6000 0519

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-413
AUTHOR	C. Ballew; R. Lisle, R. Vance; K. Allen; S. King; V. Reid; G. Langstaff; B. Kurpis; D. Keyser; R. Parish
DATE OF DOC(S)	1997
MULTI_DIST Y / N? Additional Dist_Nos:	
QUAD_NAME	Sulphur 7.5'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Newmont Gold Co Newmont Exploration Ltd; Hecla Mining Co.
COMMODITY If not obvious	gold; silver
NOTES	drill logs; geology; assay; geochemistry photographs; total depth 670'; invoices 82p.

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-413

6000 0519
4010

60000519

NEWMONT EXPLORATION LIMITED — DRILL HOLE SUMMARY

Project: Rosebud Location: Hecla's East Zone Drill Hole No.: RS-413

State: NV Co.: Pershing T.: R.: S.:

Purpose: Mine Geology Infill Results:

Date Started: 10/16/97 - 10/16/97 rc Date Finished: 10/20/97 - 10/23/97 core

Grid System: Northing: Easting: Elevation:

Collar Az/Inc.: / -90 Drill Site: Total Depth: 670

Geologist(s): Log Date(s): Laboratory:

HOLE CONSTRUCTION AND HISTORY

CASING (INTERVAL):

From	To	Hole Type/Size	Started	Completed	Contractor
0	500	rc /			Eklund
500	670	core / HQ			Boart-Longyear
		/			
		/			

LITHOLOGIC SUMMARY

From	To	Formation	Rock Type

ALTERATION/MINERALIZATION

SIGNIFICANT ASSAYS

From	To	Width	Au oz/st	Cutoff

DOWNHOLE SURVEYS

Directional Date:

Other

Depth (ft)	Azimuth	Inclination
670	291 @ 470°	-86.5

Water Table Depth:

Water Flow Rate:

COMMENTS

see Welnad Survey

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 1 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	PHENOS/LAPILLI/CLASTS Size	PHENOS/LAPILLI/CLASTS Shape	PHENOS/LAPILLI/CLASTS Color	PHENOS/LAPILLI/CLASTS Mineral/ Type	ALTERATION Int.	ALTERATION Distrib.	ALTERATION Type	ALTERATION Minerals	VEINS Thick.	VEINS Abund.	VEINS Selvedge	VEINS Minerals	INTERPRETATION Rock Name/ Composition	INTERPRETATION Formation	Comments	Recovery	Assay
5																				colluvium		calcareous dirt to 15'		
																				?				
10			5GY5/2 grayish	Volc	aph	massive	<1 <1	1-2mm <.5mm	prism rect.	green white	hbl→chl? feld→clay	w	disseminated phenos	arg	white clay						TcFG			
15			green				<1	1.5m	round	white	amyg?													
20							<1	2mm	prism	green	hbl→chl?											yellow clay in fractures		
25							<1	2mm	long	green	hbl→chl?					<.2mm	rare	none	white clay					26
30			numerous 5YR5/6 brown chips with		aph/vf		<1	1.5m	long	pale green	hbl→chl?											yellow clay in fractures		136
35			5Y7/2 yellow grey		vf	more granular texture	<1	1mm	long	green	hbl→chl?													84
40			5GY6/1-5GY7/1 pale grey																			still brown chips rare red aphanitic chips		67
45																						yellow clay in fractures		
50							<1	<1mm	chunky	green	hbl→chl?													

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 2 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	PHENOS/LAPILLI/CLASTS Size	PHENOS/LAPILLI/CLASTS Shape	PHENOS/LAPILLI/CLASTS Color	PHENOS/LAPILLI/CLASTS Mineral/ Type	ALTERATION Int.	ALTERATION Distrib.	ALTERATION Type	ALTERATION Minerals	VEINS Thick.	VEINS Abund.	VEINS Selvedge	VEINS Minerals	INTERPRETATION Rock Name/ Composition	INTERPRETATION Formation	Comments	Recovery	Assay
55			5GY6/1 greenish grey	Volc	uf	massive, granular	<1	1mm	round	green	hbl→chl?	W	dissem	arg	white clay						TcFG	orange clay in fractures 1 chip with pyrite		43
60							<1	1mm	oblong	green	hbl→chl?	W	dissem	py	pyrite							lots of brown chips 55' to 65'		232 238
65			5B7/1													<5mm	prev.	none	qtz+py ±FeOx			some f drusy qtz in veins		966
70			bluish grey				<1	1mm	prism	green	hbl→chl?											some qtz veins have pyrite cores Still some brown FeOx stain		136
75							<1	1mm	chunky round	green	hbl→chl?											rare white clay in samples		27
80																								132
85							<1	<1mm	chunks specks	green	hbl→chl?													148
90																								38
95			5B6/1 darker	Volc	aph	massive, not	<1 <1	.5mm <.5mm	round chunk	pale green green	feld? hbl→chl?											much less pyrite than above chip of qtz-py vein may be from above very weak disseminated pyrite		
100			bluish grey			granular																		

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-9R3	Page 3 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	Size	Shape	Color	Mineral/ Type	ALTERATION Int.	Distrib.	Type	Minerals	VEINS Thick.	Abund.	Selvedge	Minerals	INTERPRETATION Rock Name/ Composition	Formation	Comments	Recovery	Assay
105			5G6/1-5G5/6/1 greenish gray	Volc	aph	massive	<1	<.3mm	specks	green	hbl→chl?	W W	dissem dissem	arg py	whiteclay pyrite	hair-line	rare	none	qtz		TcFG	rare pyrite		
110							<1 <1	2mm <.5mm	round long chunk	green pale gray	hbl→chl? feld?													
115							<1	<.5mm	round chunk	green	hbl→chl?					<3mm	rare	?	py+qtz					
120																								
125																								7
130			some brown 5YR 5/2 chips and below				<1	<.5mm	round	green	hbl→chl?											aphanitic brown chips don't look like breccia matrix		15
135																						chip with green grading into brown toward fracture (?)		236
140																						vein with drusy qtz		280
145							<1	1mm	oblong	pale green	feld?											bladed? pyf mare in qtz		285 298
150																								85

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 4 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	PHENOS/LAPILLI/CLASTS Size	PHENOS/LAPILLI/CLASTS Shape	PHENOS/LAPILLI/CLASTS Color	PHENOS/LAPILLI/CLASTS Mineral/ Type	ALTERATION Int.	ALTERATION Distrib.	ALTERATION Type	ALTERATION Minerals	VEINS Thick.	VEINS Abund.	VEINS Selvedge	VEINS Minerals	INTERPRETATION Rock Name/ Composition	INTERPRETATION Formation	Comments	Recovery	Assay
155			5GY6/1 5G7/1 greenish grey	Volc	aph	massive	<1	1.5mm	long	green	hbl->chl?	w w	dissem dissem	arg py	white clay pyrite	<5mm	rare	?	qtz+py		TcFG	various shades of greenish-grey to flesh		17
160							<1	<1mm	specks long	green	hbl->chl?													
165							<1	1mm	long	pale green	hbl->chl?										brecciated TcFG?	brown color is in vein-like features but no change in rock texture or min. and in breccia matrix textures		0
170			10R 4/4 brown mottling, stringers				<1	<.5mm	specks	green	hbl->chl?													51
175																								280
180							<1	<.5mm	specks	green	hbl->chl?											qtz vein up to 5mm, w/drusy qtz bladed py/mcra in quartz		1370 1150
185																								179
190							<1	<1mm	square	pale green	fld?											very little pyrite		47
195							<1 <1	1.5mm 2mm	long long	pale green green	fld/hbl? hbl->chl?										TcFG			
200							<1	<1mm	chunk	pale green	fld?											more vein pyrite		

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 5 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	Size	Shape	Color	Mineral/ Type	ALTERATION Int.	Distrib.	Type	Minerals	VEINS Thick.	Abund.	Selvedge	Minerals	INTERPRETATION Rock Name/ Composition	Formation	Comments	Recovery	Assay
205		□ ○	5GY7/1 pale grey	Volc	aph	massive						W W	dissem dissem	py arg	py cubes white clay	<3mm	rare	?	qtz+py		TcFG			5
210	◇	□					<1 <1	<1mm <1mm	chunk round	pale green white	fold? ?													240
215	•	□ X X X					<1	<1mm	irreg	green	hbl→chl?	W	patchy	sil	clear qtz							some qtz veins are drusy some white clay w/ vein qtz?		248
220		□ X X □ X																						256
225		□ X X X																				grey sulfosalt? in vein w/qtz, py		140
230		□ X X X																						150
235		□ X □ X																						89
240	•	□ □					<1	<1mm	round	green	hbl→chl?				?									56
245	•	□					<1	<1mm	irreg	green	?													75
250	•	□ □					<1 <1	<1mm 1.5mm	round irreg	pale green green	fold/hbl? hbl→chl?											rare brown-stained fractures		86

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 6 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	Size	Shape	Color	Mineral/ Type	ALTERATION Int.	Distrib.	Type	Minerals	VEINS Thick.	Abund.	Selvedge	Minerals	INTERPRETATION Rock Name/ Composition	Formation	Comments	Recovery	Assay
255			N7- pale grey	Volc	aph	massive	<1 <1	<1mm <.5mm	oblong chunk	green pale gey	hbl→chl? feld?	w w	dissem dissem	arg py	white clay pyrite	<5mm	pres	none	pyrite		T,FG	rare brown staining some vein qtz is drusy bladed py/marc in vein qtz		185
260							<1	1.5mm	long	green	hbl→chl?													304
265							<1	<1mm	round	green	hbl→chl?											some brown staining along veinlets & fractures		1329
270							<1 <1	<1mm <1mm	chunk round	green pale gey	hbl→chl? feld?													212
275							<1	<1mm	round	pale gey	feldspar?											rare brown fracture/breccia matrix		660
280																								512
285							<1	<1mm	irreg	green	hbl→chl?													1889
290																						more vein quartz bladed py/marc in vein qtz		740
295																						rare brown breccia matrix		604
300							<1 <1	<1mm 2mm	irreg oblong	green pale green	hbl→chl? feld?													270

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 7 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	Size	Shape	Color	Mineral/ Type	ALTERATION Int.	Distrib.	Type	Minerals	VEINS Thick.	Abund.	Selvedge	Minerals	INTERPRETATION Rock Name/ Composition	Formation	Comments	Recovery	Assay
305			5G7/1-5G7/1 pale grey	Volc	aph	massive	<1	<1.5mm	irreg long	green	hbl->chl	W W	dissem dissem	arg py	white clay py cubes	<5mm	pres	none	pyr qtz		TcFG	some pyrite veinlets without qtz rare brown breccia matrix		89
310							<1	.1mm	chunk	green	hbl->chl													374
315																						minor white clay in sample		58
320																						chip of white clay very little dissem pyrite		42
325																					brecciated TcFG?	rare brown breccia matrix		
330			mostly 5G6/1 greenish grey				<1	1mm	irreg	green	hbl->chl?	W	dissem	arg	white clay				?		TcFG	minor brown breccia matrix not calcareous		
335							<1 <1	1mm <.5mm	long round	green pale grey	hbl->chl? feld?					<3mm	rare	?	calcite			only trace dissem pyrite chip of vein calcite? slightly calcareous grains		
340						massive, almost granular	<1 <1	<1mm <1mm	irreg round	green pale grey	hbl->chl? feld?											weakly calcareous grains to 350' trace pyrite (veins from above?)		
345							<1 <1	<1mm 1.5mm	chunk oblong round round	green white	hbl->chl? ?													
350							<1	2mm	long	green	hbl->chl?											trace dissem pyrite		

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 8 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	PHENOS/LAPILLI/CLASTS Size	PHENOS/LAPILLI/CLASTS Shape	PHENOS/LAPILLI/CLASTS Color	PHENOS/LAPILLI/CLASTS Mineral/ Type	ALTERATION Int.	ALTERATION Distrib.	ALTERATION Type	ALTERATION Minerals	VEINS Thick.	VEINS Abund.	VEINS Selvedge	VEINS Minerals	INTERPRETATION Rock Name/ Composition	INTERPRETATION Formation	Comments	Recovery	Assay
355			5G7/1 pale grey	Volc	aph	massive	<1	<.5mm	chunk	pale grey	feld?	w?	dissem	arg	white clay	<3mm	rare	?	calcite		TcFG	weakly calcareous grass to 400 trace very sparse dissem pyrite to 362'		
							<1	1.5mm	prism	pale green	hbl->chl?													
360																								
365			5RP2/2-10R2/2	Volc	aph	massive, micro-	<1	1.5mm	irreg	green	anyg?	w	patchy	bleaching							unaltered TcFG	no pyrite chips have knobby texture		
							<1	1mm	reet	pale grey	feld?													
370			darker red purple but mottled			porphyritic	<1	<.2mm	needles specks	black	hbl?										w/feldspar	green stuff intergrown with calcite		
375			w/grey an small scale																					
			5G7/1	Volc	aph	massive	<1	2.5mm	oblong	pale grey	?	w	dissem	arg	white clay						TcFG			
380			pale grey				<1	.5mm	chunk	grey	feldspar?										w/feldspar?			
							<1	<1mm	chunk	dk green	hbl->chl?													
385																<5mm	rare	?	cal+py					
390							<1	1mm	prism	green	hbl->chl?											trace dissem pyrite		
395																								
400																								

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 9 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	Size	Shape	Color	Mineral/ Type	ALTERATION Int.	Distrib.	Type	Minerals	VEINS Thick.	Abund.	Selvedge	Minerals	INTERPRETATION Rock Name/ Composition	Formation	Comments	Recovery	Assay
405			5G5/1-5G7/1 pale grey	Volc.	aph	massive	<1 <1	<1mm <1.5mm	round chunk long	pale grey green	feld? hbl→chl?	w	dissem	arg	white clay	<4mm	rare	?	ca±py		TcFG w/ feldspar?	weakly to slightly calcareous grass to 450		
410												w w	dissem dissem	arg py	white clay pyrite	<4mm	rare	?	py±sb			green stuff intergrown with calcite in amygdale?		
415																								
420																								
425			slightly darker shale		finer than above		<1	<1mm	chunk	pale grey	feld?	w?	dissem	arg	white clay							rare pyritic chips may be from above		
430																								
435			paler like 400-420		more like 400-420		<1 <1	<1.5mm 1.5mm	chunk long	pale grey green	feld? hbl→chl?					<3mm <5mm	rare rare	? ?	py+ca py+sb			pale grey green chips of green clay?		
440			slightly darker like 420'-430'		finer		<1	2mm	irreg	green	?													
445																						white clay on fractures local brown staining		
450			5RP2/2-10R2/2 darker purple	see	description	next page															unaltered TcFG (hbl only)			

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-413	Page 10 of 10
Log'd by: G. Langstaff Date: 10/23/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): Chips 0-500'	

Depth (ft.)	GRAPHIC Rock	GRAPHIC Alt/Vn	ROCK Color	ROCK Rock Type	ROCK Grain Size	ROCK Structure (Sed.,Vol.)	PHENOS/LAPILLI/CLASTS %	Size	Shape	Color	Mineral/ Type	ALTERATION Int.	Distrib.	Type	Minerals	VEINS Thick.	Abund.	Selvedge	Minerals	INTERPRETATION Rock Name/ Composition	Formation	Comments	Recovery	Assay
455			mostly 5RP2/2 dark red purple	Volc	aph	massive	1? <1	<.3mm .5mm	needles specks round irreg	black black?	hbl? - probably present to 500' but difficult to see in darker chips Fe ox clot? or bio?					<3mm	rare	?	calcite		unaltered TcFG (hbl only)	weakly calcareous matrix to 500' darker red may be related to fractures		
460																								
465							<1	2mm	round	pale grey green	clay?													
470			paler with more grey and less																					
475			dk red				<1	1mm	chunk	vitr grey	fold?													
480							<1	3mm	?	vitr.	calcite amygd?													
485																								
490																								
495																								
500																								

