60001467

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. 97-385
AUTHOR	M. Williams; S King; R. Cornelea; C. Moerhatt; R. Dixon; R. Romero; V. Reid; M. Ebert
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; Rosebud Project; Dozer NW; Santa Fe Pacific Gold Corp.
COMMODITY If not obvious	gold silver
NOTES	Drill log; geology; assay; total depth 1557 handwritten notes; directional survey; geochemistry photographs; negatives 156p 7 bags of negatives and extra photos

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 5/22/08
Initials Date

DB: mch
Initials Date

SCANNED:
Initials Date

Revised: 1/22/08

97-385

60001467 4010

97.385

6000 1467

SANTA FE PACIFIC GOLD — DRILL HOLE SUMMARY

Project: Rosebud Location: Dozer NW Drill Hole No.: 97-385c

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

Purpose: Strat + Extension Min. Results: wk Au. Stayed in FW of R.B. Shear (S. side)

Date Started: 4/2/97 Date Finished: 4/10/97

Grid System: NV Northing: 2,205,109 Easting: 481,609 Elevation: 5,283

Collar Az/Inc.: — / -90 Drill Site: Total Depth: 1556.7

Geologist(s): HSM Log Date(s): 4/5-4/16/97 Laboratory: R.B. Mine

HOLE CONSTRUCTION AND HISTORY CASING (INTERVAL)

From	To	Hole Type/Size	Started	Completed	Contractor
0	1556.7	Core / HQ	4/2/97	4/10/97	Longyear - Williams/ebert
		/			
		/			
		/			

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
	See Wetnav Rpt	

Water Table Depth:

Water Flow Rate:

COMMENTS

Was hoped to cut across Rosebud Shear. Stayed in Mine Strat most of way, therefore pushing R.B. Shear further NW of prev. thought. Target was intersect. Rosebud Shear and South ridge fault. Hole too far in footwall R.B.S. to test idea.
Same up. + low. zone of min. as other holes.

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH: 1556.7	STARTED: 04/02/97	PAGE: 1
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:	COMPLETED:	HOLE #
DATE: 04/05/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft.

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH FT	DRILLING RECOVERY	DRILLING RQD	LITHOLOGY	STRUCT	ALTERATION/MINLIZATION	STRAT	LITHGRAPH	ALTERATION	COMMENTS	SAMPLE INT	BOX
0										0	0
5	1.3 / 2.2	0 / 1.3		4		3			0-~18.3' FILL/Qal. FILL AND QUATERNARY ALLUVIUM. UNBLEACHED CLAY-RICH CHOCOLATY BRN SANDY MUD FORMS AN UNLITHIFIED MATRIX TO MIXED LITH. CLASTS. CLASTS ARE SUB-ANGULAR TO SUB-ROUNDED. LITTLE WATER-WORKING; MATRIX SUPPORTED.		
	0.6 / 1.9	0 / 0.6									
	0.6 / 2.0	0 / 0.6									
	0.6 / 1.6	0 / 0.6									
	1.1 / 2.0	0 / 1.1									
10						2			<50% RECOVERY TO ~17'.	ONE SAMPLE	1
	1.0 / 8.0	0 / 1.0							CALCIC AT SURFACE DECREASING DOWNWARDS. TRACE / ABSENT BY ~40'.		
15				3					17.2'-17.7': PORPHYRITIC CHOCOLATE	18.3	
20	5.3 / 6.3	0 / 5.3		1	1 1 1	4			18.3'-~54' T_BADGER. MODERATELY BLEACHED PEBBLE CONGLOMERATE, WITH SELECTIVE STR. BLEACHING OF CERTAIN COBBLES/CLASTS. MATRIX = LT. SALMON TAN SANDY SILT THAT IS LOCALLY STRONGLY CLAY ALTERED. SPOTTY INTENSE CLAY ALTERATION OF BLEACHED CLASTS. STR TO MOD. CLAY THRU OUT. ⇒ PROBABLY WITH WK PROPYLITIZATN	2	20.3
25	2.7 / 2.2	0 / 2.7		3		2 (CLASTS ONLY)		25° INT		24	
	4.0 / 4.0	0 / 4.0							CLAY VNLTS: WHT/CREAM, WISPY, MOD. INTERMITTENTLY PRESENT THRU OUT THIS STRETCH.	3	2
30	0.7/1	0/0.7						30° INT		29	30.0
	4.1 / 4.1	0 / 4.1		3		3		~70° BED	HETEROLITHIC THRU OUT.	4	
35						4				34	3
	7.3 / 7.9	0 / 7.3								5	
40										39	38
	2.6 / 2.0	0 / 2.6		3?		5		~5° FLT?	42-44: WEAK TO MOD. MOSAIC BXA +/- MILLING. OVERPRINTS CONGLOMERATIC FABRIC. POSSIBLE MINOR FAULT ZONE AT VERY LO ∠ TO C/A.	6	4
45						4				44	
	9.7 / 9.7	0 / 9.7		1		5			FROM ~47': POSSIBLY MILLED FAULT GOUGE. CONG. PEBBLES ARE SPARSE BELOW THIS POINT.	47 / 8	47
50											

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 2
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:	COMPLETED:	HOLE #
DATE: 04/05/97	SEC. T. N., E.	ELEVATION:	ANGLE:	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH, RECOVERY, RQD

LITHOLOGY: ALLUVIUM, CGL, LITHIC TUFF, PUMICE TUFF, SURGE TUFF, ASHLAVA, ALTERED BANDED SILICIFIED, ANDESITE, BANDED HYALITE

STRUCT: TECTONIC BXA, BRECKEN, GOUGE, VOID

ALTERATION/MINERALIZATION: Fe MINERALIZATION, MOTTIN, HEMITE, IMONITE, PYRITE, PROPYL, ARGILLIC, ARGPL, SILICIFIED, QTZ VEINS, CALCITIC, MECALTCL

STRAT: BADLANDS, CHOCOLATE, OBSIDIAN, BRADY, MKRPOR, LUD, WILDROS, DOZER

DEPTH FT	GRAPH	ANGLE	STRUCT	COMMENTS	SAMPLE INT	BOX
50				47-51': WK MILLING? CLAST-DEFICIENT RK FLOUR.	51.0	
		40° FeOx			9	5
		60° FLT		54-62': PROBABLE MILLED FAULT ZONE. STR. OCHER STAINING RIGHT AT 54' GIVES WAY TO PERVASIVE MOD/STR BLEACHED, STR ARGILLIZED GOUGY MILLED ZONE.	54.0	
55					10	56.4
					*57.9	
60		20° SH		60.7-61.1: INTENSE RED HEMATITIC STAIN IN CLAY/GOUGE.	11	
				~62': PROBABLE FAULT CONTACT.	62.0	6
				~62 – 75.4' Tc — PROBABLE CHOCOLATE LITHIC TUFF BRECCIA FROM THE BASE OF THE CLAY ZONE AT ~62'.	12	
65		45° INT		CLASSIC SANDY RED-TAN MATRIX FROM ~64' TO CONTACT WITH LAVA. FRAGMENTS ARE ANGULAR TO SUB-ANGULAR SMALL PEBBLE-SIZED & FAIRLY WELL SORTED. LT. BLUE-GRN PUNKY & MORE STRONGLY ALTERED THAN THE MATRIX. MATRIX-SUPPORTED NO TRUE JOINTING. BRASSY PY STRINGERS.	66.5	66
					13	
70					70.5	7
					14	
75		75° CNTCT		CONTACT: PROBABLY CONFORMABLE. HIGH ∡ TO C/A. ALT'K FAIRLY CONSTANT ACROSS CONTACT.	75.4	75
		50° FLOW?		75.4' – Tc — CHOCOLATE, PLAGIOCLASE-PORPHYRY LAVA.	15	
80				75.4'-91': HEALED AUTO BRECCIA AT TOP OF UNIT, IMMEDIATELY BELOW & INTERCALATED WITH FLOW BANDING. MILLED, MONOLITHIC WITH A SANDY RK FLOUR MATRIX OF THE SAME MAT'L. CLAST-SUPPORTED TIGHT.	80.5	8
					16	84.2
85					85	
				82-83.4': POSSIBLE SANDY FLT ZONE	17	
90		30° 20° 15°		~90': PRIMARY BRECCIATION IS SUPPLANTED & OVERPRINTED BY VEIN STOCKWORK BRECCIA OF ~~OPEN SPACE~~ CEMENTED BY BLADED MARCASITE LAVA CLASTS & DRUSY QUARTZ. OPEN SPACED MONOLITHIC CRACKLE BRECCIA. LATE PUNKY WHITE CLAY ON FRX & VUGS.	90	9
					18	93.3
95					95	
		30° SiVN			19	10
100		50° INT		CHOCOLATE LAVA GENERAL LITH. DESCRIPT'N P.3.	100	

* CORE NOT RECOVERED IS ASSUMED TO BE FROM THE BOTTOM OF THE RUN.

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 3
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:	COMPLETED:	HOLE #
DATE: 04/06/97	SEC. T. N., E.	ELEVATION:	ANGLE:	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

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LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	DRILLING: RECOVERY	DRILLING: RQD	LITHOLOGY	STRUCT	ALTERATION/MINERALIZATION	STRAT	DEPTH	LITHOLOGY	ALTERATION	SiO2 ALT'N:	COMMENTS	SAMPLE INT	
100							100						
										30° Si-Py	WK TO MODERATE SILICA-MARCASITE VEINING FROM ~90' INCREASING DOWNHOLE TO BXA AT 119'.	20	102.4
										40° Si-Py		103.9	
105							105			40°			
										35° FLT	104'-108': WEAKLY DEVELOPED FAULT BRECCIA ZONE WITHIN CHOCOLATE PORPHYRY LAVA.	21	11
	10.0 / 10.0	4.5 / 10.0										108.0	
110							110			25° INT	CHOCOLATE PORPHYRY LAVA FROM 91' THE GROUNDMASS IS MODERATELY PERVASIVELY BLEACHED DULL GREY WITH SOME LOCALLY COLORING DUE TO MARC. OR HmOx INTRODUCTION. PLAG: MODERATE DISSEMINATED GLOMEROPORPHYRITIC CLUSTERS ARE REPLACED WITH APPLE TO LT. GRN CLAY, NOW PUNKY & USUALLY PLUCKED. MAFICS ARE NO LONGER IDENTIFIABLE	22	111.4
										20° INT		113.0	
115							115			25° Si-VN-BXA		23	12
												-118.0	
	10.1 / 10.1	9.6 / 10.1								15° Si-Py	119-120.5': MILKY SILICA-CEMENTED HYDRO BXA WITHIN CHOCOLATE LAVA. MONOLITHIC CRACKLE BXA. SILICA CEMENT PEPPERED WITH BLADED MARCASITE BLEBS.	24	
120							120					121.0	120.4
												25	
												124.5	
125							125			~30° SiO2 HmOx BXA	122.5-124': SILICIFIED MOSAIC/ RUBBLE VEIN BXA. MONOLITHIC RK FLOUR + RED HEMATITE MATRIX. FULLY HEALED WITH SiO. MINOR LATE MARCASITE IN VUGS. GRY-WHT, PUNKY-CREAMY CLAY VNLTS SUB-// TO Si-HmOx STRUCTURES.	26	13
										40°		129	
	10.0 / 10.0	8.4 / 10.0											129.4
130							130			60° FLOW			
										55° Si-Hm VNLT		27	
												134	14
135							135			20° Si-Py		28	
												139	138.4
	10.0 / 10.0	9.2 / 10.0								25° Si-Py CLAY		29	
140							140			35° INT		144	15
										40° Si-Py		30	
145							145						
	10.0 / 10.0	6.8 / 10.0								70° HmOx VN BX	~148'-152': PARTIALLY SILICA HEALED MOSAIC BXA TEXTURALLY SIMILAR TO ABOVE.	148. / 31	147.7
150							150					150	

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 4
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:	COMPLETED:	HOLE # 97-385
DATE: 04/05/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

~152': SANDY CLAY?

DEPTH	REC	RQD	ALLUVIUM	MUD CGL		LITH TUF	PUM TUF	SURGE TUF	ALTAVIST	LITH TUF	BANDESLIT	ARHYOLITE	TEC BXA	BRECCIA	GOUGE	VOID	Fe MIN: MNOX	HEMIT	LIMONIT	PYRITE	PROPIL	ARGILLIC	ARGILLIC 2	SILICIFIED	BARITE	QTZ VNS	CALCITE	MET CLAST	BACHOD	CUBOID	BRADY	MKRPOR	LUDD	WILDROS	DOZER
150																																			
														2						2		1		3	1	3									
																										2									
155														1																					
	10.0	6.3																																	
160	10.0	10.0																						3		1									
																										3									
165																																			
	10.0	8.5																								1									
170	10.0	10.0																																	
175																																			
	10.0	9.9																																	
180	10.0	10.0																																	
185																																			
	10.0	9.9																																	
190	10.0	10.0																																	
																		1								3									
195																																			
	10.0	9.0																																	
200	10.0	10.0																																	

DEPTH	LITH GRAPH	ALT AGP	STRT NT	SAMPLE INT	SAMPLE
150				150.0	
			20° Si-Py	32–154	16
155			10° Si-Py	33–159	156
160			10° Si-Py Ba CLAY	34–164	17
165			40° Si-Py Ba	35–169	165
170			55° Si-Hm	36–174	18 174
			15° CLAY	37–179	19
175					
180			5° Py CLAY	38–184 (162 ppb)	182.5
			10° CLAY		
185				39–189	20
			45° INT		
190				40–192.5	191
			20° Si-Hm BX VN	41–195.2	581 ppb
195				42–199	21 166 ppb 199
			55° INT		
200					

COMMENTS

150-152': STR. SILICA FLODDING IN BXA. DRUSY QTZ LINES VUGS & LATE CLEAR COLORLESS EUHEDRAL BARITE (AFTER CALCITE?) GROWS INTO VUG.

BLADED MARCASITE MOD'LY TO STR'LY PRESENT AS BLEBS W/IN SiO_2 ABOVE, AND AS DISS'D BLEBS W/IN GROUNDMASS, POSSIBLY OCCUPYING FORMER MAFIC SITES.

~159'-164': SILICA + BLADED MARCASITE VEIN BXA STOCKWORK WITH ~1 CM SQUARE BARITE XTLS & SOFT WHT CLAY IN OPEN SPACES. LO % TO C/A

~161': BLADES OF QTZ? PAVED W/ QTZ DRUSE.

166': MINOR BARITE CEMENTED BXA VN.

~166'-193': MASSIVE CHOCOLATE PORPHYRY LAVA LT. DULL GRAY FLECKED WITH WHT PUNKY CLAY SHOT PLAG & PYRITIZED(?) MICROLITES. MODERATE SILICA-PYRITE +/- WHT CLAY VEINS. DULL MARCASITE BLEBS WK TO MOD. IN GROUNDMASS. LITHOLOGY, BLEACHING UNCHANGED FROM UPPER CONTACT.

193-194': SILICA + HMOX STAINING + Si-MARCASITE VEINED. RUDDY SILICA FORMS ~~AA~~ CEMENT TO MONOLITHIC CRACKLE BXA OF PROBABLE HYDROFRAC ORIGINS.

194'- : LITHOLOGY, VEINING & ALT'N AS DESCRIBED ABOVE.

SILICA VNING GONE BELOW 194'

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 5
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:	COMPLETED:	HOLE # 97-385
DATE: 04/05/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	

DRILLING: DEPTH, RECOVERY, RQD

LITHOLOGY: ALUVIUM, MUD CGL, LITHTUF, PUMTUF, SURGE FOL, PUMGRAV, SAND, ALAVA, ALAUTOBX, INTRUSIV, BASALT, ANDESITE, RHYOLITE

STRUCT: TECTONIC BXA, BRECKEN, GOUGE, VOID

ALTERATION/MINERALIZATION: Fe MINERALS (MNOX, HEMTIT, LIMONIT, PYRITE), PROPYL, ARGILLIC, ARGPROP, 2 SILICA, QTZ VNS, CALCITE, MECLAS

STRAT: BACHDOG, CHOCOLATE, UBDRY, BRADY, MKRPOR, LUD, WILDERS, DOZER

DEPTH	RECOVERY	RQD	ALUVIUM	MUD CGL		LITHTUF	PUMTUF	SURGE FOL	ALAVA	ALAUTOBX	INTRUSIV	BASALT	ANDESITE	RHYOLITE	TECTONIC BXA	BRECKEN	GOUGE	VOID	Fe MINERALS				PROPYL	ARGILLIC	ARGPROP	2 SILICA		QTZ VNS	CALCITE	MECLAS	BACHDOG	CHOCOLATE		UBDRY	BRADY	MKRPOR	LUD	WILDERS	DOZER
200																																							
																1						2		1															
205																																							
	10.0	8.6																																					
210	10.0	10.0																										1											
215																													1										
	10.0	9.4																																					
220	10.0	10.0																																					
225																						3																	
	10.0	8.8																																					
230	10.0	10.0																																					
235																																							
	10.0	9.1																																					
240	10.0	10.0																																					
245																																							
	10.0	9.4																																					
250	10.0	10.0																																					

DEPTH	LITH GRAPH	ALT GRAPH	STRUCT	SAMPLE INT	BOX
200				43	
				204	22
205			55° JNT	44	
			10, 20° JNT	209	208
210				45	
			30°	214	23
215			25° SI-PY CLAY	46	
				217	
			0° WHT. CLAY	219	
220				47	24
				224	
225			~0° CLAY	48	225
			30° JNT	229	25
230				49	
				234	234
235			~0° CLAY MARC 60° CLAY?	50	
				239	26
240			BY STWK	51	
				244	243
245				52	
				249	27
250			50° JNT		

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

COMMENTS

200-250': AS DESCRIBED ABOVE: MASSIVE DULL LT. TAN-GREY ~~PORP~~ PLAGIOCLASE PORPHYRY CHOCOLATE LAVA. MODERATE WHT CLAY ON UN-HEALED FRAX +/- MARCASITE. MODERATE IRR-REGULAR STOCKWORK OF DULL ANHEDRAL MARCASITE VEINLETS PRE-DATING THE CLAY COATINGS. ALSO DULL MARCASITE BLEBS IN GROUNDMASS COMMON.

FROM 210': TRUE STRAIGHT JOINTING IS SPARSE TO ABSENT.

WK HEMATITIC HALOS ON SOME SULFIDIC FRAX & VEINLETS COMMON THRU OUT THIS ZONE.

210-220': MOD TO WK SILICA-~~PYRIT~~ MARCASITE ~~+ APPLE~~ BLUE-GRN CLAY

220': WHT PUNKY CLAY VN // C/A. LOW ANGLE TO CORE AXIS VEINS ARE COMMON THRU HERE. + CALCITE. MARCASITIC VNLTS INCREASE FROM WK TO MOD. ~ 220'.

243-244': HEALED WKLY HEMATITIC CRACKLE BXA.

