60000523

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-417
AUTHOR	R Vance; K. Allen; S. King; G. Langstaff; R. Parish; R. Lisle, B. Kastelic, B. Kurpis; D. Keyser; V. Reid; J. Welch
DATE OF DOC(S)	1997 - 1998
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.; Hecla Mining Co.; Rosebud Mining Co. LLC; Newmont Exploration Ltd
COMMODITY If not obvious	gold; silver
NOTES	drill logs; assay; geology; photographs; geochemistry; total depth 725'; invoices 80p.

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-417

60000523
4010

60000523

NEWMONT EXPLORATION LIMITED

DRILL HOLE SUMMARY

Project: Rosebud Location: Hecla's East Zone Drill Hole No.: RS-417

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

Purpose: Mine Geology Infill Results:

Date Started: Date Finished: 10/20/97 - 10/21/97 rc; 11/19/97 - 11/20/97 core

Grid System: Northing: Easting: Elevation:

Collar Az/Inc.: / -90 Drill Site: Total Depth: 725

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

HOLE CONSTRUCTION AND HISTORY CASING (INTERVAL):

From	To	Hole Type/Size	Started	Completed	Contractor
0	550	rc /			Eklund
550	725	core / HQ			Boart-Longyear
		/			
		/			

LITHOLOGIC SUMMARY				ALTERATION/	SIGNIFICANT ASSAYS				
From	To	Formation	Rock Type	MINERALIZATION	From	To	Width	Au oz/st	Cutoff

DOWNHOLE SURVEYS

Directional Date:

Other

Depth (ft)	Azimuth	Inclination
725	39' @ 354°	-85.6°

Water Table Depth:

Water Flow Rate:

COMMENTS

See Wehrnd survey

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 1 of 11
Log'd by: G. Langstaff Date: 12/31/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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
			5YR4/1-	Volc	aph	massive,	.5-1	.2-.5mm	prism speck	black	hbl										TcFG	upper 5' weakly calcareous		
			10YR6/2-			micropor.	<1	.5-1.5mm	chunk irreg	black	hbl?										(hbl only)			
			5YR3/2																			some brown clay		
5			various																					
			shades of													<2mm	pres	"limonite"	black					
			dk brn																FeMn oxi?			minor orange clay		
10																								
																						minor grey and orange clay		
15																								
																						minor grey and red clay		
20																								
			bipartite	Volc	aph	massive		nothing				w	pervasive	arg	white clay						altered	brown and yellow colors probably Fe		
			10YR5/6-									m	patchy,	Fe	limonite						Tr FG	staining from oxidized pyrite		
			10YR3/4										"in veins"									brown and olive colors generally on		
25			orange brn																			separate chips but textures the same		
			to dark brn																					
			and																					
			10Y7/2-																					
30			5Y7/2																					
			pale olive			some olive										1mm	rare	none	drusy qtz			some white clay		
			grey			chips with																		
						granular																		
35						textures																		
40																								
							<1	.5-1mm	chunk long	green	chl?													
45																								
			[less brn																					
			and yellow]																					
50																								

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 2 of 11
Log'd by: G. Langstaff Date: 12/31/97	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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			10YR7/1-2 pale gray-yellow and mixed	Volc	aph-vf	massive, faintly granular						W W	pervasive patchy "veins"	arg Fe	white clay limonite	<1.2mm	rare	limonite	black FeMn ox?		altered TcFG			
60			10YR5/6-5YR4/4 orange to brown				<1	1-2mm	long round	white	clay											a few red chips		
65		□ X □ X										strong arg?				<3mm <3mm	pres rare	? ?	py±qtz qtz			poor sample, lots of clay, could be fault		
70		□ X □ X	5GY6/1-5G8/1 pale grey	Volc?	vf	massive, probably no primary texture						W m W	patchy vein? pervasive patchy	arg sil py	white clay qtz pyrite	<5mm	pres	none	py±qtz			bladed mare? w/drusy qtz variable white clay in samples to 100'		
75		X □ X X																				bladed mare?		
80		□ X X □ X																				bladed mare?		
85		□ X □ X □ X																						
90		□ X □ X										W	pervasive	sil	qtz									
95		□ X X																						
100		□ X □ X										strong arg?										lots of clay and pyrite - could be another fault		

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 3 of 11
Log'd by: G. Langstaff Date: 1/2/98	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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		X □ X	mostly 5G7/1 some 5G8/1-	Volc	vf	massive generally granular						m w w	dissem/rich? patchy patchy/blo.	arg sil py	white clay qtz pyrite	<3mm	pres	none	py ± qtz		altered TcFG	considerable clay as in 95-100' bladed mare? in qtz		28
110		□ X X □ X	5GY6/1 pale grn grey				<1	.3-1mm	chunk irreg	green	chl?	w m	pervasive pervasive	arg sil	white clay qtz									56
115		□ X X X □ X					<1 <1	.5mm 2mm	chunk irreg	green white	chl? amygd?											bladed mare? in qtz		106
120		X □ X X																				bladed mare? in massive and vein qtz		66
125		□ X □ X					<1	.5-1mm	chunk round	green	chl?	w	patchy	sil	qtz	<2mm	rare	none	pale grey clay			some brown staining, fractures to 130'		30
130		□ □ □					<1	.5mm	round chunk	green	chl?											magnetic mineral associated with sulfide almost all pyrite is from veins probably some qtz veins w/o pyrite		
135		□ □					<1	.5-1mm	irreg chunk	green	chl?													
140		□ □					<1 <1	.5-1mm 1.5mm	irreg euhd	green white	chl? fold										altered TcFG w/fold?	more dissem pyrite some green things partially replaced by white clay		
145		□ □					<1 <1	1-1.5mm .5-1mm	chunk irreg	white green	fold? chl?													
150		□ □					<1	.5-1mm	chunk prism	green	chl?											slightly calcareous no (?) dissem pyrite extremely fine dissem opaque flakes		

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 4 of 11
Log'd by: G. Langstaff Date: 1/2/98	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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			10YR7/1-5GY6/1 pale grn grey	Vole	aph-vf	massive, locally weakly granular	<1	1mm	chunk	white	fold	W	dissem	arg	white clay	<3mm	rare	none	py±qtz		altered TcFG w/fold	slightly calcareous		
160							<1	.5-1mm	irreg	green	chl?	W	patchy/dis.	py	py	<1mm	rare	?	calcite			weakly calcareous		
165			w/minor brown				<1	1mm	irreg	green	chl?					hair-thin	rare	none	qtz			slightly calcareous		
170							<1	.5mm	chunk	green	chl?					<2mm	rare	?	calcite			weakly calcareous to 190' only rare sulfide		
175																<2mm	rare	?	pale grn grey clay					
180							<1 <1	.5mm 2mm	irreg irreg	green gmtulite	chl? amygd?					<3mm <1mm	rare rare	none none	py±calc ±qtz white clay			bladed and acicular mrc? in vein		
185							<1	3mm	long	green	chl?											magnetic mineral associated with sulfide to 190' some bladed mrc? in calcite is magnetic some white clay on green things		
190																						more dissem pyrite in siliceous patches some bladed mrc? in calcite		0
195			mostly 5GY8/1 paler grn grey w/ 10YR7/1			weakly brecciated	<1	1mm	round	green	chl?					<3mm	rare	none	py±qtz			slightly calcareous to 200'		221 205
200			pale brn																					27

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 5 of 11
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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			5661/1- 5671/1 pale gn grey	Volc	vf	massive, granular						m w w	pervasive, veins? patchy? patchy, dis.	arg sil py	white clay qtz pyrite	<1mm <3mm	rare rare	? none	calcite py±qtz		altered TcFG w/fold	some white clay in samples to 210°		13
210																<3mm	rare	?	py±qtz calc			bladed mare? in qtz		142
215												w w	pervasive patchy, dis	arg py	white clay pyrite									21
220					more aph	less granular	<1 <1	3mm 1mm	chunk? long	white pale green	amyg? fold? chl?											magnetic mineral in sulfide slightly calcareous to 250'		
225							<1	.5mm	long	pale green	chl?					<3mm <1mm	rare rare	? ?	py±qtz ±calc calcite					
230							<1	1mm	round	vitr. grey	qtz/fold?											most dissem pyrite in siliceous patches to 245'		
235																						magnetic mineral in sulfide most pyrite dissem rare pyrite-calc vein w/white clay		
240							<1 <1 <1	1mm 1mm 2mm	round prism round	vitr. grey green pale green	qtz/fold? chl? chl?					<1mm	rare	?	calcite			magnetic mineral in sulfide		
245			1076/1? pale olive		aph	massive	<1	.5-1mm	chunk irreg	pale green	chl?													
250							<1	1-2mm	prism irreg	green	chl?											only trace pyrite, disseminated		

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 6 of 11
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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
	*?		5G6/1-	Volc	aph	massive	<1	2mm	irreg	white	amygd?	W	dissem	arg	white clay	<3mm	rare	?	py±qtz±		altered	slightly calcareous		
			10B6/1				<1	.5-1mm	oblong chunk	green	chl?	W	patchy, dis	py	pyrite				calc		TcFG			
			pale grn				<1	.8mm	chunk	vitr grey	feld?										w/feld			
255			grey-olive																					
							<1	.5mm	chunk	pale green	feld?-chl?					mir-thin	rare	none	qtz			weakly calcareous to 300'		
							<1	.5mm	chunk	vitr grey	feld?													
							<1	2mm	irreg	green	chl?													
260																								
							<1	1mm	round	vitr. grey	qtz/feld?													
							<1	1mm	oblong	pale grn	chl?													
265																								
							2	.1mm	speck	vitr grey	?													
270																								
	*?		N5 grey	Volc	aph	massive,	<1	.1-.3mm	prism speck	black	hbl										TcFG	rare pyrite surrounded by pale grey patch		
			w/red brn			weakly	<1	.5-1mm	long chunk	clear	amygd?										(hbl only)	encircled by red-brown halo		
			mottling			micro porph.																possible gradation from this to unit		
275																						above and below		
			10B6/1	Volc	aph	massive	<1	.5mm	chunk round	vitr. grey	feld/qtz?	VW	dissem	arg?	white clay						altered			
	*?		pale olive				<1	1mm	irreg	clear	amygd?	VW	dissem	py	pyrite						TcFG			
							<1	2mm	long	green	chl										w/feld			
280							1	.1mm	speck	vitr grey	?													
							<1	1mm	prism	green	chl					<3mm	rare	?	py+calc+					
	*?						<1	.5mm	chunk	vitr grey	feld/qtz?								white clay					
							<1	.5-1mm	irreg	clear	amygd?					<1mm	rare	?	calcite					
285							1	.1mm	speck	vitr grey	?					<3mm	rare	?	py±qtz					
							<1	.5-1mm	chunk prism	green pale grn	chl?					<3mm	rare	?	py±qtz					
							1	.1mm	speck	vitr grey	?													
290																								
							<1	1mm	oblong	green	chl?													
							<1	1mm	round	vitr grey	qtz/feld?													
							1	.1mm	speck	vitr grey	?													
295																								
			fading to				<1	.5-1mm	round chunk	green	chl?					<2mm	rare	?	marc+cal			bladed mare? in vein calcite		
			5GY7/1				<1	.1mm	speck	vitr grey	?													
			pale grn																					
300			grey																					

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Log'd by: G. Langstaff Date: 1/2/98	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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
305	*?	□	5GY6/1-10Y7/1 pale grn grey-olive	Volc	aph	massive	<1 <1 <1 <1	.5-1mm .5-1mm .1mm .5mm	chunk round long spade chunk	green clear vit. grey vitr. grey	chl? amygd? ? grn/fold?	W W	dissem patchy/fisser	arg? py	white clay pyrite	<1mm	rare	?	white clay		altered TcFG w/fold	weakly calcareous to 350'		
310	*?	□	N5 grey	Volc	aph	massive,	<1 <1 <1 1	2mm .5mm .5-1mm .2-1mm	long chunk irreg chunk prism chunk	clear vitr grey green black	amygd? fold? chl? hbl					<2mm	rare	none	calcite		TcFG	gradational contact with unit below trace dissem pyrite		
315	*?		with red-brown mottling as dark			weakly microporph.	<1	1-3mm	irreg	white	amygd? glomeropor?							or red			(hbl only)			
320	*?		as 10R2/1																					
325	*?																							
330	*?																							
335	*?																							
340	*?																							
345	*?																							
350	*?																							

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 8 of 11
Log'd by: G. Langstaff Date: 1/2/98	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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
355	/ \ 1 *?		N4-N5 dark gray with red-brown	Volc	aph	massive, weakly microperph.	1 <1	.2-1mm 1-2mm	chunk prism irreg	black white	hbl amygd? fold?										TcFG	weakly calcareous to 370'		
360	/ 0? \ 1		mottling																					
365	*?		5G4/1	Volc	aph	massive	<1	.3-.5mm	round chunk	vitr grey	qtz/fld?	vw	dissem	arg	white clay						altered	some weakly bleached grains but apparently sharp contact with unit below very rare dissem pyrite		
370	0 *?		gm-grey				<1	.5-1mm	long irreg	clear	amygd?										TcFG (w/fold)	very rare py-qtz vein		
375	■ *? 0	0	5G7/1- 5G7/1 pale grn grey				<1 <1 <1	.5-2 mm 1mm .5mm	prism chunk irreg irreg chunk	green white clear	chl? amygd? qtz/fld?	w w	dissem patchy div.	arg py	white clay pyrite	<5mm	rare	?	py-qtz			slightly calcareous to 380'		
380	0	0					<1 <1	1mm .5mm	long chunk	green vitr grey	chl? qtz/fld?													
385	0	0					<1	.5-1mm	chunk round	pale grn	chl?											weakly calcareous		
390	1	0						.5-1mm	prism	green	chl?		mod arg?			<1mm	rare	?	pale grn clay			slightly calcareous some clay in sample		
395	0						<1	.5-2mm	round prism	green	chl?													
400	1		paler with some 5G4 8/1				<1	.5-1.5mm	prism chunk	green	chl?											thinly mineralized py+qtz vein(?)		