American Assay Laboratories

INVOICE

Remit To: P.O. Box1153(
Reno, Nevada 8951(
Phone NO.: 702-356-060(
Fax No.: 702-356-141:

AMERICAN ASSAY LABORATORIES
1500 GLENDALE AVE.
SPARKS, NV 89431

(702) 356-0606

INVOICE NO: SP 0046862-IN
INVOICE DATE: 11/05/97

INVOICE TO:
NEWMONT EXPLORATION
ROSEBUD MINE
P.O. BOX 2610
WINNEMUCCA NV 89446

NEWMONT EXPLORATION
ROSEBUD MINE
P.O. BOX 2610
WINNEMUCCA NV 89446

CUSTOMER P.O.	PROJECT	TERMS
RS-413	ROSEBUD EXPLOR.	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
103	SAMPLES RECEIVED	.00	.00
97	DRYING	1.00	97.00
97	EXCESSIVE WETNESS	1.00	97.00
97	JAW CRUSHING CHARGE	1.30	126.10
97	SPLITTING CHARGE	1.20	116.40
97	FINE MILLING CHARGE	2.00	194.00
103	Au (1 A.T. FIRE ASSAY)	8.00	824.00
103	HYDROCHLORIC/NITRIC DIGESTION	2.00	206.00
103	Ag ANALYSES	1.00	103.00

8652-86-5210-477
KAA

NET INVOICE:	1,763.50
LESS DISCOUNT:	352.70
FREIGHT:	.00
INVOICE TOTAL:	1,410.80

xAMERICAN ASSAY LABORATORIES
ANALYSIS REPORT SP046862

American Assay Laboratories

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

NEWMONT GOLD COMPANY

COPIES TO : RANDY VANCE
: KURT ALLEN
:
:

CLIENT REFERENCE No: RS-413 RECEIVED : 21 OCT 1997
No. SAMPLES : 103 REPORTED : 5 NOV 1997
MAIN SAMPLE TYPE : DRILL CUTTINGS

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

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au	FA30	15%	ppb	5
Au(R)	FA30	15%	ppb	5
Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
Ag	D210	10%	ppm	0.5
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 000-005	<5		<0.001		<0.5	<0.02
RS-413 005-010	<5		<0.001		<0.5	<0.02
RS-413 010-015	<5		<0.001		<0.5	<0.02
RS-413 015-020	15		<0.001		<0.5	<0.02
RS-413 020-025	26		<0.001		0.5	<0.02
RS-413 025-030	136		0.004		0.6	<0.02
RS-413 030-035	84		0.002		0.6	<0.02
RS-413 035-040	67		0.002		2.0	0.06
RS-413 040-045	44		0.001		1.6	0.05
RS-413 045-050	67		0.002		2.5	0.07
RS-413 050-055	43		0.001		3.6	0.11
RS-413 055-060	238	232	0.007	0.007	2.6	0.08
RS-413 060-065	966		0.028		6.1	0.18
RS-413 065-070	138		0.004		1.5	0.04
RS-413 070-075	27		<0.001		1.1	0.03
RS-413 075-080	132		0.004		2.7	0.08
RS-413 080-085	148		0.004		3.4	0.10
RS-413 085-090	38		0.001		1.0	0.03
RS-413 090-095	28		<0.001		<0.5	<0.02
RS-413 095-100	<5		<0.001		<0.5	<0.02
RS-413 100-105	9		<0.001		<0.5	<0.02
RS-413 105-110	8		<0.001		<0.5	<0.02
RS-413 110-115	<5		<0.001		<0.5	<0.02
RS-413 115-120	<5		<0.001		<0.5	<0.02
RS-413 120-125	7		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 125-130A	15		<0.001		0.8	0.02
RS-413 125-130B	1032		0.030		<0.5	<0.02
RS-413 130-135	236		0.007		2.0	0.06
RS-413 135-140	280		0.008		3.3	0.10
RS-413 140-145	298	285	0.009	0.008	3.0	0.09
RS-413 145-150	85		0.002		1.5	0.04
RS-413 150-155	17		<0.001		0.7	0.02
RS-413 155-160	<5		<0.001		<0.5	<0.02
RS-413 160-165	<5		<0.001		<0.5	<0.02
RS-413 165-170	51		0.001		1.4	0.04
RS-413 170-175	280		0.008		2.8	0.08
RS-413 175-180	1150	1370	0.034	0.040	3.2	0.09
RS-413 180-185	179		0.005		2.0	0.06
RS-413 185-190	47		0.001		<0.5	<0.02
RS-413 190-195	7		<0.001		<0.5	<0.02
RS-413 195-200	33		<0.001		0.6	<0.02
RS-413 200-205	5		<0.001		<0.5	<0.02
RS-413 205-210	240		0.007		1.7	0.05
RS-413 210-215	248		0.007		2.2	0.06
RS-413 215-220	256		0.007		2.9	0.08
RS-413 220-225	140		0.004		2.3	0.07
RS-413 225-230	150		0.004		2.8	0.08
RS-413 230-235	89		0.003		2.3	0.07
RS-413 235-240	56		0.002		1.8	0.05
RS-413 240-245	75		0.002		2.0	0.06

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
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REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 245-250	86		0.003		3.0	0.09
RS-413 250-255	185		0.005		2.4	0.07
RS-413 255-260	304		0.009		3.0	0.09
RS-413 260-265	1329		0.039		3.2	0.09
RS-413 265-270	212		0.006		4.9	0.14
RS-413 270-275	660		0.019		6.5	0.19
RS-413 275-280	512		0.015		5.2	0.15
RS-413 280-285	1889		0.055		4.7	0.14
RS-413 285-290	740		0.022		4.6	0.13
RS-413 290-295	604		0.018		3.0	0.09
RS-413 295-300	270		0.008		2.4	0.07
RS-413 300-305	89		0.003		0.9	0.03
RS-413 305-310	374		0.011		1.4	0.04
RS-413 310-315	58		0.002		2.2	0.06
RS-413 315-320	42		0.001		1.0	0.03
RS-413 320-325	18		<0.001		0.5	<0.02
RS-413 325-330	32		<0.001		<0.5	<0.02
RS-413 330-335	<5		<0.001		<0.5	<0.02
RS-413 335-340	<5		<0.001		<0.5	<0.02
RS-413 340-345	<5		<0.001		<0.5	<0.02
RS-413 345-350	<5		<0.001		<0.5	<0.02
RS-413 350-355	<5		<0.001		<0.5	<0.02
RS-413 355-360	<5		<0.001		0.5	<0.02
RS-413 360-365	<5		<0.001		<0.5	<0.02
RS-413 365-370	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 370-375	<5		<0.001		<0.5	<0.02
RS-413 375-380	<5		<0.001		<0.5	<0.02
RS-413 380-385A	<5		<0.001		<0.5	<0.02
RS-413 380-385B	905		0.026		<0.5	<0.02
RS-413 385-390	5		<0.001		<0.5	<0.02
RS-413 390-395	8		<0.001		<0.5	<0.02
RS-413 395-400	5		<0.001		<0.5	<0.02
RS-413 400-405	<5		<0.001		<0.5	<0.02
RS-413 405-410	<5		<0.001		<0.5	<0.02
RS-413 410-415	<5		<0.001		<0.5	<0.02
RS-413 415-420	7		<0.001		0.8	0.02
RS-413 420-425	<5		<0.001		<0.5	<0.02
RS-413 425-430	<5		<0.001		<0.5	<0.02
RS-413 430-435	<5		<0.001		<0.5	<0.02
RS-413 435-440	<5		<0.001		<0.5	<0.02
RS-413 440-445	<5		<0.001		<0.5	<0.02
RS-413 445-450	<5		<0.001		<0.5	<0.02
RS-413 450-455	<5		<0.001		<0.5	<0.02
RS-413 455-460A	<5		<0.001		<0.5	<0.02
RS-413 455-460B	978		0.029		<0.5	<0.02
RS-413 460-465	8		<0.001		<0.5	<0.02
RS-413 465-470	<5		<0.001		<0.5	<0.02
RS-413 470-475	<5		<0.001		<0.5	<0.02
RS-413 475-480	<5		<0.001		<0.5	<0.02
RS-413 480-485	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 485-490	<5		<0.001		<0.5	<0.02
RS-413 490-495	<5		<0.001		<0.5	<0.02
RS-413 495-500	<5		<0.001		<0.5	<0.02

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 0047545-IN
INVOICE DATE: 12/19/97

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-413	KURT ALLEN	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
42	SAMPLES RECEIVED	.00	.00
42	DRYING	2.00	84.00
42	JAW CRUSHING CHARGE	2.60	109.20
42	COARSE MILLING CHARGE	9.00	378.00
42	SPLITTING CHARGE	2.40	100.80
42	FINE MILLING CHARGE	2.00	84.00
42	Au (1 A.T. FIRE ASSAY)	8.00	336.00
3	Au ANALYSES/GRAVIMETRIC	8.75	26.25
42	HYDROCHLORIC/NITRIC DIGESTION	2.00	84.00
42	Ag ANALYSES	1.00	42.00

~~8651~~ - 86 - 5110 - 720

NET INVOICE:	1,244.25
LESS DISCOUNT:	248.85
FREIGHT:	.00
INVOICE TOTAL:	995.40

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047545

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-413 RECEIVED : 5 DEC 1997

No. SAMPLES : 42 REPORTED : 19 DEC 1997

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 SP047545

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-413

REPORTED : 19 DEC 1997

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-413 499-505	<0.001			<0.02
RS-413 505.0-509.7	<0.001			<0.02
RS-413 509.7-515.0	<0.001	<0.001		<0.02
RS-413 515.0-519.6	<0.001			<0.02
RS-413 519.6-524.3	<0.001			<0.02
RS-413 524.3-528.5	<0.001			<0.02
RS-413 528.5-533.1	<0.001			<0.02
RS-413 533.1-536.7	<0.001			<0.02
RS-413 536.7-540.7	<0.001			<0.02
RS-413 540.7-545.0	<0.001			<0.02
RS-413 545.0-550.3	<0.001			0.05
RS-413 550.3-555.9	<0.001			<0.02
RS-413 555.9-560.0	<0.001			0.03
RS-413 560-564	<0.001			<0.02
RS-413 564.0-567.3	<0.001	<0.001		0.06
RS-413 567.3-569.8	<0.001			0.04
RS-413 569.8-573.7	0.001			0.03
RS-413 573.7-577.5	0.044			0.43
RS-413 577.5-580.6	0.058			0.04
RS-413 580.6-585.0	0.248		0.220	0.17
RS-413 585-588	0.570		0.550	0.30
RS-413 588-591	0.045			0.08
RS-413 591-594	0.432		0.440	1.06
RS-413 594.0-597.3	0.074			0.13
RS-413 597.3-601.0	0.015			0.04

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047545

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-413

REPORTED : 19 DEC 1997

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-413 601-605	0.018			0.04
RS-413 605.0-608.5	0.020			0.02
RS-413 608.5-612.0	0.007			<0.02
RS-413 612.0-615.5	0.007			0.02
RS-413 615.5-620.5	0.014			0.02
RS-413 620.5-625.0	0.015			0.02
RS-413 625-630	0.002			0.02
RS-413 630-635	0.002			0.02
RS-413 635-638	0.007			0.02
RS-413 638.0-642.5	0.005			0.04
RS-413 642.5-646.0	0.010			0.06
RS-413 646-650	0.008			0.04
RS-413 650.0-652.9	0.007			0.03
RS-413 652.9-656.5	0.006			0.04
RS-413 656.5-659.7	0.039			0.10
RS-413 659.7-664.4	0.018			0.06
RS-413 664.4-670.0	0.011			0.05

xAMERICAN ASSAY LABORATORIES
ANALYSIS REPORT SP047545

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-413 RECEIVED : 5 DEC 1997

No. SAMPLES : 42 REPORTED : 19 DEC 1997

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 SP047545

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PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-413

REPORTED : 19 DEC 1997

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-413 499-505	<0.001			<0.02
RS-413 505.0-509.7	<0.001			<0.02
RS-413 509.7-515.0	<0.001	<0.001		<0.02
RS-413 515.0-519.6	<0.001			<0.02
RS-413 519.6-524.3	<0.001			<0.02
RS-413 524.3-528.5	<0.001			<0.02
RS-413 528.5-533.1	<0.001			<0.02
RS-413 533.1-536.7	<0.001			<0.02
RS-413 536.7-540.7	<0.001			<0.02
RS-413 540.7-545.0	<0.001			<0.02
RS-413 545.0-550.3	<0.001			0.05
RS-413 550.3-555.9	<0.001			<0.02
RS-413 555.9-560.0	<0.001			0.03
RS-413 560-564	<0.001			<0.02
RS-413 564.0-567.3	<0.001	<0.001		0.06
RS-413 567.3-569.8	<0.001			0.04
RS-413 569.8-573.7	0.001			0.03
RS-413 573.7-577.5	0.044			0.43
RS-413 577.5-580.6	0.058			0.04
RS-413 580.6-585.0	0.248		0.220	0.17
RS-413 585-588	0.570		0.550	0.30
RS-413 588-591	0.045			0.08
RS-413 591-594	0.432		0.440	1.06
RS-413 594.0-597.3	0.074			0.13
RS-413 597.3-601.0	0.015			0.04

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047545

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REFERENCE : RS-413

REPORTED : 19 DEC 1997

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-413 601-605	0.018			0.04
RS-413 605.0-608.5	0.020			0.02
RS-413 608.5-612.0	0.007			<0.02
RS-413 612.0-615.5	0.007			0.02
RS-413 615.5-620.5	0.014			0.02
RS-413 620.5-625.0	0.015			0.02
RS-413 625-630	0.002			0.02
RS-413 630-635	0.002			0.02
RS-413 635-638	0.007			0.02
RS-413 638.0-642.5	0.005			0.04
RS-413 642.5-646.0	0.010			0.06
RS-413 646-650	0.008			0.04
RS-413 650.0-652.9	0.007			0.03
RS-413 652.9-656.5	0.006			0.04
RS-413 656.5-659.7	0.039			0.10
RS-413 659.7-664.4	0.018			0.06
RS-413 664.4-670.0	0.011			0.05

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047545

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-413 RECEIVED : 5 DEC 1997

No. SAMPLES : 42 REPORTED : 19 DEC 1997

MAIN SAMPLE TYPE : DRILL CORE

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

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047545

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-413

REPORTED : 19 DEC 1997

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)
RS-413 499-505	<0.001			<0.02
RS-413 505.0-509.7	<0.001			<0.02
RS-413 509.7-515.0	<0.001	<0.001		<0.02
RS-413 515.0-519.6	<0.001			<0.02
RS-413 519.6-524.3	<0.001			<0.02
RS-413 524.3-528.5	<0.001			<0.02
RS-413 528.5-533.1	<0.001			<0.02
RS-413 533.1-536.7	<0.001			<0.02
RS-413 536.7-540.7	<0.001			<0.02
RS-413 540.7-545.0	<0.001			<0.02
RS-413 545.0-550.3	<0.001			0.05
RS-413 550.3-555.9	<0.001			<0.02
RS-413 555.9-560.0	<0.001			0.03
RS-413 560-564	<0.001			<0.02
RS-413 564.0-567.3	<0.001	<0.001		0.06
RS-413 567.3-569.8	<0.001			0.04
RS-413 569.8-573.7	0.001			0.03
RS-413 573.7-577.5	0.044			0.43
RS-413 577.5-580.6	0.058			0.04
RS-413 580.6-585.0	0.248		0.220	0.17
RS-413 585-588	0.570		0.550	0.30
RS-413 588-591	0.045			0.08
RS-413 591-594	0.432		0.440	1.06
RS-413 594.0-597.3	0.074			0.13
RS-413 597.3-601.0	0.015			0.04

13,14 @ 0.316 Au
0.38 Ag

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047545

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-413

REPORTED : 19 DEC 1997

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)
RS-413 601-605	0.018			0.04
RS-413 605.0-608.5	0.020			0.02
RS-413 608.5-612.0	0.007			<0.02
RS-413 612.0-615.5	0.007			0.02
RS-413 615.5-620.5	0.014			0.02
RS-413 620.5-625.0	0.015			0.02
RS-413 625-630	0.002			0.02
RS-413 630-635	0.002			0.02
RS-413 635-638	0.007			0.02
RS-413 638.0-642.5	0.005			0.04
RS-413 642.5-646.0	0.010			0.05
RS-413 646-650	0.008			0.04
RS-413 650.0-652.9	0.007			0.03
RS-413 652.9-656.5	0.006			0.04
RS-413 656.5-659.7	0.039			0.10
RS-413 659.7-664.4	0.018			0.06
RS-413 664.4-670.0	0.011			0.05

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VERTICAL

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/22/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 218.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***
PROJECTED F/645' T/670'.