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 6
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:	COMPLETED:	HOLE #
DATE: 04/05/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

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DEPTH	DRILLING: ECT	DRILLING: RQD	LITHOLOGY: ALUVUM	LITHOLOGY: MUD CGL	LITHOLOGY: LITH TUF	LITHOLOGY: PUM TUF	LITHOLOGY: SURGE TUF	STRUCT: TEC BXA	STRUCT: BROKEN	STRUCT: GOUGE	STRUCT: VOID	ALTERATION/MINERALIZATION: Fe MIN: MNOX	MHEMTIT	LIMONITE	PYRITE	PROP	ARGR	ARGR 2	ARPL SIL	QTZ VNS	CALCITE	METALS	STRAT: BACHDOGEROL	CHUBUD	BARRY	MKRPOR	BUD	LIDROS	DOZER
250																													
									1						3		1												
255																													
	10.0	9.7																		2									
260	10.0	10.0																											
265																													
	10.0	9.0																											
270	10.0	10.0																											
275																				2									
	10.0	9.6																											
280	10.0	10.0																											
285																													
	10.0	9.3																											
290	10.0	10.0																											
295																													
	10.0	4.5																											
300	10.0	10.0						1									2												

DEPTH	LITH GRAPH	ALT GRAPH	STRAT	COMMENTS
250				250-300': LITHOLOGY AS DESCRIBED ON P.5.
255			40° CLAY MARC	~256': MOD. SILICA + BLADED MARCASITE + WHT CLAY BXA VEINING REAPPEARS. SILICA-MARC VEINS TO ~280' WITH CLAY + MARCASITE CONTINUING BELOW THAT. "BACKGROUND" CLAY & MARCASITE VEINING CONTINUES AS DESCRIBED ON P.5.
260			50° Si-Py CLAY	
			15° Si-Py BXVN	
265			40° CLAY MARC	
270			40° CLAY MARC	
275			20° Si-MARC	
280			40° Py JNT ~0° CLAY MARC	
285				
290			30° CLAY MARC	
295			30° CLAY MARC	~297'-302': UNHEALED TO SEMI-HEALED CRACKLE BRECCIA. MINOR WHT CLAY MATRIX. TIGHT CLAST-SUPPORTED W/O ROTATION. MONOLITHIC.
300				

SAMPLE INT	
53	252
254	
54	28
259	
55	261
264	
56	29
269	
	270
57	
274	
58	30
279	
	279.5
59	
284	
	31
60	
289	
	288.5
61	
294	32
62	
297	
	297.5
63	

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 7
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:	COMPLETED: 04	HOLE # 97-385
DATE: 04/06/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	

SCALE: 1" = 10 ft

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MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH (FT), RECOVERY (FT), RQD

LITHOLOGY: ALLUVIUM, MUD CGL, LITHTUF, PUM TUF, SURGE TUF, ASH, ALAVA, AUTOBXA, INTRUSIV, BASALT, ANDESITE, RHYOLITE

STRUCT: TEC, BXA, BRECK, GOUGE, VOID

ALTERATION/MINERALIZATION: Fe MIN (MONOX, HEMTITE, LIMONITE, PYRITE), PROPYL, ARGIL, ARGILLIC, REPLACE, QTZ VNS, CALCITE, METCLAS

STRAT: BAD GEROL, CHOCOLAT, BOUD, BRADY, MKRPOR, BUD, LIDROS, WIDE, DOZER

DEPTH (FT)	RECOVERY (FT)	RQD	LITHOLOGY	STRUCT	ALTERATION/MINERALIZATION	STRAT	DEPTH (FT)	LITH GRAPH	ALT GRAPH	STRUCT	COMMENTS	SAMPLE INT	BOX
300							300						
					3 2						297-302': TIGHT UNHEALED CRACKLE BRECCIA IN BLCHED TAN-GREY CHOCOLATE PLAGIOCLASE PORPHYRY ~~LAVA~~ FLOW.	302.0	33
305							305					64	
	10.0 / 10.0	8.9 / 10.0			1					40° JNT	BELOW 302': THE CHOCOLATE IS AS DESCRIBED ON PREVIOUS PAGES: CONT'D TAN-GREY, FLECKED WITH CLAYSHOT PLAG GLOMEROPORPHYRITICS MODERATELY TO WKLY STOCKWORKED W/ IRREGULAR MARCASITE VNLTS. IRREGULAR FRX WITH WHT CLAY COATINGS SPARSE BUT PRESENT. TRUE STRAIGHT JOINTS SPARSE. SILICA VNLTS ABSENT. SPARRY CALCITE APPEARS AT 307'	307	306.5
310							310			30° MARC		65	34
												312	
315					1		315					66	
	10.0 / 10.0	9.7 / 10.0			1 1					40° BXA FOLIA MARC	FROM 316' TO CONTACT/FAULT AT ~349': INTERVALS OF MYLONITIC TO MILLED, ~~SUB-ROUNDED~~ MONOLITHIC BRECCIA. HEMATIZED ROCK FLOUR MATRIX. THE TEXTURE & MATRIX OF THESE BRECCIA INTERVALS REMAINS CONSTANT, BUT IT IS WELL HEALED FROM 316-320' & DECREASINGLY SO TOWARDS THE CONTACT. SUB-ANGULAR FRAGMTS. NOTE ~40° FABRIC. LATER JNTS & VEINS TEND TO FOLLOW THIS TOO. THIS TREND IS NOT PERVASIVE, MUCH OF THIS BXA, ESPECIALLY THE COARSER MATERIAL, APPEARS UNORIENTED.	316.0	315
320					1		320					67	
												320	35
325					2		325			40° JNT ~25° CALVN		68	
					2							324.0	324
	10.0 / 10.0	9.6 / 10.0			2 2						FROM 324': THE ABOVE FABRIC IS OVERPRINTED BY A PERVASIVE GRAININESS, POSSIBLY DUE TO ARGILLIZATION. IT OBSCURES ORIGINAL TEXTURES TO SOME EXTENT & IS RELATED TO THE MILLED & UNHEALED BRECCIA ZONES.	69	
330							330					329	36
												10	
					3 3					30° CALVN		333	
335							335					334	
										40° BXA FOLIA	BRECCIATED INTERVALS = 316-324', 329-332', 334'-339' & 342-348'.	11	
	10.0 / 10.0	10.0 / 10.0										339	37
340							340					12	
					1					40° JNT		342	
												344	
345							345					13	
	10.0 / 10.0	6.4 / 10.0		2 1 1	2 3					40° JNT 15° FLT	348'-355': TIGHT, CLAST-SUPPORTED, UNHEALED FAULT BRECCIA. TWO-TONED: LT. BLUE-GRN & DULL FLESH. FABRICS ARE VARIABLE, BUT LO ∠.	348	38
350							350					14	

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:
DATE: 04/06/97	SEC. T. N., E.	ELEVATION:	ANGLE:

STARTED: 04/02/97 | COMPLETED: | DRILLER: LONGYEAR | PAGE: 8 | HOLE # 97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH (350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400); RECOVERY (10.0/10.0); RQD (2.1, 6.6, 0.5, 9.2, 8.3)

LITHOLOGY: ALLUVIUM, MUD, CGL, LITHUTF, PUMUTF, SURGE, ALAVA, AUTOBX, INTRUSIV, BASALT, ANDESITE, RHYOLITE

STRUCT: TEC, BRX, GOUGE, VOID

ALTERATION/MINERALIZATION: Fe MIN, MHNOX, HEMTITE, LIMONITE, PYRITE, PROP, ARG, ARG2, ARPL, SILI, QTZ VNS, CALCITE, METALS

STRAT: BCHDOLOMITE, CUDA, BRADY, MKRPOR, LUD, WIDROS, DOZER

DEPTH	SAMPLE	COMMENTS	BOX
350		348'-355': DULL BRASSY MARCASITE BLEBS & STRINGERS EXHIBIT THE SHEAR FABRIC WITHIN THIS FAULTED ZONE. MUCH OF THE FAULT BRECCIA APPEARS WEAKLY OXIDIZED. BETWEEN 354.5' & 355' THE FAULT ZONE DIES OFF INTO CRACKLE BXA WITH VERY APHANITIC FLOW? BANDED ROCK.	351
355	355	355': LOWER EDGE OF FAULT ZONE AT 45° TO CA.	
	15	354.5'-~395.5'? CRACKLE BRECCIATION CONTINUES INTO THIS UNIT TO 357.5'. THIS APHANITIC FLOW BANDED ROCK IS FAULT BOUNDED AT BOTH MARGINS AND MAY BE A FAULT SLIVER FROM ROCK FOUND AGAIN AT ~450'. PHENOCRYSTS ARE SPARSE TO ABSENT.	39
	359		
360	360		360
	16	MODERATE STRAIGHT JOINTING ~~SUB~~ // FOLIATION.	
	363		
365			40
	17	359-363': TIGHT CLAST-SUPPORTED CRACKLE BXA WITH MINOR HEMATIZED ROCK FLOUR MATRIX & LESSER CALCITE & CLAY IN BTWN. SEMI-HEALED. BLEBS OF DULL BRASSY MARC. IN MATRIX.	
	368.5		369.3
370			
	18	374': MINOR ARGILLIZED FAULT RUBBLE	
	374		41
375			
	19	374-380.5': SOME MODERATE CLAY STOCKWORK & TECTONIZATION OF FLOW BANDED APHANITIC ROCK AS ABOVE.	
	378		378
	80		
380	380.5	380.5': MINOR BLEACH LT BLUE-GRN FAULT A/O INTRUSIVE BRECCIA. FINE PEBBLE BRECCIA	
	81	~382': END OF FLOW BANDED UNIT BEGINNING OF MIXED LITH. BXA? OR ROCK FLOUR.	42
385	385.5	380.5'-395.5': APPARENT DISAGGREGATED ROCK FLOUR OF OVERLYING MATERIAL, ENCASING & CONTAINING V. LT. BLUE-GRN SUB-ROUNDED TO SUB-ANGULAR FRAGMENTS OF CHILLED, JUVENILE MATERIAL (SEE BELOW).	386
	82		
390	390.5		
	83		43
		395.5': SOMEWHAT ARBITRARY INTRUSIVE +/- FAULTED CONTACT.	
395	395.5		395
	84	395.5'-503.5' T 395.5-400.5': INTRUSIVE MARGIN BXA: ANGULAR TO SUB-ROUND LT. BLUE-GRN PERLITIC ULTRA-APHANITIC FRAGMTS OF UNDERLYING RK, IN A RK FLOUR MATRIX.	44
400	400.5		

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:
DATE: 04/07/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°

STARTED: 04/02/97 | COMPLETED: 0 | DRILLER: LONGYEAR | PAGE: 9 | HOLE # 97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH (FT), RECOVERY (%), RQD

LITHOLOGY: 1 ALLUVIUM, 2 MUDCGL, 3, 4 LITHUTUF, 5 PUMTUFF, 6 SURGTUFF, 7 ASHFALL, 8 ALAVA, 9 AUTOBXA, 10 INTRUSIV, 11 BASALT, 12 ANDESITE, 13 RHYOLITE

STRUCT: 14 TECTONIC BXA, 15 BROKEN, 16 GOUGE, 17 VOID

ALTERATION/MINERALIZATION: Fe MIN: 18 MNOX, 19 HEMTIT, 20 LIMONIT, 21 PYRITE; 22 PROP, 23 ARG, 24 ARG2, 25 RPLSIL, 26, 27 QTZVNS, 28 CALCITE, 29 METCLAS

STRAT: 30 BACHDGE, 31 COLDGR, 32 UBD, 33 BRADY, 34 MKRPOR, 35 LUD, 36 WILDOR, 37 DOZER

DEPTH (FT), LITHGRAPH, ALTGRAPH, STRCNT

SAMPLE INT

COMMENTS

Depth (ft)	Recovery (%)	RQD
405–410	10.0 / 10.0	5.8 / 10.0
415–420	10.0 / 10.0	9.6 / 10.0
425–430	10.0 / 10.0	8.4 / 10.0
435–440	10.0 / 10.0	5.7 / 10.0
445–450	10.0 / 10.0	5.2 / 10.0

Sample	Interval
~~400.5~~	
85	404
86	409
87	414
88	419
89	424
90	429
91	434
92	439
93	~~444~~
94	449

COMMENTS:

FROM 400.5': SOLID, LT. BLUE-GRN, ULTRA-APHANITIC & PROBABLY DEVITRIFIED, PERLITIC & MOTTLED. TO 417'.

SULFIDES GONE BY ~ 395.5'. MINOR TRACE HEMATITE +/- SULFIDE IN FAULTS ONLY. GROUNDMASS IS PERVASIVELY PROPYLITIZED BUT HARD & UNARGILLIZED.

FROM ~ 410': STRAIGHT JOINTS +/- CALCITE VEINS COMMON. MINOR DISSEMINATED CALCITE PROBABLY PRESENT.

417-418': BLACK UNPROPYLITIZED INTERVAL SUGGESTING ORIGINAL LITHOLOGY WAS QUITE MAFIC. LT. BLUE-GREEN AND PROPYLITIZED AGAIN BELOW 418'.

431': MINOR MOSAIC BRECCIA CEMENTED W/ HEMATIZED ROCK FLOUR.

435': FIRST FLOW BANDING OBSERVED.

440': BLACK INTERVAL ~ 4"

444-449': SPARRY CALCITE CEMENTED 'HYDROFRAC' MONOLITHIC CRACKLE BXA/ STOCKWORK.

~ 450': DK GRN FLAKEY CHLORITE (?) BEGINS TO APPEAR ON FRX, & IN VNS.

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 10
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING:	COMPLETED:	HOLE #
DATE: 04/07/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	DRILLING EECT	DRILLING RQD	LITHOLOGY (1–13)	STRUCT TEC (14)	STRUCT BRO (15)	STRUCT GOU (16)	STRUCT VOID (17)	ALTERATION/MINIZATION Fe MIN (18–21)	PRO (22)	ARG (23)	ARG (24)	ARPL (25)	QTZ (26)	QTZ VNS (27)	CALCITE (28)	METALS (29)	STRAT (30–37)	DEPTH	LITH	ALT	STRUCT	COMMENTS	SAMPLE INT
450																		450			30°		
					2				2						3						CALVN 60° CALVN		95
																						453: CALCITE CEMENTED CRACKLE BRECCIA.	454
455																		455			65° FLOW 10° CAL+ MARC CHL.	FROM 450': MOD. TO WK STRWK OF CHLORITE COATED FRAX + CHL + MARC W/O CALCITE VEINLETS. VK STRWK CONTINUES TO ~ 499'.	96
	10.0 / 10.0	6.7 / 10.0																					459
460																		460			10° CAL+ Hm+ CHL? 40° 60°		97
																						GEN'L LITHOLOGY: FROM 435' WHERE FLOW BANDING BEGINS THE ROCK BECOMES LT. WARM ~~PA~~ GRAY WITH LT. BLUE-GRN COLOR REMAINING ONLY AS HALOS ON FLOW PARTINGS.	464
465																		465					98
	10.0 / 10.0	6.1 / 10.0																			30°		469
470																		470			40° CALVN		99
																					40° FLOW		474
475																		475					100
	9.0 / 9.0	3.8 / 9.0			3																50°	477-484': BROKEN. STR. FRX ZONE. STR. JOINTING CONTINUES BELOW THIS TO 499'. MODERATE DK GRN CHLORITE ON ALL FRX; SOME CLAY ESP. WHERE FRAX INTENSITY IS STRONG.	479
480																		480			50°		101
																							484
485																		485			50° JNTS		102
	10.2 / 10.2	4.2 / 10.2																			~0° CAL 50° FLOW		489
490																		490					103
																					70		493.2
495	4.9 / 4.9	0.8 / 4.9																495			40° FLOW		104
																					~10° CHL+ CAL		498.7
500																		500				500.5': 3" THICK, IRREGULAR MARGINED, VEIN/DIKE OF CALCITE W/ TRACE CHLORITE DISS'D WITHIN IT.	

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —
DATE: 04/07/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°

STARTED: 04/02/97 | COMPLETED: | DRILLER: LONGYEAR | PAGE: 11 | HOLE # 97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	REC	RQD	LITH	STRAT	COMMENTS	SAMPLE
500						498.7
				70° BX	FROM ~ 498': INCREASINGLY FINE/ULTRA-APHANITIC & FLOW BANDS DISAPPEAR. AT 502': A MARGIN CRACKLE BXA SUGGEST THERMAL SHOCK FRXING.	105 502.0 106 503.5
505	10.2 / 10.2	2.6 / 10.2		30° CNTCT 60° FLT	503.5'-546.5' BXA? POSSIBLE TECTONIZED BRADY? OR CHOCOLATE?	107 506.0
				40° CALVN	503.5': ACTUAL CONTACT IS MODERATELY ARGILLIZED, MILLED AND UNHEALED. IT APPEARS TO BE IN PART A FAULTED CONTACT. THIS FLT IS AT A SIGNIFICANTLY LOWER ∠ TO C/A THAN THE SHATTERED MARGINAL BXA & MAY BE LATE WRT EMPLACEMENT OF THE OVERLYING INTRUSIVE.	108 508.3
510						109
515	10.2 / 10.2	9.0 / 10.2		40° CALVN		513.5
					FROM 503.5': BRECCIATED OR GROUND UP MATERIAL THAT IS NOW FULLY HEALED. QUITE SIMILAR IN APPEARANCE TO THE MATERIAL FOUND AT THE UPPER MARGIN OF THE INTRUSIVE.	110 518.5
520				50° INT	THE MATERIAL IS MODERATELY HOMOGENEOUS, ALTHO IT CONTAINS SUB-ANGULAR BLOBS OF LT. BLUE-GRN JUVENILE INTRUSIVE (SEE ABOVE) TO 512'. IT IS OTHERWISE CONSISTENTLY DULL RUDDY TAN-GREY, POROUS, WITH AN OVERPRINTING OVERALL GRAININESS, POSSIBLY DUE TO ARGILLIZATION. THE BRECCIA TEXTURE IS FAINT, IN THE BACKGROUND & RANGES FROM ANGULAR CRACKLE BXA TO MILLED OR ROUNDED. SOME OF THE FRAGMENTS APPEAR DUCTILELY DEFORMED. I HAVEN'T SEEN THIS RK TYPE BEFORE.	111 523.5
525	10.1 / 10.1	9.0 / 10.1				112 528.6
530	5.4 / 5.4	3.9 / 5.4		30° CALVN		113
535					NO OBSERVABLE PHENOCRYSTS ALTHO FeOx BLEBS ARE COMMON. SPARSE JOINTING. MODERATE IRREGULAR-SHAPED CALCITE VNING. CHLORITE ABSENT BELOW ~ 506'. WK CLAY VNING.	534.0 114
					FROM ~ 532': FAINT FOLIATN FABRIC // TO C/A.	538.0
540	10.0 / 10.0	4.4 / 10.0		10° CALVN		115
				35° INT	FROM 542.5' TO CONTACT: THE DIFFUSE, HM-OBSCURED BRECCIA DESCRIBED ABOVE IS OVERPRINTED BY CLEARCUT, OBVIOUS, CLAY + RK FLOUR MATRIXED TECTONIC BXA. DISAGGREGATED GOUGE FROM ~ 545' TO 546.5'.	542.5 116 546.5
545				60° CNTCT		
550	6.1 / 6.1	0 / 6.1		50° SH	546.5'-~784 T BUD BUD SURGE TUFF. GREEN TO MAROON LITHIC LAPILLI TUFF. WEAKLY SHEARED TO 547.5' BUT UNBRECCIATED	117

550.1 − 3.6 = 546.5 | 544 2.6 = 546.6

PROJECT: Rosebud JV UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 12
LOGD BY: HSM STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED:	HOLE #
DATE: 04/08/97 SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

DRILLING: DEPTH (550–600); EECI; EECT; RQD (10.3/10.3, 8.8/10.3; 10.2/10.2, 8.9/10.2; 10.1/10.1, 9.7/10.1; 10.3/10.3, 7.2/10.3; 3.0/3.0, 2.6/3.0; 10.0/10.0, 9.2/10.0)

LITHOLOGY: ALUVUM (1), MUDCGL (2), LITHTUF (4), PUMTUF (5), SURGTUF (6), ASHFLO (7), ALAVA (8), AUTOBXA (9), INTRUSIV (10), BANDESIT (11), ANDESITE (12), RHYOLITE (13)

STRUCT: TEC (14), BROKEN (15), GOUGED (16), VOID (17)

ALTERATION/MINERALIZATION: Fe MIN: MNOX (18), HEMTITE (19), LIMONITE (20), PYRITE (21); PROP (22), ARG (23), 2 (24), ARPLSIL (25), QTZVNS (27), CALCITE (28), METCLAS (29)

STRAT: BCUBAD (30), CHOCOLATE (31), OBSIDIAN (32), BRAD (33), MKPOR (34), LUD (35), WLDROS (36), DOZER (37)

