay Laboratories

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PROJECT : ROSEBUD DEVELOPMENT
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SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag(OZ) D210 OPT
RS-431 500-510	0.003		0.11
RS-431 510-520	0.003	0.002	0.06
RS-431 520-530	0.002		0.08
RS-431 530-540	0.005		0.64
RS-431 540-550	0.007		0.08
RS-431 550-560	0.002		0.07
RS-431 560-570	0.006		0.18
RS-431 570-580	0.009		0.33
27783	0.117		2.92

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-431

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/17/98

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: TRUE NORTH

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

COMMENTS: ** BOART LONGYEAR **
*** SCOTT VIEGUT ***

****
****
*** 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

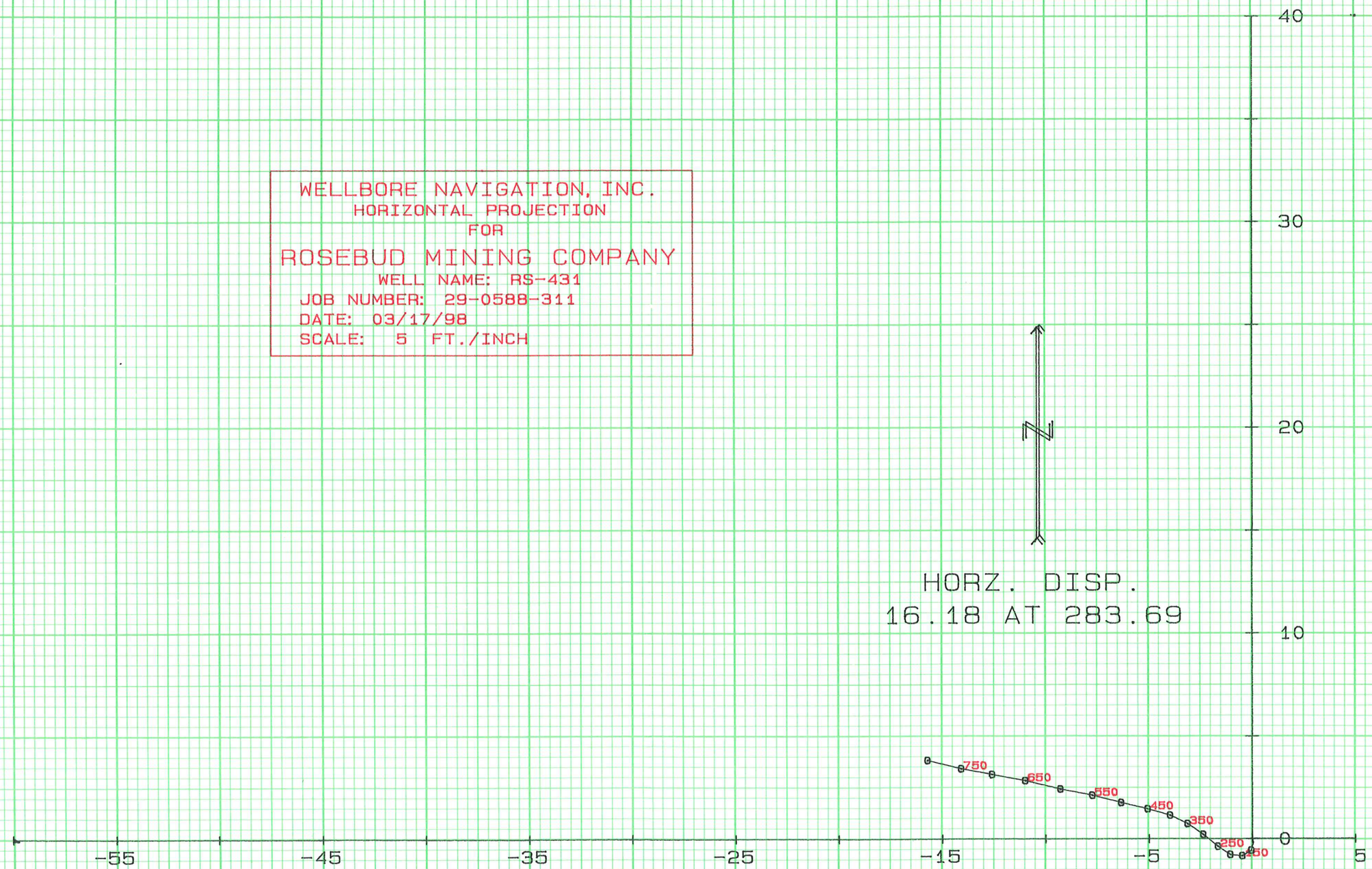
JOB NUMBER: 29-0588-311 WELL NAME: RS-431

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	-0.09	-0.167	-89.56	164.37	0.18 S	0.05 E	0.88	0.44	0.19	AT 164.37
100.0	100.00	-0.08	-0.564	-89.42	218.58	0.57 S	0.05 W	0.96	0.48	0.57	AT 185.47
150.0	150.00	0.28	-0.928	-89.34	255.92	0.84 S	0.49 W	0.81	0.40	0.97	AT 210.47
200.0	199.99	0.86	-1.002	-89.25	294.30	0.77 S	1.07 W	0.94	0.47	1.32	AT 234.21
250.0	249.99	1.53	-0.752	-89.09	312.16	0.37 S	1.66 W	0.60	0.30	1.70	AT 257.46
300.0	299.98	2.35	-0.363	-88.81	306.40	0.20 N	2.37 W	0.60	0.30	2.38	AT 274.93
350.0	349.97	3.22	-0.028	-89.07	303.00	0.73 N	3.13 W	0.53	0.27	3.22	AT 283.19
400.0	399.96	4.13	0.171	-88.77	290.59	1.14 N	3.97 W	0.76	0.38	4.14	AT 286.05
450.0	449.95	5.26	0.223	-88.63	282.54	1.46 N	5.06 W	0.46	0.23	5.27	AT 286.12
500.0	499.93	6.58	0.221	-88.36	284.52	1.77 N	6.34 W	0.55	0.27	6.58	AT 285.62
550.0	549.91	8.02	0.233	-88.33	283.78	2.12 N	7.74 W	0.07	0.04	8.02	AT 285.35
600.0	599.88	9.60	0.160	-88.05	278.70	2.43 N	9.29 W	0.64	0.32	9.60	AT 284.65
650.0	649.85	11.36	0.150	-87.90	287.71	2.83 N	11.00 W	0.70	0.35	11.36	AT 284.45
700.0	699.83	12.99	0.071	-88.32	272.40	3.14 N	12.60 W	1.31	0.65	12.99	AT 284.00
750.0	749.80	14.50	-0.011	-88.17	288.12	3.42 N	14.10 W	1.00	0.50	14.50	AT 283.65
800.0	799.78	16.18	0.001	-87.99	280.42	3.83 N	15.72 W	0.63	0.31	16.18	AT 283.69

```
*************************************************************
*                         ********                          *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                         ********                          *
*   800.0 FEET EQUALS     16.18   FEET AT   283.69          *
*                         ********                          *
*************************************************************
```

WELLBORE NAVIGATION, INC.
HORIZONTAL PROJECTION
FOR
ROSEBUD MINING COMPANY
WELL NAME: RS-431
JOB NUMBER: 29-0588-311
DATE: 03/17/98
SCALE: 5 FT./INCH



STARLIGHT PRINTING (801) 467-2841

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-431 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/17/98