****
****
*** 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: 29-0521-311 WELL NAME: RS-413 / VERTICAL

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.
0.0	0.00	0.00	0.000	-89.13	024.77	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.75	-0.110	-89.07	052.52	0.59 N	0.48 E	0.87	0.44	0.76	AT 039.11	059.96
100.0	99.98	1.75	-0.046	-88.64	050.03	1.22 N	1.26 E	0.87	0.43	1.75	AT 045.88	061.83
150.0	149.97	3.05	-0.118	-88.37	039.35	2.15 N	2.16 E	0.77	0.39	3.05	AT 045.17	062.19
200.0	199.94	4.72	-0.404	-87.75	036.40	3.49 N	3.20 E	1.26	0.63	4.73	AT 042.48	062.62
250.0	249.90	6.76	-0.733	-87.51	039.87	5.11 N	4.48 E	0.56	0.28	6.80	AT 041.19	062.90
300.0	299.85	8.87	-1.002	-87.60	040.38	6.75 N	5.85 E	0.19	0.09	8.93	AT 040.93	063.26
350.0	349.80	11.05	-1.052	-87.39	051.33	8.25 N	7.42 E	1.04	0.52	11.10	AT 041.94	063.84
400.0	399.74	13.51	-0.773	-86.93	055.97	9.71 N	9.42 E	1.03	0.51	13.53	AT 044.10	064.70
450.0	449.66	16.24	-0.471	-86.75	051.52	11.35 N	11.63 E	0.61	0.30	16.25	AT 045.72	065.21
500.0	499.59	18.99	-0.276	-86.93	051.35	13.06 N	13.79 E	0.36	0.18	19.00	AT 046.55	065.57
550.0	549.51	21.75	-0.092	-86.74	051.08	14.79 N	15.94 E	0.38	0.19	21.75	AT 047.14	066.00
600.0	599.43	24.61	-0.009	-86.68	047.02	16.67 N	18.11 E	0.48	0.24	24.61	AT 047.36	066.43
645.0	644.35	27.26	-0.008	-86.59	047.78	18.46 N	20.05 E	0.22	0.10	27.26	AT 047.36	067.29
670.0	669.31	28.77	0.000	-86.46	047.58	19.48 N	21.17 E	0.52	0.13	28.77	AT 047.38	067.22

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*************************************************************
*                         ********                          *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                         ********                          *
*   670.0 FEET EQUALS    28.77   FEET AT  047.38            *
*                         ********                          *
*************************************************************
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WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/22/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 218.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***
PROJECTED F/645' T/670'

****
****
*** 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: 29-0521-311 WELL NAME: RS-413 / 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.
0.0	0.00	0.00	0.000	-89.13	024.77	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.76	0.055	-89.07	052.52	0.59 N	0.48 E	0.87	0.44	0.76	AT 039.11	059.96
100.0	99.98	1.72	0.331	-88.64	050.03	1.22 N	1.26 E	0.87	0.43	1.75	AT 045.88	061.83
150.0	149.97	3.00	0.539	-88.37	039.35	2.15 N	2.16 E	0.77	0.39	3.05	AT 045.17	062.19
200.0	199.94	4.69	0.617	-87.75	036.40	3.49 N	3.20 E	1.26	0.63	4.73	AT 042.48	062.62
250.0	249.90	6.76	0.733	-87.51	039.87	5.11 N	4.48 E	0.56	0.28	6.80	AT 041.19	062.90
300.0	299.85	8.88	0.923	-87.60	040.38	6.75 N	5.85 E	0.19	0.09	8.93	AT 040.93	063.26
350.0	349.80	11.02	1.341	-87.39	051.33	8.25 N	7.42 E	1.04	0.52	11.10	AT 041.94	063.84
400.0	399.74	13.36	2.141	-86.93	055.97	9.71 N	9.42 E	1.03	0.51	13.53	AT 044.10	064.70
450.0	449.66	15.97	3.023	-86.75	051.52	11.35 N	11.63 E	0.61	0.30	16.25	AT 045.72	065.21
500.0	499.59	18.61	3.803	-86.93	051.35	13.06 N	13.79 E	0.36	0.18	19.00	AT 046.55	065.57
550.0	549.51	21.26	4.573	-86.74	051.08	14.79 N	15.94 E	0.38	0.19	21.75	AT 047.14	066.00
600.0	599.43	24.04	5.269	-86.68	047.02	16.67 N	18.11 E	0.48	0.24	24.61	AT 047.36	066.43
645.0	644.35	26.62	5.836	-86.59	047.78	18.46 N	20.05 E	0.22	0.10	27.26	AT 047.36	067.29
670.0	669.31	28.10	6.169	-86.46	047.58	19.48 N	21.17 E	0.52	0.13	28.77	AT 047.38	067.22

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*************************************************************
*                          ********                         *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                          ********                         *
*  670.0 FEET EQUALS    28.77   FEET AT   047.38            *
*                          ********                         *
*************************************************************
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WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/22/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 218.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***
PROJECTED F/645' T/670'.

****
****
*** 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: 29-0521-311 WELL NAME: RS-413 / 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.
0.0	0.00	0.00	0.000	-89.13	024.77	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.05	-0.761	-89.07	052.52	0.59 N	0.48 E	0.87	0.44	0.76	AT 039.11	059.96
100.0	99.98	0.33	-1.721	-88.64	050.03	1.22 N	1.26 E	0.87	0.43	1.75	AT 045.88	061.83
150.0	149.97	0.54	-3.003	-88.37	039.35	2.15 N	2.16 E	0.77	0.39	3.05	AT 045.17	062.19
200.0	199.94	0.62	-4.693	-87.75	036.40	3.49 N	3.20 E	1.26	0.63	4.73	AT 042.48	062.62
250.0	249.90	0.73	-6.756	-87.51	039.87	5.11 N	4.48 E	0.56	0.28	6.80	AT 041.19	062.90
300.0	299.85	0.92	-8.881	-87.60	040.38	6.75 N	5.85 E	0.19	0.09	8.93	AT 040.93	063.26
350.0	349.80	1.34	-11.016	-87.39	051.33	8.25 N	7.42 E	1.04	0.52	11.10	AT 041.94	063.84
400.0	399.74	2.14	-13.358	-86.93	055.97	9.71 N	9.42 E	1.03	0.51	13.53	AT 044.10	064.70
450.0	449.66	3.02	-15.967	-86.75	051.52	11.35 N	11.63 E	0.61	0.30	16.25	AT 045.72	065.21
500.0	499.59	3.80	-18.611	-86.93	051.35	13.06 N	13.79 E	0.36	0.18	19.00	AT 046.55	065.57
550.0	549.51	4.57	-21.262	-86.74	051.08	14.79 N	15.94 E	0.38	0.19	21.75	AT 047.14	066.00
600.0	599.43	5.27	-24.044	-86.68	047.02	16.67 N	18.11 E	0.48	0.24	24.61	AT 047.36	066.43
645.0	644.35	5.84	-26.624	-86.59	047.78	18.46 N	20.05 E	0.22	0.10	27.26	AT 047.36	067.29
670.0	669.31	6.17	-28.102	-86.46	047.58	19.48 N	21.17 E	0.52	0.13	28.77	AT 047.38	067.22

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*************************************************************
*                         ********                          *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                         ********                          *
*  670.0 FEET EQUALS    28.77   FEET AT   047.38            *
*                         ********                          *
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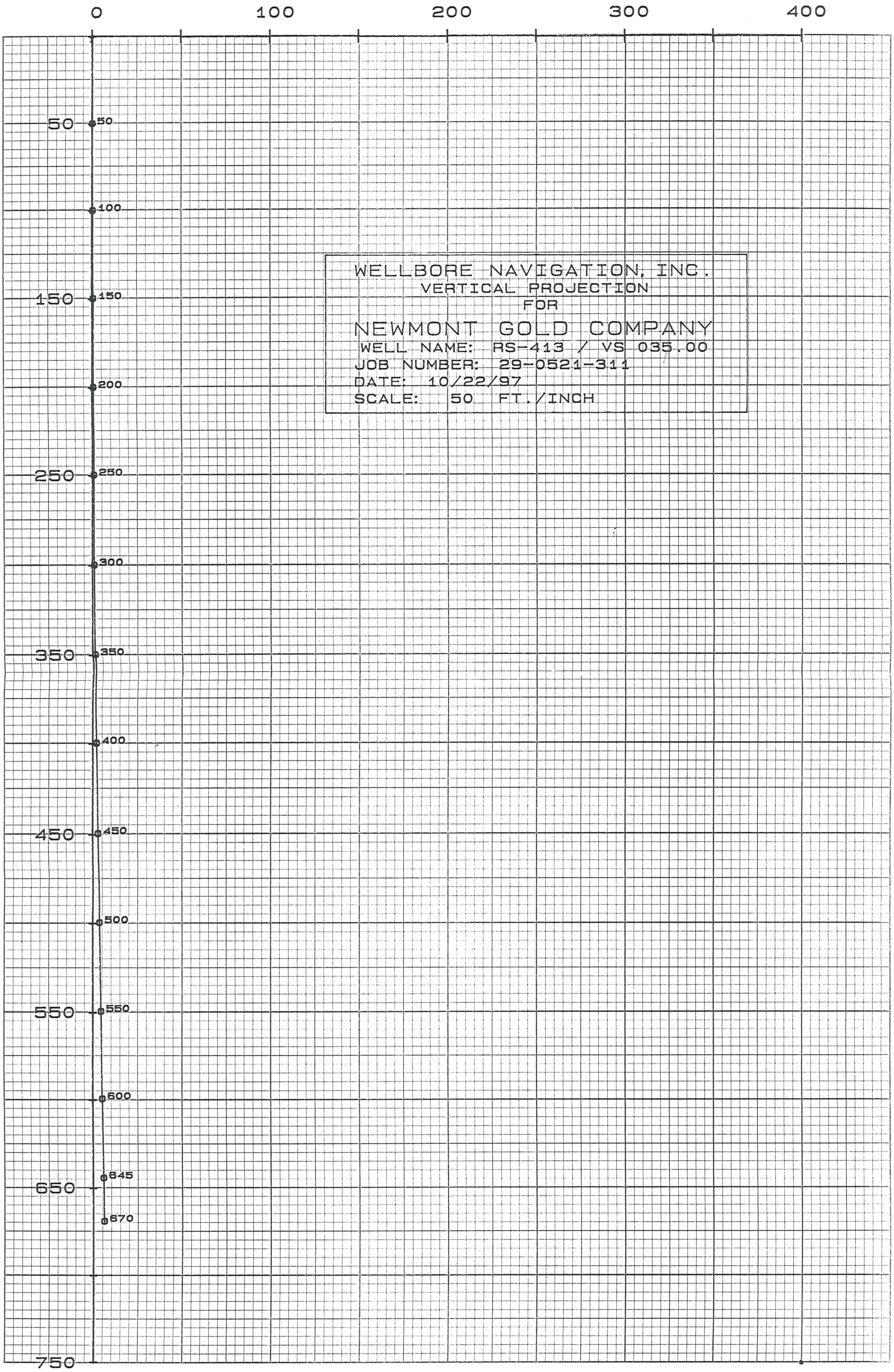
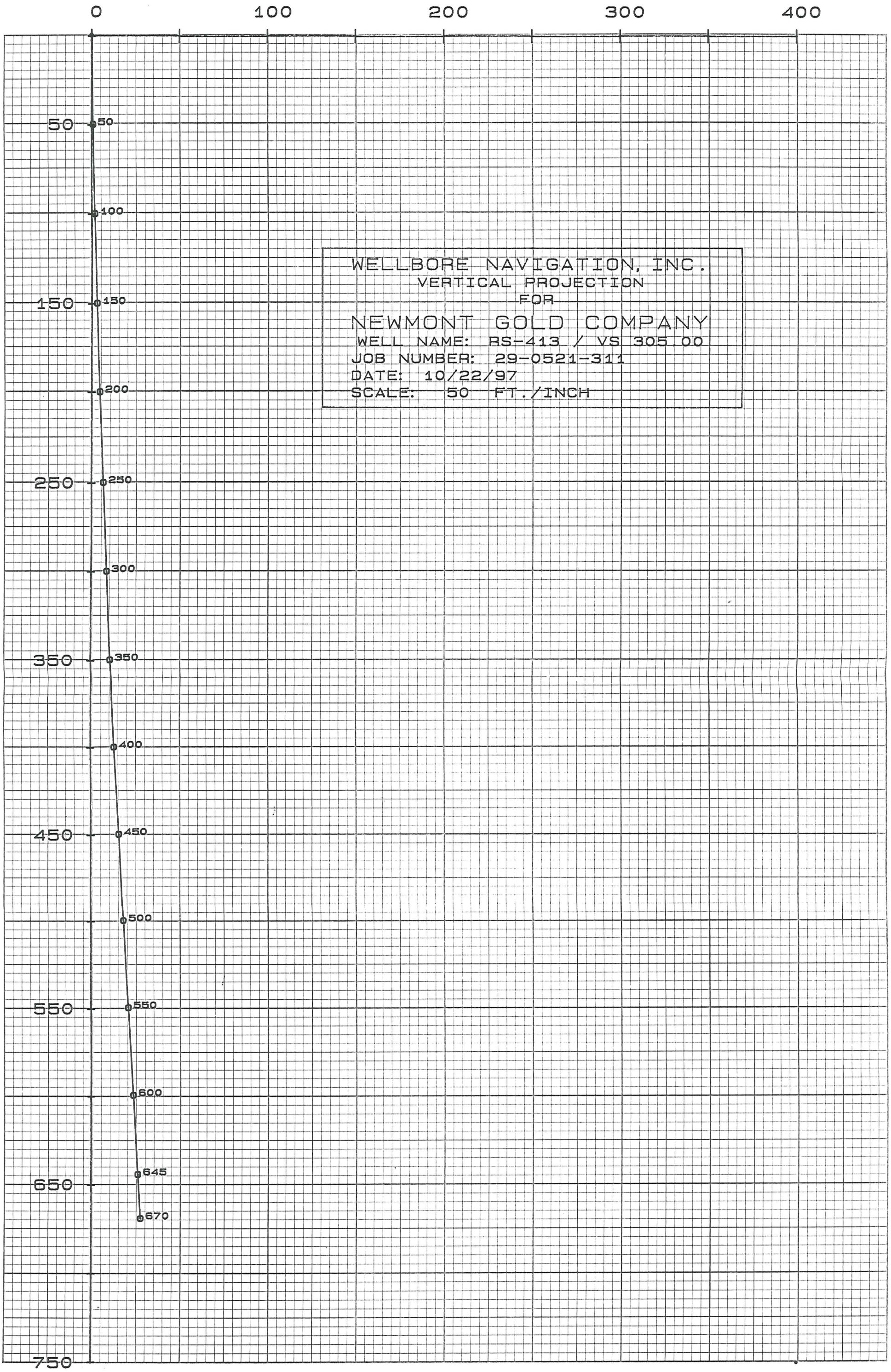
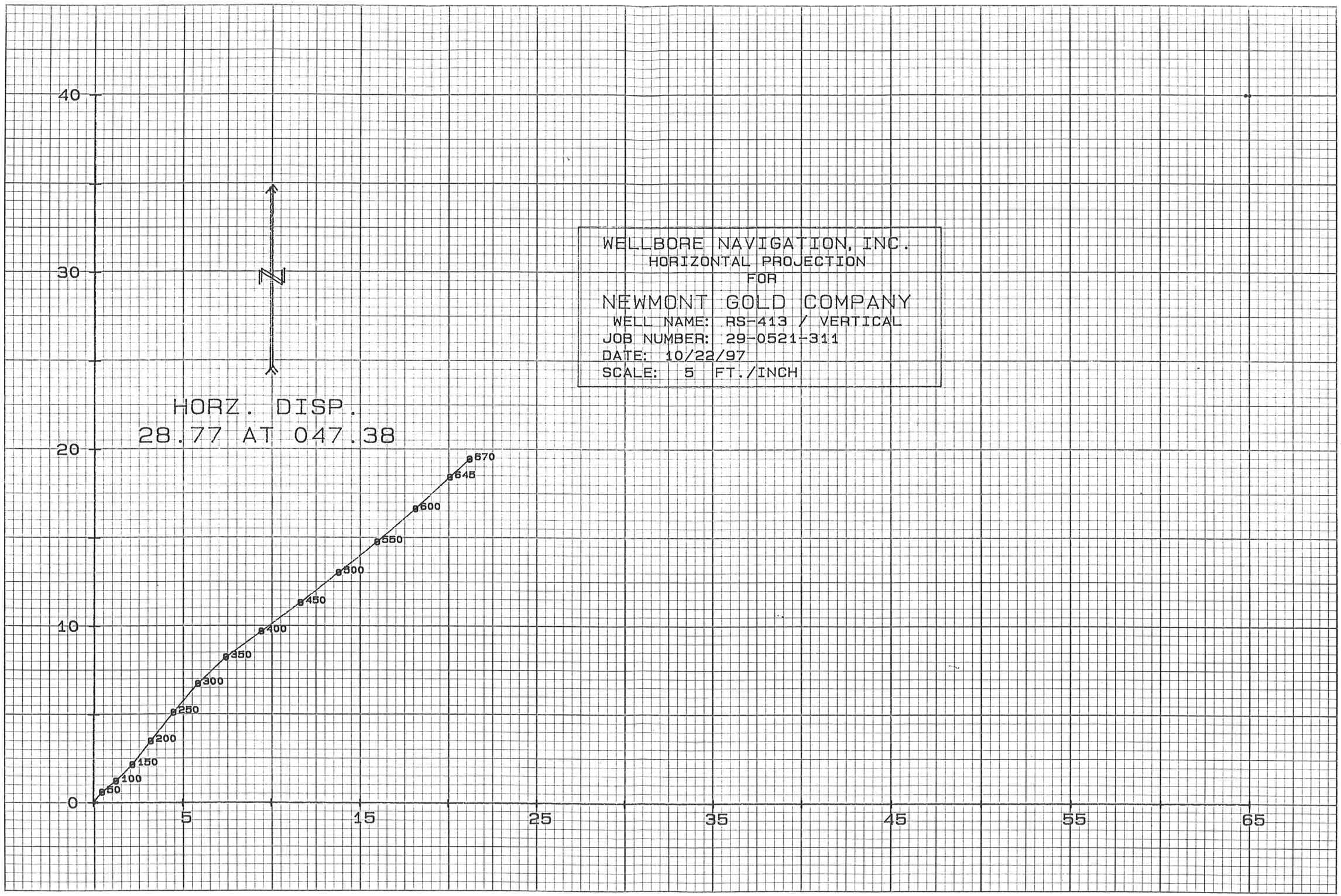
STARLIGHT PRINTING (801) 467-2841