DEPTH	LITH	GRAPH	STRUCT	COMMENTS	SAMPLE
550				SCALE: 1" = 10 ft.	550.1
				LITH. EXPLANATION:	
				MUD CGL Mud matrix conglomerate	
				LITH TUF Lithic clast dominant tuff	
				PUM TUF Pumice rich tuff	
				SURGE TUF Bedded matrix rich lithic tuff	
			45° FRX ~0° CALVN	FROM ~550': ESSENTIAL UNDEFORMED LITHIC LAPILLI SURGE TUFF. LITTLE VEINING OR TRUE JOINTING. PERVASIVELY CLAY ALTERED AND PROPYLITIZED TO ~565'.	118
555					555
			60° BED SH		119
560					560.4
			50° JNT		120
565				~565': GREEN COLOR & SOME PUNKINESS (CLAY CONTENT?) DECREASE. ROCK IS MIXED GRN & MAROON WITH PERVASIVE MAROON HEMATIZATION OF THE MATRIX BTWN 573-577'.	565
			60° BED		121
570				~566': THE ALTERATION & COLOR CHANGE COINCIDES WITH AN INCREASE IN FRAGMENT SIZE. SUB-ANGULAR TO SUB-ROUNDED COBBLES A FEW INCHES ACROSS APPEAR. V. APHANITIC & POSSIBLY JUVENILE.	570.6
					122
575				~577': RETURN TO GRN CLAY-ALTERED APPEARANCE AS DESCRIBED ABOVE, BELOW A MINOR SHEAR.	575.5
			50° SH/BED	575'-581': LT. BLUE-GREEN, SUB-ANGULAR, PLASTICALLY DEFORMED FLOW BANDED COBBLES FLOAT W/IN PEA-SIZED LITHIC LAPILLI MATRIX. PROBABLY JUVENILE OR NEARLY SO WHEN EMPLACED. THESE APHANITIC COBBLE ARE COMMON TO ~596'.	123
580					580.7
			30° BED		124
585					586
			50° JNT	~587': ELONGATE BLK PHYLLITE LITHIC FIRST OBSERVED.	125
590					591
			55° BED		126
595					596
			60° JNT 30° BED	598': CLAY/GOUGE ~2".	127
600					

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 13
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED:	HOLE #
DATE: 04/08/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	RECOVERY	RQD	ALUVIUM	MUDCGL	LITHTUFF	PUMTUFF	SURGTUFF	ASHFLO	ALAVA	AUTOBXV	INTRUSIVE	BASALT	ANDESITE	RHYOLITE	TECBXA	BROKEN	GOUGE	VOID	Fe MIN: MNOX	HEMATITE	MIMOTIT	PYRITE	PROP	ARG	ARGPL2	SILL	QTZVNS	CALCITE	METCLAS	BACHDOCGER	CHLORITE	BOUDINAGE	BRADY	MKPOR	LUD	WILDROS	DOZER	DEPTH	LITHGRAPH	ALTGRAP	STRCT	SAMPLINK
600																																						600				600
																1							2	2				3														128
605																																						605		20° CALVN		604
																																								70° BED		129
	10.0 / 10.0	9.7 / 10.0																																								609
610																																						610		20° CALVN		130
																				1			1	1				2														614
615																																						615				131
	10.0 / 10.0	10.0 / 10.0																																						70° BED		619
620																																						620				132
																																								60° BED		624
625																																						625				133
																							2	2				3												70° SH		629
	10.0 / 10.0	9.7 / 10.0																		2			1	1				2												75° BED		134
630																																						630				634
																				1			2	2																			135
635																				2			1	1															635				639
	10.0 / 10.0	9.7 / 10.0																																								136
640																																						640		70° BED		644
645																																						645				137
	10.0 / 10.0	9.8 / 10.0																																						90° BED		649
650																																						650				

COMMENTS

THE LITHIC LAPILLI TUFF IS SPECKLED DARK & LT. GRN, ~~CLA~~ MOD'LY CLAY-ALTERED & PROPYLITIZED TO ~612', WHERE IT BECOMES HARDER, GREYER, & WEAKLY HEMATIZED/MAROON.

606': 2" SPARRY CALCITE VEIN

607-609': ANASTOMOSING/BOUDINAGED TEXTURE FIRST SEEN WELL-DEVELOPED IN SILTY LITHIC LAPILLI TUFF. MORE SANDSTONE-LIKE ELSEWHERE IN THIS COREHOLE.

600-650': JOINTING & VEINING & SULFIDES = TRACE/SPARSE OR ABSENT.

625'-627': GRNER, MOD'LY CLAY-ALTERED & SHEARED OR ANASTOMOSING TEXTURE.

634-653': MOD'LY HEMATIZED, ESP. MATRIX SILT. NO SHEARED OR ANASTOMOSING TEXTURE; GOOD PRESERVATION OF SED. TEXTURES.

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 14
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED:	HOLE #
DATE: 04/08/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	DRILLING: ECF	DRILLING: RQD	LITHOLOGY	STRUCT	ALTERATION/MINLIZATION	STRAT	DEPTH	LITHGRAPH	ALTGRAPH	STRUCT	COMMENTS	SAMPLE
650							650				650-700': AS ABOVE. SPARSE VEINING & JNTING. WK CALCITE VEINING. BLK PHYLLITIC BASEMT LITHICS BECOME COMMON, TO 3-5% OF ROCK.	138
				0	2 / 1 1 / 2 2 / 2							654
655							655			60° BED 30° CALVN	653'-681': SPECKLED GRN, MODERATELY ARGILLIZED AND PROPYLITIZED SAND- TO PEBBLE-SIZED LITHIC LAPILLI SURGE TUFF.	139
	10.0 / 10.0	9.8 / 10.0										659
660							660			65° SH 90° CALVN		140
												664
665							665					141
	10.0 / 10.0	9.7 / 10.0								55° BED		669
670							670			70° CALVN		142
												674
675					1		675				674: SUB-ANGULAR, PLASTICALLY DEFORMED, LARGE PEBBLE- TO COBBLE-SIZED ~~LAPILLI~~ FRAGMENT FLOAT IN PREDOMINANTLY PEA-SIZED SURGE TUFF. TO 680'.	143
	10.0 / 10.0	10.0 / 10.0									~679-685': ARGILLIZATION & PROPYLITIZATION DECREASE GRADUALLY THRU THIS INTERVAL.	679
680					1		680			55° BED		144
											682'-713': COBBLE TO LARGE PEBBLE DOMINATED INTERVAL IN SURGE TUFF. GRN TO GRY-PURPLE, WKLY HEMATITIC, WKLY PROPYLITIC & ARGILLIC. THE COBBLES ARE NOT MONOLITHIC SOME ARE ROUNDED WATERWORN & BEAR ELONGATE MICROLITES (POSSIBLY AMPHIBOLE). PERHAPS OSCAR.	684
685							685					145
	10.0 / 10.0	9.6 / 10.0								60° BED /SH		689
690							690					146
										55° BED		694
695							695					147
	10.0 / 10.0	9.5 / 10.0										699
700							700					

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 15
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED:	HOLE #
DATE: 04/08/97	SEC. T. N., E.	ELEVATION:	ANGLE: −90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft.

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	DRILLING RECOVERY	DRILLING RQD	LITHOLOGY (1–13)	STRUCT (14–17)	ALTERATION/MINERALIZATION (18–29)	STRAT (30–37)	DEPTH	LITH GRAPH	ALT GRAPH	STRUCT	COMMENTS	SAMPLE INT
700							700				LARGE GRY-PURPLE COBBLES DOMINATE THE INTERVAL TO 712'. MOST OF THESE ARE VERY APHANITIC, APHYRIC BUT BLEBBED WITH FeOx OPAQUE MATTER & MANY ARE FLOW BANDED. THERE ARE SOME EXOTIC LITHICS IN THIS SIZE RANGE TOO (SEE P. 14)	148–704
705				0	1 / 2	2	705			70° CALVN	~ 707': DARK GRN RIP-UP ? OF EARLIER SURGE TUFF.	149–709
710	10.0 / 10.0	9.6 / 10.0			1 / 2		710			25° CALVN	713-723': GRN, MODERATELY PROPYLITIC & MODERATELY ARGILLIZED. SHEARED OR ANASTOMOSING TEXTURE PROMINENT.	150–714
715	10.0 / 10.0	10.0 / 10.0			2		715			60° BED/SH	750-800': JOINTS SPARSE. WK CALCITE VEINING.	151–719
720							720			30° CALVN	723-738: LESS ALTERED. INTERMITTENTLY GREY & FRESH. ~~TRACE HEMATITE~~. NO HEMATITE.	152–724
725	10.0 / 10.0	9.1 / 10.0			1		725			75° BED	~ LOOKS LIKE INTERNAL CONTACT BTWN SURGES.	153–729
730							730			65° SH		154–734
735	10.3 / 10.3	9.2 / 10.3			2		735			70° BED	738-755': MODERATELY ARGILLIZED & PROPYLITIZED	155–739
740							740			55° BED		156–744.3
745	9.7 / 9.7	9.6 / 9.7					745			45° BED		157–749
750							750					

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 16
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: –	COMPLETED:	HOLE #
DATE: 04/08/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

DRILLING: DEPTH (750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800); RECOVERY (9.6, 9.6, 10.3, 10.3, 10.1, 10.1, 10.0, 10.0, 10.0, 10.0); RQD (9.0, 9.6, 9.0, 10.3, 9.9, 10.1, 10.0, 10.0, 9.8, 10.0)

LITHOLOGY / STRUCT / ALTERATION/MINILIZATION / STRAT

Depth	Alluvium (1)	Mud (2)	Lithic Tuff (4)	Pumice Tuff (5)	Surge Tuff (6)	Ash Fall (7)	Lava (8)	Auto Breccia (9)	Intrusive (10)	Basalt (11)	Andesite (12)	Rhyolite (13)	Tectonic Contact (14)	Broken Rock (15)	Gouge (16)	Void (17)	Fe Mineralization (18)	Hematite (19)	Limonite (20)	Pyrite (21)	Propylitization (22)	Argillization (23)	Argillic (24)	Silicification (25)	Quartz Veins (27)	Calcite (28)	Metacalcite (29)	Bahada (30)	Chocolate Tuff (31)	Bouldery (32)	Bedded (33)	Mark (34)	Lava Blocks (35)	Wildroses (36)	Dozer (37)
750																																			
755														1							2	2				2										
760																					1	1														
765																										3										
770																										2										
775																																				
780																																				
785																		1								3										
790												?														2										
795																										1										
800																																				

Depth	Lithology	Alteration	Strat	Comments	Sample
750					158
					754
755			70° BED	~755': BEGINNING OF A GRADUAL SLIGHT DECREASE IN PROPYLITIZATION & ARGILLIZATION. ROCK BECOMES GRAY & SLIGHTLY HARDER WITH DEPTH	159
					759
760					160
					763.6
765			70° BED		
			70° CALC	766-768': DARK SAND-SIZED HORIZON POSSIBLY DUE TO A HIGH CONTENT OF CHLORITIZED (PHYLLITE ?) FRAGMENTS.	161
					769
770				BELOW 768': PHYLLITE BASEMENT FRAGMENTS ARE MORE COMMON THAN ABOVE. THE ROCK LOOKS LESS LIKE SORTED, BEDDED SURGE TUFF & MORE LIKE A RUBBLE BXA SUBJECT TO MINIMAL TRANSPORT. SAME ORIGIN AS OVERLYING TUFF HOWEVER. FRAGMENTS HAVE THE SAME TEXTURES & THE SAME RESPONSE/ALT'N. THE BULK OF THE FRAGMENT POPULATION AT THIS LEVEL APPEARS TO BE DOZER BUT IT IS STILL HETEROLITHIC.	162
					773.9
775					163
					779.0
780			60° BED	783.0-783.4': FINE, HARD, GREY, SANDY LAYER AT BASE OF SURGE TUFFS.	164
					783.4
785			60° CALC	783.4' - 1076.5' T_D DOZER AUTOBRECCIA: MONOLITHIC, ANGULAR TO SUBANGULAR DOZER RHYOLITE FRAGMENTS IN A ROCK FLOUR & SAND MATRIX OF THE SAME. NUMEROUS FINELY FLOW BANDED FRAGMENTS. JOINTS & VNS SPARSE TO ABSENT. CLAST-SUPPORTED.	165
					788.5
790				~~ABC~~ THE BRECCIA IS LT. GRY STAINED MAROON (HMOX) TO 793' AND TURNS GRADUALLY GRN-GRY TO 809' WHERE IT BLEACHES OUT TO CREAM-GRY.	166
					794
795			35° INT		167
					799
800					

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —
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COMPLETED:	HOLE #	
DRILLER: LONGYEAR	97-385	

SCALE: 1" = 10 ft

LITH EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH, RECOVERY, RQD

LITHOLOGY: ALUVIUM, MUDCGL, LITHTUF, PUMTUF, SURGE TUF, LUSH VOLCANIC, ASHFALL, ALTAVOX, AUTOBRECCIA, INTRUSIVE, BANDED, ANDESITE, RHYOLITE

STRUCT: TECTONIC BXA, BRECCIA, GOUGE, VOID

ALTERATION/MINERALIZATION: Fe MINERALS (MINOR, HEMATITE, MIMETITE, LIMONITE), PROPYLITIC, ARGILLIC, ARGILLIC 2, SILICIFIED, QTZ VEINS, CALCITE, MELANTACLASTS

STRAT: BAHDOCOLT, CHUDOD, BRADY, MKRPO, LUD, WILDROS, DOZER

DEPTH, LITHOLOGY, ALTERATION, STRUCT

SAMPLE INTERVALS

Depth	Recovery	RQD
800–805	10.0	10.0
805–810	10.0	10.0
810–815	10.0	10.3
815–820	10.0	10.0
820–825	10.0	9.6
825–830	10.0	10.0
830–835	10.0	9.1
835–840	10.0	10.0
840–845	10.0	9.7
845–850	10.0	10.0

STRUCT: 35° INT; 55° INT; 50° CLAY

COMMENTS

809-815': TRACE BLEACHING.

FROM 815': AS DESCRIBED ON P.16: MONOLITHIC DOZER AUTOBRECCIA CONSISTING OF SUB-ANGULAR TO SUB-ROUND FRAGMENTS. CLAST-SUPPORTED WITH A SAND- TO PEBBLE-SIZED MATRIX OF THE SAME DOZER MAT'L. FRAGMENTS RANGE IN COLOR FROM MEDIUM TO LT. BLUISH GRAY. SOME ARE FLOW BANDED.

NO VEINS; TRACE JOINTING.

BY ~826 THE AUTOBRECCIATED DOZER IS UNIFORMLY MED. BLUE-GRAY AND MORE UNIFORM IN TEXTURE OF FRAGMENT. BXA TEXTURE IS THE SAME.

SAMPLE INTERVALS: 168–804; 169–809; 170–814; 171–819; 172–824; 173–829; 174–834; 175–839; 176–844; 177–849

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —
DATE: 04/09/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°

STARTED: 04/02/97 | COMPLETED: | DRILLER: LONGYEAR | PAGE: 18 | HOLE # 97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH, RECOVERY, RQD

LITHOLOGY: 1 AMLUVUM, 2 MUDCGL, 3, 4 LITHTUF, 5 PUMTUF, 6 SURGTUF, 7 ASHFLO, 8 LAVA, 9 AUTOBXA, 10 INTRUSV, 11 BASALT, 12 ANDESIT, 13 RHYOLIT

STRUCT: 14 TECTOBXA, 15 BRECCIA, 16 GOUGE, 17 VOID

ALTERATION/MINIERALIZATION: Fe MIN: 18 MNOX, 19 HEMTIT, 20 LIMONIT, 21 PYRITE; 22 PROP, 23 ARG, 24 ARG2, 25 ARPSIL, 26, 27 QTZVNS, 28 CALCITE, 29 MECLAS

STRAT: 30 BAHDGEAR, 31 CHCOLT, 32 UBUD, 33 BRADY, 34 MKPOR, 35 LBUDR, 36 WIDOS, 37 DOZER

DEPTH, LITHOLOGY, GRAPHS, ALTS, STRUCT

SAMPLE INTERVALS: 178–854; 179–858; 180–862; 181–864.3; 182–869; 183–874; 184–879; 185–884.2; 186–889; 187–894; 188–899

COMMENTS

850'–900': FEW JOINTS; WK TO MOD. VEINING; CONT'D AUTOBXA AS DESCRIBED ABOVE.

854– ~ 860': ARGILLIZED WALLROCK AUTOBXA + MODERATE WHITE CLAY STRINGER VEINLET SWARM. THIS INCREASE IN PERVASIVE ALTERATION COINCIDES WITH CLAY VEINING ELSEWHERE. SOMEWHAT TENDS TO OBSCURE THE PRIMARY AUTOBXA TEXTURE BUT OCCASIONALLY PICKS OUT FRAGMTS WITH PREFERENTIAL ALT'N.

15° CLAY; 50° CLAY; 30° CLAY; 50° CLAY

866': MINOR ANNEALLED MYLONITE OVERPRINTING PRIMARY AUTOBXA. ~1-2'.

30° SH

FROM 870': AUTOBRECCIATED DOZER GROWS GRADUALLY PALER TO LT. GRY-AQUA BY ~ 890'.

NO FeOx, NO VISIBLE SULFIDES

Depth	Recovery	RQD
860–865	10.3 / 10.3	7.4 / 10.3
870–875	9.7 / 9.7	9.6 / 9.7
880–885	10.2 / 10.2	10.0 / 10.2
890–895	9.8 / 9.8	9.7 / 9.8
895–900	10.0 / 10.0	9.7 / 10.0

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 19
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SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH, RECOVERY, RQD

LITHOLOGY: ALLUVIUM, MUD, CGL, LITHIC TUFF, PUMICE TUFF, SURGE TUFF, ASHFALL, ALAVA, AUTOBXA, INTRUSIVE, BASALT, ANDESITE, RHYOLITE

STRUCT: TECTOBXA, BROKEN, GOUGE, VOID

ALTERATION/MINERALIZATION: Fe MIN: MNOX, HEMTIT, LIMONIT, PYRITE; PROP, ARG, ARGG, RPL, SILL, QTZVNS, CALCITE, METCLAS

STRAT: BADGER, CHOCOLT, UBUD, BRADY, MKRPOR, LBUD, WILDROS, DOZER

DEPTH, LITHGRAPH, ALTGRAPH, STRCNT

COMMENTS

Depth	Recovery	RQD	Alluvium	Mud	Cgl	Lithic tuff	Pumice tuff	Surge tuff	Ashfall	Alava	Autobxa	Intrusive	Basalt	Andesite	Rhyolite	Tectobxa	Broken	Gouge	Void	Fe min: Mnox	Hemtit	Limonit	Pyrite	Prop	Arg	Argg	Rpl	Silt	Qtz vns	Calcite	Metclas	Badger	Chocolt	Ubud	Brady	Mkrpor	Lbud	Wildros	Dozer
900																																							
905	10.0 / 10.0	9.4 / 10.0																																					
910																																							
915	10.0 / 10.0	10.0 / 10.0																																					
920																																							
925	10.0 / 10.0	9.7 / 10.0																																					
930																																							
935	10.0 / 10.0	4.0 / 10.0																																					
940																																							
945	10.0 / 10.0	9.3 / 10.0																																					
950																																							

Depth	Alt graph	Strct
905		60° JNT
910		65° CLAY
925		50° CLAY+ CAL
935		60° CLAY
940		30° CLAY
		60° CLAY
945		45° CLAY
		40° JNT

COMMENTS:

900 - 950: CONT'D DOZER AUTOBXA. PERVASIVE LT. BLUE-GREEN WITH SOME FAINT PINK-RED STAINING AT RIMS OF FRAGMTS & DISSEMINATED IN THE MATRIX. PROBABLY TRACE HMOX. TR. JOINTING & LOCAL MOD. TO STR. WHT CLAY VEINLET SWARMS WITH ATTENDANT INCREASED WALLROCK ARGILLIZATION.

FRAGMENT SIZE IN AUTOBXA INCREASING.

939 - 944': WHITE CLAY VEINLET SWARM. THE DOZER AUTOBXA WALLROCK IS STRONGLY ARGILLIZED THRU THIS INTERVAL & POSSIBLY SUBJECT TO SECONDARY BRECCIATION AT ~ 940'.