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 9 of 11
Log'd by: G. Langstaff Date: 1/2/98	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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
405			5G7/1-5G7/1 pale grn grey w/ some 5G8/1 at 400-405'	Volc	aph	massive	<1	1mm	prism	green	chl?	W	dissem	arg	white clay	<4mm	rare-pres	none	pyrite qtz		altered TcFG	bladed marc? in qtz chip with pyrite and brown chalcedony?		
												W	patchy, disse	py	pyrite									
410							<1	1mm	prism	green	chl?	W	patchy	sil	qtz							bladed marc? in qtz some veins (or chips) of qtz with little or no sulfide		
415							<1	1mm	irreg	green	chl?											bladed marc? in qtz		
							<1	.5-1mm	round	pale green	chl?													
420								5-2mm	round prism	green	chl?					<1mm	rare	?	pale grn grey clay					
425							<1	.5mm	round chunk	vitr grey	qtz/fdl?											some brown staining possibly related to brecciation to 431'		
							<1	.5-1mm	prism	pale grn green	chl?													
430							<1	.5-1mm	chunk prism	green	chl?											only a trace dissem pyrite more dk brown, hard, chalcedony? veinlets		
435			5Y/2 olive-blk	Volc	aph	massive	<1	1-3mm	irreg chunk	white-pale grey	amygd?										TcLLT?	slightly calcareous to 440' some mottled bleaching but apparently not gradational w/breccia below		
							<1	.2-.5mm	prism	black	hbl													
440			mottled 5GY6/1-7/1 pale grey grey & 5YR3/2	Volc?	<vf-/>5mm	breccia, possibly of unit above 430'	40-90	.1-3mm	ang-subround	white	volc clast	W	in clasts	arg	white clay	<2mm	pres	?	calcite	monomict breccia	altered TcLLT	trace dissem pyrite. breccia matrix is various shades brown white clasts are white and more altered than rock above 430'		
							<1	1mm	prism	green	chl													
							<1	.5mm	chunk	vitr grey	pheno in clast													
445			5YR5/2 grey brn			clast? matrix support										<2mm	rare	?	pale grey clay			weakly calcareous to 450' trace dissem pyrite in clasts		
450																						trace dissem pyrite in clasts		

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 10 of 11
Log'd by: G. Langstaff Date: 1/2/98	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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
455			mottled 5GY6/1-7/1 pale grey/ brown	Volc?	<vf-25mm	breccia, generally clast sup	50-70 <1	<.2mm-.5-2mm >3mm	ang-subround chunk prism	white pale green green	volc clast chl? in clasts	W	in clasts	arg	whitecly	<3mm	rare	none	calcite		altered Tr. LLT	weakly calcareous to 500' trace diesem pyrite in clasts		
460																						chip of red-brown chalcedony(?) veinlet		
465			N3-N4 dk grey w/brown tints	Volc?	<vf->3mm	breccia, probably mostly clast sup but can't see well	? <1	<.2->3mm 1-2mm	ang-subround prism	dk grey white	volc-clast feld? amygd?										TcLLT	almost invisible clastic texture with clasts slightly paler than matrix rare hbl microphenocrysts		
470																								
475																								
480																								
485																								
490																								
495																						very small magnetite chips to 500'		
500																								

Project: ROSEBUD JV	State: Nevada	Northing:	Inclination:	Total Depth:	Hole No. RS-417	Page 11 of 11
Log'd by: G. Langstaff Date: 1/2/98	County: Pershing	Easting:	Azimuth:	Elevation:	Core/Chips(Intervals): 0-550' chips	

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
505			N3-N4 dk grey w/ brn mottling	Volc	<vf-7.5mm	breccia, probably mostly clast sup															TcLLT	small magnetic chips weakly calcareous to 515' some chips of dark aphanitic, aphyric rock rare hbl microphenocrysts		
510			mostly N4 grey w/ brn mottling																					
515																								
520			5Y6/1- 5G7/1	Volc	<vf-7.3mm	breccia generally clast-sup of generally aphyric rock like that above 430'	<1 <1	2mm 5-3mm	prism chunk prism	pale yellow grey w/ green	Sed± clay? chl?	w w	in clasts pervasive	arg bleach	white clay pale matrix	<2mm	rare	none	pale grey clay		altered TcLLT	slightly calcareous		
525			pale grey w/ 5YR5/1- 5YR3/4 browns				30-90	<.2-7.3mm	ang subround	white	volc clast					<2mm <3mm	rare rare	? ?	calcite pyrite			pale grey clay vein cut by darker green fractures w/ pyrite trace dissem pyrite in matrix, clasts matrix is pale to brown		
530																								
535																						Slightly calcareous		
540																						weakly calcareous to 550' some tan-pink aphanitic, aphyric chips		
545																								
550																<1mm	pres	?	pale grn grey clay			trace dissem pyrite		

Weakly brecciated, aphanitic rock w/ hematitic fractures, sparse black specks, local mottled texture, definite LLT with abundant red matrix at 557

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

Hecla
MINING COMPANY

ROSEBUD PROJECT
DIAMOND DRILL LOG

HOLE NUMBER	RS-417	LOCATION	East ZONE	REMARKS	
PAGE 1 OF	3	NORTHING	2,203,977	RC Pilot 0-550'	
DATE	1/13/98	EASTING	483,073		
LOGGED BY	R PARISH	ELEVATION			
SCALE	1"=10'	AZIMUTH	—		
TOTAL DEPTH	725	INCLINATION	-90°		

LITH.	OX/RED.	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
Tc	WK OX	550-557.1 med. gray, Fine grained Flows. weakly porphyritic w/ euhedral plag. phenos to 1/8". Rounded black, hematized pyrite blebs common.	550		557.1-592 Local Strong shearing as noted. Dominant weak foliation at 50°.	550-557.1 weakly hematized, abdnt hematized lg clots.
	OX	557.1-592 Clast to matrix supported Breccia Angular, heterolithic, poorly sorted clasts of generally gray, porphyritic to flow banded Lava. Clasts from grit to boulder-size. Matrix is typically strongly hematized dk maroon, and is often strongly sheared. Clasts often show crude planar foliation, could be bedding or shearing. Unit in places looks epiclastic though the Dark maroon muddy looking matrix contains distinct plag. phenocrysts. Interval is probably a sheared volcaniclastic Breccia.	560		562.5 multi slicked shear zone 2" thick 35°, 25° Rakes.	560' 1" calcite Vn filling zone of fracturing @ 20TCA
			570		569' minor slip 20°TCA. Rake 25° 571-572.5' strongly sheared zone - shears typically 35° TCA.	557.1-595 strongly hematized, v. weak calcite veinlets
			580		582' Flt'd calcite Vn 60°TCA Rake 40° 583-592 Crude Alignment of clasts. Bedding or shear foliation	
		592-600.8 weakly flow banded, Massive Flows. Pinkish tan, weakly hematized. Very fine, dark gray phenocrysts?	590		590' sheared clay/calcite Vnlt 50°TCA Rake 70° 594' Flt'd calcite veinlet 40° T.C.A. Rake 50° 60° Flow Banding	
	WK. OX		600			

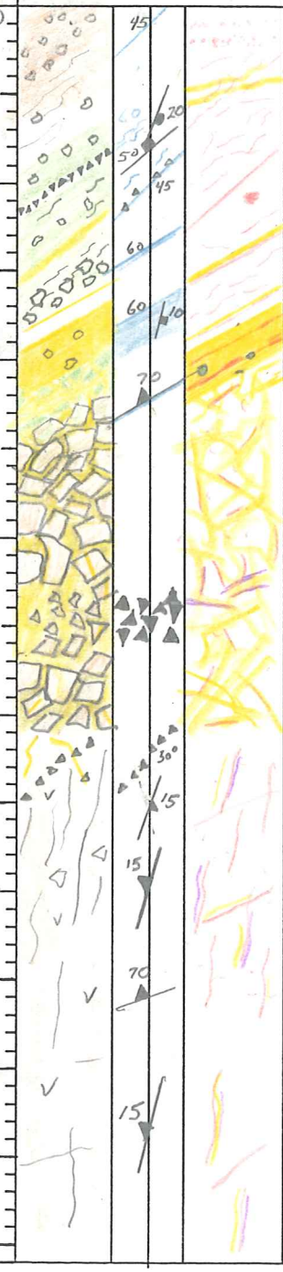
ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag
550	553.7		.002	<		
553.7	557.1		.005	<	.006	
557.1	562.3		<	<		
562.3	566.9		<	<		
566.9	570		<	<		
570	575		<	<		
575	580.2		.001	.02	<	
580.2	585		<	<		
585	590		<	<		
590	595.2		<	<		
595.2	600.8		<	<		

HOLE NUMBER RS-417 PAGE 2 OF 3

LITH.	OX/RED.	LITHOLOGY
TC	WK. OX	600.8 – 608.2 Massive, Fine grained Flows. Increasing tectonic disruption and shearing approaching S. Ridge Fault. Tan to gray Brown. Green at 607.5'.
South Ridge Fault Zone	Red.	608.2 – 609.6 green, strongly sheared Flow Breccias. Possible upper Bud.
		609.6 – 609.8 Gray, pyritic clay + rk. flour Fault gouge. Milled, silicified clasts to 1/8".
		609.8 – 618 Flows and Flow Breccias – clast supported, heterolithic, poorly sorted – Bud and Dozer clasts. Sheared @ 45-60° TCA. Gray, Texture destructive, Hydrothermal silica veins or silicified Fault zones @ 614 and 617'.
T Dozer		618 – 620.7 Intense, Texture destructive silicification. Breccia. Gray green to Dk gray bands of silica w/ rare unsilicified Bud clasts. Hydrothermal overprint on tectonic Bx.
		620.7 – 623 Strongly tectonized Dozer Flows. crackle bx's w/ gray SiO_2 vein/matrix and milled, tectonized zones w/ patchy silicification of matrix and clasts. Several gray chalcedonic bx. veins or silicified Flt gouge.
		623 – 640.7 Gray to Greenish Gray Dozer Flows. Crackle Breccia – clast supported, monolithic, Angular Dozer clasts. Generally mosaic texture with gray chalcedonic silica veins/matrix. Local zones/veins of re-brecciation and more intense clast rotation.
		640.7 – 678 Dozer Flows. Pale greenish white, massive to flow banded, local auto breccia texture. Weak sulfide stockwork veinlets to 646'. Prominent near vertical sulfide vein set Below 646'.

FT

GRAPHIC LOG



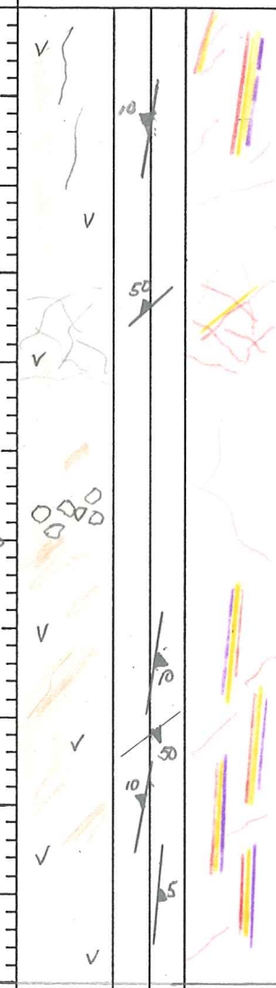
STRUCTURE
600.8' 1/8" Fault gouge 45°
603 – 609.6 increasingly str. shearing @ 50-60° TCA. Core is competent.
609.6-609.8 Fault bx. Clast Sppt 1/8" RK Frags in soft clay matrix, prominent slick 45°. Rake 40° forms footwall.
617' Flt'd gray Hydrothermal SiO_2 vn. 60° T.C.A. Rake 60°
618 – 620.7 Strongly silicified Fault zone.
623' – Flt'd qtz vn 70° TCA. Rake 90°
623 – 640.7 Random Crackle Breccia veining
633.7-636.8 clast Sppt'd bx.
640.7 – 680 Prominent Vein orientation at ~15° T.C.A. Very minor set @ 70° T.C.A.

ALTERATION AND MINERALIZATION
601 – 609.6 Increasing argillic and pyritic shear surfaces. Mottled, Vuggy, silica + black, sooty Pyrite vein at 606.2 – 606.6'
609.6 – 609.8 gray pyritic clay Flt. Matrix – silicified clasts.
609.8 – 618 Argillized, pyritic, sheared. About stibnite @ 612. Gray hydrothermal silica veins at 614 and 617
618 – 620.7 Dense, almost Complete gray to dk. gray silica w/ minor bladed marcasite.
620.7 – 623 Str. crackle Bx. Silic and patchy flooding. Several chalced. qtz vns.
623 – 640.7 intense crackle breccia w/ gray chalcedonic qtz matrix/veins. minor diss. marcasite and marcasite Vug fill. Common Barite in Vugs w/ white clay. Patchy Silicification of Dozer clasts.
640.7 – 646 stkwork Py ± marcasite veinlets Minor white qtz + barite + white clay + bladed marc. vns.
646 – 678 sparse, irregular often open marcasite + drusy qtz ± white clay + barite vns. Common diss. Py and marcasite. Rock is bleached and mildly argillized.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2
600.8	605.7		<	.07	
605.7	608.2		.012	.36	
608.2	609.6		<	.12	
609.6	609.8		.007	.19	
609.8	612.8		.008	.94	
612.8	614.0		.003	.12	
614.0	618		.021	.09	
618	620.7		.008	.11	
620.7	623		.007	.04	
623	628		.002	.03	
628	633.2		.056	.10	.057
633.2	636.8		.020	.03	
636.8	640.7		.002	.04	
640.7	645		.015	.05	
645	650		.005	.07	
650	655		.002	.04	
655	660		.002	.05	
660	665		.006	.09	
665	670		.009	.07	

HOLE NUMBER Rs-417 PAGE 3 OF 3

LITH.	OX/RED.	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
Dozer		678-703 Dozer Flows - Fine grained, weakly flow banded. Pale green propylitic overprint on white and pinkish groundmass. Local weak auto breccia texture with tarnished sulfide preferential to matrix and weak crackle veinlets. 703-725.4 Dozer Flows - Fine grained, weak flow laminations. Pale greenish white with pinkish, hematitic flow bands. Prominent vein set @ 5-15° T.C.A.	670 680 690 700 710 720 725.4 EOH		685-691 - Random sulfide vnlt. stockwork 703-725 Primary vein set at 5-15° T.C.A. Minor, secondary set at 50° T.C.A.	678-703 weakly argillized flows. Sparse pyrite + marcasite vnlts and disseminations. 685-691 - moderate argillization and bleaching and increase to moderate py + marcasite vnlt. stockwork. Trace qtz w/ sulfides. 703-725.4 Largely open veins to ½" thick. Barite + gray SiO_2 + traded marcasite ± white clay

ANALYTICAL DATA					
FROM	TO	W	Au	Ag	Au2
670	675		.006	.04	
675	680		.014	.06	
680	685		.001	.04	
685	690		.005	.07	
690	695		<	.03	<
695	700		<	.03	
700	703		.007	.07	
703	707.8		.055	.10	.033
707.8	711.9		.009	.10	
711.9	714.3		.018	.11	
714.3	717.2		.022	.19	
717.2	720.7		.022	.39	
720.7	725.4		.016	.15	

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-417 DATE: 1/13/98 LOGGED BY: R. PARISH PAGE 1 OF 2

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
550	553.7	100	100	82										
553.7	557.1	102	102	37										
557.1	562.3	98	98	42										
562.3	566.9	100	100	39										
566.9	571.9	100	100	14										
571.9	581.9	102	102	18										
581.9	592	100	100	74										
592	602.1	100	100	83										
602.1	611.9	100	100	50										
611.9	622	100	100	72										
622	632.2	100	100	91										

HECLA MINING COMPANY – ROSEBUD PROJECT
GEOTECHNICAL DRILL LOG

HOLE # RS-417 DATE: 1/13/98 LOGGED BY: R. PARISH

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)
632.2	642.5	100	100	95										
642.5	652.7	100	100	95										
652.7	663	100	100	94										
663	673.1	100	100	91										
673.1	683.2	100	100	98										
683.2	693.2	101	101	81										
693.2	703	100	100	92										
703	711.9	100	100	51										
711.9	722.2	100	100	72										
722.2	725.4	100	100	80										