STARLIGHT PRINTING (801) 467-2841





STARLIGHT PRINTING (801) 467-2841

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VERTICAL

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/16/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 327.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

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

COMMENTS: **** EKLUND ****
** JOHN WELCH **

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

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VERTICAL

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.
0.0	0.00	0.00	0.000	-89.05	025.59	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.76	-0.208	-89.15	034.05	0.68 N	0.39 E	0.33	0.17	0.78	AT 029.58	095.86
100.0	99.98	1.77	-0.284	-88.52	044.42	1.45 N	1.05 E	1.32	0.66	1.79	AT 035.82	090.29
150.0	149.96	3.24	-0.384	-88.09	038.47	2.56 N	2.02 E	0.93	0.46	3.26	AT 038.19	086.61
200.0	199.93	4.97	-0.558	-87.93	039.93	3.91 N	3.11 E	0.34	0.17	5.00	AT 038.55	081.49
250.0	249.90	6.83	-0.783	-87.76	036.38	5.39 N	4.27 E	0.43	0.22	6.88	AT 038.43	078.24
300.0	299.85	8.87	-0.918	-87.55	045.53	6.92 N	5.62 E	0.86	0.43	8.91	AT 039.05	076.37
350.0	349.81	11.05	-0.734	-87.41	053.78	8.34 N	7.29 E	0.78	0.39	11.08	AT 041.16	074.71
400.0	399.75	13.47	-0.363	-86.99	053.62	9.78 N	9.26 E	0.84	0.42	13.47	AT 043.42	072.62
450.0	449.67	16.23	-0.115	-86.63	046.92	11.57 N	11.39 E	1.04	0.52	16.23	AT 044.55	070.46
500.0	499.58	19.27	-0.001	-86.39	047.27	13.64 N	13.62 E	0.48	0.24	19.27	AT 044.96	069.52

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*************************************************************
*                         ********                          *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                         ********                          *
*   500.0 FEET EQUALS    19.27   FEET AT  044.96            *
*                         ********                          *
*************************************************************
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WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/16/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 327.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00

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

COMMENTS: **** EKLUND ****
** JOHN WELCH **

****
*** 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: 29-0521-311 WELL NAME: RS-413 / 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.
0.0	0.00	0.00	0.000	-89.05	025.59	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.78	-0.074	-89.15	034.05	0.68 N	0.39 E	0.33	0.17	0.78	AT 029.58	095.86
100.0	99.98	1.79	0.026	-88.52	044.42	1.45 N	1.05 E	1.32	0.66	1.79	AT 035.82	090.29
150.0	149.96	3.26	0.182	-88.09	038.47	2.56 N	2.02 E	0.93	0.46	3.26	AT 038.19	086.61
200.0	199.93	4.99	0.310	-87.93	039.93	3.91 N	3.11 E	0.34	0.17	5.00	AT 038.55	081.49
250.0	249.90	6.86	0.411	-87.76	036.38	5.39 N	4.27 E	0.43	0.22	6.88	AT 038.43	078.24
300.0	299.85	8.89	0.630	-87.55	045.53	6.92 N	5.62 E	0.86	0.43	8.91	AT 039.05	076.37
350.0	349.81	11.01	1.189	-87.41	053.78	8.34 N	7.29 E	0.78	0.39	11.08	AT 041.16	074.71
400.0	399.75	13.33	1.972	-86.99	053.62	9.78 N	9.26 E	0.84	0.42	13.47	AT 043.42	072.62
450.0	449.67	16.01	2.694	-86.63	046.92	11.57 N	11.39 E	1.04	0.52	16.23	AT 044.55	070.46
500.0	499.58	18.98	3.332	-86.39	047.27	13.64 N	13.62 E	0.48	0.24	19.27	AT 044.96	069.52

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*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   500.0 FEET EQUALS    19.27    FEET AT   044.96          *
*                          ********                         *
*************************************************************
```

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/16/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 327.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00

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

COMMENTS: **** EKLUND ****
** JOHN WELCH **

****
****
*** 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: 29-0521-311

WELL NAME: RS-413 / 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.
0.0	0.00	0.00	0.000	-89.05	025.59	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	-0.07	-0.780	-89.15	034.05	0.68 N	0.39 E	0.33	0.17	0.78	AT 029.58	095.86
100.0	99.98	0.03	-1.788	-88.52	044.42	1.45 N	1.05 E	1.32	0.66	1.79	AT 035.82	090.29
150.0	149.96	0.18	-3.256	-88.09	038.47	2.56 N	2.02 E	0.93	0.46	3.26	AT 038.19	086.61
200.0	199.93	0.31	-4.988	-87.93	039.93	3.91 N	3.11 E	0.34	0.17	5.00	AT 038.55	081.49
250.0	249.90	0.41	-6.864	-87.76	036.38	5.39 N	4.27 E	0.43	0.22	6.88	AT 038.43	078.24
300.0	299.85	0.63	-8.892	-87.55	045.53	6.92 N	5.62 E	0.86	0.43	8.91	AT 039.05	076.37
350.0	349.81	1.19	-11.012	-87.41	053.78	8.34 N	7.29 E	0.78	0.39	11.08	AT 041.16	074.71
400.0	399.75	1.97	-13.326	-86.99	053.62	9.78 N	9.26 E	0.84	0.42	13.47	AT 043.42	072.62
450.0	449.67	2.69	-16.008	-86.63	046.92	11.57 N	11.39 E	1.04	0.52	16.23	AT 044.55	070.46
500.0	499.58	3.33	-18.984	-86.39	047.27	13.64 N	13.62 E	0.48	0.24	19.27	AT 044.96	069.52

```
*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   500.0 FEET EQUALS     19.27    FEET AT  044.96          *
*                          ********                         *
*************************************************************
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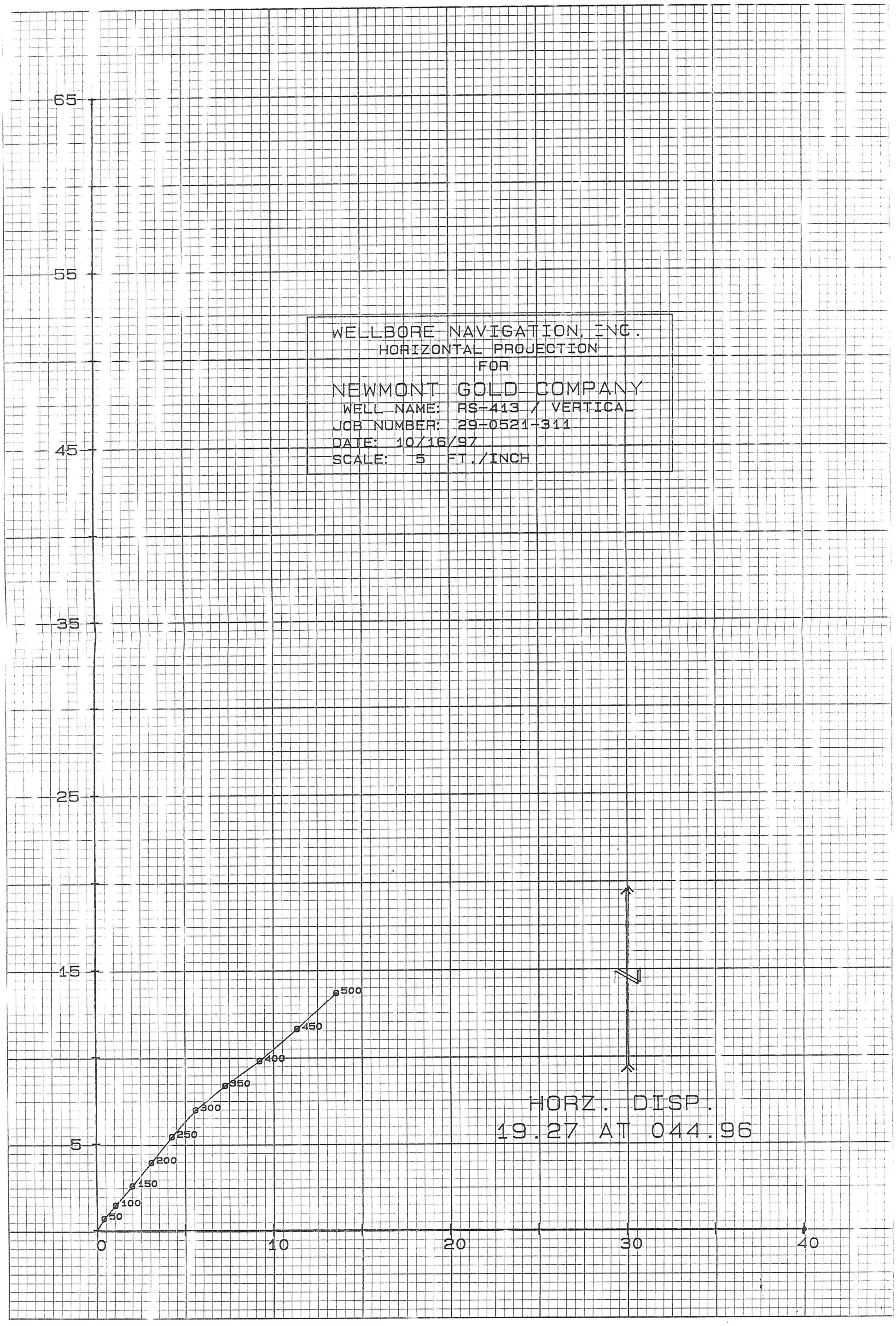
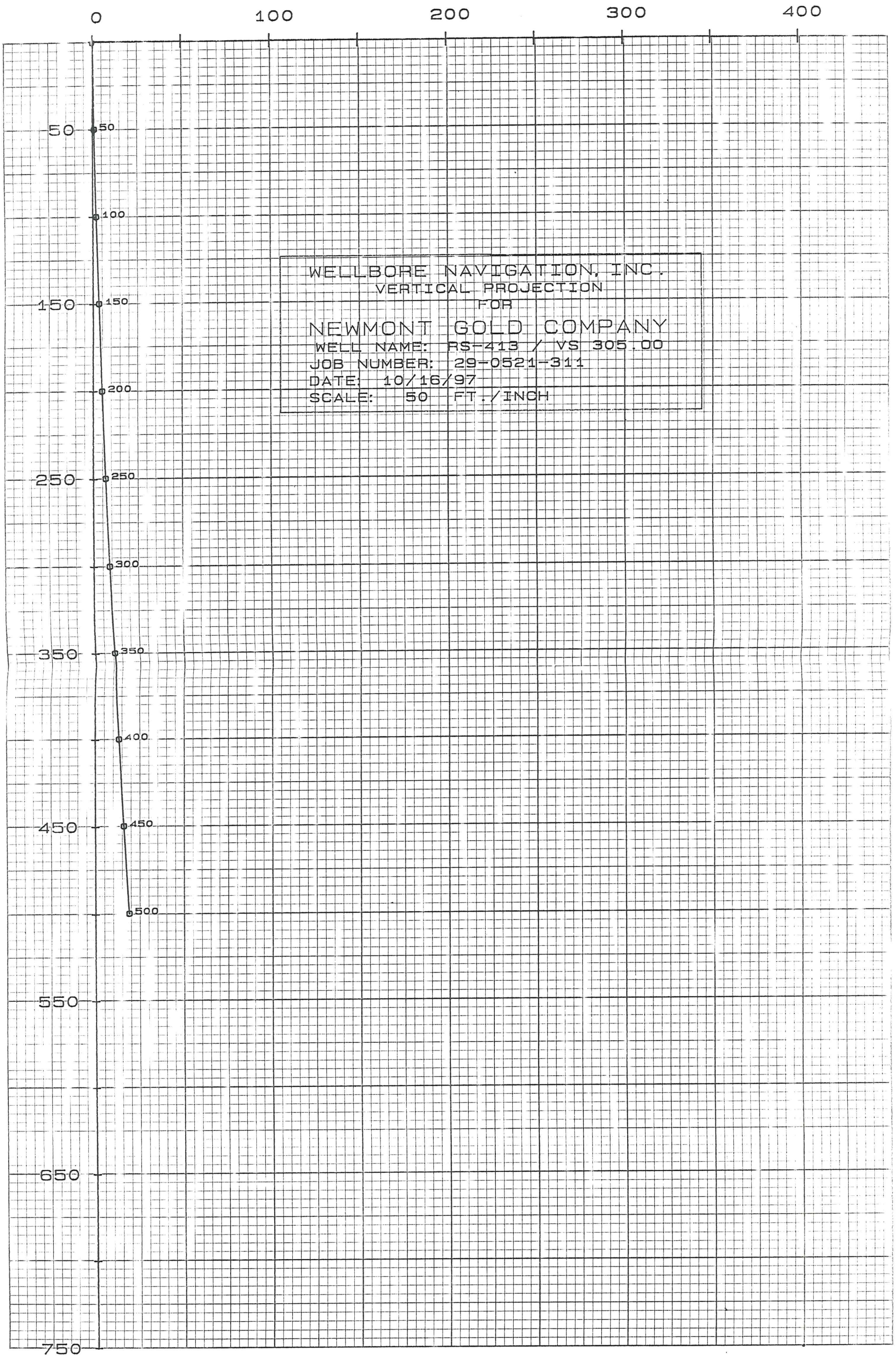
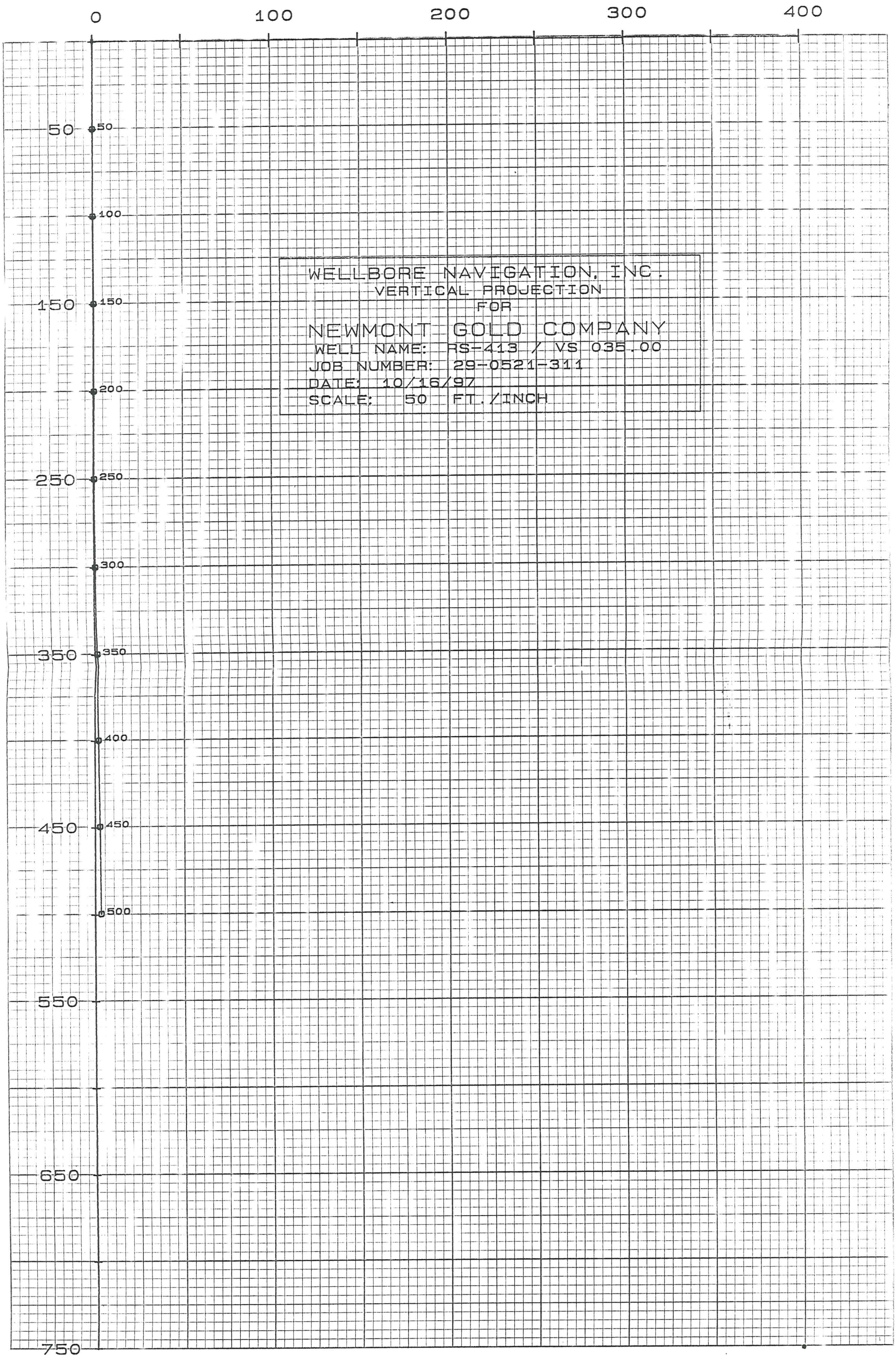
STARLIGHT PRINTING (801) 467-284