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 **
*** SCOTT VIEGUT ***

****
****
*** 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-431 / 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	-0.12	0.148	-89.56	164.37	0.18 S	0.05 E	0.88	0.44	0.19	AT 164.37
100.0	100.00	-0.50	0.281	-89.42	218.58	0.57 S	0.05 W	0.96	0.48	0.57	AT 185.47
150.0	150.00	-0.97	0.077	-89.34	255.92	0.84 S	0.49 W	0.81	0.40	0.97	AT 210.47
200.0	199.99	-1.24	-0.434	-89.25	294.30	0.77 S	1.07 W	0.94	0.47	1.32	AT 234.21
250.0	249.99	-1.26	-1.149	-89.09	312.16	0.37 S	1.66 W	0.60	0.30	1.70	AT 257.46
300.0	299.98	-1.19	-2.062	-88.81	306.40	0.20 N	2.37 W	0.60	0.30	2.38	AT 274.93
350.0	349.97	-1.20	-2.987	-89.07	303.00	0.73 N	3.13 W	0.53	0.27	3.22	AT 283.19
400.0	399.96	-1.34	-3.912	-88.77	290.59	1.14 N	3.97 W	0.76	0.38	4.14	AT 286.05
450.0	449.95	-1.70	-4.984	-88.63	282.54	1.46 N	5.06 W	0.46	0.23	5.27	AT 286.12
500.0	499.93	-2.18	-6.207	-88.36	284.52	1.77 N	6.34 W	0.55	0.27	6.58	AT 285.62
550.0	549.91	-2.70	-7.556	-88.33	283.78	2.12 N	7.74 W	0.07	0.04	8.02	AT 285.35
600.0	599.88	-3.34	-8.998	-88.05	278.70	2.43 N	9.29 W	0.64	0.32	9.60	AT 284.65
650.0	649.85	-3.99	-10.635	-87.90	287.71	2.83 N	11.00 W	0.70	0.35	11.36	AT 284.45
700.0	699.83	-4.65	-12.127	-88.32	272.40	3.14 N	12.60 W	1.31	0.65	12.99	AT 284.00
750.0	749.80	-5.28	-13.509	-88.17	288.12	3.42 N	14.10 W	1.00	0.50	14.50	AT 283.65
800.0	799.78	-5.88	-15.070	-87.99	280.42	3.83 N	15.72 W	0.63	0.31	16.18	AT 283.69

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   800.0 FEET EQUALS     16.18    FEET AT  283.69          *
*                          ********                         *
*************************************************************
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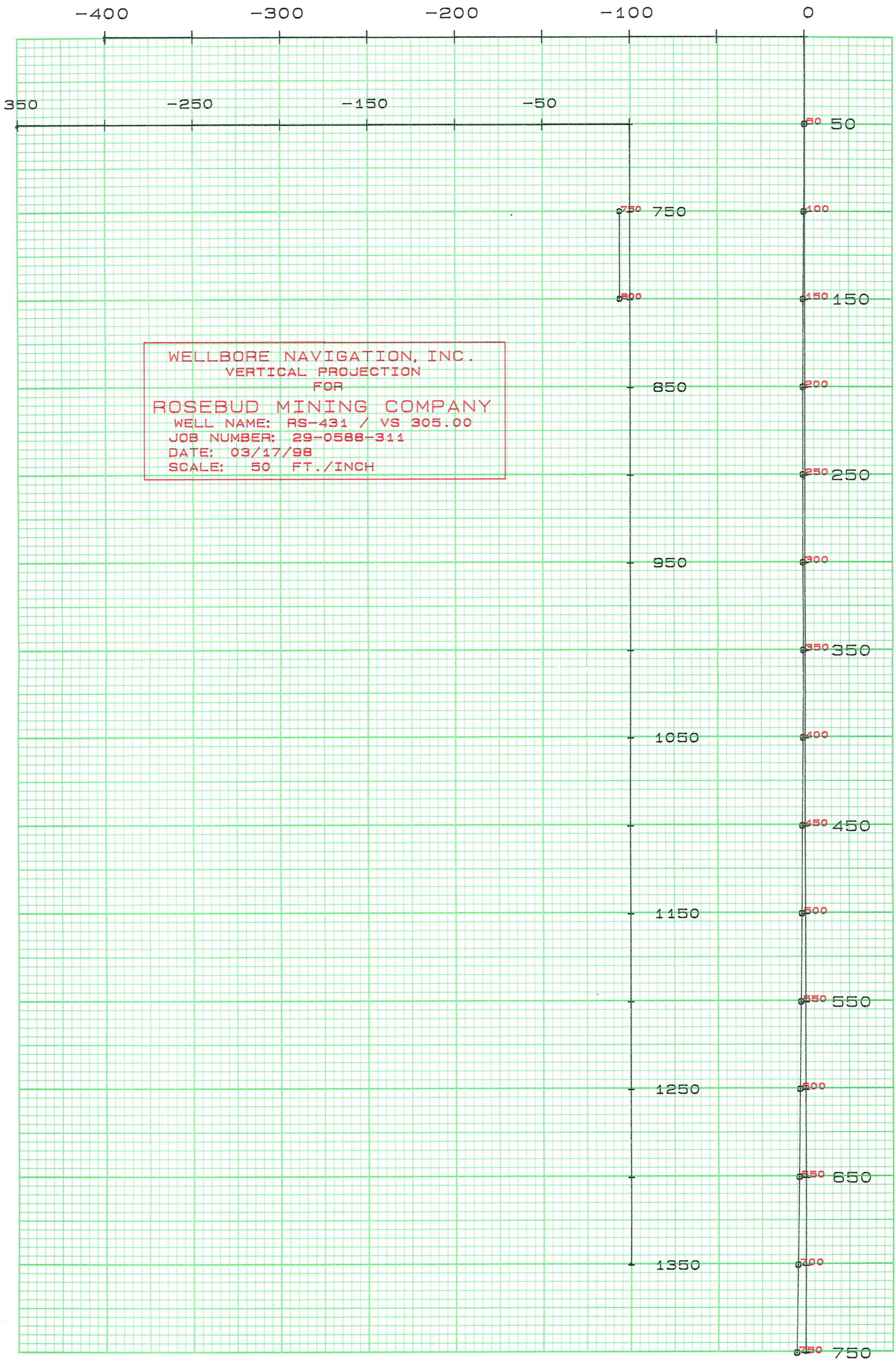
STARLIGHT PRINTING (801) 467-2841



WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-431 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/17/98