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047965

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

HECLA MINING COMPANY

COPIES TO : KURT ALLEN

:

:

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NS1

CLIENT REFERENCE No: RS-417 RECEIVED : 26 JAN 1998

No. SAMPLES : 43 REPORTED : 3 FEB 1998

MAIN SAMPLE TYPE : DRILL CORE

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

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

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047965

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-417

REPORTED : 3 FEB 1998

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)
RS-417 550.0-553.7	0.002			<0.02
RS-417 553.7-557.1	0.005	0.006		<0.02
RS-417 557.1-562.3	<0.001			<0.02
RS-417 562.3-566.9	<0.001			<0.02
RS-417 566.9-570.0	<0.001			<0.02
RS-417 570-575	<0.001			<0.02
RS-417 575.0-580.2	0.001	<0.001		0.02
RS-417 580.2-585.0	<0.001			<0.02
RS-417 585-590	<0.001			<0.02
RS-417 590.0-595.2	<0.001			<0.02
RS-417 595.2-600.8	<0.001			<0.02
RS-417 600.8-605.7	<0.001			0.07
RS-417 605.7-608.2	0.012			0.36
RS-417 608.2-609.6	<0.001			0.12
RS-417 609.6-609.8	0.007			0.19
RS-417 609.8-612.8	0.008			0.94
RS-417 612.8-614.0	0.003			0.12
RS-417 614-618	0.021			0.09
RS-417 618.0-620.7	0.008			0.11
RS-417 620.7-623.0	0.007			0.04
RS-417 623-628	0.002			0.03
RS-417 628.0-633.2	0.056		0.057	0.10
RS-417 633.2-636.8	0.020			0.03
RS-417 636.8-640.7	0.002			0.04
RS-417 640.7-645.0	0.015			0.05

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047965

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-417

REPORTED : 3 FEB 1998

SAMPLES	Au(OZ)	Au(RZ)	AuGRAV	Ag(OZ)
RS-417 645-650	0.005			0.07
RS-417 650-655	0.002			0.04
RS-417 655-660	0.002			0.05
RS-417 660-665	0.006			0.09
RS-417 665-670	0.009			0.07
RS-417 670-675	0.006			0.04
RS-417 675-680	0.014			0.06
RS-417 680-685	0.001			0.04
RS-417 685-690	0.005			0.07
RS-417 690-695	<0.001	<0.001		0.03
RS-417 695-700	<0.001			0.03
RS-417 700-703	0.007			0.07
RS-417 703.0-707.8	0.055		0.033	0.10
RS-417 707.8-711.9	0.009			0.10
RS-417 711.9-714.3	0.018			0.11
RS-417 714.3-717.2	0.022			0.19
RS-417 717.2-720.7	0.022			0.39
RS-417 720.7-725.4	0.016			0.15

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 0047965-IN
INVOICE DATE: 02/04/98

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-417	DEVELOPMENT	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
43	SAMPLES RECEIVED	.00	.00
43	JAW CRUSHING CHARGE	2.60	111.80
43	COARSE MILLING CHARGE	9.00	387.00
43	SPLITTING CHARGE	2.40	103.20
43	RING MILLING CHARGE	2.00	86.00
43	Au (1 A.T. FIRE ASSAY)	8.00	344.00
2	Au ANALYSES/GRAVIMETRIC	8.75	17.50
43	HYDROCHLORIC/NITRIC DIGESTION	2.00	86.00
43	Ag ANALYSES	1.00	43.00

86-5210-477
RNA

NET INVOICE:	1,178.50
LESS DISCOUNT:	235.70
FREIGHT:	.00
INVOICE TOTAL:	942.80

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ANALYSIS REPORT SP047965

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-417 RECEIVED : 26 JAN 1998

No. SAMPLES : 43 REPORTED : 4 FEB 1998

MAIN SAMPLE TYPE : DRILL CORE

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

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047965

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-417

REPORTED : 4 FEB 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-417 550.0-553.7	0.002			<0.02
RS-417 553.7-557.1	0.005	0.006		<0.02
RS-417 557.1-562.3	<0.001			<0.02
RS-417 562.3-566.9	<0.001			<0.02
RS-417 566.9-570.0	<0.001			<0.02
RS-417 570-575	<0.001			<0.02
RS-417 575.0-580.2	0.001	<0.001		0.02
RS-417 580.2-585.0	<0.001			<0.02
RS-417 585-590	<0.001			<0.02
RS-417 590.0-595.2	<0.001			<0.02
RS-417 595.2-600.8	<0.001			<0.02
RS-417 600.8-605.7	<0.001			0.07
RS-417 605.7-608.2	0.012			0.36
RS-417 608.2-609.6	<0.001			0.12
RS-417 609.6-609.8	0.007			0.19
RS-417 609.8-612.8	0.008			0.94
RS-417 612.8-614.0	0.003			0.12
RS-417 614-618	0.021			0.09
RS-417 618.0-620.7	0.008			0.11
RS-417 620.7-623.0	0.007			0.04
RS-417 623-628	0.002			0.03
RS-417 628.0-633.2	0.056		0.057	0.10
RS-417 633.2-636.8	0.020			0.03
RS-417 636.8-640.7	0.002			0.04
RS-417 640.7-645.0	0.015			0.05

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047965

American Assay Laboratories

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PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-417

REPORTED : 4 FEB 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-417 645-650	0.005			0.07
RS-417 650-655	0.002			0.04
RS-417 655-660	0.002			0.05
RS-417 660-665	0.006			0.09
RS-417 665-670	0.009			0.07
RS-417 670-675	0.006			0.04
RS-417 675-680	0.014			0.06
RS-417 680-685	0.001			0.04
RS-417 685-690	0.005			0.07
RS-417 690-695	<0.001	<0.001		0.03
RS-417 695-700	<0.001			0.03
RS-417 700-703	0.007			0.07
RS-417 703.0-707.8	0.055		0.033	0.10
RS-417 707.8-711.9	0.009			0.10
RS-417 711.9-714.3	0.018			0.11
RS-417 714.3-717.2	0.022			0.19
RS-417 717.2-720.7	0.022			0.39
RS-417 720.7-725.4	0.016			0.15

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047965

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-417

No. SAMPLES : 43

MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 26 JAN 1998

REPORTED : 4 FEB 1998

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

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

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047965

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-417

REPORTED : 4 FEB 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-417 550.0-553.7	0.002			<0.02
RS-417 553.7-557.1	0.005	0.006		<0.02
RS-417 557.1-562.3	<0.001			<0.02
RS-417 562.3-566.9	<0.001			<0.02
RS-417 566.9-570.0	<0.001			<0.02
RS-417 570-575	<0.001			<0.02
RS-417 575.0-580.2	0.001	<0.001		0.02
RS-417 580.2-585.0	<0.001			<0.02
RS-417 585-590	<0.001			<0.02
RS-417 590.0-595.2	<0.001			<0.02
RS-417 595.2-600.8	<0.001			<0.02
RS-417 600.8-605.7	<0.001			0.07
RS-417 605.7-608.2	0.012			0.36
RS-417 608.2-609.6	<0.001			0.12
RS-417 609.6-609.8	0.007			0.19
RS-417 609.8-612.8	0.008			0.94
RS-417 612.8-614.0	0.003			0.12
RS-417 614-618	0.021			0.09
RS-417 618.0-620.7	0.008			0.11
RS-417 620.7-623.0	0.007			0.04
RS-417 623-628	0.002			0.03
RS-417 628.0-633.2	0.056		0.057	0.10
RS-417 633.2-636.8	0.020			0.03
RS-417 636.8-640.7	0.002			0.04
RS-417 640.7-645.0	0.015			0.05

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047965

American Assay Laboratories

CLIENT : HECLA MINING COMPANY
PROJECT : ROSEBUD DEVELOPMENT
REFERENCE : RS-417

REPORTED : 4 FEB 1998

SAMPLES	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
RS-417 645-650	0.005			0.07
RS-417 650-655	0.002			0.04
RS-417 655-660	0.002			0.05
RS-417 660-665	0.006			0.09
RS-417 665-670	0.009			0.07
RS-417 670-675	0.006			0.04
RS-417 675-680	0.014			0.06
RS-417 680-685	0.001			0.04
RS-417 685-690	0.005			0.07
RS-417 690-695	<0.001	<0.001		0.03
RS-417 695-700	<0.001			0.03
RS-417 700-703	0.007			0.07
RS-417 703.0-707.8	0.055		0.033	0.10
RS-417 707.8-711.9	0.009			0.10
RS-417 711.9-714.3	0.018			0.11
RS-417 714.3-717.2	0.022			0.19
RS-417 717.2-720.7	0.022			0.39
RS-417 720.7-725.4	0.016			0.15

xAMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047005

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-417 RECEIVED : 29 OCT 1997

No. SAMPLES : 111 REPORTED : 11 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 SP047005

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 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-417 000-005	<5		<0.001		<0.5	<0.02
RS-417 005-010	<5		<0.001		<0.5	<0.02
RS-417 010-015	<5	<5	<0.001	<0.001	<0.5	<0.02
RS-417 025-030	<5		<0.001		<0.5	<0.02
RS-417 030-035	<5		<0.001		<0.5	<0.02
RS-417 035-040	8		<0.001		<0.5	<0.02
RS-417 040-045	5		<0.001		<0.5	<0.02
RS-417 045-050	<5		<0.001		<0.5	<0.02
RS-417 050-055	<5		<0.001		<0.5	<0.02
RS-417 055-060	<5		<0.001		<0.5	<0.02
RS-417 060-065	24		<0.001		1.5	0.04
RS-417 065-070	31		<0.001		1.9	0.06
RS-417 070-075	36		0.001		2.8	0.08
RS-417 075-080	30		<0.001		2.5	0.07
RS-417 080-085	29		<0.001		3.4	0.10
RS-417 085-090	65		0.002		1.7	0.05
RS-417 090-095	29	26	<0.001	<0.001	1.2	0.04
RS-417 095-100	22		<0.001		1.2	0.04
RS-417 100-105	28		<0.001		1.7	0.05
RS-417 105-110	56		0.002		1.9	0.06
RS-417 110-115	106		0.003		3.3	0.10
RS-417 115-120	66		0.002		2.8	0.08
RS-417 120-125	30		<0.001		1.8	0.05
RS-417 125-130	74	62	0.002	0.002	2.4	0.07
RS-417 130-135	36		0.001		1.6	0.05

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047005

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 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-417 135-140A	11		<0.001		0.6	<0.02
RS-417 135-140B	138		0.004		<0.5	<0.02
RS-417 140-145	41		0.001		<0.5	<0.02
RS-417 145-150	6		<0.001		0.5	<0.02
RS-417 150-155	<5		<0.001		<0.5	<0.02
RS-417 155-160	<5		<0.001		<0.5	<0.02
RS-417 160-165	<5		<0.001		<0.5	<0.02
RS-417 165-170	<5		<0.001		<0.5	<0.02
RS-417 170-175	<5		<0.001		<0.5	<0.02
RS-417 175-180	<5		<0.001		<0.5	<0.02
RS-417 180-185	<5		<0.001		<0.5	<0.02
RS-417 185-190	<5		<0.001		<0.5	<0.02
RS-417 190-195	205	221	0.006	0.006	1.1	0.03
RS-417 195-200	27		<0.001		1.1	0.03
RS-417 200-205	13		<0.001		1.1	0.03
RS-417 205-210	142		0.004		2.2	0.06
RS-417 210-215	21		<0.001		0.9	0.03
RS-417 215-220	<5		<0.001		<0.5	<0.02
RS-417 220-225	<5		<0.001		<0.5	<0.02
RS-417 225-230	<5		<0.001		<0.5	<0.02
RS-417 230-235	110	153	0.003	0.004	1.7	0.05
RS-417 235-240	6		<0.001		0.7	0.02
RS-417 240-245	<5		<0.001		<0.5	<0.02
RS-417 245-250	<5		<0.001		<0.5	<0.02
RS-417 250-255	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047005

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 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-417 255-260	<5		<0.001		<0.5	<0.02
RS-417 260-265	<5		<0.001		<0.5	<0.02
RS-417 265-270	<5		<0.001		<0.5	<0.02
RS-417 270-275	<5		<0.001		<0.5	<0.02
RS-417 275-280	<5		<0.001		<0.5	<0.02
RS-417 280-285	<5		<0.001		<0.5	<0.02
RS-417 285-290	<5		<0.001		<0.5	<0.02
RS-417 290-295	10		<0.001		<0.5	<0.02
RS-417 295-300	36	35	0.001	0.001	0.7	0.02
RS-417 300-305	<5		<0.001		<0.5	<0.02
RS-417 305-310	12		<0.001		<0.5	<0.02
RS-417 310-315	<5		<0.001		<0.5	<0.02
RS-417 315-320	<5		<0.001		<0.5	<0.02
RS-417 320-325	<5		<0.001		<0.5	<0.02
RS-417 325-330A	<5		<0.001		<0.5	<0.02
RS-417 325-330B	95		0.003		<0.5	<0.02
RS-417 330-335	<5		<0.001		<0.5	<0.02
RS-417 335-340	<5		<0.001		<0.5	<0.02
RS-417 340-345	<5		<0.001		<0.5	<0.02
RS-417 345-350	<5		<0.001		<0.5	<0.02
RS-417 350-355	<5		<0.001		<0.5	<0.02
RS-417 355-360	<5		<0.001		<0.5	<0.02
RS-417 360-365	<5		<0.001		<0.5	<0.02
RS-417 365-370	<5		<0.001		<0.5	<0.02
RS-417 370-375	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047005

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 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-417 375-380	14	12	<0.001	<0.001	1.8	0.05
RS-417 380-385	11		<0.001		1.4	0.04
RS-417 385-390	<5		<0.001		0.5	<0.02
RS-417 390-395	<5		<0.001		<0.5	<0.02
RS-417 395-400	6		<0.001		<0.5	<0.02
RS-417 400-405	30		<0.001		1.7	0.05
RS-417 405-410	73	76	0.002	0.002	2.7	0.08
RS-417 410-415	61		0.002		3.2	0.09
RS-417 415-420	10		<0.001		1.2	0.04
RS-417 420-425	6		<0.001		0.5	<0.02
RS-417 425-430	<5		<0.001		<0.5	<0.02
RS-417 430-435	<5		<0.001		<0.5	<0.02
RS-417 435-440	<5		<0.001		<0.5	<0.02
RS-417 440-445	<5		<0.001		<0.5	<0.02
RS-417 445-450	<5		<0.001		<0.5	<0.02
RS-417 450-455	<5		<0.001		<0.5	<0.02
RS-417 455-460	<5		<0.001		<0.5	<0.02
RS-417 460-465	<5	<5	<0.001	<0.001	<0.5	<0.02
RS-417 465-470	<5		<0.001		<0.5	<0.02
RS-417 470-475	<5		<0.001		<0.5	<0.02
RS-417 475-480	<5		<0.001		<0.5	<0.02
RS-417 480-485A	<5		<0.001		<0.5	<0.02
RS-417 480-485B	909		0.027		<0.5	<0.02
RS-417 485-490	5		<0.001		<0.5	<0.02
RS-417 490-495	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP047005