STARLIGHT PRINTING (801) 467-2841



STARLIGHT PRINTING (801) 467-2841



SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

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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: _____ Purchase Order Number: _____

Date Submitted: 12/3/97 Number of Samples: 42

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

RS-413 SAMPLE IDENTIFICATION			TYPE	ELEMENTS REQUIRED
499-505	567.3-569.8	620.5-625	CORE	Au-Ag
505-509.7	569.8-573.7	625-630		
509.7-515	573.7-577.5	630-635		
515-519.6	577.5-580.6	639-637		
519.6-524.3	580.6-585	638-642.5		
524.3-528.5	585-588	642.5-646		
528.5-533.1	588-591	646-650		
533.1-536.7	591-594	650-652.9		
536.7-540.7	594-597.3	652.9-656.5		
540.7-545	597.3-601	656.5-659.7		
545-550.3	601-605	659.7-664.4		
550.3-555.9	605-608.5	664.4-670		
555.9-560	608.5-612			
560-564	612-615.5			
564-567.3	615.5-620.5			

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
RANDY VANCE

Comments:

CLIENT FILE COPY

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

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

NEWMONT GOLD COMPANY

COPIES TO : RANDY VANCE

: KURT ALLEN

:

:

CLIENT REFERENCE No: RS-413 RECEIVED : 21 OCT 1997

No. SAMPLES : 103 REPORTED : 5 NOV 1997

MAIN SAMPLE TYPE : DRILL CUTTINGS

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

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au	FA30	15%	ppb	5
Au(R)	FA30	15%	ppb	5
Au(OZ)	FA30	15%	OPT	0.001
Au(RZ)	FA30	15%	OPT	0.001
Ag	D210	10%	ppm	0.5
Ag(OZ)	D210	10%	OPT	0.02

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 000-005	<5		<0.001		<0.5	<0.02
RS-413 005-010	<5		<0.001		<0.5	<0.02
RS-413 010-015	<5		<0.001		<0.5	<0.02
RS-413 015-020	15		<0.001		<0.5	<0.02
RS-413 020-025	26		<0.001		0.5	<0.02
RS-413 025-030	136		0.004		0.6	<0.02
RS-413 030-035	84		0.002		0.6	<0.02
RS-413 035-040	67		0.002		2.0	0.06
RS-413 040-045	44		0.001		1.6	0.05
RS-413 045-050	67		0.002		2.5	0.07
RS-413 050-055	43		0.001		3.6	0.11
RS-413 055-060	238	232	0.007	0.007	2.6	0.08
RS-413 060-065	966		0.028		6.1	0.18
RS-413 065-070	138		0.004		1.5	0.04
RS-413 070-075	27		<0.001		1.1	0.03
RS-413 075-080	132		0.004		2.7	0.08
RS-413 080-085	148		0.004		3.4	0.10
RS-413 085-090	38		0.001		1.0	0.03
RS-413 090-095	28		<0.001		<0.5	<0.02
RS-413 095-100	<5		<0.001		<0.5	<0.02
RS-413 100-105	9		<0.001		<0.5	<0.02
RS-413 105-110	8		<0.001		<0.5	<0.02
RS-413 110-115	<5		<0.001		<0.5	<0.02
RS-413 115-120	<5		<0.001		<0.5	<0.02
RS-413 120-125	7		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 125-130A	15		<0.001		0.8	0.02
RS-413 125-130B	1032		0.030		<0.5	<0.02
RS-413 130-135	236		0.007		2.0	0.06
RS-413 135-140	280		0.008		3.3	0.10
RS-413 140-145	298	285	0.009	0.008	3.0	0.09
RS-413 145-150	85		0.002		1.5	0.04
RS-413 150-155	17		<0.001		0.7	0.02
RS-413 155-160	<5		<0.001		<0.5	<0.02
RS-413 160-165	<5		<0.001		<0.5	<0.02
RS-413 165-170	51		0.001		1.4	0.04
RS-413 170-175	280		0.008		2.8	0.08
RS-413 175-180	1150	1370	0.034	0.040	3.2	0.09
RS-413 180-185	179		0.005		2.0	0.06
RS-413 185-190	47		0.001		<0.5	<0.02
RS-413 190-195	7		<0.001		<0.5	<0.02
RS-413 195-200	33		<0.001		0.6	<0.02
RS-413 200-205	5		<0.001		<0.5	<0.02
RS-413 205-210	240		0.007		1.7	0.05
RS-413 210-215	248		0.007		2.2	0.06
RS-413 215-220	256		0.007		2.9	0.08
RS-413 220-225	140		0.004		2.3	0.07
RS-413 225-230	150		0.004		2.8	0.08
RS-413 230-235	89		0.003		2.3	0.07
RS-413 235-240	56		0.002		1.8	0.05
RS-413 240-245	75		0.002		2.0	0.06

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 245-250	86		0.003		3.0	0.09
RS-413 250-255	185		0.005		2.4	0.07
RS-413 255-260	304		0.009		3.0	0.09
RS-413 260-265	1329		0.039		3.2	0.09
RS-413 265-270	212		0.006		4.9	0.14
RS-413 270-275	660		0.019		6.5	0.19
RS-413 275-280	512		0.015		5.2	0.15
RS-413 280-285	1889		0.055		4.7	0.14
RS-413 285-290	740		0.022		4.6	0.13
RS-413 290-295	604		0.018		3.0	0.09
RS-413 295-300	270		0.008		2.4	0.07
RS-413 300-305	89		0.003		0.9	0.03
RS-413 305-310	374		0.011		1.4	0.04
RS-413 310-315	58		0.002		2.2	0.06
RS-413 315-320	42		0.001		1.0	0.03
RS-413 320-325	18		<0.001		0.5	<0.02
RS-413 325-330	32		<0.001		<0.5	<0.02
RS-413 330-335	<5		<0.001		<0.5	<0.02
RS-413 335-340	<5		<0.001		<0.5	<0.02
RS-413 340-345	<5		<0.001		<0.5	<0.02
RS-413 345-350	<5		<0.001		<0.5	<0.02
RS-413 350-355	<5		<0.001		<0.5	<0.02
RS-413 355-360	<5		<0.001		0.5	<0.02
RS-413 360-365	<5		<0.001		<0.5	<0.02
RS-413 365-370	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 370-375	<5		<0.001		<0.5	<0.02
RS-413 375-380	<5		<0.001		<0.5	<0.02
RS-413 380-385A	<5		<0.001		<0.5	<0.02
RS-413 380-385B	905		0.026		<0.5	<0.02
RS-413 385-390	5		<0.001		<0.5	<0.02
RS-413 390-395	8		<0.001		<0.5	<0.02
RS-413 395-400	5		<0.001		<0.5	<0.02
RS-413 400-405	<5		<0.001		<0.5	<0.02
RS-413 405-410	<5		<0.001		<0.5	<0.02
RS-413 410-415	<5		<0.001		<0.5	<0.02
RS-413 415-420	7		<0.001		0.8	0.02
RS-413 420-425	<5		<0.001		<0.5	<0.02
RS-413 425-430	<5		<0.001		<0.5	<0.02
RS-413 430-435	<5		<0.001		<0.5	<0.02
RS-413 435-440	<5		<0.001		<0.5	<0.02
RS-413 440-445	<5		<0.001		<0.5	<0.02
RS-413 445-450	<5		<0.001		<0.5	<0.02
RS-413 450-455	<5		<0.001		<0.5	<0.02
RS-413 455-460A	<5		<0.001		<0.5	<0.02
RS-413 455-460B	978		0.029		<0.5	<0.02
RS-413 460-465	8		<0.001		<0.5	<0.02
RS-413 465-470	<5		<0.001		<0.5	<0.02
RS-413 470-475	<5		<0.001		<0.5	<0.02
RS-413 475-480	<5		<0.001		<0.5	<0.02
RS-413 480-485	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP046862

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-413

REPORTED : 5 NOV 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
RS-413 485-490	<5		<0.001		<0.5	<0.02
RS-413 490-495	<5		<0.001		<0.5	<0.02
RS-413 495-500	<5		<0.001		<0.5	<0.02

SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

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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: Newmont Exploration - Rosebud Mine

Address: P.O. Box 2610

City Winnemucca State NV Zip 89446

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

Project Name: Rosebud Exploration Purchase Order Number:

Date Submitted: 10/20/97 Number of Samples: 103

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

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
RS-413	RC	Au/Ag FA/AA each sample (5')
0-500' T.D. (100 samples)		
+130B		
+385B		
+460B		
PEEL HERE MS-3 MS-3 130B		
PEEL HERE MS-3 MS-3 385B		MS-3 MS-3 460B

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:

Bob Kastelic / Randy Vance
Rosebud Mine

esults to:

Rick Lisle - Newmont Exploration
Winnemucca
Randy Vance } Rosebud Mine
Curt Allen }

Comments:

CLIENT FILE COPY

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 0046862-IN
INVOICE DATE: 11/05/97

INVOICE TO:
NEWMONT EXPLORATION
ROSEBUD MINE
P.O. BOX 2610
WINNEMUCCA NV 89446

NEWMONT EXPLORATION
ROSEBUD MINE
P.O. BOX 2610
WINNEMUCCA NV 89446

CUSTOMER P.O.	PROJECT	TERMS
RS-413	ROSEBUD EXPLOR.	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
103	SAMPLES RECEIVED	.00	.00
97	DRYING	1.00	97.00
97	EXCESSIVE WETNESS	1.00	97.00
97	JAW CRUSHING CHARGE	1.30	126.10
97	SPLITTING CHARGE	1.20	116.40
97	FINE MILLING CHARGE	2.00	194.00
103	Au (1 A.T. FIRE ASSAY)	8.00	824.00
103	HYDROCHLORIC/NITRIC DIGESTION	2.00	206.00
103	Ag ANALYSES	1.00	103.00

NET INVOICE:	1,763.50
LESS DISCOUNT:	352.70
FREIGHT:	.00
INVOICE TOTAL:	1,410.80

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VERTICAL

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/22/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 218.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***
PROJECTED F/645' T/670'.