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 **
*** SCOTT VIEGUT ***

****
****
*** 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-431 / 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	0.15	0.122	-89.56	164.37	0.18 S	0.05 E	0.88	0.44	0.19	AT 164.37
100.0	100.00	0.28	0.496	-89.42	218.58	0.57 S	0.05 W	0.96	0.48	0.57	AT 185.47
150.0	150.00	0.08	0.966	-89.34	255.92	0.84 S	0.49 W	0.81	0.40	0.97	AT 210.47
200.0	199.99	-0.43	1.245	-89.25	294.30	0.77 S	1.07 W	0.94	0.47	1.32	AT 234.21
250.0	249.99	-1.15	1.256	-89.09	312.16	0.37 S	1.66 W	0.60	0.30	1.70	AT 257.46
300.0	299.98	-2.06	1.194	-88.81	306.40	0.20 N	2.37 W	0.60	0.30	2.38	AT 274.93
350.0	349.97	-2.99	1.195	-89.07	303.00	0.73 N	3.13 W	0.53	0.27	3.22	AT 283.19
400.0	399.96	-3.91	1.343	-88.77	290.59	1.14 N	3.97 W	0.76	0.38	4.14	AT 286.05
450.0	449.95	-4.98	1.705	-88.63	282.54	1.46 N	5.06 W	0.46	0.23	5.27	AT 286.12
500.0	499.93	-6.21	2.184	-88.36	284.52	1.77 N	6.34 W	0.55	0.27	6.58	AT 285.62
550.0	549.91	-7.56	2.698	-88.33	283.78	2.12 N	7.74 W	0.07	0.04	8.02	AT 285.35
600.0	599.88	-9.00	3.338	-88.05	278.70	2.43 N	9.29 W	0.64	0.32	9.60	AT 284.65
650.0	649.85	-10.64	3.987	-87.90	287.71	2.83 N	11.00 W	0.70	0.35	11.36	AT 284.45
700.0	699.83	-12.13	4.655	-88.32	272.40	3.14 N	12.60 W	1.31	0.65	12.99	AT 284.00
750.0	749.80	-13.51	5.281	-88.17	288.12	3.42 N	14.10 W	1.00	0.50	14.50	AT 283.65
800.0	799.78	-15.07	5.878	-87.99	280.42	3.83 N	15.72 W	0.63	0.31	16.18	AT 283.69

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   800.0 FEET EQUALS     16.18   FEET AT  283.69           *
*                          ********                         *
*************************************************************
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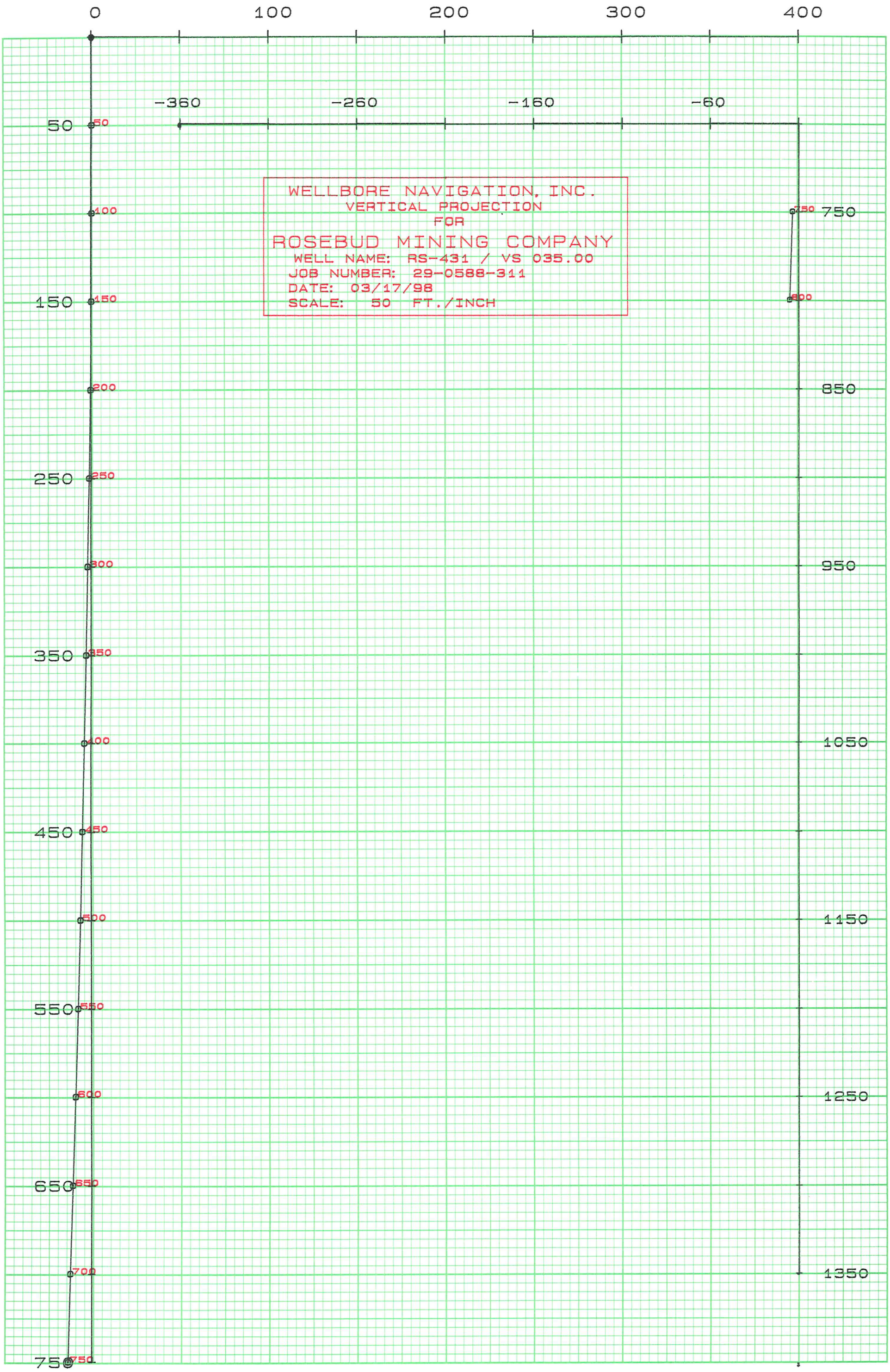

SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

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Nevada 89431
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Reno, NV 89510
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Nevada 89801
Box 2908
Elko, NV 89801
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(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 89446

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

Project Name: DEVELOPMENT Purchase Order Number:

Date Submitted: 03/13/98 Number of Samples: SEE BELOW

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

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
RS-431 0'-10' → 570-580'	RC	Au-Ag ACCORDING TO
(58 SAMPLES)		ROSEBUD MINE
		PROTOCOL
RS-432 0'-10' → 540-550'		
(55 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 *
****

JOB NUMBER: 29-0588-311

WELL NAME: RS-431

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/11/98

SURVEY ENGINEER: VERNN REID

GYRO REFERENCE BEARING: TRUE NORTH

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-431

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	-0.165	-89.56	164.37	0.18 S	0.05 E	0.88	0.44	0.19	AT 164.37	072.59
100.0	100.00	-0.09	-0.562	-89.42	218.58	0.57 S	0.05 W	0.96	0.48	0.57	AT 185.47	071.78
150.0	150.00	0.26	-0.934	-89.34	255.92	0.84 S	0.49 W	0.81	0.40	0.97	AT 210.47	070.46
200.0	199.99	0.83	-1.022	-89.25	294.30	0.77 S	1.07 W	0.94	0.47	1.32	AT 234.21	068.49
250.0	249.99	1.51	-0.788	-89.09	312.16	0.37 S	1.66 W	0.60	0.30	1.70	AT 257.46	067.18
300.0	299.98	2.35	-0.417	-88.81	306.40	0.20 N	2.37 W	0.60	0.30	2.38	AT 274.93	066.54
350.0	349.97	3.22	-0.103	-89.07	303.00	0.73 N	3.13 W	0.53	0.27	3.22	AT 283.19	065.72
400.0	399.96	4.14	0.075	-88.77	290.59	1.14 N	3.97 W	0.76	0.38	4.14	AT 286.05	065.02
450.0	449.95	5.27	0.101	-88.63	282.54	1.46 N	5.06 W	0.46	0.23	5.27	AT 286.12	064.62
500.0	499.93	6.58	0.069	-88.36	284.52	1.77 N	6.34 W	0.55	0.27	6.58	AT 285.62	064.31
550.0	549.91	8.02	0.047	-88.33	283.78	2.12 N	7.74 W	0.07	0.04	8.02	AT 285.35	064.20
580.0	579.90	8.87	-0.001	-88.44	279.70	2.30 N	8.56 W	0.53	0.16	8.87	AT 285.02	064.04

```
*************************************************************
*                         ********                          *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                         ********                          *
*   580.0 FEET EQUALS      8.87   FEET AT  285.02           *
*                         ********                          *
*************************************************************
```