Sample	Depth
189	904
190	909
191	914
192	919
193	924
194	929
195	934
196	939
197	944
198	949

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 20
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SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH FT	DRILLING: RECOVERY	DRILLING: RQD	LITHOLOGY: ALLUVIUM (1)	AMUD CGL (2)	(3)	LITH TUF (4)	PUM TUF (5)	SURGE TUF (6)	ASH FLO (7)	LAVA (8)	AUTOBX (9)	INTRUSIV (10)	BASALT (11)	ANDESITE (12)	RHYOLIT (13)	STRUCT: TEC BXA (14)	BROKEN (15)	GOUGE (16)	VOID (17)	ALTERATION/MINIZATION: Fe MIN: MNOX (18)	HEMTIT (19)	LIMONIT (20)	PYRITE (21)	PROP (22)	ARG (23)	ARGG (24)	RPL SIL (25)	(26)	QTZ VNS (27)	CALCITE (28)	METALS (29)	STRAT: BADGER (30)	CHOCOLT (31)	(32)	BRADY (33)	MKRPOR (34)	LBUD (35)	WILDROS (36)	DOZER (37)	DEPTH FT	LITHGRAPH	ALTGRAPH	STRCNT	COMMENTS	SAMPLE INT
950																																								950					199
																																													954
955																																								955					200
	10.0	9.6																																											959
960	10.0	10.0																																						960					201
																																													964
965																																								965		40° INT		~965': SLIGHT INCREASE IN RED HmOx STAINING AT RIMS & IN INTERIORS OF AUTO.BXA FRAGMENTS. CONTINUES TO INCREASE TO ~988' THEN DROPS OFF.	202
	10.0	9.9																																											969
970	10.0	10.0																																						970		55° BXA/VN			203
																																													974
975																																								975					204
																																													979
980	10.0	9.7																																						980		30° INT			205
	10.0	10.0																																											984
985																																								985					206
																																													989
990	10.0	10.2																																						990					207
	10.0	10.0																																								40° INT			994
995																																								995		55° CLAY	994-998': WHT CLAY VNLT SWARM. LITTLE INCREASE IN WALLROCK ARGILLIZATION; SLIGHTLY BLUER THAN ELSEWHERE.	208
	10.0	8.7																																											997.8
	10.0	10.0																																								50° INT			
1000																																								1000		45° CLAY			

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 21
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DATE: 04/09/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH	RECOVERY	RQD	LITHOLOGY	STRUCT	ALTERATION/MINLIZATION	STRAT	DEPTH	LITHOGRAPH	ALTGRAPH	STRAT	COMMENTS	SAMPLE
1000							1000					209
											FROM 998': INCREASING AMOUNTS OF UN-BRECCIATED ROCK WITH II FLOW BANDING INDICATING THAT ITS INTACT. INTERVALS OF AUTOBXA CONTINUE HOWEVER. FAINT RED WASHES OF HmOx STAINING ARE PRESENT DOWN TO ~1030'. JOINTING & VEINING ARE SPARSE TO ABSENT.	1003
1005							1005		20° FLOW			210
	10.0/10.0	10.0/10.0							30° BXVN			1008.5
1010							1010					211
									40° INT			1014
1015							1015		40° FLOW			212
	10.2/10.2	10.2/10.2										1019
1020							1020		50° FLOW			213
												1024.2
1025							1025				~1025-1052': SHATTER/MOSAIC BRECCIA, GRADING INTO PSEUDO BRECCIA ~1052'.	214
	9.8/9.8	9.8/9.8										1029
1030							1030		30° FLOW			215
												1034
1035							1035					216
	10.0/10.0	10.0/10.0										1039
1040							1040					217
												1044
1045							1045		70° INT			218
	10.0/10.0	9.7/10.0							60° CALVN			1049
1050							1050					

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 22
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SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH FT	DRILLING REC CUT	DRILLING REC Q D	LITHOLOGY (1–13)	STRUCT (14–17)	ALTERATION/MINLIZATION (18–37)	STRAT (30–37)	DEPTH FT	LITH	ALT GRAPH	ALT	STRUCT	COMMENTS	SAMPLE INT
1050							1050					BY 1052' THE ~~RHYO~~ DOZER IS STILL DISTURBED & CONTORTED BUT IS PRIMARILY INTACT WITH MINOR INTERVALS OF FAINT DIFFUSE BXATN. CONTINUED LT. TO MED. BLUE-GRN-GRY.	219 1054
1055							1055					CALCITE REACTIVITY SUBTLY INCREASING TOWARDS LOWER CONTACT. DISSEMINATED & NOT VISIBLE.	220 1059
1060	10.2 / 10.2	10.1 / 10.2					1060						221 1064.2
1065							1065				30° FLOW		
1070	9.8 / 9.8	9.8 / 9.8					1070				30° CLAY/CAL		222 1069 223 1074
1075							1075				45° INTCT	1076.5': INTRUSIVE CONTACT. IRREGULAR BUT VERY SHARP WITH < 1" OF CONTACT BRECCIA, NOW FULLY HEALED.	224 1076.5
1080	10.0 / 10.0	10.0 / 10.0					1080				60° FLOW	1076.5'-1126' Tmp MARKER PORPHYRY INTRUSIVE. DARK TO MEDIUM BLUE-GRN LITTLE DIFFERENT FROM ABOVE. LIBERALLY FLECKED WITH 8-10mm LONG PLAGIOCLASE PHENOCRYSTS, ~5%. THESE WHT FSP PHENOS HAVE ROUNDED, RESORBED (?) EDGES. SMALLER RELICT AMPHIBOLES, NOW CHLORITIZED.	225 1080 226 1084
1085							1085				60° CLAY 60° CLAY	FROM 1085': DARK BLOBS (MAFIC INCLUSIONS?) COMMONLY SPOT THE ROCK. 1-5 CMS LONG.	227 1089
1090	10.0 / 10.0	9.3 / 10.0					1090				55° INT 40° FLOW 20° INT		228 1094
1095	10.0 / 10.0	10.0					1095				40° INT	CALCITE AS VEINS & REPLACEMT IN PLAG RELICTS.	229 1099
1100							1100						

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 23
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SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH FEET; RECOVERY; RQD

LITHOLOGY: ALLUVIUM; AMUD; LITHTUF; PUMTUF; SURGTUF; ASH; LAVA; AUTOBX; INTRUSV; BASALT; ANDESIT; RHYOLIT

STRUCT: TECBXA; BROKEN; GOUGE; VOID

ALTERATION/MINLIZATION: Fe MIN: MNOX; HEMTIT; LIMONIT; PYRITE; PROP; ARG; ARGG; RPLSIL; QTZVNS; CALCITE; METCLAS

STRAT: BADDGER; CHOCOLAT; UBAD; BRADY; MKRPOR; LBUD; WILDROS; DOZER

DEPTH FEET; LITHGRAPH; ALTGRAPH; STRCT

COMMENTS; SAMPLE INTERVALS

Depth	Recovery	RQD
1105–1110	10.0	10.0
	10.0	10.0
1110–1115	10.0	9.7
	10.0	10.0
1125–1130	10.0	10.1
	10.0	10.0
1135–1140	10.0	9.7
	10.0	10.0
1145–1150	10.0	10.3
	10.0	10.0

Structure: 60° JNT; 50° JNT; 50°; 50°; 45° JNT; 30° CNTCT; 60° JNT; 30° CALVN; 50° JNT

CONTINUED MEDIUM BLUE-GRN, MODERATELY PROPYLITIZED BUT UNARGILLIZED MARKER PORPHYRY INTRUSIVE.

TO 1126':
WK CALCITE VNING BUT STR. DISS'D CALCITE & CALCITE REPLACING PLAG PHENOCRYSTS. NO SULFIDES, ~~TRACE~~ MOD. JOINTING.

~1119': LIGHTENS TO A GRNER SHADE NEAR CONTACT. CONT'D HARD AND UNARGILLIZED.

~1125': PERLITIC AUTOBRECCIATED CHILLED MARGIN EXTENDS TO THE VERY SHARP BUT IRREGULAR 30° CONTACT AT 1126'. IDENTICAL TO UPPER CNTCT.

1126 - TD

FAIRLY SUBTLE CONTACT; THE ROCK CONTINUES HARD LT. BLUE-GRN AND IS PERVASIVELY AUTOBRECCIATED. MONOLITHIC DOZER CRACKLE BRECCIA WITH ROCK FLOUR + DK GRN CHLORITE MATRIX. WK DISS'D CALCITE. FAINT PINK-RED HMOX STAINING ~~BR~~ RIMS INTERIORS OF FRAGMTS.

A NOTEABLY ANGULAR FRAGMT. POPULATION.

SAMPLE INTERVALS: 230 (1104); 231 (1109); 232 (1114); 233 (1120); 234 (1126); 235 (1130); 236 (1134); 237 (1139); 238 (1144); 239 (1149)

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 24
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE #
DATE: 04/10/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

DRILLING: DEPTH FEET; RECOVERY; RQD

LITHOLOGY: 1 ALIUVUM; 2 AMUDCGL; 3; 4 LITHTUF; 5 PUMTUF; 6 SURGTUF; 7 ASHFALL; 8 LAVA; 9 AUTOBXA; 10 INTRUSV; 11 BASALT; 12 ANDESIT; 13 RHYOLIT

STRUCT: 14 TECTONIC BXA; 15 BRECKEN; 16 GOUGE; 17 VOID

ALTERATION/MINLIZATION: 18 Fe MIN NODX; 19 HEMTIT; 20 MINTIN; 21 PYRITE; 22 PROPYL; 23 ARGIL; 24 ARGIL 2; 25 SILICIFL; 26; 27 QTZ VNS; 28 CALCITE; 29 METASOM

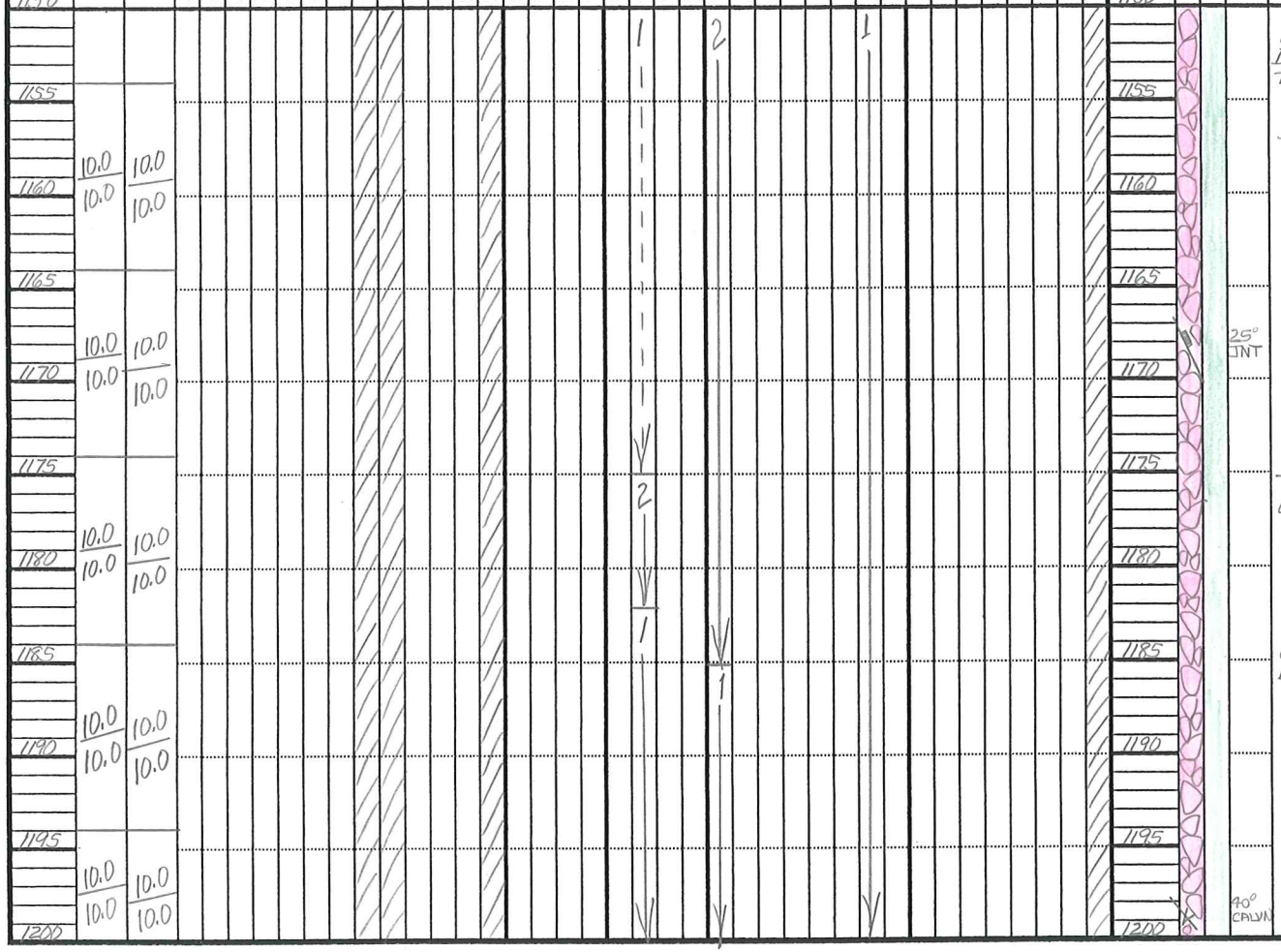
STRAT: 30 BADGER; 31 CHOCOLT; 32 BUD; 33 BRADY; 34 MKRPOR; 35 LUD; 36 WILDROS; 37 DOZER

DEPTH FEET; LITHGRAPH; ALTGRAPH; STRCNT

SCALE: 1" = 10 ft.

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff



COMMENTS

1150-1200': CONTINUED DOZER AUTOBRECCIA AS DESCRIBED ON P.23. TRACE JOINTING, TRACE TO WK CALCITE VEINING.

VARIABLY MATRIX-SUPPORTED TO CLAST-SUPPORTED CRACKLE TO MOSAIC BXA.

1175-1182': INCREASE PINK-RED HMDX (?) STAINING. TEXTURE & BRECCIA IDENTICAL TO ELSEWHERE.

GRADUAL DECREASE DOWNHOLE IN INTENSITY OF BLUE-GRN COLOR.

SAMPLE INT: 240 1154; 241 1159; 242 1164; 243 1169; 244 1174; 245 1179; 246 1184; 247 1189; 248 1194; 249 1199

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 25
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE # 97-385
DATE: 04/10/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	

DRILLING: DEPTH FT; RECOVERY; RQD

LITHOLOGY: 1 ALLUVIUM; 2 MUD; 3 CGL; 4 LITHIC TUF; 5 PUMICE TUFF; 6 SURGE TUFF; 7 FALLOUT; 8 ALAVA; 9 AUTOBXA; 10 INTRUSIV; 11 BASALT; 12 ANDESITE; 13 RHYOLITE

STRUCT: 14 TECTONIC BXA; 15 BROKEN; 16 GOUGE; 17 VOID

ALTERATION/MINLIZATION: Fe MIN: 18 MNOX; 19 HEMTIT; 20 LIMONIT; 21 PYRITE; 22 PROP; 23 ARG; 24 ARGG; 25 2 RPLSIL; 26; 27 QTZ VNS; 28 CALCITE; 29 MELTAS

STRAT: 30 BADGER; 31 AHDCOL; 32 COBUD; 33 BRADY; 34 MKRPOR; 35 LBUD; 36 WILDROS; 37 DOZER

DEPTH FT; LITHGRAPH; LATGRAPH; STRCNT

SCALE: 1" = 10 ft.

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH FT	REC FT	RQD	STRCNT
1200			
1205	9.8 / 10.0	9.8 / 9.8	
1210			
1215	10.2 / 10.2	10.2 / 10.2	55° CALIN
1220			40° CALIN
1225	9.8 / 9.8	9.8 / 9.8	
1230			
1235	10.3 / 10.3	10.1 / 10.3	
1240			
1245	9.7 / 9.7	9.7 / 9.7	80° INT
1250			

COMMENTS

1200-1250': MONOLITHIC CLAST & MATRIX-SUPPORTED MOSAIC TO CRACKLE BXA. AS DESCRIBED ON PRECEDING PAGES.

LT. BLUE-GRN WITH WK TO MOD. RED-PINK HmOx-STAINING

~1230': RED-PINK HmOx STAINING DECREASES.

~1241': AUTOBRECCIA BEGINS TO DIE OUT. MATRIX ROCK FLOUR DISAPPEARS LEAVING A MONOLITHIC VERY TIGHTLY PACKED CLAST-SUPPORTED BXA TO PSEUDOBRECCIA.

SAMPLE	INT
250	1204.0
251	1209
252	1214
253	1219
254	1224.2
255	1229
256	1234
257	1239
258	1244.3
259	1249

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 26
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE # 97-385
DATE: 04/10/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	

DRILLING: DEPTH FT; RECOVERY; RQD

LITHOLOGY: 1 ALLUVIUM; 2 MUD; 3 CGL; 4 LITHTUF; 5 PUMTUF; 6 SURGTUF; 7 ASHFALL; 8 ALAVA; 9 AUTOBXA; 10 INTRUSIVE; 11 BASALT; 12 ANDESITE; 13 RHYOLITE

STRUCT: 14 TECTONIC BXA; 15 BROKEN; 16 GOUGE; 17 VOID

ALTERATION/MINLIZATION: 18 Fe MINOX; 19 HEMATITE; 20 MIMETIC; 21 PYRITE; 22 PROPYL; 23 ARG; 24 ARG2; 25 ARPL SILI; 26 [illegible]; 27 QTZ VNS; 28 CALCITE; 29 MECALAS

STRAT: 30 BADGER; 31 CHOCOLT; 32 BUD; 33 BRADY; 34 MKRPOR; 35 LUD; 36 WILDROS; 37 DOZER

DEPTH FT; LITHGRAPH; ALTRAPH; ASTRCT; SAMPLINT

SCALE: 1" = 10 ft

LITH EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

COMMENTS

1250–1300': MINOR VEINFORM ZONE OF COMPARATIVELY FINE-GRAINED MOSAIC BRECCIA TO RUBBLE OR WKLY MILLED BXA. DISTURBED FLOW BANDING COMMON IN INTACT ZONES. CONSISTENT UNDISTURBED FLOW BANDING BY 1287'.

1258–1262': BRECCIATED. MOSAIC W/ RK FLOUR MATRIX.

ALT'N: HOMOGENEOUS LT. BLUE-GRN/GRY. TRACE RED HMOX STAINING. NO SULFIDES. TRACE JOINTING & CALCITE VEINING.

~1287': FIRST CONSISTENT, INTACT FLOW BANDING OBSERVED.

Depth	Recovery	RQD
1250–1255		
1255–1260	10.3 / 10.3	10.0 / 10.3
1260–1265		
1265–1270	9.7 / 9.7	10.0 / 9.7
1270–1275		
1275–1280	10.0 / 10.0	9.8 / 10.0
1280–1285		
1285–1290	10.0 / 10.0	10.0 / 10.0
1290–1295		
1295–1300	10.0 / 10.0	10.0 / 10.0

Alteration: 1 (1250–1300); 1 (1258–1262); 1 (1265–1270); 1 (1285–1290)

Structure: 15° BXN; 0° CRUXN; 70° INT; 40° FLOW; 35° FLOW; 30° FLOW

Sample intervals: 1254; 1259; 1264.3; 1269; 1274; 1279; 1284; 1289; 1294; 1299

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH:	STARTED: 04/02/97	PAGE: 27
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE #
DATE: 04/10/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

DRILLING: DEPTH | RECOVERY | RQD

LITHOLOGY: 1 ALLUVIUM, 2 AMUDGL, 3, 4 LITHTUF, 5 PUMTUF, 6 SURGTUF, 7 ASHFLO, 8 ALAVA, 9 AUTOBXA, 10 INTRUSIV, 11 BASALT, 12 ANDESIT, 13 RHYOLIT

STRUCT: 14 TECTONITE, 15 BRECCIA, 16 GOUGE, 17 VOID

ALTERATION/MINLIZATION: 18 Fe MINERAL, 19 HEMATITE, 20 LIMONITE, 21 PYRITE, 22 PROPYLITIC, 23 ARGILLIC, 24 ARGILLIC 2, 25 RPLSIL, 26, 27 QTZVNS, 28 CALCITE, 29 METALAS

STRAT: 30 DAGER, 31 CHOLT, 32 UBOD, 33 BRADY, 34 MKRPOR, 35 LBUD, 36 WILDROS, 37 DOZER

DEPTH | LITHGRAPH | ALTGRAP | STRCT

SCALE: 1" = 10 ft.