American Assay Laboratories

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 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-417 495-500	<5		<0.001		<0.5	<0.02
RS-417 500-505	<5		<0.001		<0.5	<0.02
RS-417 505-510	<5		<0.001		<0.5	<0.02
RS-417 510-515	<5		<0.001		<0.5	<0.02
RS-417 515-520	<5		<0.001		<0.5	<0.02
RS-417 520-525	<5		<0.001		<0.5	<0.02
RS-417 525-530	<5		<0.001		<0.5	<0.02
RS-417 530-535	<5		<0.001		<0.5	<0.02
RS-417 535-540	<5		<0.001		<0.5	<0.02
RS-417 540-545	<5		<0.001		<0.5	<0.02
RS-417 545-550	<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 0047005-IN
INVOICE DATE: 11/12/97

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-417	ROSEBUD EXPLOR.	NET 30 - DUE IN U.S. DOLLARS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
111	SAMPLES RECEIVED	.00	.00
111	DRYING	1.00	111.00
111	JAW CRUSHING CHARGE	1.30	144.30
111	SPLITTING CHARGE	1.20	133.20
111	FINE MILLING CHARGE	2.00	222.00
111	Au (1 A.T. FIRE ASSAY)	8.00	888.00
111	HYDROCHLORIC/NITRIC DIGESTION	2.00	222.00
111	Ag ANALYSES	1.00	111.00

NET INVOICE:	1,831.50
LESS DISCOUNT:	366.30
FREIGHT:	.00
INVOICE TOTAL:	1,465.20

CENTRAL BUSINESS FORMS — RENO — (702) 329-6405

SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

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

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

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

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

Other Offices
Lima, Peru
Santiago, Chile
Mendoza, Argentina

Company: 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: 10/28/97 Number of Samples: 113

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

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
RS-417	RC	Au/Ag FA/AA each sample (5')
0-550' T.D.		
+140B, 330B, 485B*		
PEEL HERE 140B MS-2 MS-2		
330B MS-1 (RMG1)		
485B MS-3 MS-3		

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

Results to:

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

Comments:

CLIENT FILE COPY

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT EXPLORATION LTD. *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-417

LOCATION: ROSEBUD MINE

SURVEY DATE: 11/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 068.00

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***

****
****
*** 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-417

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	-0.057	-89.74	323.63	0.09 N	0.07 W	0.52	0.26	0.11	AT 323.63	055.00
100.0	99.99	0.80	-0.202	-88.60	345.62	0.77 N	0.29 W	2.33	1.16	0.83	AT 339.71	055.22
150.0	149.97	2.36	-0.325	-87.82	351.77	2.31 N	0.57 W	1.60	0.80	2.38	AT 346.03	055.36
200.0	199.93	4.20	-0.532	-87.92	342.88	4.12 N	0.98 W	0.69	0.34	4.23	AT 346.64	055.86
250.0	249.90	6.15	-0.713	-87.56	353.47	6.04 N	1.37 W	1.10	0.55	6.19	AT 347.26	055.93
300.0	299.84	8.41	-0.730	-87.26	353.38	8.28 N	1.62 W	0.60	0.30	8.44	AT 348.91	056.37
350.0	349.78	10.96	-0.723	-86.89	354.63	10.82 N	1.89 W	0.75	0.38	10.99	AT 350.10	056.65
400.0	399.69	13.93	-0.629	-86.31	356.55	13.78 N	2.11 W	1.18	0.59	13.94	AT 351.28	056.87
450.0	449.57	17.42	-0.494	-85.67	355.68	17.27 N	2.35 W	1.29	0.64	17.43	AT 352.24	057.16
500.0	499.42	21.28	-0.401	-85.46	354.85	21.12 N	2.67 W	0.44	0.22	21.29	AT 352.79	057.51
550.0	549.26	25.24	-0.426	-85.47	352.15	25.05 N	3.12 W	0.43	0.21	25.24	AT 352.90	057.87
600.0	599.11	29.10	-0.525	-85.67	352.67	28.88 N	3.63 W	0.41	0.20	29.10	AT 352.84	058.30
650.0	648.97	32.91	-0.474	-85.58	356.57	32.67 N	3.99 W	0.62	0.31	32.91	AT 353.04	057.73
690.0	688.85	35.94	-0.245	-85.69	359.85	35.71 N	4.08 W	0.68	0.27	35.94	AT 353.48	057.80
725.0	723.75	38.60	-0.001	-85.58	358.42	38.38 N	4.12 W	0.44	0.15	38.60	AT 353.87	058.30

```
*************************************************************
*                        ********                           *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                        ********                           *
*   725.0 FEET EQUALS    38.60   FEET AT  353.87            *
*                        ********                           *
*************************************************************
```

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT EXPLORATION LTD. *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-417 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 11/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 068.00

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***

****
****
*** 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-417 / 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	0.04	-0.107	-89.74	323.63	0.09 N	0.07 W	0.52	0.26	0.11	AT 323.63	055.00
100.0	99.99	0.47	-0.679	-88.60	345.62	0.77 N	0.29 W	2.33	1.16	0.83	AT 339.71	055.22
150.0	149.97	1.56	-1.794	-87.82	351.77	2.31 N	0.57 W	1.60	0.80	2.38	AT 346.03	055.36
200.0	199.93	2.81	-3.161	-87.92	342.88	4.12 N	0.98 W	0.69	0.34	4.23	AT 346.64	055.86
250.0	249.90	4.16	-4.583	-87.56	353.47	6.04 N	1.37 W	1.10	0.55	6.19	AT 347.26	055.93
300.0	299.84	5.85	-6.083	-87.26	353.38	8.28 N	1.62 W	0.60	0.30	8.44	AT 348.91	056.37
350.0	349.78	7.78	-7.755	-86.89	354.63	10.82 N	1.89 W	0.75	0.38	10.99	AT 350.10	056.65
400.0	399.69	10.08	-9.634	-86.31	356.55	13.78 N	2.11 W	1.18	0.59	13.94	AT 351.28	056.87
450.0	449.57	12.80	-11.830	-85.67	355.68	17.27 N	2.35 W	1.29	0.64	17.43	AT 352.24	057.16
500.0	499.42	15.77	-14.302	-85.46	354.85	21.12 N	2.67 W	0.44	0.22	21.29	AT 352.79	057.51
550.0	549.26	18.73	-16.921	-85.47	352.15	25.05 N	3.12 W	0.43	0.21	25.24	AT 352.90	057.87
600.0	599.11	21.57	-19.535	-85.67	352.67	28.88 N	3.63 W	0.41	0.20	29.10	AT 352.84	058.30
650.0	648.97	24.48	-22.004	-85.58	356.57	32.67 N	3.99 W	0.62	0.31	32.91	AT 353.04	057.73
690.0	688.85	26.91	-23.827	-85.69	359.85	35.71 N	4.08 W	0.68	0.27	35.94	AT 353.48	057.80
725.0	723.75	29.07	-25.388	-85.58	358.42	38.38 N	4.12 W	0.44	0.15	38.60	AT 353.87	058.30

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*************************************************************
*                         ********                          *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                         ********                          *
*  725.0 FEET EQUALS    38.60   FEET AT  353.87             *
*                         ********                          *
*************************************************************
```

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT EXPLORATION LTD. *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-417 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 11/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 068.00

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***

****
****
*** 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-417 / 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	-0.11	-0.036	-89.74	323.63	0.09 N	0.07 W	0.52	0.26	0.11	AT 323.63	055.00
100.0	99.99	-0.68	-0.470	-88.60	345.62	0.77 N	0.29 W	2.33	1.16	0.83	AT 339.71	055.22
150.0	149.97	-1.79	-1.561	-87.82	351.77	2.31 N	0.57 W	1.60	0.80	2.38	AT 346.03	055.36
200.0	199.93	-3.16	-2.811	-87.92	342.88	4.12 N	0.98 W	0.69	0.34	4.23	AT 346.64	055.86
250.0	249.90	-4.58	-4.165	-87.56	353.47	6.04 N	1.37 W	1.10	0.55	6.19	AT 347.26	055.93
300.0	299.84	-6.08	-5.855	-87.26	353.38	8.28 N	1.62 W	0.60	0.30	8.44	AT 348.91	056.37
350.0	349.78	-7.75	-7.782	-86.89	354.63	10.82 N	1.89 W	0.75	0.38	10.99	AT 350.10	056.65
400.0	399.69	-9.63	-10.075	-86.31	356.55	13.78 N	2.11 W	1.18	0.59	13.94	AT 351.28	056.87
450.0	449.57	-11.83	-12.795	-85.67	355.68	17.27 N	2.35 W	1.29	0.64	17.43	AT 352.24	057.16
500.0	499.42	-14.30	-15.768	-85.46	354.85	21.12 N	2.67 W	0.44	0.22	21.29	AT 352.79	057.51
550.0	549.26	-16.92	-18.729	-85.47	352.15	25.05 N	3.12 W	0.43	0.21	25.24	AT 352.90	057.87
600.0	599.11	-19.53	-21.571	-85.67	352.67	28.88 N	3.63 W	0.41	0.20	29.10	AT 352.84	058.30
650.0	648.97	-22.00	-24.476	-85.58	356.57	32.67 N	3.99 W	0.62	0.31	32.91	AT 353.04	057.73
690.0	688.85	-23.83	-26.912	-85.69	359.85	35.71 N	4.08 W	0.68	0.27	35.94	AT 353.48	057.80
725.0	723.75	-25.39	-29.071	-85.58	358.42	38.38 N	4.12 W	0.44	0.15	38.60	AT 353.87	058.30