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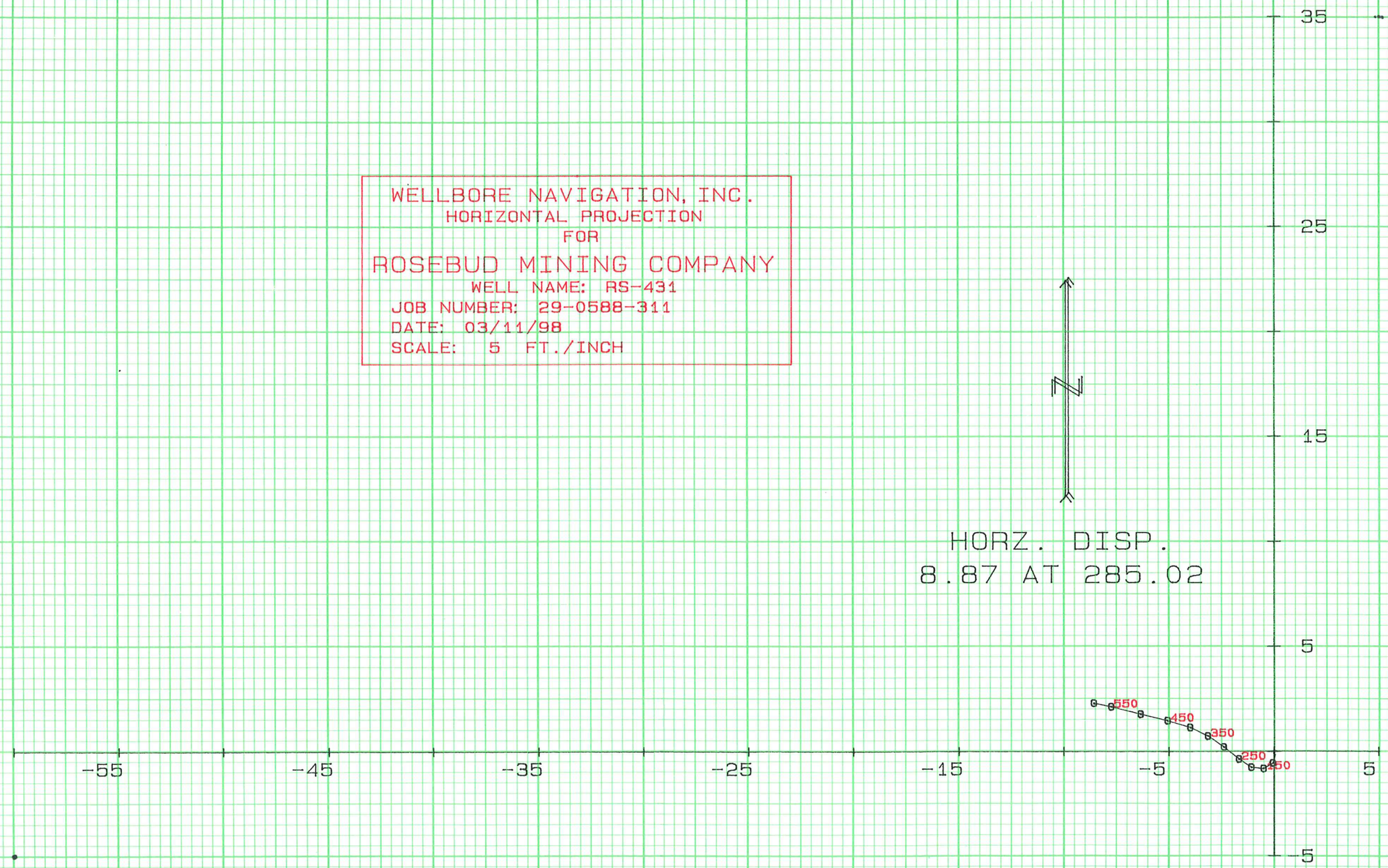
WELLBORE NAVIGATION, INC.
HORIZONTAL PROJECTION
FOR
ROSEBUD MINING COMPANY
WELL NAME: RS-431
JOB NUMBER: 29-0588-311
DATE: 03/11/98
SCALE: 5 FT./INCH



WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-431 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/11/98

SURVEY ENGINEER: VERNN REID

GYRO REFERENCE BEARING: TRUE NORTH

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00

****
***** 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-431 / 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	-0.12	0.148	-89.56	164.37	0.18 S	0.05 E	0.88	0.44	0.19	AT 164.37	072.59
100.0	100.00	-0.50	0.281	-89.42	218.58	0.57 S	0.05 W	0.96	0.48	0.57	AT 185.47	071.78
150.0	150.00	-0.97	0.077	-89.34	255.92	0.84 S	0.49 W	0.81	0.40	0.97	AT 210.47	070.46
200.0	199.99	-1.24	-0.434	-89.25	294.30	0.77 S	1.07 W	0.94	0.47	1.32	AT 234.21	068.49
250.0	249.99	-1.26	-1.149	-89.09	312.16	0.37 S	1.66 W	0.60	0.30	1.70	AT 257.46	067.18
300.0	299.98	-1.19	-2.062	-88.81	306.40	0.20 N	2.37 W	0.60	0.30	2.38	AT 274.93	066.54
350.0	349.97	-1.20	-2.987	-89.07	303.00	0.73 N	3.13 W	0.53	0.27	3.22	AT 283.19	065.72
400.0	399.96	-1.34	-3.912	-88.77	290.59	1.14 N	3.97 W	0.76	0.38	4.14	AT 286.05	065.02
450.0	449.95	-1.70	-4.984	-88.63	282.54	1.46 N	5.06 W	0.46	0.23	5.27	AT 286.12	064.62
500.0	499.93	-2.18	-6.207	-88.36	284.52	1.77 N	6.34 W	0.55	0.27	6.58	AT 285.62	064.31
550.0	549.91	-2.70	-7.556	-88.33	283.78	2.12 N	7.74 W	0.07	0.04	8.02	AT 285.35	064.20
580.0	579.90	-3.03	-8.333	-88.44	279.70	2.30 N	8.56 W	0.53	0.16	8.87	AT 285.02	064.04