****
****
*** 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: 29-0521-311 WELL NAME: RS-413 / VERTICAL

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.
0.0	0.00	0.00	0.000	-89.13	024.77	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.75	-0.110	-89.07	052.52	0.59 N	0.48 E	0.87	0.44	0.76	AT 039.11	059.96
100.0	99.98	1.75	-0.046	-88.64	050.03	1.22 N	1.26 E	0.87	0.43	1.75	AT 045.88	061.83
150.0	149.97	3.05	-0.118	-88.37	039.35	2.15 N	2.16 E	0.77	0.39	3.05	AT 045.17	062.19
200.0	199.94	4.72	-0.404	-87.75	036.40	3.49 N	3.20 E	1.26	0.63	4.73	AT 042.48	062.62
250.0	249.90	6.76	-0.733	-87.51	039.87	5.11 N	4.48 E	0.56	0.28	6.80	AT 041.19	062.90
300.0	299.85	8.87	-1.002	-87.60	040.38	6.75 N	5.85 E	0.19	0.09	8.93	AT 040.93	063.26
350.0	349.80	11.05	-1.052	-87.39	051.33	8.25 N	7.42 E	1.04	0.52	11.10	AT 041.94	063.84
400.0	399.74	13.51	-0.773	-86.93	055.97	9.71 N	9.42 E	1.03	0.51	13.53	AT 044.10	064.70
450.0	449.66	16.24	-0.471	-86.75	051.52	11.35 N	11.63 E	0.61	0.30	16.25	AT 045.72	065.21
500.0	499.59	18.99	-0.276	-86.93	051.35	13.06 N	13.79 E	0.36	0.18	19.00	AT 046.55	065.57
550.0	549.51	21.75	-0.092	-86.74	051.08	14.79 N	15.94 E	0.38	0.19	21.75	AT 047.14	066.00
600.0	599.43	24.61	-0.009	-86.68	047.02	16.67 N	18.11 E	0.48	0.24	24.61	AT 047.36	066.43
645.0	644.35	27.26	-0.008	-86.59	047.78	18.46 N	20.05 E	0.22	0.10	27.26	AT 047.36	067.29
670.0	669.31	28.77	0.000	-86.46	047.58	19.48 N	21.17 E	0.52	0.13	28.77	AT 047.38	067.22

```
*************************************************************
*                          ********                         *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                          ********                         *
*  670.0 FEET EQUALS    28.77   FEET AT  047.38              *
*                          ********                         *
*************************************************************
```

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/22/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 218.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***
PROJECTED F/645' T/670'.

****
****
*** 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: 29-0521-311 WELL NAME: RS-413 / 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.
0.0	0.00	0.00	0.000	-89.13	024.77	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.76	0.055	-89.07	052.52	0.59 N	0.48 E	0.87	0.44	0.76	AT 039.11	059.96
100.0	99.98	1.72	0.331	-88.64	050.03	1.22 N	1.26 E	0.87	0.43	1.75	AT 045.88	061.83
150.0	149.97	3.00	0.539	-88.37	039.35	2.15 N	2.16 E	0.77	0.39	3.05	AT 045.17	062.19
200.0	199.94	4.69	0.617	-87.75	036.40	3.49 N	3.20 E	1.26	0.63	4.73	AT 042.48	062.62
250.0	249.90	6.76	0.733	-87.51	039.87	5.11 N	4.48 E	0.56	0.28	6.80	AT 041.19	062.90
300.0	299.85	8.88	0.923	-87.60	040.38	6.75 N	5.85 E	0.19	0.09	8.93	AT 040.93	063.26
350.0	349.80	11.02	1.341	-87.39	051.33	8.25 N	7.42 E	1.04	0.52	11.10	AT 041.94	063.84
400.0	399.74	13.36	2.141	-86.93	055.97	9.71 N	9.42 E	1.03	0.51	13.53	AT 044.10	064.70
450.0	449.66	15.97	3.023	-86.75	051.52	11.35 N	11.63 E	0.61	0.30	16.25	AT 045.72	065.21
500.0	499.59	18.61	3.803	-86.93	051.35	13.06 N	13.79 E	0.36	0.18	19.00	AT 046.55	065.57
550.0	549.51	21.26	4.573	-86.74	051.08	14.79 N	15.94 E	0.38	0.19	21.75	AT 047.14	066.00
600.0	599.43	24.04	5.269	-86.68	047.02	16.67 N	18.11 E	0.48	0.24	24.61	AT 047.36	066.43
645.0	644.35	26.62	5.836	-86.59	047.78	18.46 N	20.05 E	0.22	0.10	27.26	AT 047.36	067.29
670.0	669.31	28.10	6.169	-86.46	047.58	19.48 N	21.17 E	0.52	0.13	28.77	AT 047.38	067.22

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*************************************************************
*                          ********                         *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                          ********                         *
*  670.0 FEET EQUALS    28.77   FEET AT   047.38            *
*                          ********                         *
*************************************************************
```

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT GOLD COMPANY *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/22/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 218.00
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***
PROJECTED F/645' T/670'.

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

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

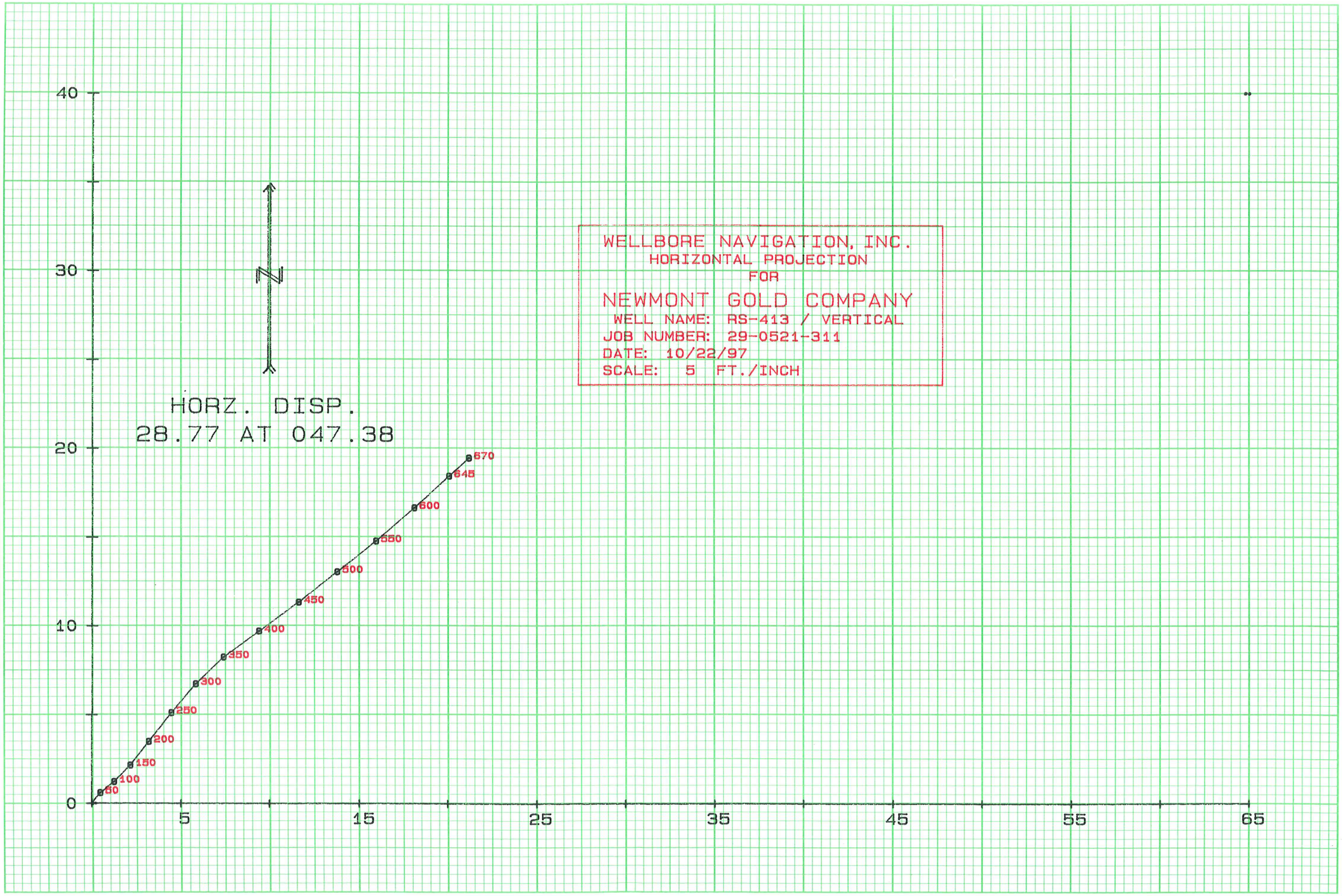
JOB NUMBER: 29-0521-311

WELL NAME: RS-413 / VS 035.00

INRUN SURVEY
BY MINIMUM CURVATURE

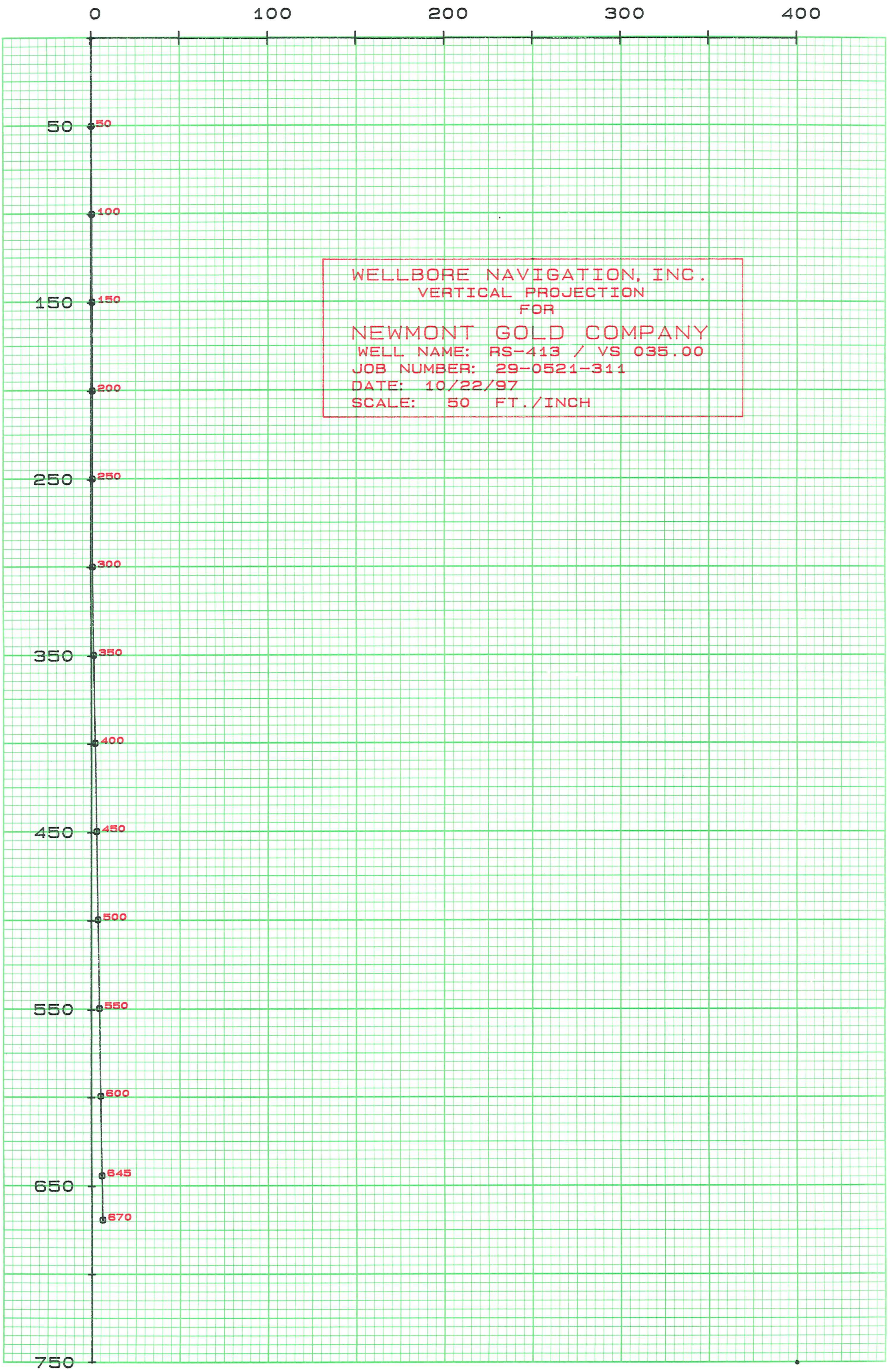
MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	L/R PROP.	INCL HORZ	BEARING AZIMUTH	COORDINATES LATITUDE	COORDINATES DEPARTURE	D-LEG /100	D-LEG /CL	STATION DISP.	DISPLACEMENT DIRECTION	TEMP. DEG. F.
0.0	0.00	0.00	0.000	-89.13	024.77	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.05	-0.761	-89.07	052.52	0.59 N	0.48 E	0.87	0.44	0.76	AT 039.11	059.96
100.0	99.98	0.33	-1.721	-88.64	050.03	1.22 N	1.26 E	0.87	0.43	1.75	AT 045.88	061.83
150.0	149.97	0.54	-3.003	-88.37	039.35	2.15 N	2.16 E	0.77	0.39	3.05	AT 045.17	062.19
200.0	199.94	0.62	-4.693	-87.75	036.40	3.49 N	3.20 E	1.26	0.63	4.73	AT 042.48	062.62
250.0	249.90	0.73	-6.756	-87.51	039.87	5.11 N	4.48 E	0.56	0.28	6.80	AT 041.19	062.90
300.0	299.85	0.92	-8.881	-87.60	040.38	6.75 N	5.85 E	0.19	0.09	8.93	AT 040.93	063.26
350.0	349.80	1.34	-11.016	-87.39	051.33	8.25 N	7.42 E	1.04	0.52	11.10	AT 041.94	063.84
400.0	399.74	2.14	-13.358	-86.93	055.97	9.71 N	9.42 E	1.03	0.51	13.53	AT 044.10	064.70
450.0	449.66	3.02	-15.967	-86.75	051.52	11.35 N	11.63 E	0.61	0.30	16.25	AT 045.72	065.21
500.0	499.59	3.80	-18.611	-86.93	051.35	13.06 N	13.79 E	0.36	0.18	19.00	AT 046.55	065.57
550.0	549.51	4.57	-21.262	-86.74	051.08	14.79 N	15.94 E	0.38	0.19	21.75	AT 047.14	066.00
600.0	599.43	5.27	-24.044	-86.68	047.02	16.67 N	18.11 E	0.48	0.24	24.61	AT 047.36	066.43
645.0	644.35	5.84	-26.624	-86.59	047.78	18.46 N	20.05 E	0.22	0.10	27.26	AT 047.36	067.29
670.0	669.31	6.17	-28.102	-86.46	047.58	19.48 N	21.17 E	0.52	0.13	28.77	AT 047.38	067.22