```
*************************************************************
*                         ********                          *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                         ********                          *
*  725.0 FEET EQUALS    38.60   FEET AT   353.87            *
*                         ********                          *
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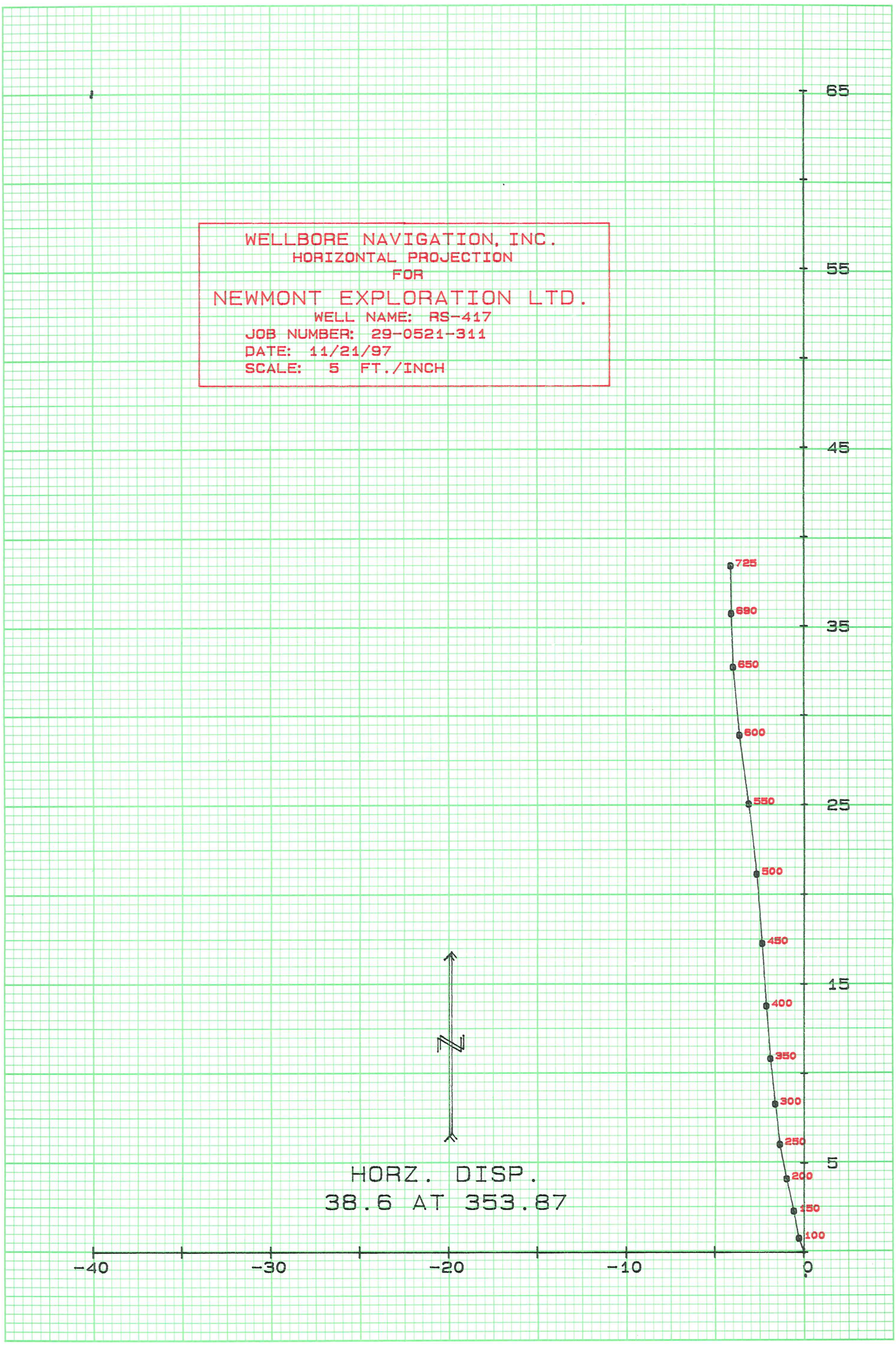
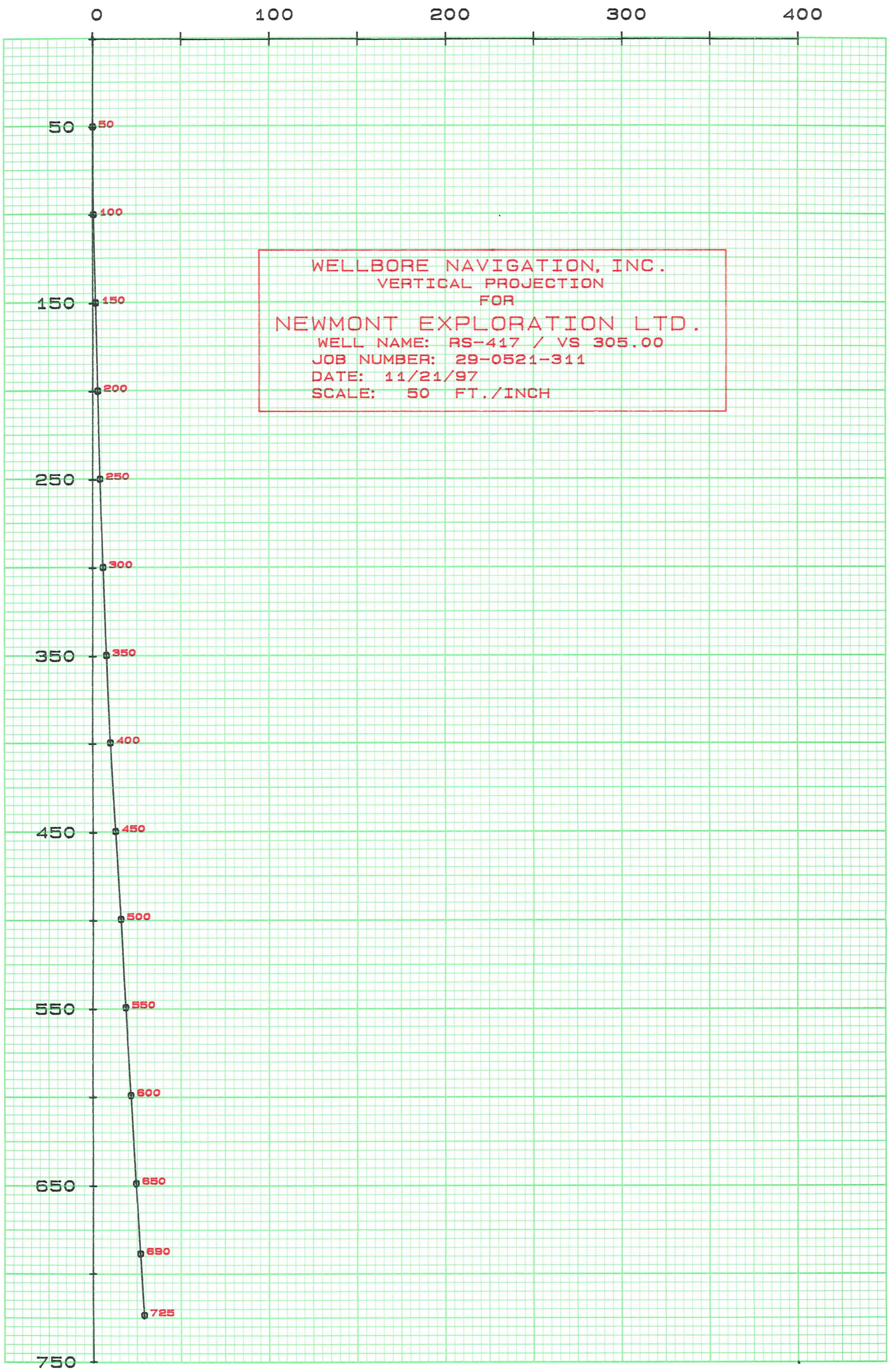
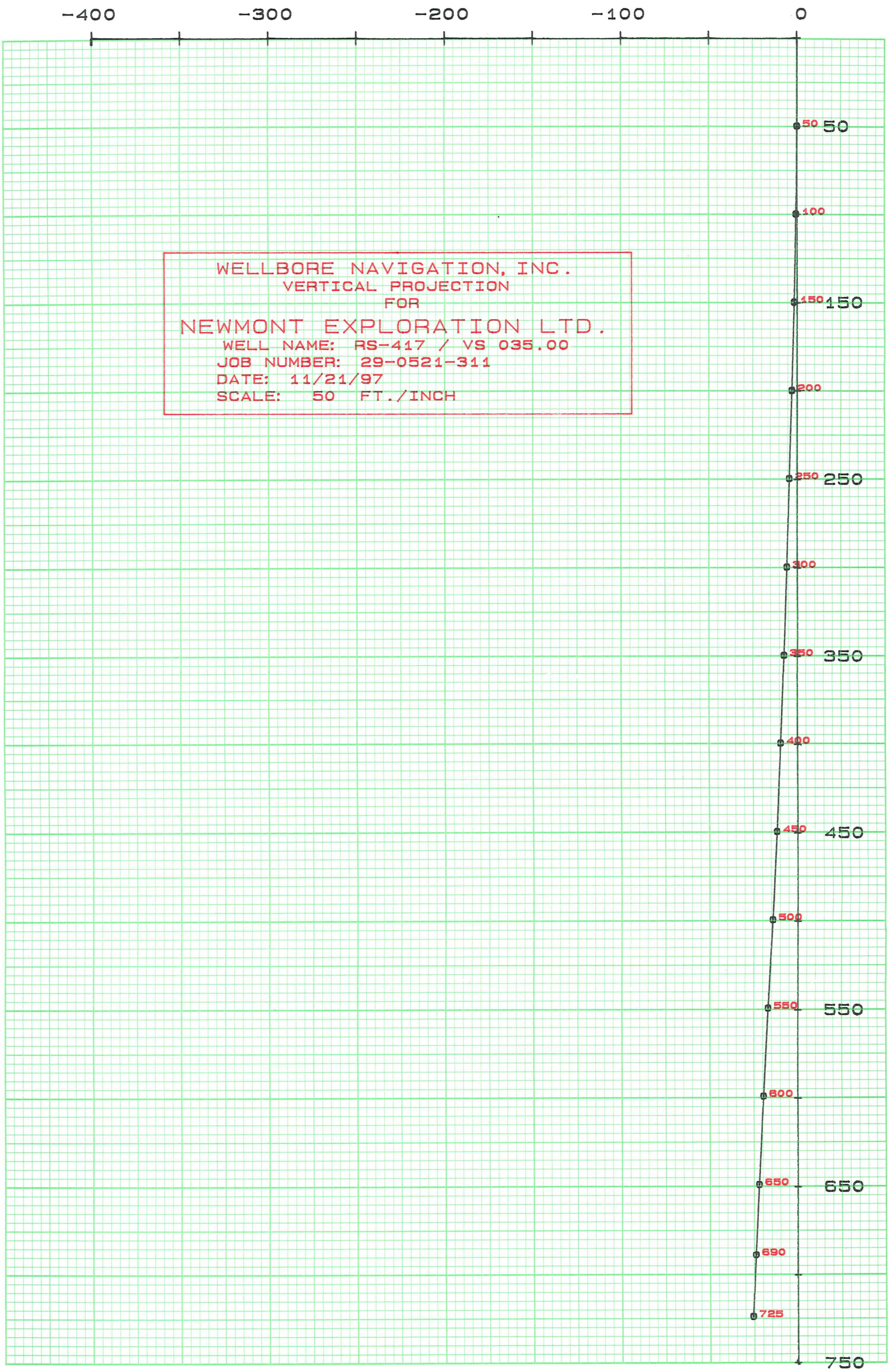
STARLIGHT PRINTING (801) 467-2841



STARLIGHT PRINTING (801) 467-2841



STARLIGHT PRINTING (801) 467-2841



SP

SUBMITTAL FORM

American Assay Laboratories

Geochemical • Environmental • Metallurgical

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

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

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

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

Other Offices
Lima, Peru
Santiago, Chile
Mendoza, Argentina

Company: ROSEBUD MINING CO. LLT

Address: P.O. BOX 2610

City WINNEMUCCA State _____ Zip _____

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

Project Name: DEVELOPMENT Purchase Order Number: _____

Date Submitted: 01/25/98 Number of Samples: 43

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

RS-417 SAMPLE IDENTIFICATION			TYPE	ELEMENTS REQUIRED
550 - 553.7	609.8-612.8	670 - 675	CORE	AU-Ag ROSEBUD MINE
553.7-557.1	612.8-614	675 - 680		PROTOCOL
557.1 - 562.3	614 - 618	680 - 685		
562.3 - 566.9	618 - 620.7	685 - 690		
566.9 - 570	620.7-623	690 - 695		
570 - 575	623 - 628	695 - 700		
575 - 580.2	628-633.2	700 - 703		
580.2 585	633.2-636.8	703-707.8		
585 - 590	636.8-640.7	707.8-711.9		
590 - 595.2	640.7-645	711.9-714.3		
595.2 - 600.8	645-650	714.3-717.2		
600.8 - 605.7	650-655	717.2-720.7		
605.7 - 608.2	655-660	720.7-725.4		
608.2 - 609.6	660-665			
609.6 - 609.8	665. 670			

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

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047005

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-417 RECEIVED : 29 OCT 1997

No. SAMPLES : 111 REPORTED : 11 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

PROVISIONAL REPORT SP047005

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 NOV 1997

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-417 000-005	<5		<0.001		<0.5	<0.02
RS-417 005-010	<5		<0.001		<0.5	<0.02
RS-417 010-015	<5	<5	<0.001	<0.001	<0.5	<0.02
RS-417 025-030	<5		<0.001		<0.5	<0.02
RS-417 030-035	<5		<0.001		<0.5	<0.02
RS-417 035-040	8		<0.001		<0.5	<0.02
RS-417 040-045	5		<0.001		<0.5	<0.02
RS-417 045-050	<5		<0.001		<0.5	<0.02
RS-417 050-055	<5		<0.001		<0.5	<0.02
RS-417 055-060	<5		<0.001		<0.5	<0.02
RS-417 060-065	24		<0.001		1.5	0.04
RS-417 065-070	31		<0.001		1.9	0.06
RS-417 070-075	36		0.001		2.8	0.08
RS-417 075-080	30		<0.001		2.5	0.07
RS-417 080-085	29		<0.001		3.4	0.10
RS-417 085-090	65		0.002		1.7	0.05
RS-417 090-095	29	26	<0.001	<0.001	1.2	0.04
RS-417 095-100	22		<0.001		1.2	0.04
RS-417 100-105	28		<0.001		1.7	0.06
RS-417 105-110	56		0.002		1.9	0.06
RS-417 110-115	106		0.003		3.3	0.10
RS-417 115-120	66		0.002		2.8	0.08
RS-417 120-125	30		<0.001		1.8	0.05
RS-417 125-130	74	62	0.002	0.002	2.4	0.07
RS-417 130-135	36		0.001		1.6	0.05

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047005

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 NOV 1997

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-417 135-140A	11		<0.001		0.6	<0.02
RS-417 135-140B	138		0.004		<0.5	<0.02
RS-417 140-145	41		0.001		<0.5	<0.02
RS-417 145-150	6		<0.001		0.5	<0.02
RS-417 150-155	<5		<0.001		<0.5	<0.02
RS-417 155-160	<5		<0.001		<0.5	<0.02
RS-417 160-165	<5		<0.001		<0.5	<0.02
RS-417 165-170	<5		<0.001		<0.5	<0.02
RS-417 170-175	<5		<0.001		<0.5	<0.02
RS-417 175-180	<5		<0.001		<0.5	<0.02
RS-417 180-185	<5		<0.001		<0.5	<0.02
RS-417 185-190	<5		<0.001		<0.5	<0.02
RS-417 190-195	205	221	0.006	0.006	1.1	0.03
RS-417 195-200	27		<0.001		1.1	0.03
RS-417 200-205	13		<0.001		1.1	0.03
RS-417 205-210	142		0.004		2.2	0.06
RS-417 210-215	21		<0.001		0.9	0.03
RS-417 215-220	<5		<0.001		<0.5	<0.02
RS-417 220-225	<5		<0.001		<0.5	<0.02
RS-417 225-230	<5		<0.001		<0.5	<0.02
RS-417 230-235	110	153	0.003	0.004	1.7	0.05
RS-417 235-240	6		<0.001		0.7	0.02
RS-417 240-245	<5		<0.001		<0.5	<0.02
RS-417 245-250	<5		<0.001		<0.5	<0.02
RS-417 250-255	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047005

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 NOV 1997

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-417 255-260	<5		<0.001		<0.5	<0.02
RS-417 260-265	<5		<0.001		<0.5	<0.02
RS-417 265-270	<5		<0.001		<0.5	<0.02
RS-417 270-275	<5		<0.001		<0.5	<0.02
RS-417 275-280	<5		<0.001		<0.5	<0.02
RS-417 280-285	<5		<0.001		<0.5	<0.02
RS-417 285-290	<5		<0.001		<0.5	<0.02
RS-417 290-295	10		<0.001		<0.5	<0.02
RS-417 295-300	36	35	0.001	0.001	0.7	0.02
RS-417 300-305	<5		<0.001		<0.5	<0.02
RS-417 305-310	12		<0.001		<0.5	<0.02
RS-417 310-315	<5		<0.001		<0.5	<0.02
RS-417 315-320	<5		<0.001		<0.5	<0.02
RS-417 320-325	<5		<0.001		<0.5	<0.02
RS-417 325-330A	<5		<0.001		<0.5	<0.02
RS-417 325-330B	95		0.003		<0.5	<0.02
RS-417 330-335	<5		<0.001		<0.5	<0.02
RS-417 335-340	<5		<0.001		<0.5	<0.02
RS-417 340-345	<5		<0.001		<0.5	<0.02
RS-417 345-350	<5		<0.001		<0.5	<0.02
RS-417 350-355	<5		<0.001		<0.5	<0.02
RS-417 355-360	<5		<0.001		<0.5	<0.02
RS-417 360-365	<5		<0.001		<0.5	<0.02
RS-417 365-370	<5		<0.001		<0.5	<0.02
RS-417 370-375	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047005

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 NOV 1997

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-417 375-380	14	12	<0.001	<0.001	1.8	0.05
RS-417 380-385	11		<0.001		1.4	0.04
RS-417 385-390	<5		<0.001		0.5	<0.02
RS-417 390-395	<5		<0.001		<0.5	<0.02
RS-417 395-400	6		<0.001		<0.5	<0.02
RS-417 400-405	30		<0.001		1.7	0.05
RS-417 405-410	73	76	0.002	0.002	2.7	0.08
RS-417 410-415	61		0.002		3.2	0.09
RS-417 415-420	10		<0.001		1.2	0.04
RS-417 420-425	6		<0.001		0.5	<0.02
RS-417 425-430	<5		<0.001		<0.5	<0.02
RS-417 430-435	<5		<0.001		<0.5	<0.02
RS-417 435-440	<5		<0.001		<0.5	<0.02
RS-417 440-445	<5		<0.001		<0.5	<0.02
RS-417 445-450	<5		<0.001		<0.5	<0.02
RS-417 450-455	<5		<0.001		<0.5	<0.02
RS-417 455-460	<5		<0.001		<0.5	<0.02
RS-417 460-465	<5	<5	<0.001	<0.001	<0.5	<0.02
RS-417 465-470	<5		<0.001		<0.5	<0.02
RS-417 470-475	<5		<0.001		<0.5	<0.02
RS-417 475-480	<5		<0.001		<0.5	<0.02
RS-417 480-485A	<5		<0.001		<0.5	<0.02
RS-417 480-485B	909		0.027		<0.5	<0.02
RS-417 485-490	5		<0.001		<0.5	<0.02
RS-417 490-495	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

PROVISIONAL REPORT SP047005

CLIENT : NEWMONT GOLD COMPANY
PROJECT : ROSEBUD
REFERENCE : RS-417

REPORTED : 11 NOV 1997

SAMPLES	Au	Au(R)	Au(OZ)	Au(RZ)	Ag	Ag(OZ)
RS-417 495-500	<5		<0.001		<0.5	<0.02
RS-417 500-505	<5		<0.001		<0.5	<0.02
RS-417 505-510	<5		<0.001		<0.5	<0.02
RS-417 510-515	<5		<0.001		<0.5	<0.02
RS-417 515-520	<5		<0.001		<0.5	<0.02
RS-417 520-525	<5		<0.001		<0.5	<0.02
RS-417 525-530	<5		<0.001		<0.5	<0.02
RS-417 530-535	<5		<0.001		<0.5	<0.02
RS-417 535-540	<5		<0.001		<0.5	<0.02
RS-417 540-545	<5		<0.001		<0.5	<0.02
RS-417 545-550	<5		<0.001		<0.5	<0.02