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	RECOVERY	RQD	STRUCT
1310	10.0 / 10.0	9.8 / 10.0	40° FLOW
1315	10.0 / 10.0	10.0 / 10.0	
1320			25° FLOW
1325	10.0 / 10.0	10.0 / 10.0	
1335	10.0 / 10.0	9.7 / 10.0	40° FLOW
1345	10.0 / 10.0	10.0 / 10.0	

COMMENTS

LITHOLOGY: DOZER

1300-1350': BLUISH-GRAY-GRN WITH INTACT FLOW BANDING TO ~ 1335'. FROM 1335' INCREASINGLY YELLOWER CELADON GRN WITH A CLASSIC DOZER PSEUDOBRECCIA TEXTURE APPEARING ~ 1340'.

1300-1350': ALT'N: NO JOINTING OR VEINING. TRACE RED HmOx ON HAIRLINE FRX; STAINING WALLROCK WKLY ~ 1335'. TRACE BRASSY PYRITE IN HAIRLINE FRAX BY ~ 1344'. WK DISS'D CALCITE WITH VERY MINOR INCREASE ~ 1335'.

~1325': WELL-DEVELOPED CONSISTENT FLOW FOLIATION DISAPPEARS, & IS REPLACED BY MONOLITHIC MOSAIC BXA, MUCH OF WHICH IS TIGHTLY PACKED (CLAST-SUPPORTED). INDISTINGUISHABLE FROM THE ~~ALTOH~~ EXTENSIVE AUTO-BRECCIA AT THE TOP OF THIS UNIT BUT COULD BE SECONDARY.

~1340': ALTERATION OR METASOMATIC STOCKWORK CREATES A PSEUDOBXA IN ~~OTHERWISE~~ UN-DISRUPTED DOZER. THIS TEXTURE BECOMES QUITE STRONGLY DEVELOPED BELOW 1345' AND REMAINS WELL-DEVELOPED TO THE FAULT. FLOW BANDING TEXTURE GONE; PROBABLY OVERPRINTED.

SAMPLINT: 1304, 1309, 1314, 1319, 1324, 1329, 1334, 1339, 1344, 1349

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH: 1556.7'	STARTED: 04/02/97	PAGE: 28
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE #
DATE: 04/15/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

DRILLING: DEPTH, RECOVERY, RQD

LITHOLOGY: 1 ALLUVIUM, 2 MUD, 3 COG, 4 LITHTUF, 5 PUMTUF, 6 SURGTUF, 7 SALAVA, 8 LAUTOBX, 9 INTRUSV, 10 BASALT, 11 ANDESIT, 12 RHYOLIT

STRUCT: 13 TECTBXA, 14 BRECCIA, 15 GOUGE, 16 VOID

ALTERATION/MINERALIZATION: 17 Fe MINOX, 18 HEMATITE, 19 MOLIN, 20 PYRITE, 21 PROPYL, 22 ARGILLIC, 23 ARGILLIC 2, 24 RPLSIL, 25 QTZ VNS, 26 CALCITE, 27 MELACAS

STRAT: 28 BCHDGEOL, 29 CHOCOLT, 30 BUD, 31 BRADY, 32 MKRPOR, 33 LBUD, 34 WILDROS, 35 DOZER

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	RECOVERY	RQD	DEPTH	LITHGRAPH	ALTGRAPH	STRUCT	COMMENTS	SAMPLE
1350			1350				FROM ~1340': CONTINUED STOCKWORKED METASOMATIC PSEUDOBRECCIA, IN UNBROKEN, WEAKLY JOINTED DOZER.	1354
1355			1355				1350 – 1371.5': WK TO TR. DISSEMINATED PYRITE MAINLY ON FRAX.	1359
1360	10.0 / 10.0	9.7 / 10.0	1360			40° JNT 65° 50° SHEAR	1363': DISSEMINATED CALCITE DIMINISHES ABRUPTLY.	1364
1365			1365					1368
1370	10.0 / 10.0	9.0 / 10.0	1370			40° SH. 50° 20° FLT	~1370': LT. PROPYLITIC GREEN COLOR FADES; ROCK IS MOTTLED OFF WHITE BELOW THIS POINT.	1371.5
1375			1375			50° MARC	1371.5'–1419.3' FLT FAULT ZONE IN DOZER (SOUTH RIDGE FLT): THE ROCK IS BLEACHED & MOTTLED OFF WHT DUE TO STKWKED PSEUDOBRECCIATION THAT INCREASES DOWN TO 1378.5'. LOSE LAST SAGE GRN BY 1378.5	1374 / 1377.5
1380	10.0 / 10.0	8.2 / 10.0	1380			70° MARC + SI	1378.5'–1384': ANNEALED MYLONITE IN DOZER BEGINS JUST BELOW A 1" WIDE SILICA-MARCASITE VEIN, GRADES DOWNWARDS INTO A SLIGHTLY MORE POROUS FAULT BXA BY ~1382' AND BECOMES A SEMI-HEALED CRACKLE BRECCIA BY 1384'. WHILE MOST OF THIS MYLONITE APPEARS ANNEALED IT IS NOT SILICIFIED.	1382 / 1384
1385			1385			60° MARC		1387
1390	9.8 / 9.8	5.2 / 9.8	1390			50° 50° 20° JNT 80° FLOW	~1388': ~3" SILICA-SOOTY SULFIDE ZONE IN BROKEN ROCK AT ~50° TO CORE AXIS. THIS BLK, SOOTY MATERIAL IS PRESENT FROM 1384' LINING CRACKLE BXA OPEN SPACE TO 1389' WHERE IT DISAPPEARS IN COMPARATIVELY UNBROKEN RK. MAY BE CARBONACEOUS OR MnO. BRASSY PY BLEBS COMMON.	1390 / 1394
1395	10.0 / 10.0	6.6 / 10.0	1395			CLAY VNLTS 30° JNT	~1389–1399': DOZER IS FAIRLY INTACT WKLY CRACKLE BRECCIATED AND STKWKED WITH WHT-GRN CLAY VEINLETS. BLADED MARCASITE IS PRESENT IN VEINLETS AND BLEBS.	1399
1400			1400					

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH: 1556.7'	STARTED: 04/02/97	PAGE: 29
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE #
DATE: 04/15/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH (FT), RECOVERY, RQD

LITHOLOGY: ALLUVIUM, MUDCGL, SANDSTONE, LITHTUF, PUMTUF, SURGTUFF, ASHALVA, LAVA, AUTOBX, INTRUSV, BASALT, ANDESIT, RHYOLIT

STRUCT: TECTONIC, BROKEN, GOUGE, VOID

ALTERATION/MINIZATION: Fe MIN (MNOX, HEMTIT, LIMONIT, PYRITE), PROP, ARG, ARG2, RPLSIL, QTZVNS, CALCITES, METALS

STRAT: DAGER, CAHOLT, OBUD, BRADY, MKRPOR, LBUD, WILDROS, DOZER

DEPTH (FT)	LITHOLOGY	STRAT	COMMENTS	SAMPLE
1400				
		30° Si-Py	~1399'-1416': SILICA-CEMENTED, SANDY TO PEBBLY MATRIXED CRACKLE BRECCIA IN FLOW BANDED DOZER. MONOLITHIC. MATRIX SAND & PEBBLES LIKEWISE DERIVED FROM DOZER. LITTLE OPEN SPACE LINED WITH DRUSY QUARTZ EUHEDRA. LATE BLADED MARCASITE EMBEDDED IN SILICA. LATER WHT CLAY.	1404
1405				
		30° GOUGE	~1408': GRN, FRIABLE CLAY GOUGE ~2".	1409
1410				
			~1416': BRECCIA DIES OUT INTO SILICA-~~PY~~ MARCASITE VEINLETS.	1414
1415		40° CLAY 35° Si	1417-1418': SALMON RK FLOUR MATRIX TO ANNEALED MYLONITE.	1419.3
1420		45° CNTCT 30° Si-Py	1419.3'-1446.2' ?SS — GREY-TAN, WEAKLY CARBONACEOUS (PHYLLITIC LITHICS), VERY COARSE TO MEDIUM-GRAINED SANDSTONE. VARIABLE ANASTOMOSING BEDDING ANGLES AT HI ANGLE TO CORE AXIS. SIGNIFICANT TECTONIC OVERPRINT ON BEDDING & INTERNAL CONTACTS.	1424
1425		30° Si-Py 75° BED	CONTACT - 1422': PROPYLITIZED SAGE GREEN SANDSTONE. PROPYLITIC GRN FADES BY ~1426.	1429
1430			1426-1426.5': BLK CARBONACEOUS INTERVAL. FAIRLY UNIFORM TECTONIZED GRAY SS BELOW TO CONTACT.	1434
1435		25° VNLBX 30° SiPy VNLBX 75° BED	THE SS IS EITHER ARGILLACEOUS OR WEAKLY ARGILLIZED THRU OUT. PROBABLY THE FORMER, JUDGING FROM THE LACK OF BLCHING.	1439
1440				1443
1445		45° SH		1446.2
1450			1446.2'-1460.5' To — DOZER SLIVER BETWEEN T SANDSTONE AND PHYLLITE. POSSIBLY A FAULT SLIVER. UPPER & LOWER CONTACTS	1449.5

DEPTH	REC	RQD
1405	10.0 / 10.0	5.5 / 10.0
1415	10.0 / 10.0	5.7 / 10.0
1430	10.0 / 10.0	7.3 / 10.0
1440	10.0 / 10.0	8.6 / 10.0
1450	10.0 / 10.0	5.3 / 10.0

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH: 1556.7'	STARTED: 04/02/97	PAGE: 30
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE #
DATE: 04/15/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DRILLING: DEPTH FT; RECOVERY; RQD

LITHOLOGY: AMIUM; MUDCGL; PHYLLITE; LITHTUF; PUMTUF; SURGTUF; ASHFLO; LAVA; AUTOBX; INTRUSV; BASALT; ANDESIT; RHYOLIT

STRUCT: TECBXA; BRECKEN; VOUGOUID

ALTERATION/MINIZATION: Fe MIN: MNOX; HEMTIT; LIMONIT; PYRITE; PROP; ARG; ARGG; RPL; SIL; CARBON; QTZVNS; CALCITES; METALS

STRAT: BADGER; CHOLT; BUD; BRADY; MKRPOR; LBUD; WILDROS; DOZER

DEPTH FT; LITHGRAPH; ALTGRAPH; STRCNT; SAMPLIN

COMMENTS

Depth	Recovery	RQD
1455–1460	10.0/10.0	3.1/10.0
1460–1465	10.0/10.0	
1465–1470	10.0/10.0	0.5/10.0
1470–1475	6.5/6.5	0/6.5
1475–1480	7.8/7.8	0.4/7.8
1480–1485	6.0/6.0	0.9/6.0
1485–1490	5.0/5.0	0/5.0

Sample	Comments
1455.1	LOCALLY CRUMBLY AND SHEARED MOTTLED LT. GRN DOZER. MODERATE WHT CLAY VNLTS, MODERATE FG SULFIDE VNLTS.
1460.5	1460.5': RUBBLY, WEAKLY FAULTED CONTACT.
1462.5	1460.5'–1556.7' ~R ALS — BLACK STRONGLY CARBONACEOUS BEDDED PHYLLITE.
1466	1460.5–1468': 1460.5–1462: VERY TECTONIZED, GOUGY ZONE AT TOP OF PHYLLITE. BROKEN/BRECCIATED ZONE EXTENDS DOWN TO 1468'. FOLLOWED BY AN INTERVAL OF COMPARATIVELY WELL-BEDDED, UNDISTURBED PHYLLITE.
1471	1463–1466': IRREGULAR ~4" WIDE, RUBBLY & FRIABLE SILLS OF PROBABLE DOZER AFFINITY. WHT-GREY, CALCIC.
1476	1468–1474': STRONGLY BROKEN & CALCITE VEINED BUT UNSHEARED PHYLLITE. METALLIC LUSTER GRAPHITE ON PARTINGS. BEDDING // FRX.
1480.5	1474–1479': LIGHTLY/MODERATELY TECTONIZED WITH UNHEALED RUBBLE/MOSAIC BRECCIA.
1485.4	1479'–1480.5' WKLY TECTONIZED, STRLY CALCITE VNED ~~CARB~~
1489.2	1485.4'–1489.2': MODERATELY TECTONIZED WITH TRUE TECTONIC BRECCIA FROM 1488.3–1489.2, WITH SUB-ANGULAR PHYLLITE FRAGMENTS IN BLACK CARBONACEOUS FRIABLE MATRIX GOUGE.
1494.3	1489.2'–1510.5': STRONGLY BROKEN & CALCITE VNED BUT UNSHEARED PHYLLITE. BEDDING // FRX.
1499.3	FROM ~1464': WHT SPARRY STRONG CALCITE PRESENT AS BEDDING // FILL & AS CROSSCUTTING VNLTS.

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH: 1556.7'	STARTED: 04/02/97	PAGE: 31
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE #
DATE: 04/16/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	97-385

DRILLING: DEPTH INT; RECOVERY; RQD

LITHOLOGY: 1 ALLUVIUM; 2 MUD CGL; 3 PHYLLITE; 4 LITHTUF; 5 PUMTUF; 6 SURGTUF; 7 ASHFALL; 8 ALAVA; 9 AUTOBXV; 10 INTRUSV; 11 BASALT; 12 ANDESIT; 13 RHYOLIT

STRUCT: 14 TECTONIC BXA; 15 BROKEN; 16 GOUGE; 17 VOID

ALTERATION/MINLIZATION: 18 Fe MIN NOXMT; 19 HEMTITE; 20 MIMOINT; 21 PYRITE; 22 PROP; 23 ARG; 24 ARG2; 25 RPLSIL; 26 ; 27 QTZVNS; 28 CALCITE; 29 METCLAS

STRAT: 30 BADGER; 31 CHOCOLT; 32 UBUD; 33 BRADY; 34 MKRPOR; 35 LUD; 36 WILDROS; 37 DOZER

DEPTH; LITHGRAPH; ALTGRAPH; STRCNT

SCALE: 1" = 10 ft.

LITH EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

DEPTH	REC/CUT	RQD	STRCNT	COMMENTS	SAMPLE
1500	2.0/2.6	0/2.6		TO 1510.4': STRLY BROKEN, TRACE TECTONIZATION	1499.3
1505	8.5/8.5	1.7/8.5	50° BED; 50° CALVN		1505
1510	4.5/4.5	0/4.5		1510.5'-1515': MODERATELY DEFORMED / TECTONIZED	1510.4
1515	3.7/3.7	0.8/3.7	40° BED		1514.9
1520	5.4/5.4	0.5/5.4	45° CALVN; 65° BED	1519-1520': 1' CALCITE VEIN	1519.5
1525					1524
1530	10.0/10.0	1.1/10.0	55° CALVN; 70° BED	1529': 8" CALCITE VN	1529
1535	2.0/2.0	0/2.0	70° CALVN	1539.5'-1536': ~4" CALCITE VEIN; 1536-1538': GREY-WHT, HARD, APHANITIC, DOZER AFFINITY SILL / DIKE.	1534
1540	6.9/6.9	0/6.9	65° CNTCT; 50° BED		1540.5
1545	2.4/2.4	/2.4	50° BED		1545.3
1550	5.7/5.7	3.3/5.7	45° CALVN		1551

PROJECT: Rosebud JV	UTM: NK 11-10-06 C	NORTHING:	TOTAL DEPTH: 1556.7'	STARTED: 04/02/97	PAGE: 32
LOGD BY: HSM	STATE: Nevada County Pershing	EASTING:	BEARING: —	COMPLETED: 04/10/97	HOLE # 97-385
DATE: 04/16/97	SEC. T. N., E.	ELEVATION:	ANGLE: -90°	DRILLER: LONGYEAR	

DRILLING: DEPTH FT | RECOVERY (REC/CUT) | RQD

LITHOLOGY: 1 ALLUVIUM | 2 MUDCGL | 3 PHYLLITE | 4 LITHTUF | 5 PUMTUF | 6 SURGTUF | 7 ASHFLO | 8 LAVA | 9 AUTOBX | 10 INTRUSV | 11 BASALT | 12 ANDESIT | 13 RHYOLIT

STRUCT: 14 TECBXA | 15 BROKEN | 16 GOUGE | 17 VOID

ALTERATION/MINLIZATION: Fe MIN: 18 MNOX | 19 HEMMINT | 20 LIMONIT | 21 PYRITE | 22 PROP | 23 ARG | 24 ARG2 | 25 RPSIL | 26 | 27 QTZVNS | 28 CALCITE | 29 METCAS

STRAT: 30 BADGER | 31 CHOCOLT | 32 UBUDD | 33 BRADY | 34 MKRPOR | 35 LBUD | 36 WILDROS | 37 DOZER

DEPTH FT | LITHGRAPH | ALTGRAPH | STRCT ANGL

SCALE: 1" = 10 ft

LITH. EXPLANATION:

MUD CGL	Mud matrix conglomerate
LITH TUF	Lithic clast dominant tuff
PUM TUF	Pumice rich tuff
SURGE TUF	Bedded matrix rich lithic tuff

COMMENTS | SAMPL INT

Depth	REC/CUT	RQD	Lithology	Struct (15 Broken)	Alteration (28 Calcite)	Lithgraph	Strct angl	Comments	Sample int
1550–1556.7	5.7/5.7	0/5.7	3 (Phyllite)	2	4				1551
1555						[illegible]	65° BED		
1556.7								T.D. 1556.7'	1556.7
1560									

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

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

SANTA FE PACIFIC GOLD

COPIES TO : RADU CONELEA
: RICHARD DIXON
: CHARLIE MUERHOFF
:

CLIENT REFERENCE No: 97-385 RECEIVED : 11 APR 1997

No. SAMPLES : 186 REPORTED : 18 APR 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	FA30	15%	ppb	5
Au(R)	FA30	15%	ppb	5
Ag	D210	10%	ppm	0.5
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 00.0-18.3	<5		0.7	2	29	1
97-385 18.3-24.0	12		<0.5	6	30	1
97-385 24-29	20	27	<0.5	5	32	1
97-385 29-34	88		0.6	7	53	4
97-385 34-39	72		0.7	10	71	2
97-385 39-44	24		0.5	13	39	2
97-385 44-47	64		0.6	21	26	<1
97-385 47-51	139		1.3	34	40	<1
97-385 51-54	97		2.2	37	32	2
97-385 54.0-57.9	42		0.6	15	26	3
97-385 57.9-62.0	37		<0.5	8	29	2
97-385 62.0-66.5	13		1.2	7	25	1
97-385 66.5-70.5	22		<0.5	2	24	1
97-385 70.5-75.4	97		1.0	117	24	1
97-385 75.4-80.5	72		0.5	103	39	2
97-385 80.5-85.0	89		1.5	153	86	1
97-385 85-90	130		1.2	115	87	2
97-385 90-95	106		3.4	155	498	2
97-385 95-100	148		2.1	145	275	1
97-385 100.0-103.9	153		3.1	59	301	1
97-385 103.9-108.0	138		3.4	44	934	3
97-385 108-113	73		3.2	58	829	3
97-385 113-118	185		1.0	129	203	1
97-385 118-121	97		1.5	106	404	<1
97-385 121.0-124.5	98		1.0	65	140	1