```
*************************************************************
*                        ********                           *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                        ********                           *
*  670.0 FEET EQUALS     28.77   FEET AT   047.38           *
*                        ********                           *
*************************************************************
```

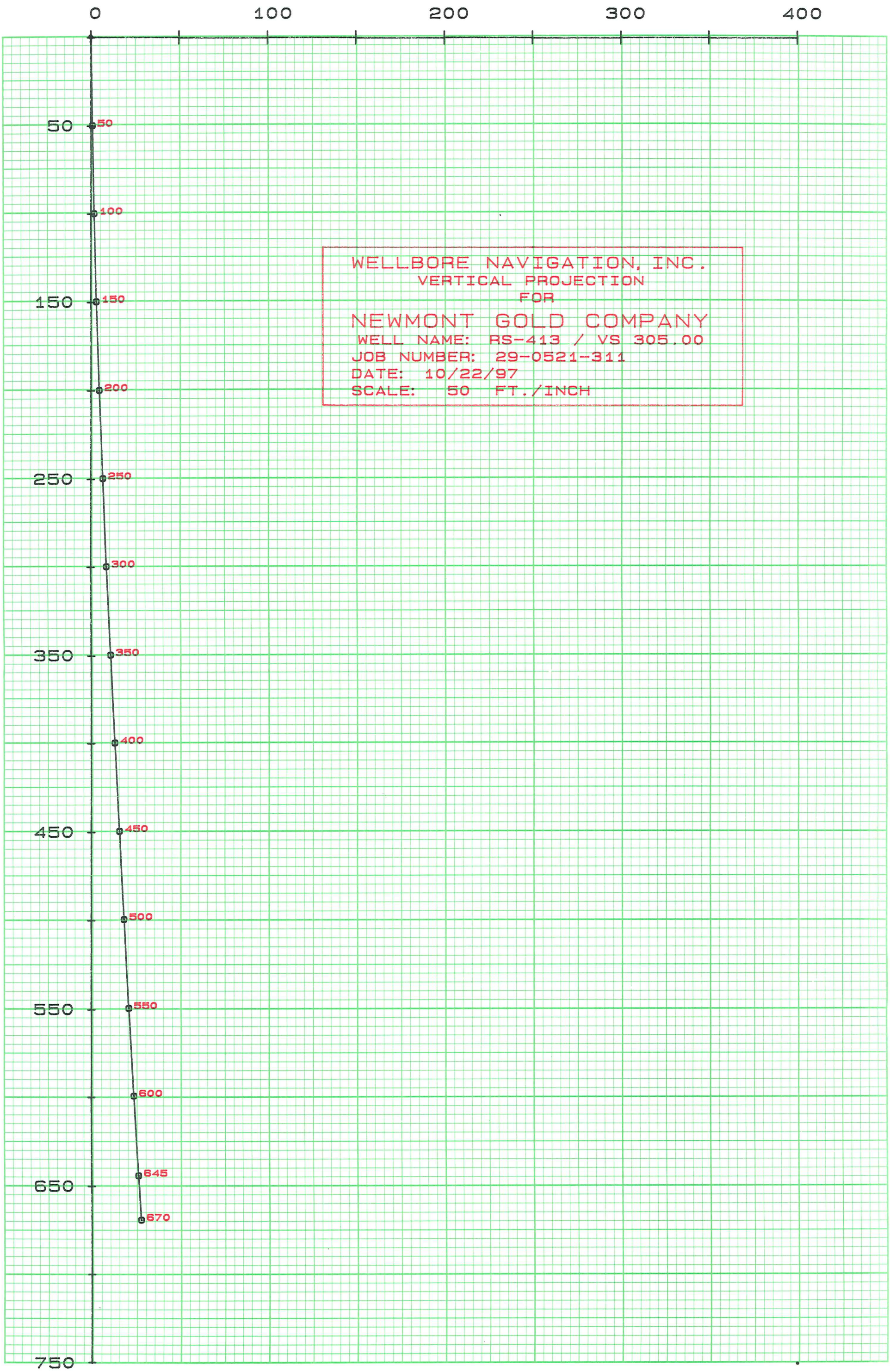


STARLIGHT PRINTING (801) 467-2841

STARLIGHT PRINTING (801) 467-2841



STARLIGHT PRINTING (801) 467-2841



Hecla MINING COMPANY

ROSEBUD PROJECT
DRILL LOG

HOLE NUMBER RS 413
PAGE 1 OF 3
DATE 6-29-98
LOGGED BY BLC
TOTAL DEPTH 500'

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 MAJOR %	SILICIFICATION QUARTZ %	ARGILLIC 5%	ARGILLIC 15%	ARGILLIC +25%	ARGILLIC TYPE	PROPYLITIC % CHLORITE	PROPYLITIC % CALCITE	POTASSIC % K-SPAR	POTASSIC % ALUNITE	OXIDATION 5%	OXIDATION 15%	OXIDATION +25%	VEINING %	VEINING TYPE	MINERALIZATION: SULFIDES 5%	SULFIDES 15%	SULFIDES +25%	PY %	CPY %	MAR %	AS-SUL %	STIBNITE %	BARITE %	METALLURGY: OXIDE	SULF	CARBON	MOCURE	ANALYTICAL DATA: FROM	TO	W	Au	As
		Coll	Colluvium																		X																				
																					X																				
20																					X																				
		TCFG	Chocolate Fm - fine grnd																		X																				
40																				X																					
																					X																				
60																					X																				
																			X																						
80																																									
																			X																						
100																			X																						
																			X																						
120																																									
140																																									
160																				X																					
																				X																					
180																				X																					

Hecla MINING COMPANY

ROSEBUD PROJECT
DRILL LOG

HOLE NUMBER RS-413
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 DATA				
						SILICIFICATION					ARGILLIC				PROPYLITIC %		POTASSIC %		OXIDATION			VIENING	SULFIDES			PY	CPY	MAR	K-SUL	STIBNITE	BARITE	OXIDE	SULF	CARBON	MOISTURE	FROM	TO	W	Au	Ag
						5%	15%	+25%	MATRIX %	QUARTS %	5%	15%	+25%	TYPE	CHLORITE	CALCITE	K-SPAR	ALUNITE	5%	15%	+25%	%	TYPE	5%	15%	+25%	%	%	%	%	%	%										
		TCFG																																							
220																																									
240																																									
260																																									
280																																									
300																																									
320																																									
340																																									
360																																									
380																																									

Hecla MINING COMPANY

ROSEBUD PROJECT
DRILL LOG

HOLE NUMBER RS-413
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 DATA				
						SILICIFICATION					ARGILLIC				PROPYLITIC %			POTASSIC %	OXIDATION			VIENING		SULFIDES			PY	CPY	MAR	K-SUL	STIBNITE	BARITE	OXIDE	SULF	CARBON	MOISTURE	FROM	TO	W	Au	Ag
						5%	15%	+25%	MATRIX %	CLASTS %	5%	15%	+25%	TYPE	CHLORITE	CALCITE	K-SPAR	ALUNITE	5%	15%	+25%	%	TYPE	5%	15%	+25%	%	%	%	%	%	%										
		TcFG																																								
420																			X																							
																				X																						
440																					X																					
																					X																					
460																					X																					
																					X																					
480																					X																					
																					X																					
500																					X																					

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

Hecla
MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	RS 413	LOCATION	East zone
PAGE	1 OF 3	NORTHING	
DATE	11/24/97	EASTING	
LOGGED BY	R. PARISH	ELEVATION	
SCALE	1" = 10'	AZIMUTH	
TOTAL DEPTH	670'	INCLINATION	-90°

REMARKS
RVC pre-collar 0-499'
Core HQ 499'-670'

REC	RQD	LITHOLOGY	FT	GRAPHIC LOG Lith + Alm.	STR.	MINL.	STRUCTURE	ALTERATION AND MINERALIZATION
				RVC		RVC		499 - 524.3 hematitic, v. weakly altered, minor white clay selvedges around some clasts.
Tc		499 - 505.1 Lt. to med. gray, Flow banded, F.gr Latite-andesite flow. Bx'd top w/hematitic matrix. Flow Laminations 50° TCA.	500		70	45	Calcite veins	499 - 524.3 Minor to locally common f.gr. pyrite as stkwks, fr. fillings and dissem. Locally oxidized. Pyrite Blebs to 1" Common
		505.1 - 524.3 Lt. purple/gray, Latitic to andesitic? Volcanic Auto Breccia. Clasts are fine grained, weakly porphyritic to flow banded, pea sized to 1' blocks.	510					504.5' 1" th. Calcite vn, 45°
		518.5 - 524.3 - Dark purple/gray - Auto Bx, common white glomeroporphyritic plag phenos to 1/8" - alt. to clay						509 - 516 weak calcite ± clay Fracture fillings
		524.1 to 524.3 Fault gouge - 60° TCA - Brown clay.	520					
		524.3 - 536.7 Lt purple gray Latite to Andesite? Flow Breccia - Clast supported, clasts fine grained to weakly porphyritic, no flow lamination. Common, irregular pyrite blebs to 1" dia., Largely altered to FeOx.			60	40	524.1 - 524.3 2" thick brown clay fault gouge - 60° TCA	
		529.4 - 535 pinkish, hematitic matrix	530				526 - 526.5 - sheared fault zone - several clay/rock flour gouge zones @ 45° TCA	533.1 - 535 - v weakly altered - mod hematite
		536.7 - 562 Lt greenish white to faint pink-gray Latite/andesite? Flows and auto Breccias. Lightly bleached and argillized. Mostly crackled flows w/ minor clast rotation - minor flow Bx's smaller, more monolithologic clasts than above unit.	540					536.7 to 540.7, wk propylitic alt.
								536.5 to 562 wk. bleaching and argillization, increase in pyrite blebs and fracture fillings

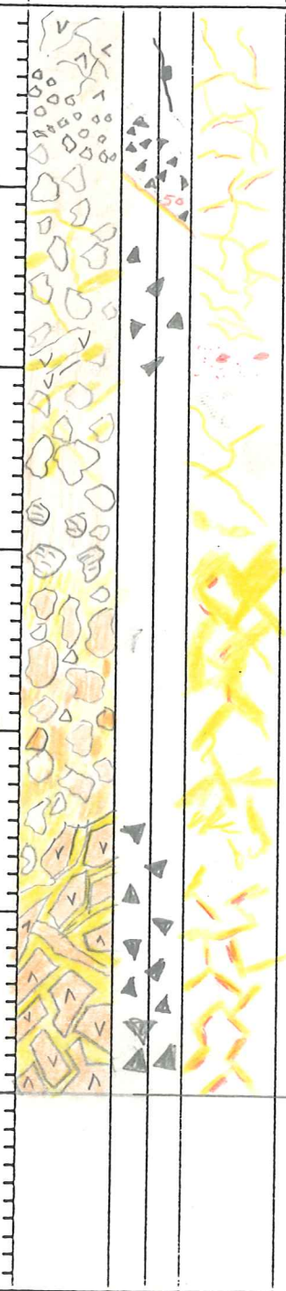
ANALYTICAL DATA FROM	TO	W	Au	Ag	Au2	Ag2
499	505		<	<		
505	509.7		<	<		
509.7	515		<	<	<	
515	519.6		<	<		
519.6	524.3		<	<		
524.3	528.5		<	<		
528.5	533.1		<	<		
533.1	536.7		<	<		
536.7	540.7		<	<		

HOLE NUMBER RS-413 PAGE 2 OF 3

REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
Tc		536.7 – 555.9 Lt. pale greenish white to faint Pinkish white. Latitic to andesitic? flows and Auto breccias – Flows are fine grained, weakly porphyritic and are crackled, w/ matrix of same composition – Minor flow Bx w/ faint Pink hematitic matrix increasing down hole. 555.9 – 569.3 Lt. pinkish to greenish white Flow Breccia. Angular latite to andesite? heterolithic clasts to 6" Bleached and/or propylitized, in a pinkish, hematitic matrix. 564 – 569.3 – increasingly argillized and chloritized along shears from proximity to South Ridge fault.	540 550 560 570 580 590 600 610	gradational	30 30 45 70 65 50 65	543.6 – clay/pyrite filled fault slip – 30° Rake 45° 549 1/8" calcite vein – 30° TCA Rake 80°	549-560 – whispy py stkwks and minor dissem.