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT EXPLORATION LTD. *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-417

LOCATION: ROSEBUD MINE

SURVEY DATE: 11/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 068.00

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***

****
****
*** 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-417

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	-0.057	-89.74	323.63	0.09 N	0.07 W	0.52	0.26	0.11	AT 323.63	055.00
100.0	99.99	0.80	-0.202	-88.60	345.62	0.77 N	0.29 W	2.33	1.16	0.83	AT 339.71	055.22
150.0	149.97	2.36	-0.325	-87.82	351.77	2.31 N	0.57 W	1.60	0.80	2.38	AT 346.03	055.36
200.0	199.93	4.20	-0.532	-87.92	342.88	4.12 N	0.98 W	0.69	0.34	4.23	AT 346.64	055.86
250.0	249.90	6.15	-0.713	-87.56	353.47	6.04 N	1.37 W	1.10	0.55	6.19	AT 347.26	055.93
300.0	299.84	8.41	-0.730	-87.26	353.38	8.28 N	1.62 W	0.60	0.30	8.44	AT 348.91	056.37
350.0	349.78	10.96	-0.723	-86.89	354.63	10.82 N	1.89 W	0.75	0.38	10.99	AT 350.10	056.65
400.0	399.69	13.93	-0.629	-86.31	356.55	13.78 N	2.11 W	1.18	0.59	13.94	AT 351.28	056.87
450.0	449.57	17.42	-0.494	-85.67	355.68	17.27 N	2.35 W	1.29	0.64	17.43	AT 352.24	057.16
500.0	499.42	21.28	-0.401	-85.46	354.85	21.12 N	2.67 W	0.44	0.22	21.29	AT 352.79	057.51
550.0	549.26	25.24	-0.426	-85.47	352.15	25.05 N	3.12 W	0.43	0.21	25.24	AT 352.90	057.87
600.0	599.11	29.10	-0.525	-85.67	352.67	28.88 N	3.63 W	0.41	0.20	29.10	AT 352.84	058.30
650.0	648.97	32.91	-0.474	-85.58	356.57	32.67 N	3.99 W	0.62	0.31	32.91	AT 353.04	057.73
690.0	688.85	35.94	-0.245	-85.69	359.85	35.71 N	4.08 W	0.68	0.27	35.94	AT 353.48	057.80
725.0	723.75	38.60	-0.001	-85.58	358.42	38.38 N	4.12 W	0.44	0.15	38.60	AT 353.87	058.30

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*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*   725.0 FEET EQUALS    38.60    FEET AT   353.87          *
*                          ********                         *
*************************************************************
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WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT EXPLORATION LTD. *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-417 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 11/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 068.00

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 035.00

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***

****
****
*** 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-417 / 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	0.04	-0.107	-89.74	323.63	0.09 N	0.07 W	0.52	0.26	0.11	AT 323.63	055.00
100.0	99.99	0.47	-0.679	-88.60	345.62	0.77 N	0.29 W	2.33	1.16	0.83	AT 339.71	055.22
150.0	149.97	1.56	-1.794	-87.82	351.77	2.31 N	0.57 W	1.60	0.80	2.38	AT 346.03	055.36
200.0	199.93	2.81	-3.161	-87.92	342.88	4.12 N	0.98 W	0.69	0.34	4.23	AT 346.64	055.86
250.0	249.90	4.16	-4.583	-87.56	353.47	6.04 N	1.37 W	1.10	0.55	6.19	AT 347.26	055.93
300.0	299.84	5.85	-6.083	-87.26	353.38	8.28 N	1.62 W	0.60	0.30	8.44	AT 348.91	056.37
350.0	349.78	7.78	-7.755	-86.89	354.63	10.82 N	1.89 W	0.75	0.38	10.99	AT 350.10	056.65
400.0	399.69	10.08	-9.634	-86.31	356.55	13.78 N	2.11 W	1.18	0.59	13.94	AT 351.28	056.87
450.0	449.57	12.80	-11.830	-85.67	355.68	17.27 N	2.35 W	1.29	0.64	17.43	AT 352.24	057.16
500.0	499.42	15.77	-14.302	-85.46	354.85	21.12 N	2.67 W	0.44	0.22	21.29	AT 352.79	057.51
550.0	549.26	18.73	-16.921	-85.47	352.15	25.05 N	3.12 W	0.43	0.21	25.24	AT 352.90	057.87
600.0	599.11	21.57	-19.535	-85.67	352.67	28.88 N	3.63 W	0.41	0.20	29.10	AT 352.84	058.30
650.0	648.97	24.48	-22.004	-85.58	356.57	32.67 N	3.99 W	0.62	0.31	32.91	AT 353.04	057.73
690.0	688.85	26.91	-23.827	-85.69	359.85	35.71 N	4.08 W	0.68	0.27	35.94	AT 353.48	057.80
725.0	723.75	29.07	-25.388	-85.58	358.42	38.38 N	4.12 W	0.44	0.15	38.60	AT 353.87	058.30

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*                          ********                         *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                          ********                         *
*   725.0 FEET EQUALS    38.60   FEET AT   353.87           *
*                          ********                         *
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WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* NEWMONT EXPLORATION LTD. *
****

JOB NUMBER: 29-0521-311

WELL NAME: RS-417 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 11/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 068.00

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 125.00

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

COMMENTS: ** BOART LONGYEAR **
*** BILL KURPIS ***
*** DEAN KEYSER ***

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

JOB NUMBER: 29-0521-311 WELL NAME: RS-417 / 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	-0.11	-0.036	-89.74	323.63	0.09 N	0.07 W	0.52	0.26	0.11	AT 323.63	055.00
100.0	99.99	-0.68	-0.470	-88.60	345.62	0.77 N	0.29 W	2.33	1.16	0.83	AT 339.71	055.22
150.0	149.97	-1.79	-1.561	-87.82	351.77	2.31 N	0.57 W	1.60	0.80	2.38	AT 346.03	055.36
200.0	199.93	-3.16	-2.811	-87.92	342.88	4.12 N	0.98 W	0.69	0.34	4.23	AT 346.64	055.86
250.0	249.90	-4.58	-4.165	-87.56	353.47	6.04 N	1.37 W	1.10	0.55	6.19	AT 347.26	055.93
300.0	299.84	-6.08	-5.855	-87.26	353.38	8.28 N	1.62 W	0.60	0.30	8.44	AT 348.91	056.37
350.0	349.78	-7.75	-7.782	-86.89	354.63	10.82 N	1.89 W	0.75	0.38	10.99	AT 350.10	056.65
400.0	399.69	-9.63	-10.075	-86.31	356.55	13.78 N	2.11 W	1.18	0.59	13.94	AT 351.28	056.87
450.0	449.57	-11.83	-12.795	-85.67	355.68	17.27 N	2.35 W	1.29	0.64	17.43	AT 352.24	057.16
500.0	499.42	-14.30	-15.768	-85.46	354.85	21.12 N	2.67 W	0.44	0.22	21.29	AT 352.79	057.51
550.0	549.26	-16.92	-18.729	-85.47	352.15	25.05 N	3.12 W	0.43	0.21	25.24	AT 352.90	057.87
600.0	599.11	-19.53	-21.571	-85.67	352.67	28.88 N	3.63 W	0.41	0.20	29.10	AT 352.84	058.30
650.0	648.97	-22.00	-24.476	-85.58	356.57	32.67 N	3.99 W	0.62	0.31	32.91	AT 353.04	057.73
690.0	688.85	-23.83	-26.912	-85.69	359.85	35.71 N	4.08 W	0.68	0.27	35.94	AT 353.48	057.80
725.0	723.75	-25.39	-29.071	-85.58	358.42	38.38 N	4.12 W	0.44	0.15	38.60	AT 353.87	058.30

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*************************************************************
*                         ********                          *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                         ********                          *
*   725.0 FEET EQUALS     38.60    FEET AT   353.87         *
*                         ********                          *
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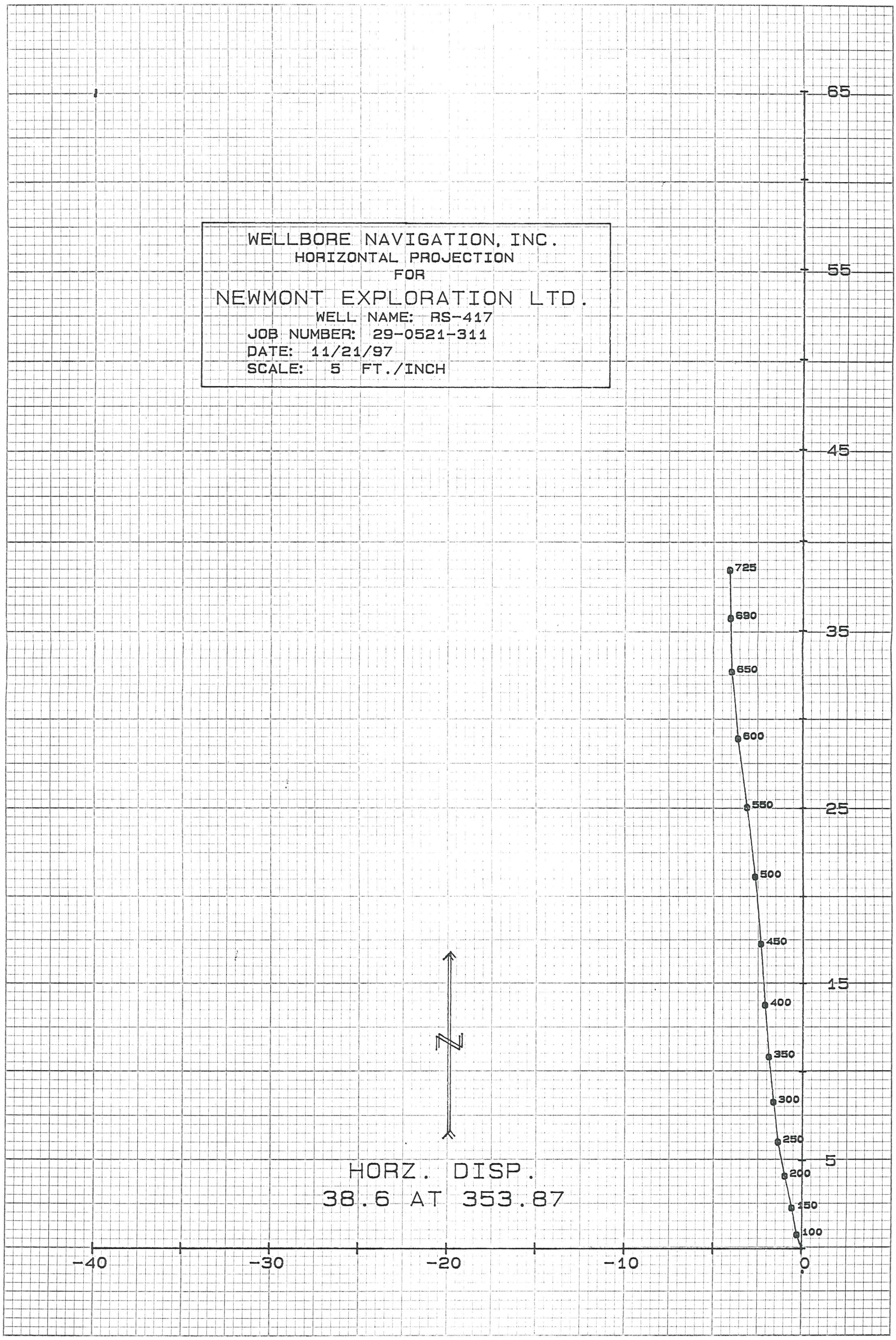
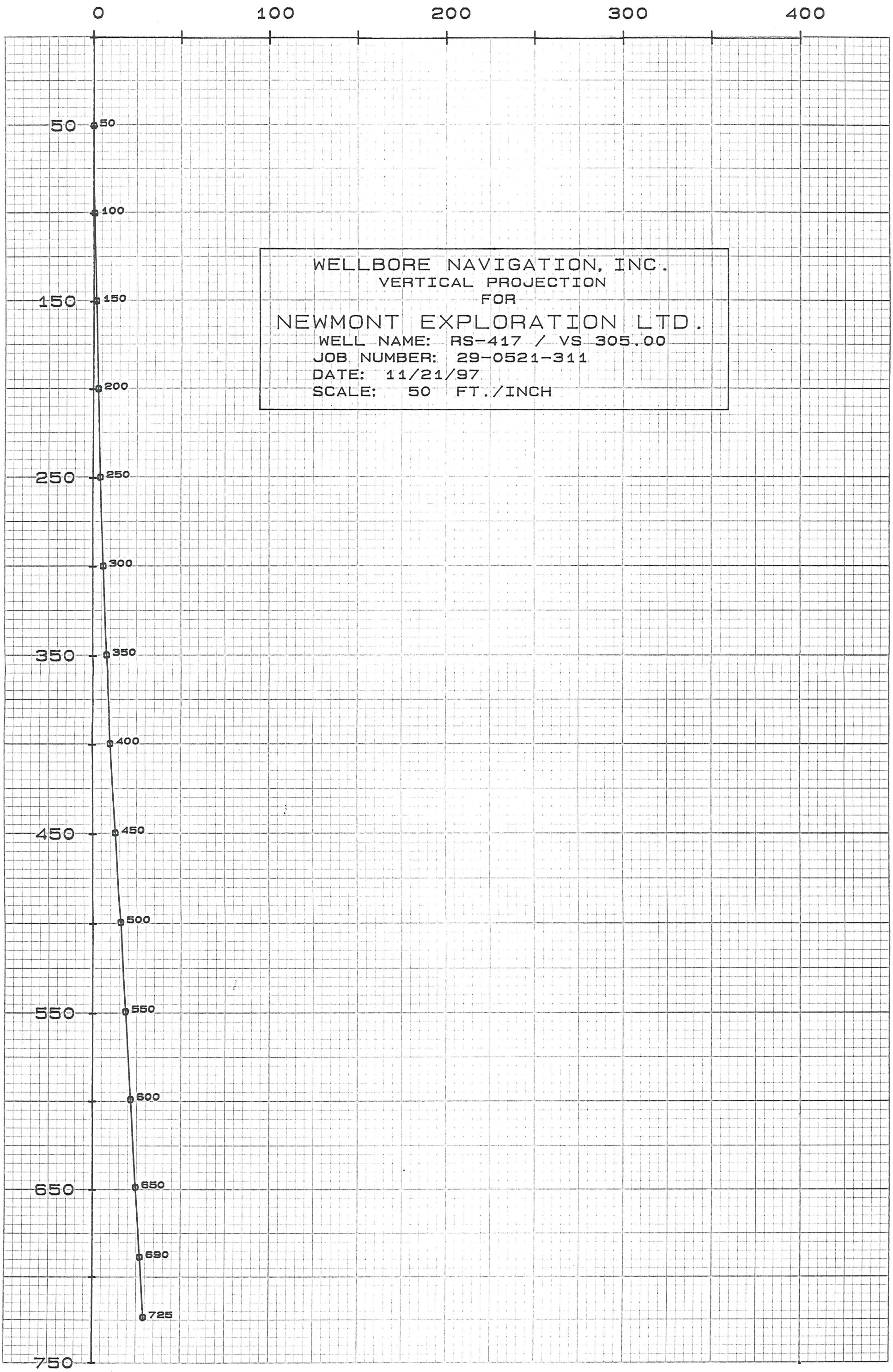
WELLBORE NAVIGATION, INC.
HORIZONTAL PROJECTION
FOR
NEWMONT EXPLORATION LTD.
WELL NAME: RS-417
JOB NUMBER: 29-0521-311
DATE: 11/21/97
SCALE: 5 FT./INCH