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 124.5-129.0	137		1.1	141	145	<1
97-385 129-134	25		1.1	85	194	<1
97-385 134-139	18		<0.5	74	368	1
97-385 139-144	46		0.5	107	237	1
97-385 144-148	68		1.1	55	109	1
97-385 148-150	72		0.7	72	127	1
97-385 150-154	104		<0.5	117	164	1
97-385 154-159	104		2.0	101	240	1
97-385 159-164	59		1.6	165	132	1
97-385 164-169	132		0.7	170	214	1
97-385 169-174	42		0.7	41	53	1
97-385 174-179	43		<0.5	25	51	<1
97-385 179-184	162		1.6	124	37	2
97-385 184-189	67		1.6	92	51	1
97-385 189.0-192.5	42		0.5	49	50	1
97-385 192.5-195.2	581		3.4	69	82	1
97-385 195.2-199.0	166		1.0	43	43	1
97-385 199-204	36		0.5	37	38	2
97-385 204-209	35		1.0	38	72	3
97-385 209-214	60		1.5	35	26	3
97-385 214-219	79		2.0	34	53	2
97-385 219-224	409		2.2	47	30	2
97-385 224-229	75		1.4	28	33	1
97-385 229-234	50		2.1	49	13	2
97-385 234-239	45		1.4	43	25	1

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 239-244	54		1.7	42	26	2
97-385 244-249	38		1.7	37	18	1
97-385 249-254	67		4.0	46	41	2
97-385 254-259	87		2.3	44	56	3
97-385 259-264	171		3.2	192	75	3
97-385 264-269	150		2.7	210	47	2
97-385 269-274	102		2.3	111	42	2
97-385 274-279	93		2.4	215	55	2
97-385 279-284	80		3.3	200	32	2
97-385 284-289	189		4.3	71	42	2
97-385 289-294	395		3.1	43	41	2
97-385 294-297	182		3.9	129	21	2
97-385 297-302	65		5.1	170	12	2
97-385 302-307	176		3.1	46	32	1
97-385 307-312	144		2.1	32	23	1
97-385 312-316	100		2.5	24	12	1
97-385 316-320	144		1.8	26	<5	<1
97-385 320-324	22		1.5	21	<5	<1
97-385 324-329	41		1.7	46	10	<1
97-385 329-334	42		2.5	22	<5	1
97-385 334-339	22		1.2	34	5	<1
97-385 339-344	132		0.5	57	14	<1
97-385 344-348	138		1.7	33	<5	<1
97-385 348-355	83		1.7	36	23	1
97-385 355-359	172		2.9	43	18	2

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 359-363	130	120	1.4	33	44	1
97-385 363.0-368.5	67		1.1	24	10	1
97-385 368.5-374.0	71		1.3	31	51	1
97-385 374-378	125		1.0	39	22	1
97-385 378.0-380.5	126		1.8	35	31	<1
97-385 380.5-385.5	178		1.0	15	14	<1
97-385 385.5-390.5	<5		<0.5	12	6	<1
97-385 390.5-395.5	<5		<0.5	4	<5	<1
97-385 395.5-400.5	<5		<0.5	<2	<5	<1
97-385 400.5-404.0	104		<0.5	18	64	2
97-385 404-409	196		<0.5	14	19	<1
97-385 409-414	<5		<0.5	3	29	<1
97-385 414-419	94		<0.5	5	62	<1
97-385 419-424	22		<0.5	9	30	<1
97-385 424-429	<5		<0.5	13	22	<1
97-385 429-434	<5		<0.5	11	20	1
97-385 434-439	<5		<0.5	11	12	<1
97-385 439-444	<5		<0.5	12	29	<1
97-385 444-449	<5		0.5	10	24	<1
97-385 449-454	58	62	1.2	20	15	<1
97-385 454-459	24		0.5	12	22	<1
97-385 459-464	40		1.4	16	34	1
97-385 464-469	10		1.6	23	8	1
97-385 469-474	20		<0.5	8	43	1
97-385 474-479	<5		<0.5	18	19	1

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 479-484	<5	<5	<0.5	8	65	1
97-385 484-489	<5		<0.5	13	15	1
97-385 489.0-493.2	<5		<0.5	16	26	<1
97-385 493.2-498.7	<5		<0.5	11	6	<1
97-385 498.7-502.0	<5		<0.5	85	65	<1
97-385 502.0-503.5	<5		<0.5	23	42	1
97-385 503.5-506.0	<5		<0.5	3	19	1
97-385 506.0-508.3	<5		<0.5	7	17	1
97-385 508.3-513.5	<5		<0.5	7	22	1
97-385 513.5-518.5	<5		<0.5	7	22	1
97-385 518.5-523.5	<5		<0.5	4	40	1
97-385 523.5-528.6	<5		<0.5	7	19	1
97-385 528.6-534.0	<5		<0.5	14	47	<1
97-385 534-538	<5		<0.5	12	23	<1
97-385 538.0-542.5	<5		<0.5	9	27	<1
97-385 542.5-546.5	<5		<0.5	17	18	1
97-385 546.5-550.1	<5	<5	<0.5	18	76	1
97-385 550.1-555.0	<5		<0.5	5	23	1
97-385 555.0-560.4	<5		<0.5	3	18	1
97-385 560.4-565.0	<5		<0.5	3	<5	<1
97-385 565.0-570.6	<5		<0.5	2	<5	<1
97-385 570.6-575.5	<5		<0.5	4	21	<1
97-385 575.5-580.7	<5		<0.5	3	32	<1
97-385 580.7-586.0	<5		<0.5	11	17	<1
97-385 586-591	<5		<0.5	10	19	1

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 591-596	<5	<5	<0.5	7	12	<1
97-385 596-600	<5		<0.5	18	14	1
97-385 600-604	<5		<0.5	4	9	1
97-385 604-609	<5		<0.5	<2	10	1
97-385 609-614	<5		<0.5	<2	16	<1
97-385 614-619	<5		<0.5	<2	9	1
97-385 619-624	<5		<0.5	2	15	<1
97-385 624-629	<5		<0.5	2	25	1
97-385 629-634	<5		<0.5	4	30	<1
97-385 634-639	<5		<0.5	<2	37	<1
97-385 639-644	<5		<0.5	2	6	<1
97-385 644-649	<5		<0.5	<2	<5	1
97-385 649-654	<5		<0.5	<2	44	<1
97-385 654-659	<5		<0.5	2	19	<1
97-385 659-664	<5		<0.5	<2	32	1
97-385 664-669	<5		<0.5	2	<5	1
97-385 669-674	<5		<0.5	3	<5	1
97-385 674-679	<5	<5	<0.5	2	<5	1
97-385 679-684	<5	<5	<0.5	3	6	1
97-385 684-689	<5		<0.5	<2	5	<1
97-385 689-694	<5		<0.5	<2	15	<1
97-385 694-699	<5		<0.5	3	7	<1
97-385 699-704	<5		<0.5	4	15	1
97-385 704-709	<5		<0.5	7	8	1
97-385 709-714	<5		<0.5	4	7	1

AMERICAN ASSAY LABORATORIES

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REFERENCE : 97-385

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 714-719	<5		<0.5	5	<5	1
97-385 719-724	<5		<0.5	5	<5	1
97-385 724-729	<5		<0.5	6	6	<1
97-385 729-734	<5		<0.5	7	8	<1
97-385 734-739	<5		<0.5	4	5	<1
97-385 739.0-744.3	<5		<0.5	3	<5	<1
97-385 744.3-749.0	<5	<5	<0.5	5	7	<1
97-385 749-754	<5		<0.5	6	<5	<1
97-385 754-759	<5		<0.5	9	<5	<1
97-385 759.0-763.6	<5		<0.5	3	<5	<1
97-385 763.6-769.0	<5		<0.5	7	10	1
97-385 769.0-773.9	<5		<0.5	4	27	<1
97-385 773.9-779.0	<5		<0.5	5	<5	<1
97-385 779.0-783.4	<5		<0.5	6	20	<1
97-385 783.4-788.5	<5		<0.5	10	10	<1
97-385 788.5-794.0	<5		<0.5	5	<5	<1
97-385 794-799	<5		<0.5	2	23	<1
97-385 799-804	<5	<5	<0.5	<2	<5	<1
97-385 804-809	<5		<0.5	2	25	<1
97-385 809-814	<5		<0.5	4	12	<1
97-385 814-819	<5		<0.5	3	<5	<1
97-385 819-824	<5		<0.5	<2	<5	<1
97-385 824-829	<5		<0.5	<2	9	<1
97-385 829-834	<5		<0.5	<2	<5	<1
97-385 834-839	<5		<0.5	<2	<5	<1

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 839-844	<5		<0.5	2	<5	<1
97-385 844-849	<5		<0.5	4	<5	2
97-385 849-854	<5		<0.5	8	<5	2
97-385 854-858	<5		<0.5	5	14	2
97-385 858-862	<5		<0.5	6	29	2
97-385 862.0-864.3	<5		<0.5	16	26	3
97-385 864.3-869.0	<5		<0.5	12	28	2
97-385 869-874	<5		<0.5	17	27	1
97-385 874-879	<5		<0.5	11	33	2
97-385 879.0-884.2	<5		<0.5	9	22	3
97-385 884.2-889.0	<5		<0.5	3	25	3

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SANTA FE PACIFIC GOLD

COPIES TO : RADU CONELEA
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:

RECEIVED
MAY 27 1997
SANTA FE PACIFIC GOLD
RENO

CLIENT REFERENCE No: 97-385
No. SAMPLES : 186
MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 11 APR 1997
REPORTED : 18 APR 1997

NEVADA LEGISLATIVE DISCLAIMER :-
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ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au	FA30	15%	ppb	5
Au(R)	FA30	15%	ppb	5
Ag	D210	10%	ppm	0.5
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 00.0-18.3	<5		0.7	2	29	1
97-385 18.3-24.0	12		<0.5	6	30	1
97-385 24-29	20	27	<0.5	5	32	1
97-385 29-34	88		0.6	7	53	4
97-385 34-39	72		0.7	10	71	2
97-385 39-44	24		0.5	13	39	2
97-385 44-47	64		0.6	21	26	<1
97-385 47-51	139		1.3	34	40	<1
97-385 51-54	97		2.2	37	32	2
97-385 54.0-57.9	42		0.6	15	26	3
97-385 57.9-62.0	37		<0.5	8	29	2
97-385 62.0-66.5	13		1.2	7	25	1
97-385 66.5-70.5	22		<0.5	2	24	1
97-385 70.5-75.4	97		1.0	117	24	1
97-385 75.4-80.5	72		0.5	103	39	2
97-385 80.5-85.0	89		1.5	153	86	1
97-385 85-90	130		1.2	115	87	2
97-385 90-95	106		3.4	155	498	2
97-385 95-100	148		2.1	145	275	1
97-385 100.0-103.9	153		3.1	59	301	1
97-385 103.9-108.0	138		3.4	44	934	3
97-385 108-113	73		3.2	58	829	3
97-385 113-118	185		1.0	129	203	1
97-385 118-121	97		1.5	106	404	<1
97-385 121.0-124.5	98		1.0	65	140	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 124.5-129.0	137		1.1	141	145	<1
97-385 129-134	25		1.1	85	194	<1
97-385 134-139	18		<0.5	74	368	1
97-385 139-144	46		0.5	107	237	1
97-385 144-148	68		1.1	55	109	1
97-385 148-150	72		0.7	72	127	1
97-385 150-154	104		<0.5	117	164	1
97-385 154-159	104		2.0	101	240	1
97-385 159-164	59		1.6	165	132	1
97-385 164-169	132		0.7	170	214	1
97-385 169-174	42		0.7	41	53	1
97-385 174-179	43		<0.5	25	51	<1
97-385 179-184	162		1.6	124	37	2
97-385 184-189	67		1.6	92	51	1
97-385 189.0-192.5	42		0.5	49	50	1
97-385 192.5-195.2	581		3.4	69	82	1
97-385 195.2-199.0	166		1.0	43	43	1
97-385 199-204	36		0.5	37	38	2
97-385 204-209	35		1.0	38	72	3
97-385 209-214	60		1.5	35	26	3
97-385 214-219	79		2.0	34	53	2
97-385 219-224	409		2.2	47	30	2
97-385 224-229	75		1.4	28	33	1
97-385 229-234	50		2.1	49	13	2
97-385 234-239	45		1.4	43	25	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

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REFERENCE : 97-385

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 239-244	54		1.7	42	26	2
97-385 244-249	38		1.7	37	18	1
97-385 249-254	67		4.0	46	41	2
97-385 254-259	87		2.3	44	56	3
97-385 259-264	171		3.2	192	75	3
97-385 264-269	150		2.7	210	47	2
97-385 269-274	102		2.3	111	42	2
97-385 274-279	93		2.4	215	55	2
97-385 279-284	80		3.3	200	32	2
97-385 284-289	189		4.3	71	42	2
97-385 289-294	395		3.1	43	41	2
97-385 294-297	182		3.9	129	21	2
97-385 297-302	65		5.1	170	12	2
97-385 302-307	176		3.1	46	32	1
97-385 307-312	144		2.1	32	23	1
97-385 312-316	100		2.5	24	12	1
97-385 316-320	144		1.8	26	<5	<1
97-385 320-324	22		1.5	21	<5	<1
97-385 324-329	41		1.7	46	10	<1
97-385 329-334	42		2.5	22	<5	1
97-385 334-339	22		1.2	34	5	<1
97-385 339-344	132		0.5	57	14	<1
97-385 344-348	138		1.7	33	<5	<1
97-385 348-355	83		1.7	36	23	1
97-385 355-359	172		2.9	43	18	2

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PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 359-363	130	120	1.4	33	44	1
97-385 363.0-368.5	67		1.1	24	10	1
97-385 368.5-374.0	71		1.3	31	51	1
97-385 374-378	125		1.0	39	22	1
97-385 378.0-380.5	126		1.8	35	31	<1
97-385 380.5-385.5	178		1.0	15	14	<1
97-385 385.5-390.5	<5		<0.5	12	6	<1
97-385 390.5-395.5	<5		<0.5	4	<5	<1
97-385 395.5-400.5	<5		<0.5	<2	<5	<1
97-385 400.5-404.0	104		<0.5	18	64	2
97-385 404-409	196		<0.5	14	19	<1
97-385 409-414	<5		<0.5	3	29	<1
97-385 414-419	94		<0.5	5	62	<1
97-385 419-424	22		<0.5	9	30	<1
97-385 424-429	<5		<0.5	13	22	<1
97-385 429-434	<5		<0.5	11	20	1
97-385 434-439	<5		<0.5	11	12	<1
97-385 439-444	<5		<0.5	12	29	<1
97-385 444-449	<5		0.5	10	24	<1
97-385 449-454	58	62	1.2	20	15	<1
97-385 454-459	24		0.5	12	22	<1
97-385 459-464	40		1.4	16	34	1
97-385 464-469	10		1.6	23	8	1
97-385 469-474	20		<0.5	8	43	1
97-385 474-479	<5		<0.5	18	19	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 479-484	<5	<5	<0.5	8	65	1
97-385 484-489	<5		<0.5	13	15	1
97-385 489.0-493.2	<5		<0.5	16	26	<1
97-385 493.2-498.7	<5		<0.5	11	6	<1
97-385 498.7-502.0	<5		<0.5	85	65	<1
97-385 502.0-503.5	<5		<0.5	23	42	1
97-385 503.5-506.0	<5		<0.5	3	19	1
97-385 506.0-508.3	<5		<0.5	7	17	1
97-385 508.3-513.5	<5		<0.5	7	22	1
97-385 513.5-518.5	<5		<0.5	7	22	1
97-385 518.5-523.5	<5		<0.5	4	40	1
97-385 523.5-528.6	<5		<0.5	7	19	1
97-385 528.6-534.0	<5		<0.5	14	47	<1
97-385 534-538	<5		<0.5	12	23	<1
97-385 538.0-542.5	<5		<0.5	9	27	<1
97-385 542.5-546.5	<5		<0.5	17	18	1
97-385 546.5-550.1	<5	<5	<0.5	18	76	1
97-385 550.1-555.0	<5		<0.5	5	23	1
97-385 555.0-560.4	<5		<0.5	3	18	1
97-385 560.4-565.0	<5		<0.5	3	<5	<1
97-385 565.0-570.6	<5		<0.5	2	<5	<1
97-385 570.6-575.5	<5		<0.5	4	21	<1
97-385 575.5-580.7	<5		<0.5	3	32	<1
97-385 580.7-586.0	<5		<0.5	11	17	<1
97-385 586-591	<5		<0.5	10	19	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 591-596	<5	<5	<0.5	7	12	<1
97-385 596-600	<5		<0.5	18	14	1
97-385 600-604	<5		<0.5	4	9	1
97-385 604-609	<5		<0.5	<2	10	1
97-385 609-614	<5		<0.5	<2	16	<1
97-385 614-619	<5		<0.5	<2	9	1
97-385 619-624	<5		<0.5	2	15	<1
97-385 624-629	<5		<0.5	2	25	1
97-385 629-634	<5		<0.5	4	30	<1
97-385 634-639	<5		<0.5	<2	37	<1
97-385 639-644	<5		<0.5	2	6	<1
97-385 644-649	<5		<0.5	<2	<5	1
97-385 649-654	<5		<0.5	<2	44	<1
97-385 654-659	<5		<0.5	2	19	<1
97-385 659-664	<5		<0.5	<2	32	1
97-385 664-669	<5		<0.5	2	<5	1
97-385 669-674	<5		<0.5	3	<5	1
97-385 674-679	<5	<5	<0.5	2	<5	1
97-385 679-684	<5	<5	<0.5	3	6	1
97-385 684-689	<5		<0.5	<2	5	<1
97-385 689-694	<5		<0.5	<2	15	<1
97-385 694-699	<5		<0.5	3	7	<1
97-385 699-704	<5		<0.5	4	15	1
97-385 704-709	<5		<0.5	7	8	1
97-385 709-714	<5		<0.5	4	7	1

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REFERENCE : 97-385

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 714-719	<5		<0.5	5	<5	1
97-385 719-724	<5		<0.5	5	<5	1
97-385 724-729	<5		<0.5	6	6	<1
97-385 729-734	<5		<0.5	7	8	<1
97-385 734-739	<5		<0.5	4	5	<1
97-385 739.0-744.3	<5		<0.5	3	<5	<1
97-385 744.3-749.0	<5	<5	<0.5	5	7	<1
97-385 749-754	<5		<0.5	6	<5	<1
97-385 754-759	<5		<0.5	9	<5	<1
97-385 759.0-763.6	<5		<0.5	3	<5	<1
97-385 763.6-769.0	<5		<0.5	7	10	1
97-385 769.0-773.9	<5		<0.5	4	27	<1
97-385 773.9-779.0	<5		<0.5	5	<5	<1
97-385 779.0-783.4	<5		<0.5	6	20	<1
97-385 783.4-788.5	<5		<0.5	10	10	<1
97-385 788.5-794.0	<5		<0.5	5	<5	<1
97-385 794-799	<5		<0.5	2	23	<1
97-385 799-804	<5	<5	<0.5	<2	<5	<1
97-385 804-809	<5		<0.5	2	25	<1
97-385 809-814	<5		<0.5	4	12	<1
97-385 814-819	<5		<0.5	3	<5	<1
97-385 819-824	<5		<0.5	<2	<5	<1
97-385 824-829	<5		<0.5	<2	9	<1
97-385 829-834	<5		<0.5	<2	<5	<1
97-385 834-839	<5		<0.5	<2	<5	<1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

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PROJECT : ROSEBUD EXPLORATION
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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 839-844	<5		<0.5	2	<5	<1
97-385 844-849	<5		<0.5	4	<5	2
97-385 849-854	<5		<0.5	8	<5	2
97-385 854-858	<5		<0.5	5	14	2
97-385 858-862	<5		<0.5	6	29	2
97-385 862.0-864.3	<5		<0.5	16	26	3
97-385 864.3-869.0	<5		<0.5	12	28	2
97-385 869-874	<5		<0.5	17	27	1
97-385 874-879	<5		<0.5	11	33	2
97-385 879.0-884.2	<5		<0.5	9	22	3
97-385 884.2-889.0	<5		<0.5	3	25	3

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043640

American Assay Laboratories

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

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MAY 14 1997
SANTA FE PACIFIC GOLD
RENO

SANTA FE PACIFIC GOLD

COPIES TO : RADU CONELEA
: RICHARD DIXON
: CHARLIE MUERHOFF
:

CLIENT REFERENCE No: 97-385 889 → 1249 RECEIVED : 11 APR 1997

No. SAMPLES : 74 REPORTED : 22 APR 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	FA30	15%	ppb	5
Au(R)	FA30	15%	ppb	5
Ag	D210	10%	ppm	0.5
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043728

American Assay Laboratories

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

SANTA FE PACIFIC GOLD

COPIES TO : RADU CONELEA
: RICHARD DIXON
: CHARLIE MUERHOFF
:

RECEIVED
MAY 14 1997
SANTA FE PACIFIC GOLD
RENO

1249 - 1499

CLIENT REFERENCE No: 97-385
No. SAMPLES : 55
MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 17 APR 1997
REPORTED : 9 MAY 1997

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
Ag	D210	10%	ppm	0.5
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043640

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 22 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 889-894	<5		<0.5	4	28	<1
97-385 894-899	<5		<0.5	3	30	<1
97-385 899-904	<5		<0.5	3	38	<1
97-385 904-909	<5		<0.5	2	33	<1
97-385 909-914	<5	<5	<0.5	2	31	<1
97-385 914-919	<5		<0.5	2	31	<1
97-385 919-924	<5		<0.5	2	60	1
97-385 924-929	<5		0.6	<2	28	1
97-385 929-934	<5		<0.5	4	54	3
97-385 934-939	<5		<0.5	5	30	2
97-385 939-944	<5		<0.5	13	14	5
97-385 944-949	<5		<0.5	4	54	2
97-385 949-954	<5		<0.5	4	33	1
97-385 954-959	<5		<0.5	<2	20	1
97-385 959-964	<5		<0.5	<2	15	1
97-385 964-969	<5		0.6	2	22	1
97-385 969-974	<5		<0.5	<2	27	1
97-385 974-979	<5		<0.5	2	9	1
97-385 979-984	<5		<0.5	<2	13	1
97-385 984-989	<5	<5	<0.5	2	24	1
97-385 989-994	<5		<0.5	<2	16	2
97-385 994.0-997.8	<5		<0.5	8	10	1
97-385 997.8-1003.0	<5	<5	<0.5	<2	<5	1
97-385 1003.0-1008.5	<5		<0.5	<2	22	1
97-385 1008.5-1014.0	<5		<0.5	<2	11	1

AMERICAN ASSAY LABORATORIES

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REPORTED : 22 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1014-1019	<5		<0.5	<2	<5	1
97-385 1019.0-1024.2	<5		<0.5	<2	<5	1
97-385 1024.2-1029.0	<5		<0.5	<2	<5	1
97-385 1029-1034	<5		<0.5	2	28	<1
97-385 1034-1039	<5		<0.5	<2	16	<1
97-385 1039-1044	<5		<0.5	<2	<5	<1
97-385 1044-1049	<5		<0.5	<2	<5	<1
97-385 1049-1054	<5		<0.5	<2	9	1
97-385 1054-1059	<5		<0.5	2	32	<1
97-385 1059.0-1064.2	<5		<0.5	2	16	<1
97-385 1064.2-1069.0	<5		<0.5	<2	7	1
97-385 1069-1074	<5	<5	<0.5	<2	20	1
97-385 1074.0-1076.5	<5		<0.5	<2	5	<1
97-385 1076.5-1080.0	<5		<0.5	<2	47	1
97-385 1080-1084	<5		<0.5	<2	39	1
97-385 1084-1089	<5		<0.5	3	42	<1
97-385 1089-1094	<5		<0.5	2	30	<1
97-385 1094-1099	<5		<0.5	2	50	<1
97-385 1099-1104	<5		<0.5	4	29	<1
97-385 1104-1109	<5		<0.5	<2	12	<1
97-385 1109-1114	<5		<0.5	<2	28	<1
97-385 1114-1120	<5		<0.5	<2	57	<1
97-385 1120-1124	<5		<0.5	<2	45	<1
97-385 1124-1126	<5		<0.5	10	31	<1
97-385 1126-1130	<5		<0.5	2	49	<1

AMERICAN ASSAY LABORATORIES

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SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1130-1134	<5		<0.5	<2	103	<1
97-385 1134-1139	<5		0.5	<2	17	<1
97-385 1139-1144	<5		<0.5	<2	7	<1
97-385 1144-1149	<5		<0.5	<2	12	<1
97-385 1149-1154	<5		<0.5	<2	10	<1
97-385 1154-1159	<5		<0.5	<2	19	<1
97-385 1159-1164	<5		0.5	<2	<5	1
97-385 1164-1169	<5		<0.5	<2	9	<1
97-385 1169-1174	<5		<0.5	<2	13	<1
97-385 1174-1179	<5		<0.5	<2	12	<1
97-385 1179-1184	<5		0.5	<2	7	<1
97-385 1184-1189	<5		<0.5	<2	10	<1
97-385 1189-1194	<5		0.6	<2	19	<1
97-385 1194-1199	<5		<0.5	<2	20	<1
97-385 1199-1204	<5		<0.5	<2	25	<1
97-385 1204-1209	<5		<0.5	<2	22	<1
97-385 1209-1214	<5		0.5	<2	9	<1
97-385 1214-1219	<5		<0.5	<2	9	<1
97-385 1219.0-1224.2	<5		<0.5	<2	26	<1
97-385 1224.2-1229.0	<5		0.5	<2	14	<1
97-385 1229-1234	<5		<0.5	<2	35	<1
97-385 1234-1239	<5		<0.5	<2	8	<1
97-385 1239.0-1244.3	<5		<0.5	<2	42	<1
97-385 1244.3-1249.0	<5		0.6	<2	29	<1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043728

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1244.3-1249.0	<5		<0.5	<2	8	1
97-385 1249-1254	<5		0.5	<2	17	1
97-385 1254-1259	<5		<0.5	<2	6	<1
97-385 1259.0-1264.3	<5		<0.5	<2	18	<1
97-385 1264.3-1269.0	<5		<0.5	<2	20	1
97-385 1269-1274	~~<5~~ 1477 - 1477		<0.5	<2	6	<1
97-385 1274-1279	<5	<5	<0.5	<2	<5	1
97-385 1279-1284	<5		<0.5	<2	5	1
97-385 1284-1289	<5		<0.5	<2	22	2
97-385 1289-1294	<5		<0.5	<2	<5	<1
97-385 1294-1299	<5		<0.5	<2	<5	<1
97-385 1304-1309	<5		<0.5	<2	<5	1
97-385 1309-1314	<5		<0.5	<2	<5	2
97-385 1314-1319	<5	<5	<0.5	<2	<5	1
97-385 1319-1324	<5		<0.5	<2	8	1
97-385 1324-1329	<5		<0.5	<2	<5	<1
97-385 1329-1334	<5		<0.5	<2	9	<1
97-385 1334-1339	<5		<0.5	<2	<5	<1
97-385 1339-1344	<5		<0.5	<2	<5	<1
97-385 1344-1349	<5		0.8	<2	<5	1
97-385 1349-1354	<5		0.6	<2	<5	2
97-385 1354-1359	<5		<0.5	2	<5	1
97-385 1359-1364	<5		<0.5	12	18	1
97-385 1364-1368	<5		<0.5	13	<5	<1
97-385 1368.0-1371.5	81		0.9	24	9	2

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043728

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1371.5-1374.0	122		1.5	34	<5	1
97-385 1374.0-1377.5	104		1.1	28	<5	1
97-385 1377.5-1382.0	5		1.7	18	<5	2
97-385 1382-1384	24		0.7	13	48	<1
97-385 1384-1387	62		5.1	29	167	1
97-385 1387-1390	124		1.9	44	69	1
97-385 1390-1394	50		0.7	52	77	<1
97-385 1394-1399	134	130	1.3	86	116	<1
97-385 1399-1404	315		1.1	92	105	1
97-385 1404-1409	206	166	1.2	96	48	<1
97-385 1409-1414	311		1.8	98	65	1
97-385 1414.0-1419.3	48		1.0	40	15	<1
97-385 1419.3-1424.0	<5		1.0	27	54	1
97-385 1424-1429	<5		1.3	14	5	1
97-385 1429-1434	<5		1.2	16	24	1
97-385 1434-1439	<5		1.3	21	55	1
97-385 1439-1443	<5		1.5	36	14	<1
97-385 1443.0-1446.2	<5		1.6	26	27	1
97-385 1446.2-1449.5	220		1.8	39	29	1
97-385 1449.5-1455.1	<5		<0.5	16	26	1
97-385 1455.1-1460.5	<5		<0.5	12	<5	1
97-385 1460.5-1462.5	<5		1.0	72	51	1
97-385 1462.5-1466.0	<5		<0.5	497	25	2
97-385 1466-1471	<5		<0.5	18	47	1
97-385 1471-1476	<5		<0.5	12	73	<1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043728

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1476.0-1480.5	<5		<0.5	9	40	1
97-385 1480.5-1485.4	<5		<0.5	9	42	1
97-385 1485.4-1489.2	<5		<0.5	19	24	2
97-385 1489.2-1494.3	<5		<0.5	11	19	2
97-385 1494.3-1499.3	<5	<5	<0.5	21	30	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043754

American Assay Laboratories

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RENO NV,USA
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SANTA FE PACIFIC GOLD

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MAY 14 1997
SANTA FE PACIFIC GOLD
RENO

CLIENT REFERENCE No: 97-385 1499-1556

No. SAMPLES : 11

MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 21 APR 1997

REPORTED : 9 MAY 1997

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
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043754

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
97-385 1499.3-1505.0	<5		<0.001		<0.5	<0.02
97-385 1505.0-1510.4	<5		<0.001		<0.5	<0.02
97-385 1510.4-1514.9	<5		<0.001		<0.5	<0.02
97-385 1514.9-1519.5	<5		<0.001		1.2	0.04
97-385 1519.5-1524.0	<5		<0.001		0.5	<0.02
97-385 1524-1529	<5		<0.001		<0.5	<0.02
97-385 1529-1534	<5		<0.001		<0.5	<0.02
97-385 1534.0-1540.5	<5		<0.001		<0.5	<0.02
97-385 1540.5-1545.3	<5		<0.001		<0.5	<0.02
97-385 1545.3-1551.0	<5		<0.001		<0.5	<0.02
97-385 1551-1556	<5		<0.001		<0.5	<0.02

1499-1556

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ANALYSIS REPORT SP043754

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1499.3-1505.0	26	69	3
97-385 1505.0-1510.4	20	61	2
97-385 1510.4-1514.9	38	38	2
97-385 1514.9-1519.5	85	83	2
97-385 1519.5-1524.0	50	128	2
97-385 1524-1529	46	83	2
97-385 1529-1534	38	71	2
97-385 1534.0-1540.5	48	32	2
97-385 1540.5-1545.3	2	39	2
97-385 1545.3-1551.0	24	17	2
97-385 1551-1556	30	61	2

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ANALYSIS REPORT SP043728

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SANTA FE PACIFIC GOLD
RENO

CLIENT REFERENCE No: 97-385
No. SAMPLES : 55
MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 17 APR 1997
REPORTED : 9 MAY 1997

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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
Ag	D210	10%	ppm	0.5
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043728

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1244.3-1249.0	<5		<0.5	<2	8	1
97-385 1249-1254	<5		0.5	<2	17	1
97-385 1254-1259	<5		<0.5	<2	6	<1
97-385 1259.0-1264.3	<5		<0.5	<2	18	<1
97-385 1264.3-1269.0	<5		<0.5	<2	20	1
97-385 1269-1274	<5		<0.5	<2	6	<1
97-385 1274-1279	<5	<5	<0.5	<2	<5	1
97-385 1279-1284	<5		<0.5	<2	5	1
97-385 1284-1289	<5		<0.5	<2	22	2
97-385 1289-1294	<5		<0.5	<2	<5	<1
97-385 1294-1299	<5		<0.5	<2	<5	<1
97-385 1304-1309	<5		<0.5	<2	<5	1
97-385 1309-1314	<5		<0.5	<2	<5	2
97-385 1314-1319	<5	<5	<0.5	<2	<5	1
97-385 1319-1324	<5		<0.5	<2	8	1
97-385 1324-1329	<5		<0.5	<2	<5	<1
97-385 1329-1334	<5		<0.5	<2	9	<1
97-385 1334-1339	<5		<0.5	<2	<5	<1
97-385 1339-1344	<5		<0.5	<2	<5	<1
97-385 1344-1349	<5		0.8	<2	<5	1
97-385 1349-1354	<5		0.6	<2	<5	2
97-385 1354-1359	<5		<0.5	2	<5	1
97-385 1359-1364	<5		<0.5	12	18	1
97-385 1364-1368	<5		<0.5	13	<5	<1
97-385 1368.0-1371.5	81		0.9	24	9	2

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043728

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1371.5-1374.0	122		1.5	34	<5	1
97-385 1374.0-1377.5	104		1.1	28	<5	1
97-385 1377.5-1382.0	5		1.7	18	<5	2
97-385 1382-1384	24		0.7	13	48	<1
97-385 1384-1387	62		5.1	29	167	1
97-385 1387-1390	124		1.9	44	69	1
97-385 1390-1394	50		0.7	52	77	<1
97-385 1394-1399	134	130	1.3	86	116	<1
97-385 1399-1404	315		1.1	92	105	1
97-385 1404-1409	206	166	1.2	96	48	<1
97-385 1409-1414	311		1.8	98	65	1
97-385 1414.0-1419.3	48		1.0	40	15	<1
97-385 1419.3-1424.0	<5		1.0	27	54	1
97-385 1424-1429	<5		1.3	14	5	1
97-385 1429-1434	<5		1.2	16	24	1
97-385 1434-1439	<5		1.3	21	55	1
97-385 1439-1443	<5		1.5	36	14	<1
97-385 1443.0-1446.2	<5		1.6	26	27	1
97-385 1446.2-1449.5	220		1.8	39	29	1
97-385 1449.5-1455.1	<5		<0.5	16	26	1
97-385 1455.1-1460.5	<5		<0.5	12	<5	1
97-385 1460.5-1462.5	<5		1.0	72	51	1
97-385 1462.5-1466.0	<5		<0.5	497	25	2
97-385 1466-1471	<5		<0.5	18	47	1
97-385 1471-1476	<5		<0.5	12	73	<1

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ANALYSIS REPORT SP043728

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1476.0-1480.5	<5		<0.5	9	40	1
97-385 1480.5-1485.4	<5		<0.5	9	42	1
97-385 1485.4-1489.2	<5		<0.5	19	24	2
97-385 1489.2-1494.3	<5		<0.5	11	19	2
97-385 1494.3-1499.3	<5	<5	<0.5	21	30	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043640

American Assay Laboratories

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SANTA FE PACIFIC GOLD

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MAY 14 1997
SANTA FE PACIFIC GOLD
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CLIENT REFERENCE No: 97-385
No. SAMPLES : 74
MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 11 APR 1997
REPORTED : 22 APR 1997

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
Ag	D210	10%	ppm	0.5
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

Submitted

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043640

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 22 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 889-894	<5		<0.5	4	28	<1
97-385 894-899	<5		<0.5	3	30	<1
97-385 899-904	<5		<0.5	3	38	<1
97-385 904-909	<5		<0.5	2	33	<1
97-385 909-914	<5	<5	<0.5	2	31	<1
97-385 914-919	<5		<0.5	2	31	<1
97-385 919-924	<5		<0.5	2	60	1
97-385 924-929	<5		0.6	<2	28	1
97-385 929-934	<5		<0.5	4	54	3
97-385 934-939	<5		<0.5	5	30	2
97-385 939-944	<5		<0.5	13	14	5
97-385 944-949	<5		<0.5	4	54	2
97-385 949-954	<5		<0.5	4	33	1
97-385 954-959	<5		<0.5	<2	20	1
97-385 959-964	<5		<0.5	<2	15	1
97-385 964-969	<5		0.6	2	22	1
97-385 969-974	<5		<0.5	<2	27	1
97-385 974-979	<5		<0.5	2	9	1
97-385 979-984	<5		<0.5	<2	13	1
97-385 984-989	<5	<5	<0.5	2	24	1
97-385 989-994	<5		<0.5	<2	16	2
97-385 994.0-997.8	<5		<0.5	8	10	1
97-385 997.8-1003.0	<5	<5	<0.5	<2	<5	1
97-385 1003.0-1008.5	<5		<0.5	<2	22	1
97-385 1008.5-1014.0	<5		<0.5	<2	11	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043640

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 22 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1014-1019	<5		<0.5	<2	<5	1
97-385 1019.0-1024.2	<5		<0.5	<2	<5	1
97-385 1024.2-1029.0	<5		<0.5	<2	<5	1
97-385 1029-1034	<5		<0.5	2	28	<1
97-385 1034-1039	<5		<0.5	<2	16	<1
97-385 1039-1044	<5		<0.5	<2	<5	<1
97-385 1044-1049	<5		<0.5	<2	<5	<1
97-385 1049-1054	<5		<0.5	<2	9	1
97-385 1054-1059	<5		<0.5	2	32	<1
97-385 1059.0-1064.2	<5		<0.5	2	16	<1
97-385 1064.2-1069.0	<5		<0.5	<2	7	1
97-385 1069-1074	<5	<5	<0.5	<2	20	1
97-385 1074.0-1076.5	<5		<0.5	<2	5	<1
97-385 1076.5-1080.0	<5		<0.5	<2	47	1
97-385 1080-1084	<5		<0.5	<2	39	1
97-385 1084-1089	<5		<0.5	3	42	<1
97-385 1089-1094	<5		<0.5	2	30	<1
97-385 1094-1099	<5		<0.5	2	50	<1
97-385 1099-1104	<5		<0.5	4	29	<1
97-385 1104-1109	<5		<0.5	<2	12	<1
97-385 1109-1114	<5		<0.5	<2	28	<1
97-385 1114-1120	<5		<0.5	<2	57	<1
97-385 1120-1124	<5		<0.5	<2	45	<1
97-385 1124-1126	<5		<0.5	10	31	<1
97-385 1126-1130	<5		<0.5	2	49	<1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043640

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 22 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1130-1134	<5		<0.5	<2	103	<1
97-385 1134-1139	<5		0.5	<2	17	<1
97-385 1139-1144	<5		<0.5	<2	7	<1
97-385 1144-1149	<5		<0.5	<2	12	<1
97-385 1149-1154	<5		<0.5	<2	10	<1
97-385 1154-1159	<5		<0.5	<2	19	<1
97-385 1159-1164	<5		0.5	<2	<5	1
97-385 1164-1169	<5		<0.5	<2	9	<1
97-385 1169-1174	<5		<0.5	<2	13	<1
97-385 1174-1179	<5		<0.5	<2	12	<1
97-385 1179-1184	<5		0.5	<2	7	<1
97-385 1184-1189	<5		<0.5	<2	10	<1
97-385 1189-1194	<5		0.6	<2	19	<1
97-385 1194-1199	<5		<0.5	<2	20	<1
97-385 1199-1204	<5		<0.5	<2	25	<1
97-385 1204-1209	<5		<0.5	<2	22	<1
97-385 1209-1214	<5		0.5	<2	9	<1
97-385 1214-1219	<5		<0.5	<2	9	<1
97-385 1219.0-1224.2	<5		<0.5	<2	26	<1
97-385 1224.2-1229.0	<5		0.5	<2	14	<1
97-385 1229-1234	<5		<0.5	<2	35	<1
97-385 1234-1239	<5		<0.5	<2	8	<1
97-385 1239.0-1244.3 Submitted	<5		<0.5	<2	42	<1
97-385 1244.3-1249.0	<5		0.6	<2	29	<1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

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CLIENT REFERENCE No: 97-385 RECEIVED : 11 APR 1997