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   580.0 FEET EQUALS      8.87   FEET AT  285.02           *
*                          ********                         *
*************************************************************
```

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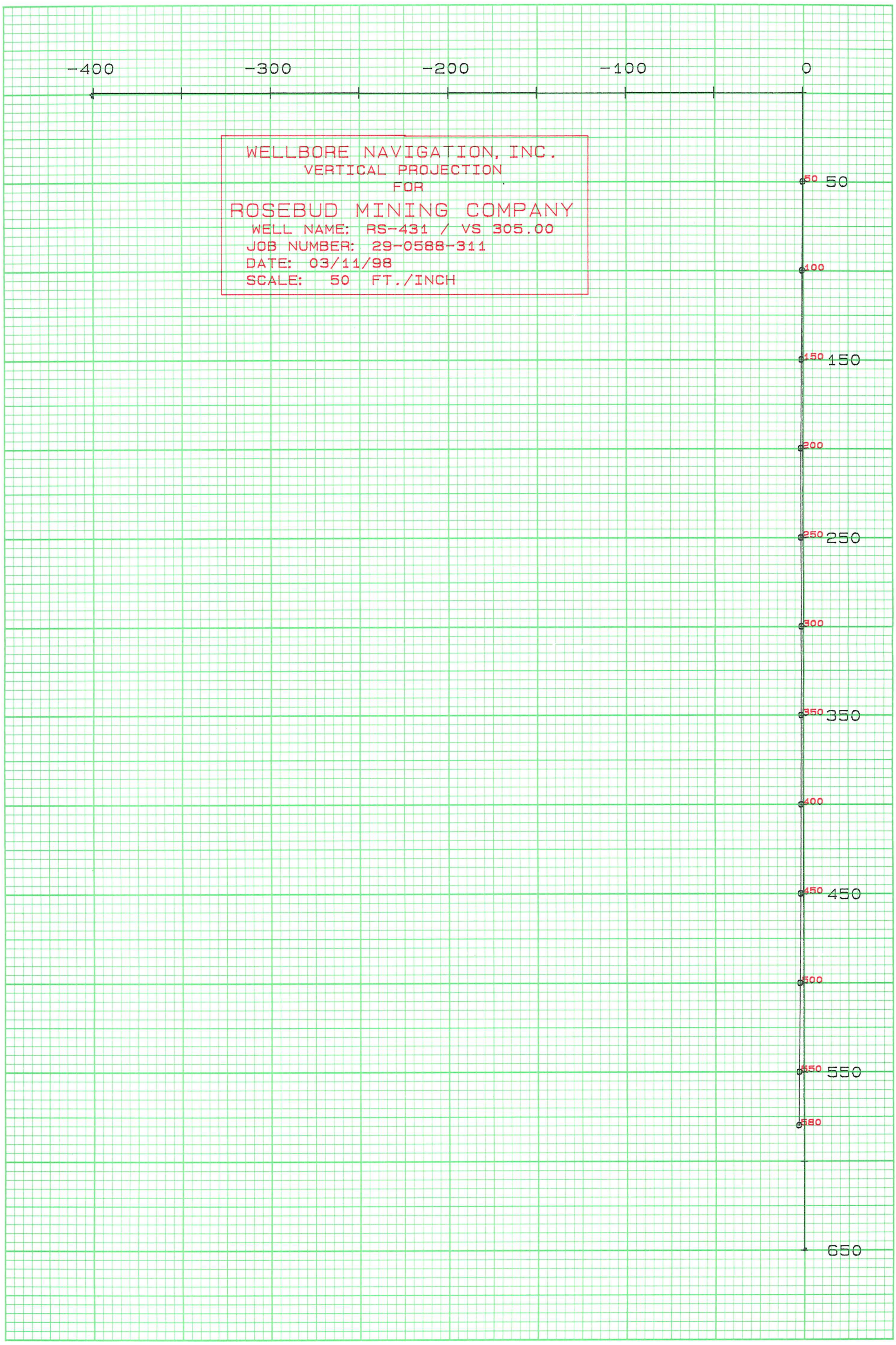

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0588-311

WELL NAME: RS-431 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 03/11/98

SURVEY ENGINEER: VERNN REID

GYRO REFERENCE BEARING: TRUE NORTH

WELNAV

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00

****
****** 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-431 / 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	0.15	0.122	-89.56	164.37	0.18 S	0.05 E	0.88	0.44	0.19	AT 164.37	072.59
100.0	100.00	0.28	0.496	-89.42	218.58	0.57 S	0.05 W	0.96	0.48	0.57	AT 185.47	071.78
150.0	150.00	0.08	0.966	-89.34	255.92	0.84 S	0.49 W	0.81	0.40	0.97	AT 210.47	070.46
200.0	199.99	-0.43	1.245	-89.25	294.30	0.77 S	1.07 W	0.94	0.47	1.32	AT 234.21	068.49
250.0	249.99	-1.15	1.256	-89.09	312.16	0.37 S	1.66 W	0.60	0.30	1.70	AT 257.46	067.18
300.0	299.98	-2.06	1.194	-88.81	306.40	0.20 N	2.37 W	0.60	0.30	2.38	AT 274.93	066.54
350.0	349.97	-2.99	1.195	-89.07	303.00	0.73 N	3.13 W	0.53	0.27	3.22	AT 283.19	065.72
400.0	399.96	-3.91	1.343	-88.77	290.59	1.14 N	3.97 W	0.76	0.38	4.14	AT 286.05	065.02
450.0	449.95	-4.98	1.705	-88.63	282.54	1.46 N	5.06 W	0.46	0.23	5.27	AT 286.12	064.62
500.0	499.93	-6.21	2.184	-88.36	284.52	1.77 N	6.34 W	0.55	0.27	6.58	AT 285.62	064.31
550.0	549.91	-7.56	2.698	-88.33	283.78	2.12 N	7.74 W	0.07	0.04	8.02	AT 285.35	064.20
580.0	579.90	-8.33	3.030	-88.44	279.70	2.30 N	8.56 W	0.53	0.16	8.87	AT 285.02	064.04

```
*************************************************************
*                         ********                          *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                         ********                          *
*   580.0 FEET EQUALS      8.87   FEET AT  285.02           *
*                         ********                          *
*************************************************************
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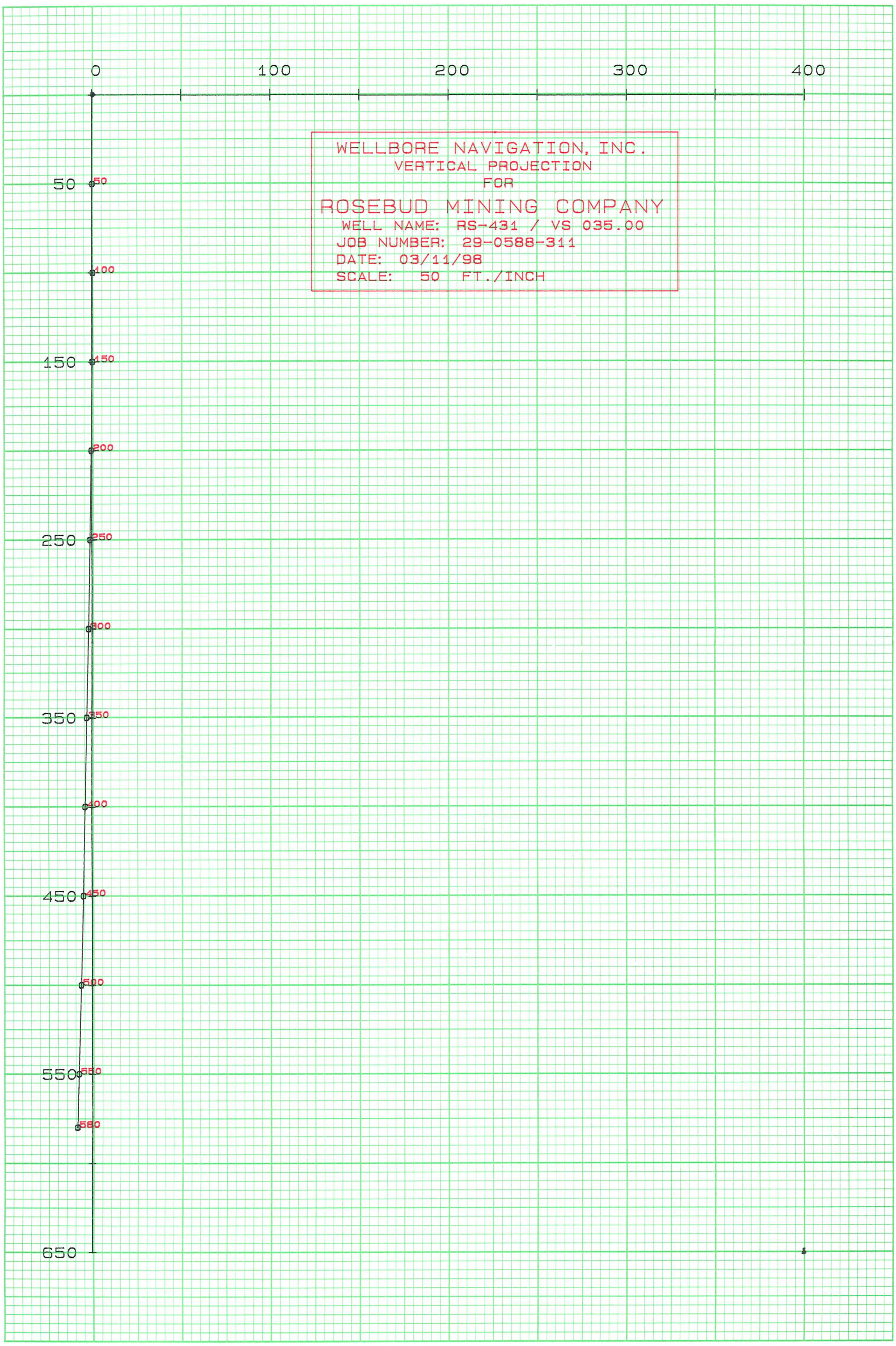

SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

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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 89446

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

Project Name: DEVELOPMENT Purchase Order Number:

Date Submitted: 04/01/98 Number of Samples: 52

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

RS-431 SAMPLE IDENTIFICATION			TYPE	ELEMENTS REQUIRED
580.0-585.1	634.8-638.0		CORE	Au-Ag ACCORDING TO
585.1-590.0	638.0-640.6			ROSEBUD MINE
590.0-595.1	640.6-644.5			PROTOCOLS
595.1-600.0	644.5-650.0	700.0-704.7		
600.0-604.7	650.0-654.9	704.7-708.3		755.6-759.5
604.7-609.1	654.9-660.0	708.3-713.7		759.5-762.7
609.1-611.1	660.0-664.7	713.7-718.3		762.7-766.7
611.1-616.9	664.7-670.0	718.3-723.8		766.7-773.4
616.9-617.4	670.0-674.5	723.8-729.1		773.4-777.7
620.0-621.5	674.5-679.3	729.1-730.5		777.7-781.2
621.5-623.5	679.3-683.1	730.5-736.5		781.2-786.4
623.5-625.7	683.1-686.7	736.5-742.0		786.4-791.6
625.7-628.5	686.7-692.0	742.0-747.0		791.6-796.3
628.5-631.5	692.0-696.1	747.0-751.8		796.3-800.0
631.5-634.8	696.1-700.0	751.8-755.6		

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:

~~PAGE 1 OF 2~~

CLIENT FILE COPY

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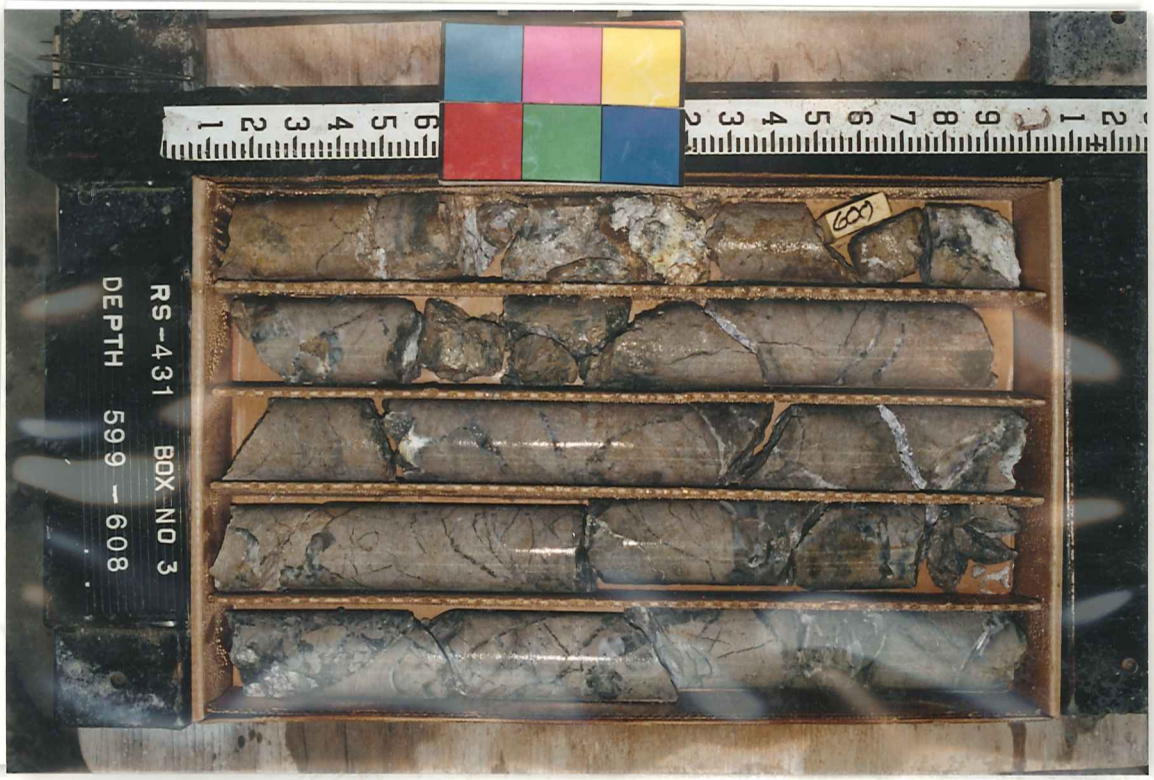
DEPTH 580 - 590