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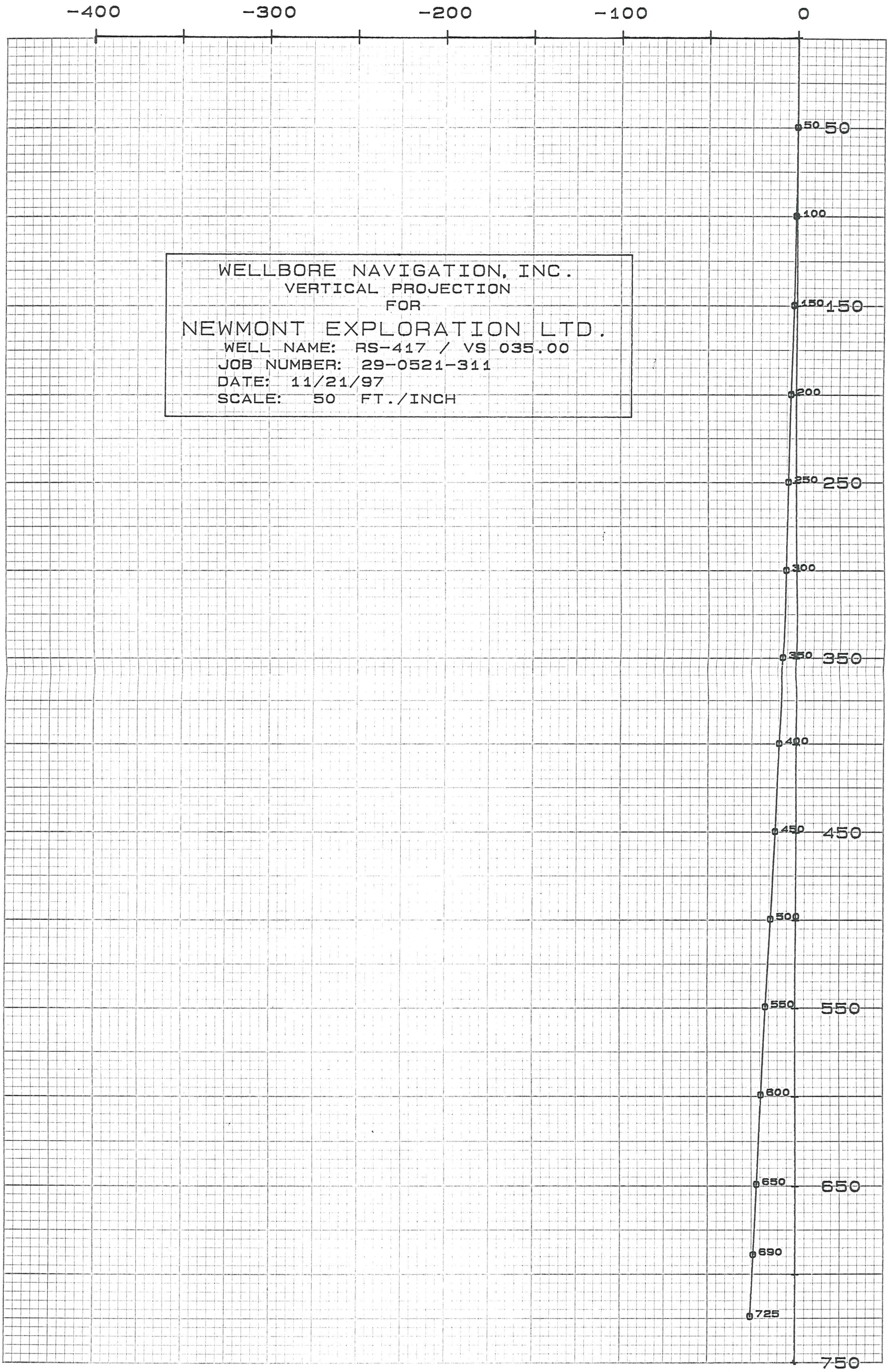
550
600
650
690
725
WELLBORE NAVIGATION, INC.
VERTICAL PROJECTION
FOR
NEWMONT EXPLORATION LTD.
WELL NAME: RS-417 / VS 305.00
JOB NUMBER: 29-0521-311
DATE: 11/21/97
SCALE: 50 FT./INCH

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-417 / VERTICAL

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 248.00

****
****** 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-417 / 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 DISPLACEMENT DISP.	STATION DISPLACEMENT DIRECTION	TEMP. DEG. F.
50.0	50.00	0.18	-0.101	-89.52	324.10	0.17 N	0.12 W	0.96	0.48	0.21	AT 324.10	071.75
100.0	99.99	1.00	-0.196	-88.55	353.60	0.97 N	0.32 W	2.12	1.06	1.02	AT 341.91	071.25
150.0	149.97	2.55	-0.311	-87.88	345.50	2.49 N	0.62 W	1.43	0.71	2.57	AT 346.07	070.31
200.0	199.93	4.46	-0.459	-87.72	351.52	4.37 N	1.00 W	0.56	0.28	4.48	AT 347.16	069.74
250.0	249.89	6.58	-0.431	-87.41	355.77	6.48 N	1.23 W	0.72	0.36	6.60	AT 349.28	069.23
300.0	299.83	9.01	-0.317	-87.02	355.70	8.90 N	1.41 W	0.78	0.39	9.01	AT 351.02	069.02
350.0	349.75	11.75	-0.220	-86.69	354.47	11.64 N	1.64 W	0.67	0.34	11.75	AT 351.96	068.80
400.0	399.65	14.85	-0.141	-86.19	354.48	14.73 N	1.94 W	1.00	0.50	14.85	AT 352.48	068.66
450.0	449.53	18.34	-0.037	-85.81	355.00	18.20 N	2.26 W	0.76	0.38	18.34	AT 352.92	068.66
500.0	499.39	22.12	-0.012	-85.52	351.92	21.95 N	2.70 W	0.74	0.37	22.12	AT 353.00	065.49
550.0	549.24	26.00	-0.001	-85.58	354.47	25.80 N	3.16 W	0.41	0.21	26.00	AT 353.03	066.79

****
* ******** *
* THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF *
* ******** *
* 550.0 FEET EQUALS 26.00 FEET AT 353.03 *
* ******** *
****

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

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

JOB NUMBER: 29-0521-311

WELL NAME: RS-417 / VS 305.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 248.00

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-417 / 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	0.07	-0.198	-89.52	324.10	0.17 N	0.12 W	0.96	0.48	0.21	AT 324.10	071.75
100.0	99.99	0.61	-0.814	-88.55	353.60	0.97 N	0.32 W	2.12	1.06	1.02	AT 341.91	071.25
150.0	149.97	1.69	-1.936	-87.88	345.50	2.49 N	0.62 W	1.43	0.71	2.57	AT 346.07	070.31
200.0	199.93	3.01	-3.323	-87.72	351.52	4.37 N	1.00 W	0.56	0.28	4.48	AT 347.16	069.74
250.0	249.89	4.61	-4.722	-87.41	355.77	6.48 N	1.23 W	0.72	0.36	6.60	AT 349.28	069.23
300.0	299.83	6.49	-6.260	-87.02	355.70	8.90 N	1.41 W	0.78	0.39	9.01	AT 351.02	069.02
350.0	349.75	8.59	-8.021	-86.69	354.47	11.64 N	1.64 W	0.67	0.34	11.75	AT 351.96	068.80
400.0	399.65	10.95	-10.039	-86.19	354.48	14.73 N	1.94 W	1.00	0.50	14.85	AT 352.48	068.66
450.0	449.53	13.61	-12.292	-85.81	355.00	18.20 N	2.26 W	0.76	0.38	18.34	AT 352.92	068.66
500.0	499.39	16.44	-14.800	-85.52	351.92	21.95 N	2.70 W	0.74	0.37	22.12	AT 353.00	065.49
550.0	549.24	19.33	-17.386	-85.58	354.47	25.80 N	3.16 W	0.41	0.21	26.00	AT 353.03	066.79

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*************************************************************
*                         ********                          *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                         ********                          *
*  550.0 FEET EQUALS    26.00   FEET AT   353.03            *
*                         ********                          *
*************************************************************
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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-417 / VS 035.00

LOCATION: ROSEBUD MINE

SURVEY DATE: 10/21/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 248.00

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! *
**
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****
****