Tc Faulted Ctc		569.3 – 577 South Ridge Fault ZONE – 569.5 – 573.7 – zones of strongly sheared, green, chloritic clay gouge/rock flour w/ horses of less altered Dozer? Rhyolite 573.7 – 577 Strongly silicified matrix supported Breccia – gray rock flour matrix w/ milled fine grained clasts to 3". Clasts often Re brecciated, Rounded. Gradational into tectonic/hydro crackle breccia w/ F.gr. Dozer? Angular clasts w/ gray chalcedonic matrix and abundant Blocky Barite +/S on fractures and Vugs.				567-573 – shearing in Hanging wall to South Ridge Flt. typically 60 – 80° TCA 573.7 Bounding Flt between Silicified footwall and unsilicified Hanging wall. 65° TCA Rake 50° oblique slip movement	560-571 – increasing F.gr Pyrite and blebs 564 – 573.7 Hanging wall – S.R. Fault. Numerous, green clay gouge shears increasing to main slip @ 573.7. Several Bxd Py seams to 2" thick 573.7 – 577.5 – str. pervasive silic'n of tectonic/hydrothermal Bx. Abdnt tabular barite in Vugs. white clay common in vugs
Td		577 – 591 Lt creme/gray, fine grained, weakly Porphyritic rhyolite flow. Dozer? Abundant, yet decreasing gray, chalcedonic hydro fract. veining. 591 – 597.3 Lt. pale, greenish-gray Monolithic dozer Bx – mosaic to poorly sorted, Milled clasts in dark gray pyritic, Rock flour matrix. Abdnt gray chalcedonic &t2 veins w/ common bladded marcasite. 597.3 – 615.5 Lt. pale green Dozer Auto Bx. Crackled, Rhyolitic flows w/ gray to darker green matrix. Common X-cutting gray &t2 ± marcasite veins – Mild to mod perv. argillization.					577.5 – 588 – Hydrothermal crackle Bx – Mosaic text. Gray chalced. Matrix – un-silicified Dozer clasts 580.6 – 587 – minor bladed marcasite ass. w/ gray chalced &t2 veins/matrix 591 – 597.3 – Abdnt gray chalced. veining w/ bladed marc. X-cutting Bx, minor OSF Barite. mod perv. oxd. 594-596 591 – 610 – Mild to mod argillization and pale green, weak Propylitic altn.? 597.3 – 615.5 – common gray silica vns w/ marcasite Drusy &t2 lining open vugs.

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
540.7	545		<	<		
545	550.3		<	.05		
550.3	555.9		<	<		
555.9	560		<	.03		
560	564		<	<		
564	567.3		<	.06	<	
567.3	569.8		<	.04		
569.8	573.7		.001	.03		
573.7	577.5		.044	.43		
577.5	580.6		.058	.04		
580.6	585		.248	.17	.220	
585	588		.570	.30	.550	
588	591		.045	.08		
591	594		.432	1.06	.440	
594	597.3		.074	.13		
597.3	601		.015	.04		
601	605		.018	.04		
605	608.5		.020	.02		

HOLE NUMBER RS-413 PAGE 3 OF 3

EC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
T.D		615.5 - 620.5 - Zone of intense clast supported Bx'n. Pea sized, somewhat rounded Dozer clasts. Rk flour gray matrix. Probably primary Bx - not tectonic. 620.5 – 638 Primary Dozer Flow breccias and minor flows. Angular, clast supported monolithic, F. grained rhyolite clasts in darker gray, Lava? matrix. Locally Re-brecciated w/ gray chalcedonic ± Pyrite crackle veins and zones of patchy, pervasive silin of clasts and matrix. 636 - 642 - Clasts have prominent flowbanding 638 – 656.5 Lt. gray primary Flow Breccia continues, but with marked increase in dense, gray silicification of matrix. Clasts remain argillized, unsilicified. Abrupt end to Flow Breccia @ 656.5' 6565 – 670 Lt. gray, Fine grained, Rhyolite Flow. Flow banded 659.7 to 661. 60° TCA, in place? Mosaic textured crackle Bx w/ gray qtz ± marcasite ± Barite matrix. Common large marc. and Barite Lined vugs increasing to E.O.H. Flow clasts Argillized, very rarely silicified.	610 620 630 640 650 660 670 T.D 670'		615' - irregular joint 10° TCA 50° TCA qtz/marc. veinlet, minor slip plane w/clay gouge 620 - 670 - No obvious Joints or Faults. Random network of qtz veinlets as matrix. Abdnt open vugs to 670'	610↓ decrease in prop. alt 615 - 620 - gray qtz ± marcasite veins w/ minor patchy silin of Bx clasts and matrix. 620 - 638 - continued gray qtz veinlets - decrease in marcasite, increase in pervasive silin and late, toothy qtz OSF vuglets. 628 - 630 abdnt Pyrite clots and disseminations 638 - 656.5 - Dense gray SiO_2 ± F. gr. Pyrite Bx matrix. Silica flooding of matrix, late OSF white SiO_2 ± bladed marcasite and minor white clay. Silicified matrix comprises 40% of core. 652.9 - 654 - White SiO_2 Bx matrix, Faint gray SiO_2 banding 656.5 - 670 Increasing bladed marcasite on Bx clasts, covered by gray and white SiO_2 - Strong increase in large, euhedral barite xls and late bladed marcasite in abdnt. open vugs.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
608.5	612		.007	<		
612	615.5		.007	.02		
615.5	620.5		.014	.02		
620.5	625		.015	.02		
625	630		.002	.02		
630	635		.002	.02		
635	638		.007	.02		
638	642.5		.005	.04		
642.5	646		.010	.06		
646	650		.008	.04		
650	652.9		.007	.03		
652.9	656.5		.006	.04		
656.5	659.7		.039	.10		
659.7	664.4		.018	.06		
664.4	670		.011	.05		

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS- 413 DATE: 11/24/97 LOGGED BY: R. PARISH PAGE 1 OF 2

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)
499	505	100	100	95.0										
505	515	97.0	97.0	86.0										
515	525	100	100	54.0										
525	535	91.0	100	67.0										
535	545	100	100	96.0										
545	555	100	100	98.0										
555	565	100	97.0	87.0										
565	575	100	103.0	12.0										
575	585	100	98.0	62.0										
585	595	93.0	94.0	79.0										
595	605	86.0	96.0	86.0										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

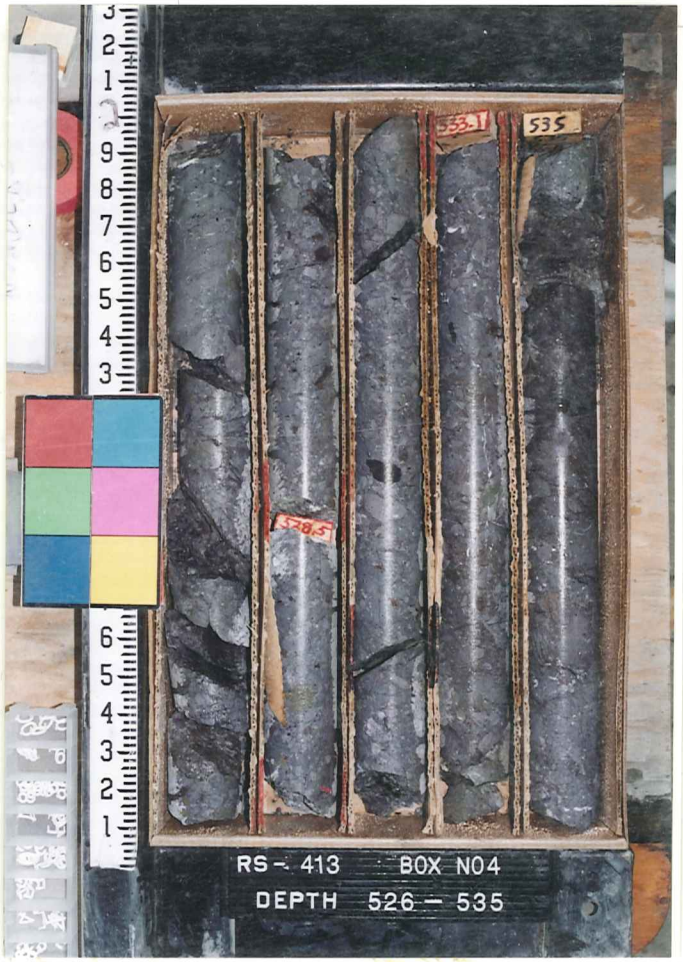
HOLE # RS-413 DATE: 11/25 LOGGED BY: R. PARISH PAGE 2 OF 2

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)
605	615	98.0	98.0	76.0										
615	625	94.0	98.0	64.0										
625	635	96.0	96.0	76.0										
635	645	98.0	98.0	69.0										
645	654.3	89.3	95.7	41.9										
654.3	664.4	97.0	97.0	73.3										
664.4	670	96.4	96.4	57.1										
	TD													

505
RS - 413 BOX NO 1
DEPTH 499 - 508

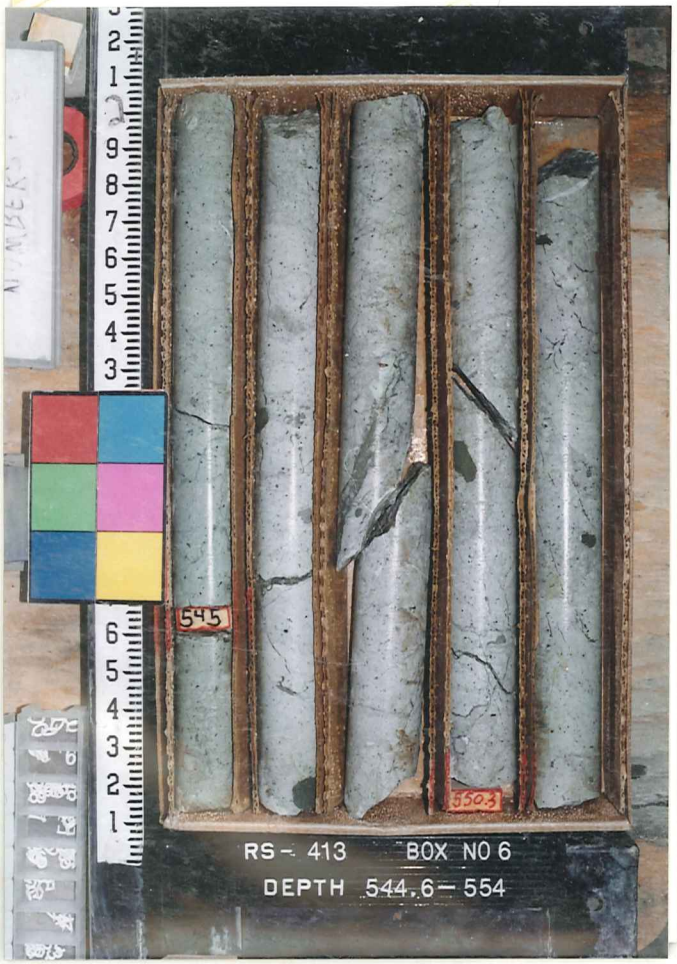
525
RS - 413 BOX NO 3
DEPTH 517.5 - 526

515
RS - 413 BOX NO 3
DEPTH 508 - 517.5


533.1
535
528.5
RS - 413 BOX NO 4
DEPTH 526 - 535

RS - 413 BOX NO 6
DEPTH 535 - 544.6

564
555
RS - 413 BOX NO 7
DEPTH 554 - 564


545
RS - 413 BOX NO 6
DEPTH 544.6 - 554

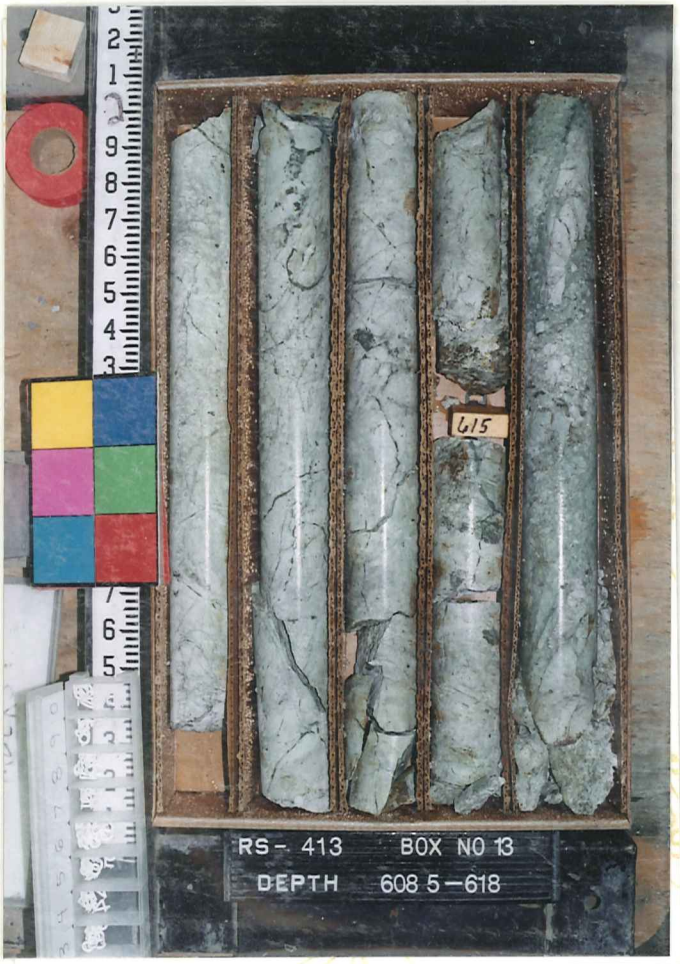
565
RS - 413 BOX NO 8
DEPTH 564 - 573

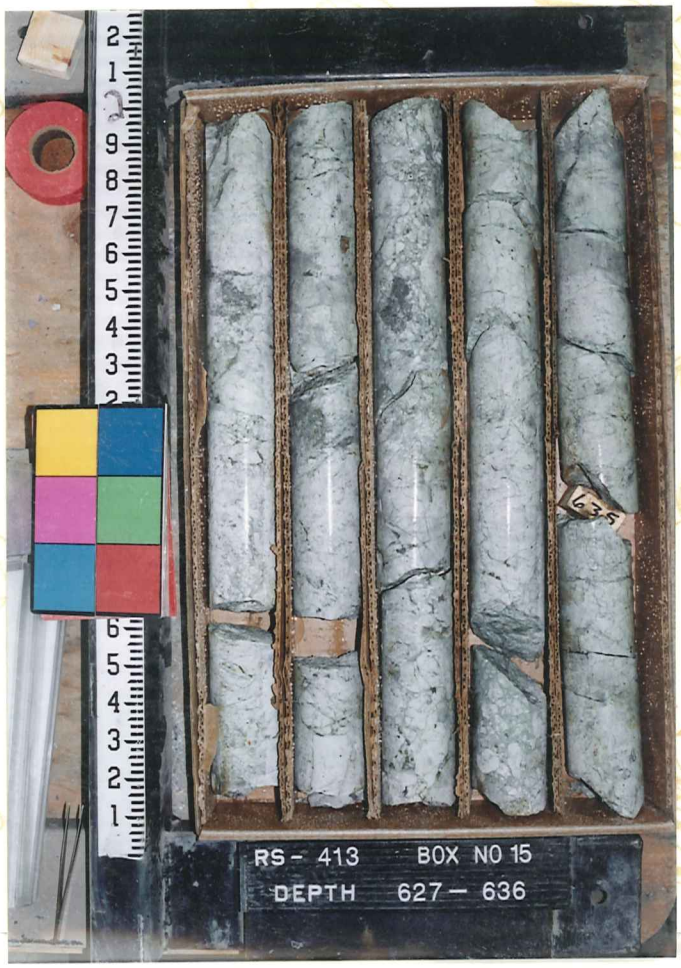
575
RS - 413 BOX NO 9
DEPTH 573 - 581.3

595
RS - 413 BOX NO 11
DEPTH 590 - 599 5

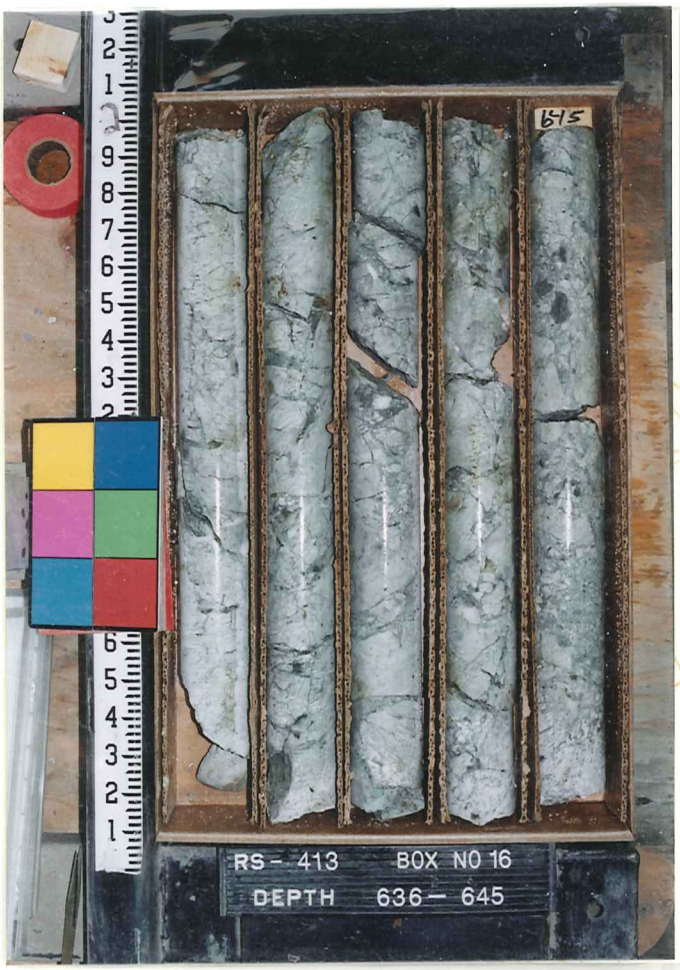
585
RS - 413 BOX NO 10
DEPTH 581.3 - 590

605
RS - 413 BOX NO 12
DEPTH 599 5 - 608 5


615
RS - 413 BOX NO 13
DEPTH 608 5 — 618


635
RS - 413 BOX NO 15
DEPTH 627 — 636

625
B-10
RS - 413 BOX NO 13
DEPTH 618 — 627


615
RS - 413 BOX NO 16
DEPTH 636 — 645

654 3
RS - 413 BOX NO 17
DEPTH 645 — 654 3

670
TD
664.4
RS - 413 BOX NO 19
DEPTH 664 — 670

RS - 413 BOX NO 18
DEPTH 654 3 — 664

RS - 413 BOX NO 1
DEPTH 499 - 508

525
RS - 413 BOX NO 3
DEPTH 517.5 - 526

515
RS - 413 BOX NO 3
DEPTH 508 - 517.5

535
RS - 413 BOX NO 4
DEPTH 526 - 535

SITE NO. 38-23
P.O. BOX 30740 • ORLANDO, FL 32890 • (407) 886-3100
DRILLING PROGRESS ARCHIVAL

RS - 413 BOX NO 9
DEPTH 573 - 581.3

RS - 413 BOX NO 11
DEPTH 590 - 599 5

RS - 413 BOX NO 10
DEPTH 581.3 - 590

RS - 413 BOX NO 12
DEPTH 599 5 - 608 5

Gilbert/Commonwealth
ARCHIVAL PRESERVER
P.O. BOX 2078 • 32802 • ORLANDO, FL • (407) 388-0100

654.3
RS - 413 BOX NO 17
DEPTH 645 - 654 3

670
TD
664.4
RS - 413 BOX NO 19
DEPTH 664 - 670

RS - 413 BOX NO 18
DEPTH 654 3 - 664