RS-431 BOX NO 2
DEPTH 590 - 599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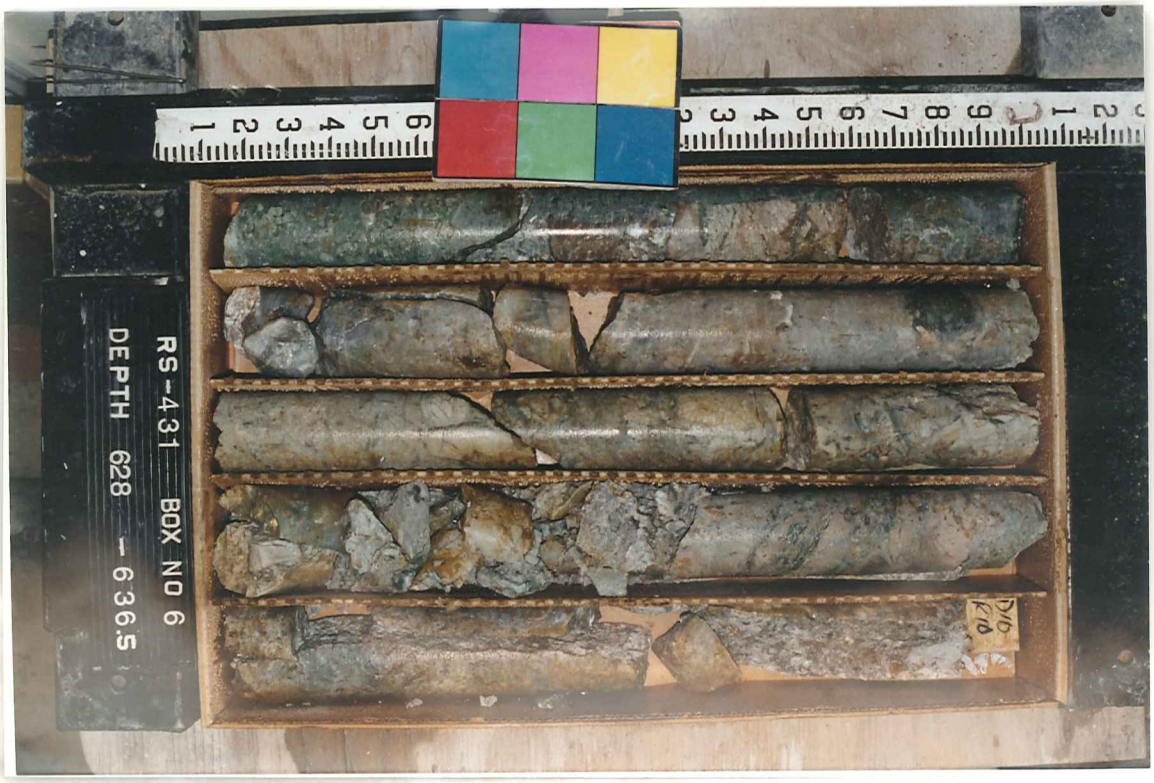
DEPTH 599 - 608

610
RS-431 BOX NO 4
DEPTH 608-617.

626.5
620
RS-431 BOX NO 5
DEPTH 617 - 628.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DEPTH 628 - 636.5