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0521-311 WELL NAME: RS-417 / 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	-0.20	-0.069	-89.52	324.10	0.17 N	0.12 W	0.96	0.48	0.21	AT 324.10	071.75
100.0	99.99	-0.81	-0.612	-88.55	353.60	0.97 N	0.32 W	2.12	1.06	1.02	AT 341.91	071.25
150.0	149.97	-1.94	-1.687	-87.88	345.50	2.49 N	0.62 W	1.43	0.71	2.57	AT 346.07	070.31
200.0	199.93	-3.32	-3.009	-87.72	351.52	4.37 N	1.00 W	0.56	0.28	4.48	AT 347.16	069.74
250.0	249.89	-4.72	-4.606	-87.41	355.77	6.48 N	1.23 W	0.72	0.36	6.60	AT 349.28	069.23
300.0	299.83	-6.26	-6.487	-87.02	355.70	8.90 N	1.41 W	0.78	0.39	9.01	AT 351.02	069.02
350.0	349.75	-8.02	-8.589	-86.69	354.47	11.64 N	1.64 W	0.67	0.34	11.75	AT 351.96	068.80
400.0	399.65	-10.04	-10.949	-86.19	354.48	14.73 N	1.94 W	1.00	0.50	14.85	AT 352.48	068.66
450.0	449.53	-12.29	-13.611	-85.81	355.00	18.20 N	2.26 W	0.76	0.38	18.34	AT 352.92	068.66
500.0	499.39	-14.80	-16.437	-85.52	351.92	21.95 N	2.70 W	0.74	0.37	22.12	AT 353.00	065.49
550.0	549.24	-17.39	-19.328	-85.58	354.47	25.80 N	3.16 W	0.41	0.21	26.00	AT 353.03	066.79

```
*************************************************************
*                          ********                         *
*     THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF           *
*                          ********                         *
*  550.0 FEET EQUALS    26.00   FEET AT  353.03             *
*                          ********                         *
*************************************************************
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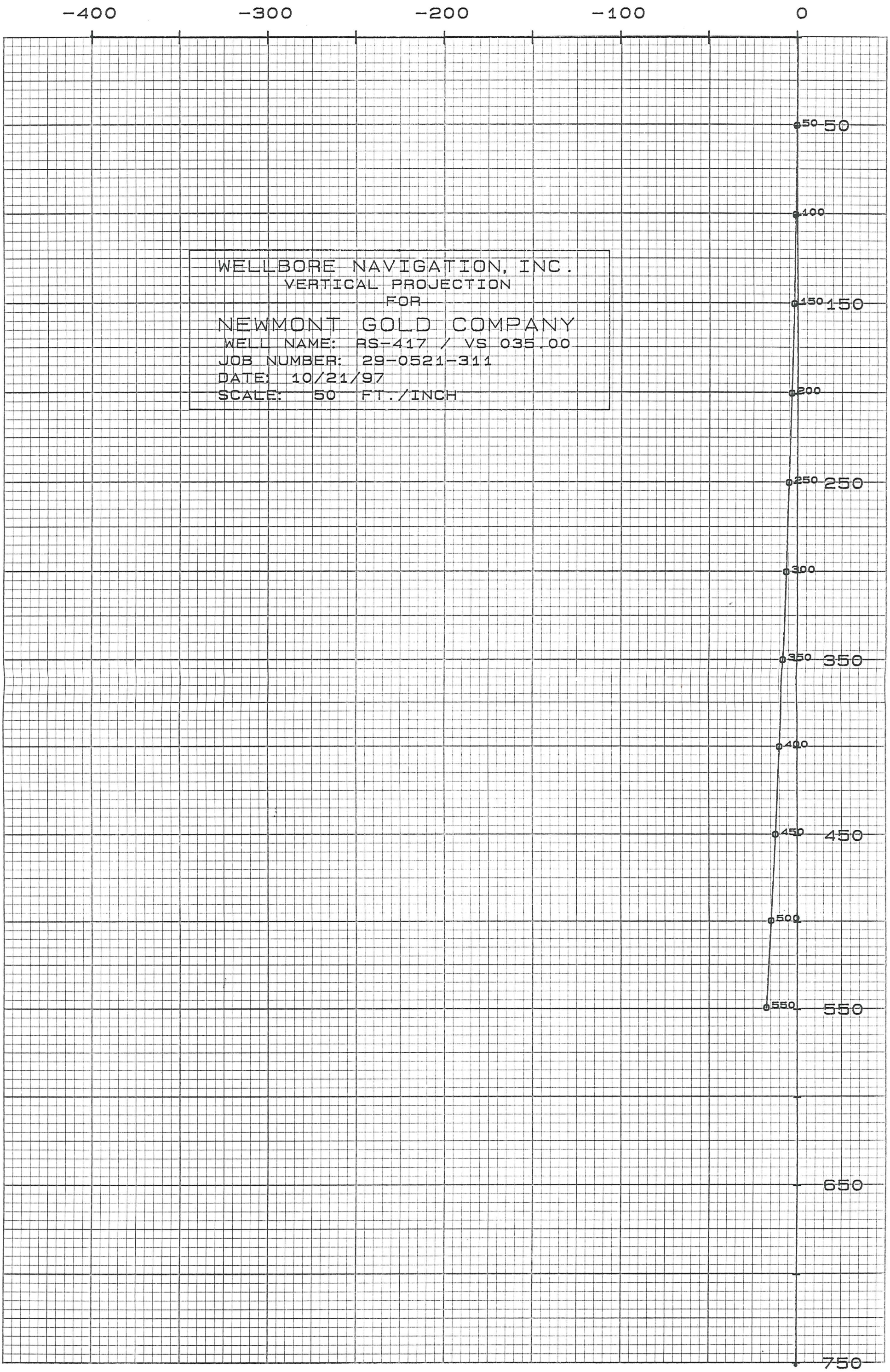

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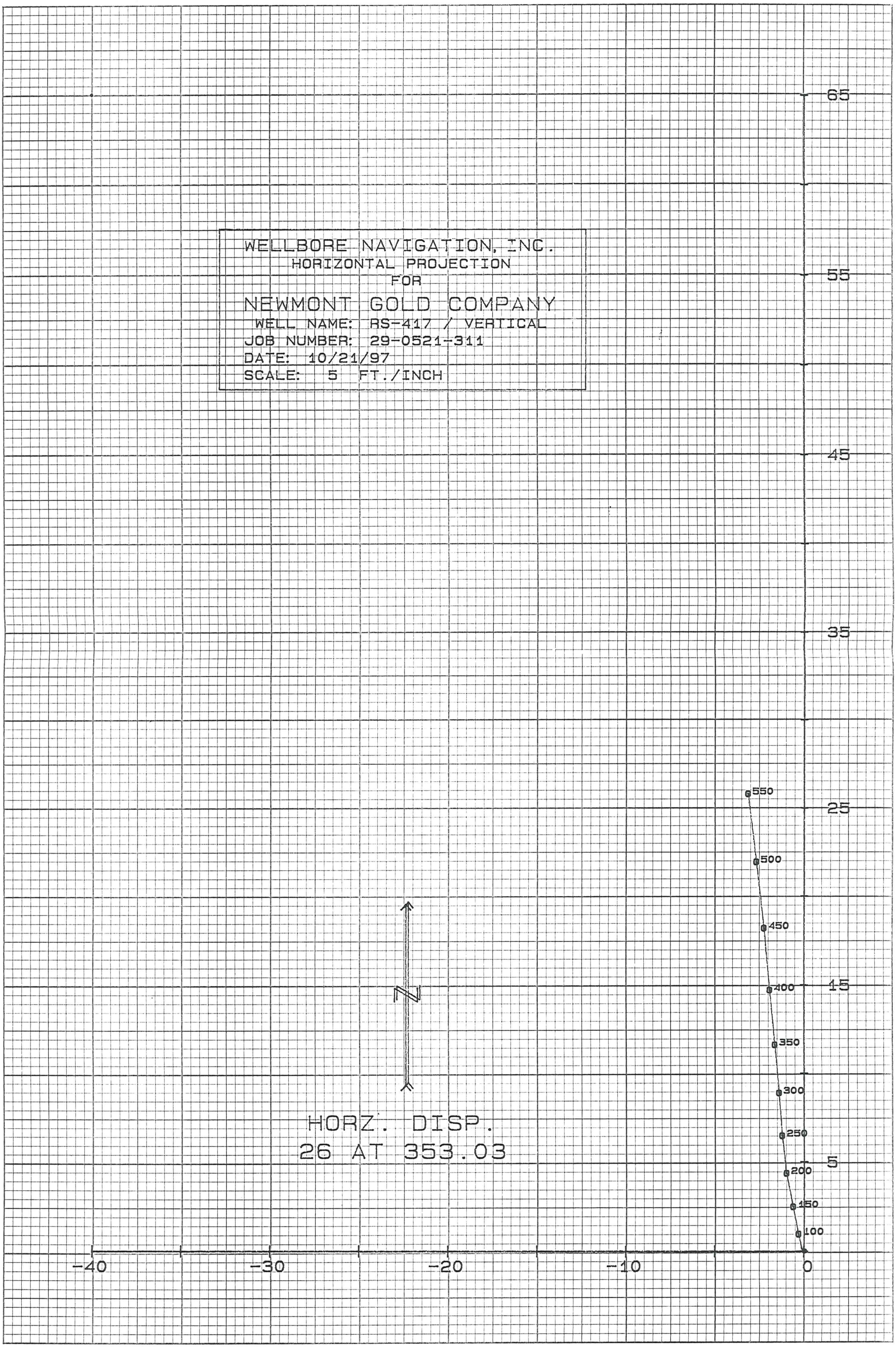

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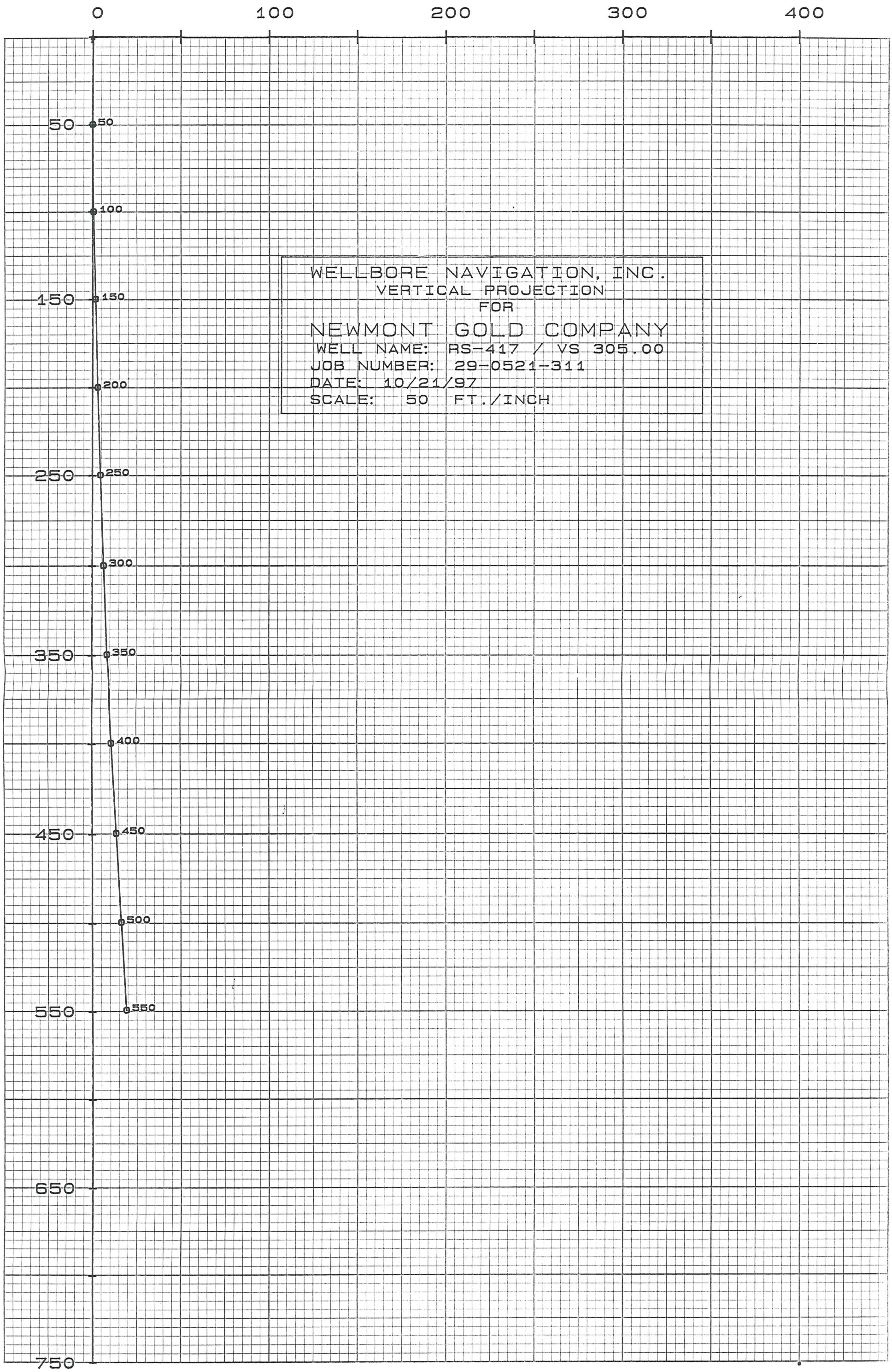


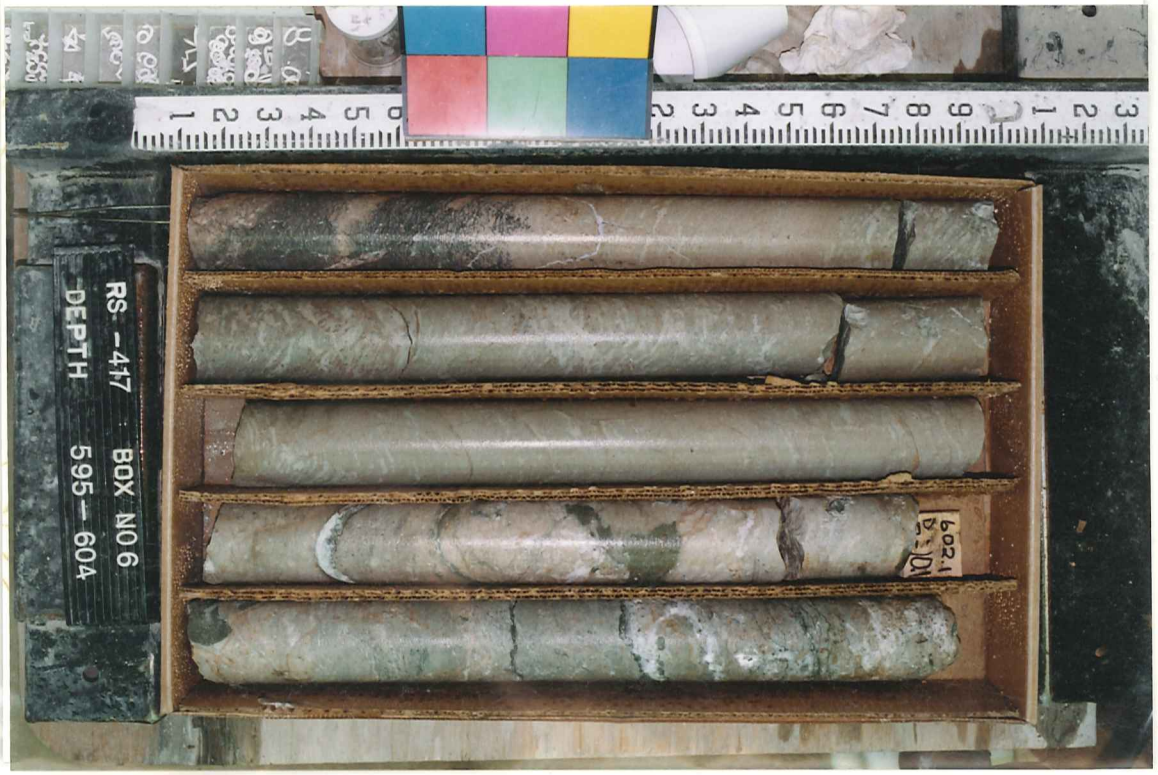
RS-417
550-629.3
(2)
557
RS -417 BOX NO 1
DEPTH 550 — 558.5

562.3
566.9
RS -417 BOX NO 2
DEPTH 558.5— 568

571.8
RS -417 BOX NO 3
DEPTH 568 — 577

RS -417 BOX NO 4
DEPTH 577 - 585.5

597
RS -417 BOX NO 5
DEPTH 585.5 - 595


RS -417 BOX NO 6
DEPTH 595 - 604

611.9'
RS -417 BOX NO 7
DEPTH 604 -612.5

RS -417 BOX NO 8
DEPTH 612.5 - 619.6

628
RS - 417 BOX NO 9
DEPTH 619.6 - 629.3

RS -417 BOX NO 1
DEPTH 550 — 558.5

RS -417 BOX NO 2
DEPTH 558.5— 56 8

RS -417 BOX NO 3
DEPTH 568 — 577

RS -417 BOX NO 4
DEPTH 577 - 585.5

RS -417 BOX NO 5
DEPTH 585.5 - 595

RS -417 BOX NO 6
DEPTH 595 - 604

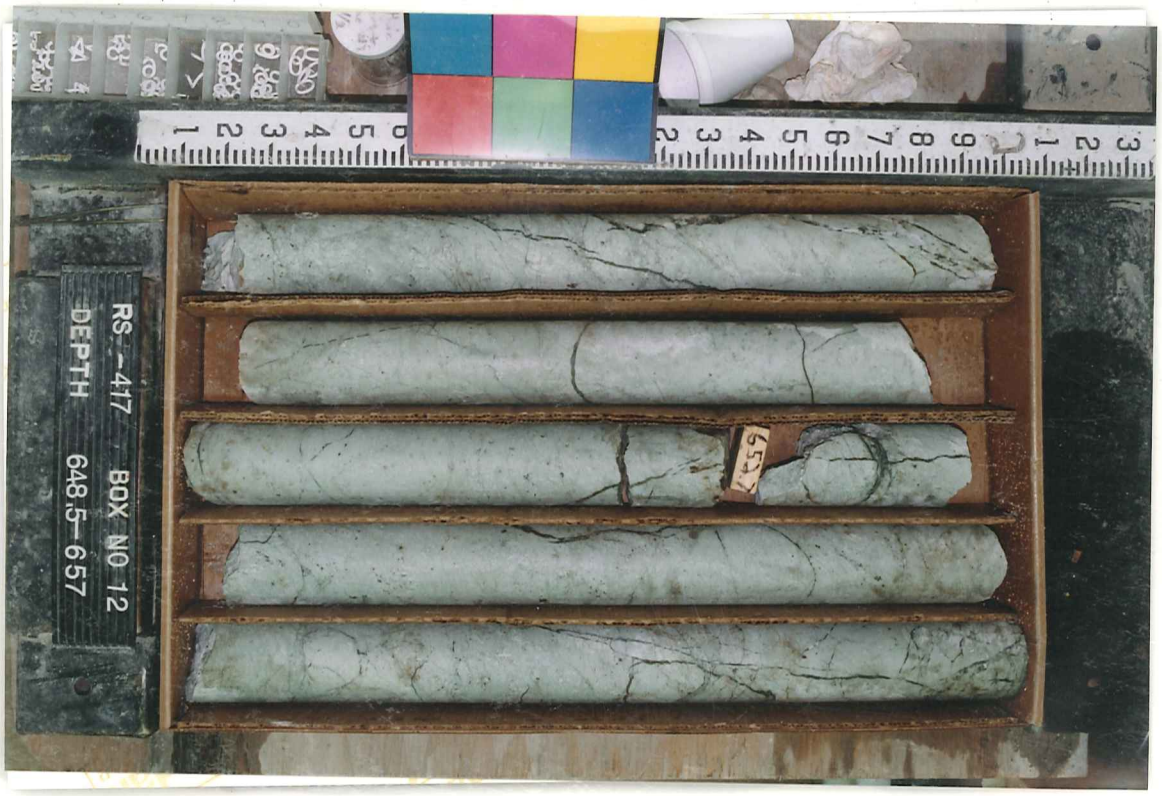
611.9'
RS -417 BOX NO 7
DEPTH 604 -612.5

RS -417 BOX NO 8
DEPTH 612.5 - 619.6

RS -417 BOX NO 9
DEPTH 619.6 -629.3

RS -417 BOX NO 10
DEPTH 629.3 -637.6

RS -417 BOX NO 11
DEPTH 637.6 -648.5


RS -417 BOX NO 12
DEPTH 648.5-657

663
D
R-10.3
RS -417 BOX NO 13
DEPTH 657-666

673.1
RS -417 BOX NO 14
DEPTH 666 - 675.1

RS -417 BOX NO 15
DEPTH 675.1-684
683.2

RS -417 BOX NO 16
DEPTH 684 -693

6932
RS -417 BOX NO 17
DEPTH 693 -702

RS -417 BOX NO 18
DEPTH 702 - 711,5

RS -417 BOX NO 19
DEPTH 711,5 – 720,5

RS -417 BOX NO 20
DEPTH 720,5 – 725,4