644.5
RS-431 BOX NO 7
DEPTH 636.5 - 645.5

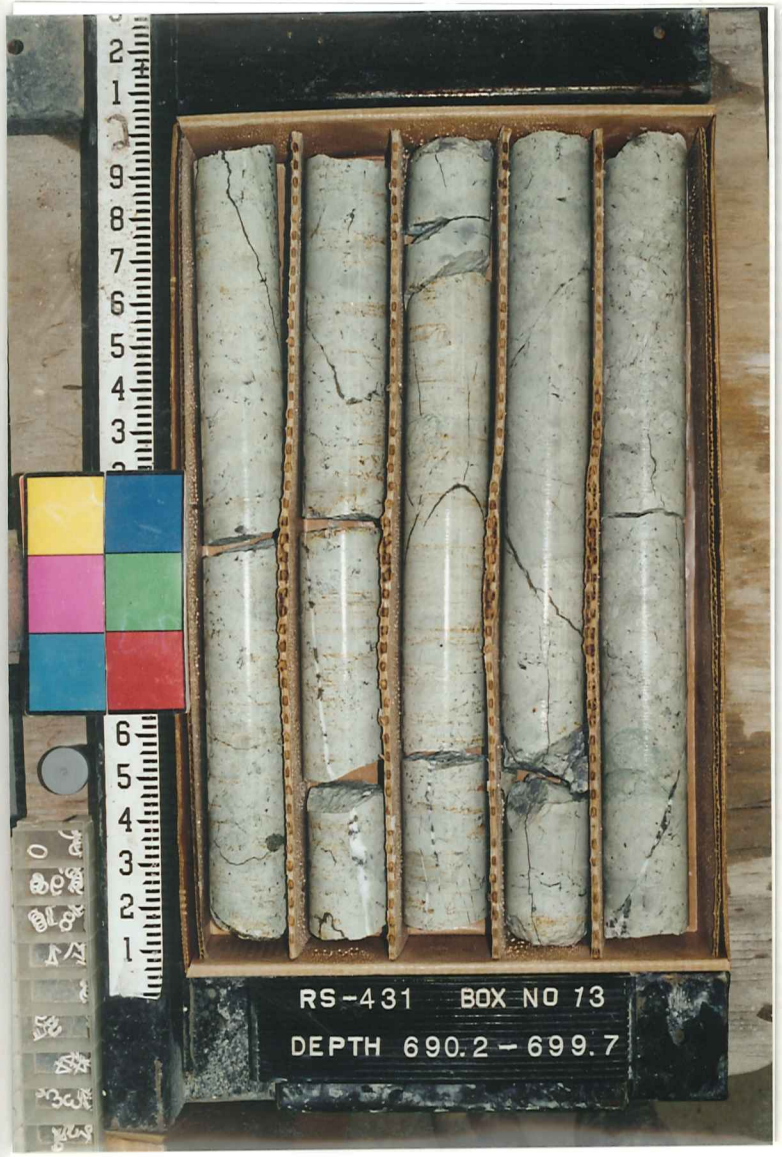
650
RS-431 BOX NO 8
DEPTH 645.5- 654

RS-431 BOX NO 9
DEPTH 654- 663

RS-431 BOX NO 10
DEPTH 663-672
670

RS-431 BOX NO 11
DEPTH 672-681
680

RS-431 BOX NO 12
DEPTH 681-690.2
690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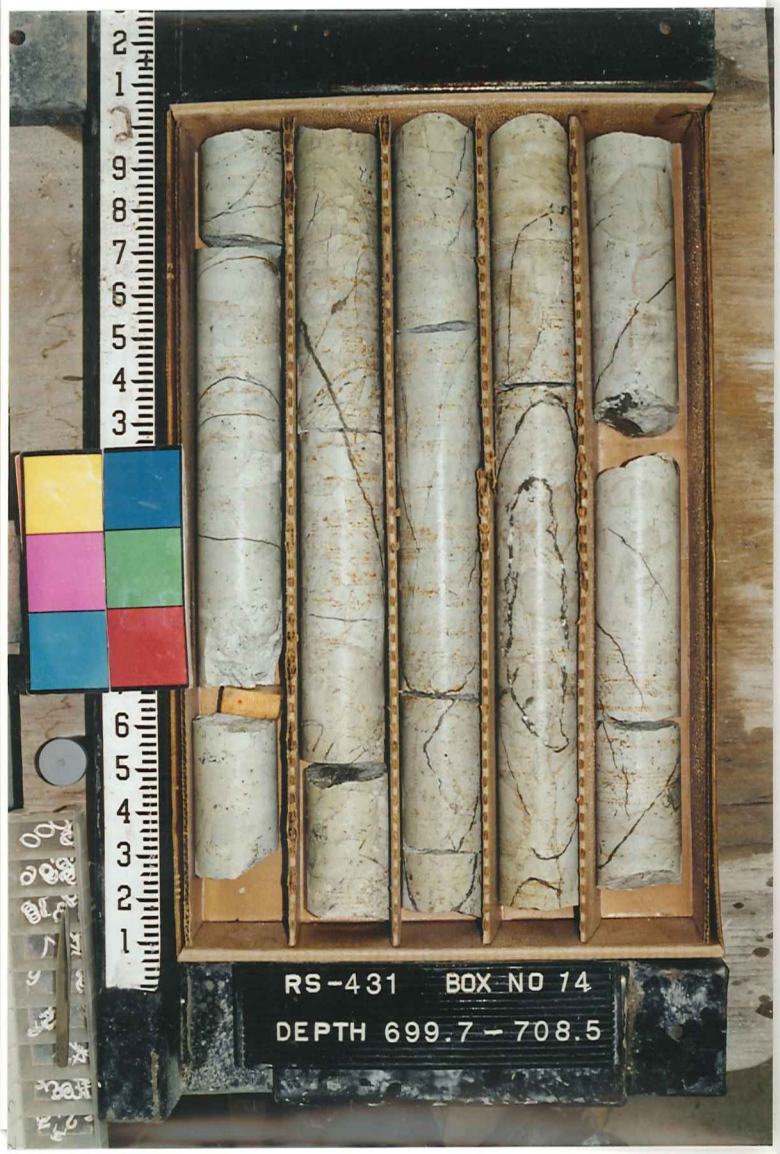
DEPTH 690.2 - 699.7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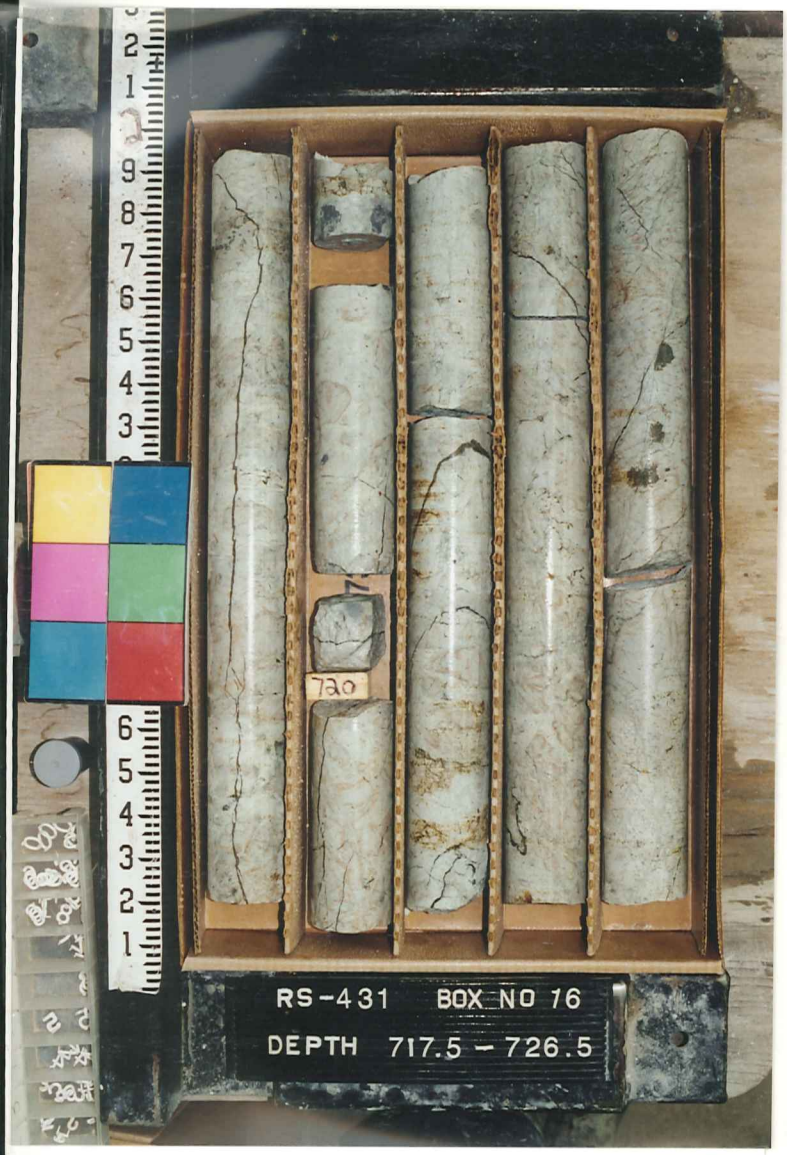
RS-431 BOX NO 15
DEPTH 708.5 - 717.5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DEPTH 717.5 - 726.5

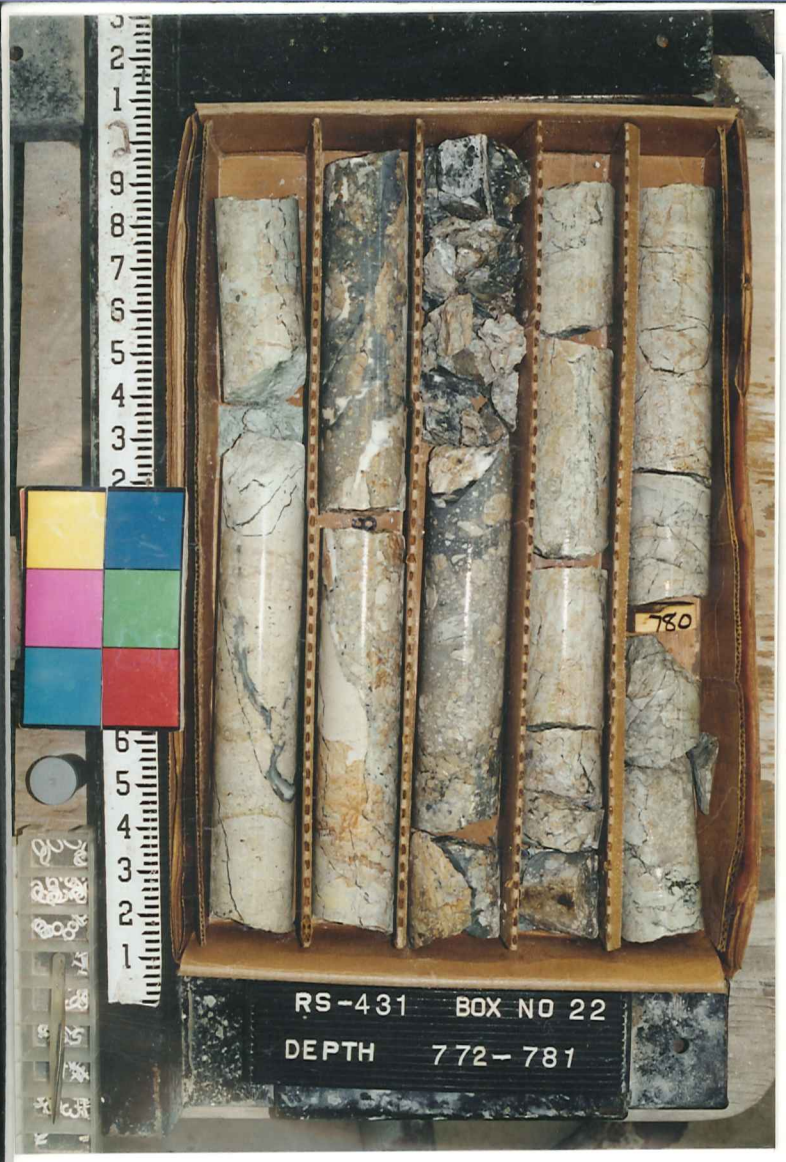
740
RS-431 BOX NO 18
DEPTH 736-745

730
RS-431 BOX NO 17
DEPTH 726.5-736

750
RS-431 BOX NO 19
DEPTH 745-754

760
RS-431 BOX NO 20
DEPTH 754-763

770
RS-431 BOX NO 21
DEPTH 763-772


780
RS-431 BOX NO 22
DEPTH 772-781

RS-431 BOX NO 23
DEPTH 781-789.8

790
RS-431 BOX NO 24
DEPTH 789.8-798

RS-431 BOX NO 25
DEPTH 798-800
NO. 79738 HQ DIV.
R=10
TD