No. SAMPLES : 186 REPORTED : 18 APR 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	FA30	15%	ppb	5
Au(R)	FA30	15%	ppb	5
Ag	D210	10%	ppm	0.5
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 00.0-18.3	<5		0.7	2	29	1
97-385 18.3-24.0	12		<0.5	6	30	1
97-385 24-29	20	27	<0.5	5	32	1
97-385 29-34	88		0.6	7	53	4
97-385 34-39	72		0.7	10	71	2
97-385 39-44	24		0.5	13	39	2
97-385 44-47	64		0.6	21	26	<1
97-385 47-51	139		1.3	34	40	<1
97-385 51-54	97		2.2	37	32	2
97-385 54.0-57.9	42		0.6	15	26	3
97-385 57.9-62.0	37		<0.5	8	29	2
97-385 62.0-66.5	13		1.2	7	25	1
97-385 66.5-70.5	22		<0.5	2	24	1
97-385 70.5-75.4	97		1.0	117	24	1
97-385 75.4-80.5	72		0.5	103	39	2
97-385 80.5-85.0	89		1.5	153	86	1
97-385 85-90	130		1.2	115	87	2
97-385 90-95	106		3.4	155	498	2
97-385 95-100	148		2.1	145	275	1
97-385 100.0-103.9	153		3.1	59	301	1
97-385 103.9-108.0	138		3.4	44	934	3
97-385 108-113	73		3.2	58	829	3
97-385 113-118	185		1.0	129	203	1
97-385 118-121	97		1.5	106	404	<1
97-385 121.0-124.5	98		1.0	65	140	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 124.5-129.0	137		1.1	141	145	<1
97-385 129-134	25		1.1	85	194	<1
97-385 134-139	18		<0.5	74	368	1
97-385 139-144	46		0.5	107	237	1
97-385 144-148	68		1.1	55	109	1
97-385 148-150	72		0.7	72	127	1
97-385 150-154	104		<0.5	117	164	1
97-385 154-159	104		2.0	101	240	1
97-385 159-164	59		1.6	165	132	1
97-385 164-169	132		0.7	170	214	1
97-385 169-174	42		0.7	41	53	1
97-385 174-179	43		<0.5	25	51	<1
97-385 179-184	162		1.6	124	37	2
97-385 184-189	67		1.6	92	51	1
97-385 189.0-192.5	42		0.5	49	50	1
97-385 192.5-195.2	581		3.4	69	82	1
97-385 195.2-199.0	166		1.0	43	43	1
97-385 199-204	36		0.5	37	38	2
97-385 204-209	35		1.0	38	72	3
97-385 209-214	60		1.5	35	26	3
97-385 214-219	79		2.0	34	53	2
97-385 219-224	409		2.2	47	30	2
97-385 224-229	75		1.4	28	33	1
97-385 229-234	50		2.1	49	13	2
97-385 234-239	45		1.4	43	25	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 239-244	54		1.7	42	26	2
97-385 244-249	38		1.7	37	18	1
97-385 249-254	67		4.0	46	41	2
97-385 254-259	87		2.3	44	56	3
97-385 259-264	171		3.2	192	75	3
97-385 264-269	150		2.7	210	47	2
97-385 269-274	102		2.3	111	42	2
97-385 274-279	93		2.4	215	55	2
97-385 279-284	80		3.3	200	32	2
97-385 284-289	189		4.3	71	42	2
97-385 289-294	395		3.1	43	41	2
97-385 294-297	182		3.9	129	21	2
97-385 297-302	65		5.1	170	12	2
97-385 302-307	176		3.1	46	32	1
97-385 307-312	144		2.1	32	23	1
97-385 312-316	100		2.5	24	12	1
97-385 316-320	144		1.8	26	<5	<1
97-385 320-324	22		1.5	21	<5	<1
97-385 324-329	41		1.7	46	10	<1
97-385 329-334	42		2.5	22	<5	1
97-385 334-339	22		1.2	34	5	<1
97-385 339-344	132		0.5	57	14	<1
97-385 344-348	138		1.7	33	<5	<1
97-385 348-355	83		1.7	36	23	1
97-385 355-359	172		2.9	43	18	2

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 359-363	130	120	1.4	33	44	1
97-385 363.0-368.5	67		1.1	24	10	1
97-385 368.5-374.0	71		1.3	31	51	1
97-385 374-378	125		1.0	39	22	1
97-385 378.0-380.5	126		1.8	35	31	<1
97-385 380.5-385.5	178		1.0	15	14	<1
97-385 385.5-390.5	<5		<0.5	12	6	<1
97-385 390.5-395.5	<5		<0.5	4	<5	<1
97-385 395.5-400.5	<5		<0.5	<2	<5	<1
97-385 400.5-404.0	104		<0.5	18	64	2
97-385 404-409	196		<0.5	14	19	<1
97-385 409-414	<5		<0.5	3	29	<1
97-385 414-419	94		<0.5	5	62	<1
97-385 419-424	22		<0.5	9	30	<1
97-385 424-429	<5		<0.5	13	22	<1
97-385 429-434	<5		<0.5	11	20	1
97-385 434-439	<5		<0.5	11	12	<1
97-385 439-444	<5		<0.5	12	29	<1
97-385 444-449	<5		0.5	10	24	<1
97-385 449-454	58	62	1.2	20	15	<1
97-385 454-459	24		0.5	12	22	<1
97-385 459-464	40		1.4	16	34	1
97-385 464-469	10		1.6	23	8	1
97-385 469-474	20		<0.5	8	43	1
97-385 474-479	<5		<0.5	18	19	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SPO43628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 479-484	<5	<5	<0.5	8	65	1
97-385 484-489	<5		<0.5	13	15	1
97-385 489.0-493.2	<5		<0.5	16	26	<1
97-385 493.2-498.7	<5		<0.5	11	6	<1
97-385 498.7-502.0	<5		<0.5	85	65	<1
97-385 502.0-503.5	<5		<0.5	23	42	1
97-385 503.5-506.0	<5		<0.5	3	19	1
97-385 506.0-508.3	<5		<0.5	7	17	1
97-385 508.3-513.5	<5		<0.5	7	22	1
97-385 513.5-518.5	<5		<0.5	7	22	1
97-385 518.5-523.5	<5		<0.5	4	40	1
97-385 523.5-528.6	<5		<0.5	7	19	1
97-385 528.6-534.0	<5		<0.5	14	47	<1
97-385 534-538	<5		<0.5	12	23	<1
97-385 538.0-542.5	<5		<0.5	9	27	<1
97-385 542.5-546.5	<5		<0.5	17	18	1
97-385 546.5-550.1	<5	<5	<0.5	18	76	1
97-385 550.1-555.0	<5		<0.5	5	23	1
97-385 555.0-560.4	<5		<0.5	3	18	1
97-385 560.4-565.0	<5		<0.5	3	<5	<1
97-385 565.0-570.6	<5		<0.5	2	<5	<1
97-385 570.6-575.5	<5		<0.5	4	21	<1
97-385 575.5-580.7	<5		<0.5	3	32	<1
97-385 580.7-586.0	<5		<0.5	11	17	<1
97-385 586-591	<5		<0.5	10	19	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 591-596	<5	<5	<0.5	7	12	<1
97-385 596-600	<5		<0.5	18	14	1
97-385 600-604	<5		<0.5	4	9	1
97-385 604-609	<5		<0.5	<2	10	1
97-385 609-614	<5		<0.5	<2	16	<1
97-385 614-619	<5		<0.5	<2	9	1
97-385 619-624	<5		<0.5	2	15	<1
97-385 624-629	<5		<0.5	2	25	1
97-385 629-634	<5		<0.5	4	30	<1
97-385 634-639	<5		<0.5	<2	37	<1
97-385 639-644	<5		<0.5	2	6	<1
97-385 644-649	<5		<0.5	<2	<5	1
97-385 649-654	<5		<0.5	<2	44	<1
97-385 654-659	<5		<0.5	2	19	<1
97-385 659-664	<5		<0.5	<2	32	1
97-385 664-669	<5		<0.5	2	<5	1
97-385 669-674	<5		<0.5	3	<5	1
97-385 674-679	<5	<5	<0.5	2	<5	1
97-385 679-684	<5	<5	<0.5	3	6	1
97-385 684-689	<5		<0.5	<2	5	<1
97-385 689-694	<5		<0.5	<2	15	<1
97-385 694-699	<5		<0.5	3	7	<1
97-385 699-704	<5		<0.5	4	15	1
97-385 704-709	<5		<0.5	7	8	1
97-385 709-714	<5		<0.5	4	7	1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 714-719	<5		<0.5	5	<5	1
97-385 719-724	<5		<0.5	5	<5	1
97-385 724-729	<5		<0.5	6	6	<1
97-385 729-734	<5		<0.5	7	8	<1
97-385 734-739	<5		<0.5	4	5	<1
97-385 739.0-744.3	<5		<0.5	3	<5	<1
97-385 744.3-749.0	<5	<5	<0.5	5	7	<1
97-385 749-754	<5		<0.5	6	<5	<1
97-385 754-759	<5		<0.5	9	<5	<1
97-385 759.0-763.6	<5		<0.5	3	<5	<1
97-385 763.6-769.0	<5		<0.5	7	10	1
97-385 769.0-773.9	<5		<0.5	4	27	<1
97-385 773.9-779.0	<5		<0.5	5	<5	<1
97-385 779.0-783.4	<5		<0.5	6	20	<1
97-385 783.4-788.5	<5		<0.5	10	10	<1
97-385 788.5-794.0	<5		<0.5	5	<5	<1
97-385 794-799	<5		<0.5	2	23	<1
97-385 799-804	<5	<5	<0.5	<2	<5	<1
97-385 804-809	<5		<0.5	2	25	<1
97-385 809-814	<5		<0.5	4	12	<1
97-385 814-819	<5		<0.5	3	<5	<1
97-385 819-824	<5		<0.5	<2	<5	<1
97-385 824-829	<5		<0.5	<2	9	<1
97-385 829-834	<5		<0.5	<2	<5	<1
97-385 834-839	<5		<0.5	<2	<5	<1

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043628

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 18 APR 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Ag D210 ppm	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 839-844	<5		<0.5	2	<5	<1
97-385 844-849	<5		<0.5	4	<5	2
97-385 849-854	<5		<0.5	8	<5	2
97-385 854-858	<5		<0.5	5	14	2
97-385 858-862	<5		<0.5	6	29	2
97-385 862.0-864.3	<5		<0.5	16	26	3
97-385 864.3-869.0	<5		<0.5	12	28	2
97-385 869-874	<5		<0.5	17	27	1
97-385 874-879	<5		<0.5	11	33	2
97-385 879.0-884.2	<5		<0.5	9	22	3
97-385 884.2-889.0	<5		<0.5	3	25	3

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043754

American Assay Laboratories

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

SANTA FE PACIFIC GOLD

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: CHARLIE MUERHOFF
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SANTA FE PACIFIC GOLD
RENO

FILE COPY

CLIENT REFERENCE No: 97-385
No. SAMPLES : 11
MAIN SAMPLE TYPE : DRILL CORE

RECEIVED : 21 APR 1997
REPORTED : 9 MAY 1997

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
As	D210	10%	ppm	2
Hg	D210	10%	ppb	5
Sb	D210	10%	ppm	1

SIGNATORY : Susan King M.S.

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043754

American Assay Laboratories

CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

SAMPLES	Au FA30 ppb	Au(R) FA30 ppb	Au(OZ) FA30 OPT	Au(RZ) FA30 OPT	Ag D210 ppm	Ag(OZ) D210 OPT
97-385 1499.3-1505.0	<5		<0.001		<0.5	<0.02
97-385 1505.0-1510.4	<5		<0.001		<0.5	<0.02
97-385 1510.4-1514.9	<5		<0.001		<0.5	<0.02
97-385 1514.9-1519.5	<5		<0.001		1.2	0.04
97-385 1519.5-1524.0	<5		<0.001		0.5	<0.02
97-385 1524-1529	<5		<0.001		<0.5	<0.02
97-385 1529-1534	<5		<0.001		<0.5	<0.02
97-385 1534.0-1540.5	<5		<0.001		<0.5	<0.02
97-385 1540.5-1545.3	<5		<0.001		<0.5	<0.02
97-385 1545.3-1551.0	<5		<0.001		<0.5	<0.02
97-385 1551-1556	<5		<0.001		<0.5	<0.02

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT SP043754

American Assay Laboratories

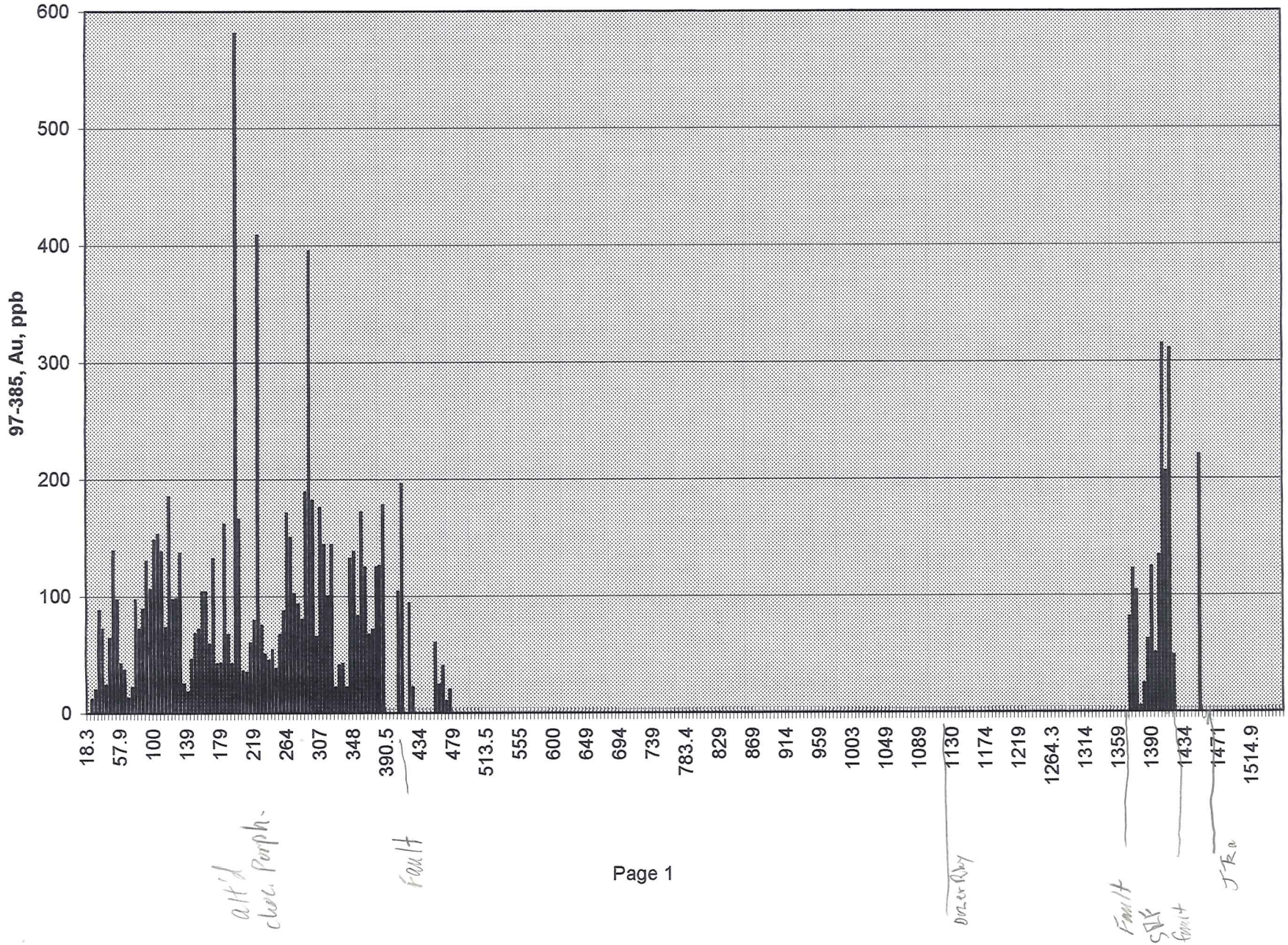
CLIENT : SANTA FE PACIFIC GOLD
PROJECT : ROSEBUD EXPLORATION
REFERENCE : 97-385

REPORTED : 9 MAY 1997

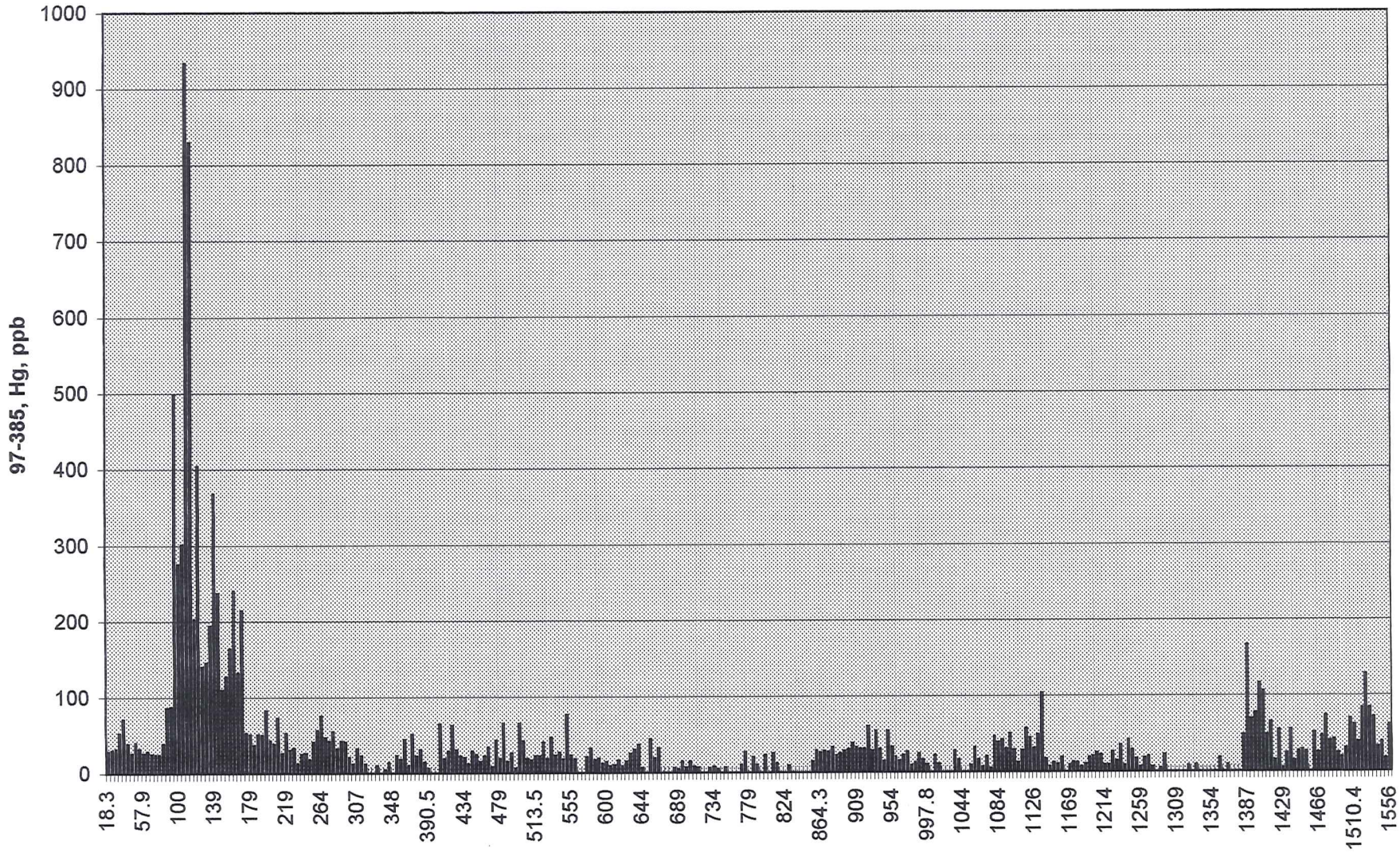
SAMPLES	As D210 ppm	Hg D210 ppb	Sb D210 ppm
97-385 1499.3-1505.0	26	69	3
97-385 1505.0-1510.4	20	61	2
97-385 1510.4-1514.9	38	38	2
97-385 1514.9-1519.5	85	83	2
97-385 1519.5-1524.0	50	128	2
97-385 1524-1529	46	83	2
97-385 1529-1534	38	71	2
97-385 1534.0-1540.5	48	32	2
97-385 1540.5-1545.3	2	39	2
97-385 1545.3-1551.0	24	17	2
97-385 1551-1556	30	61	2

Au

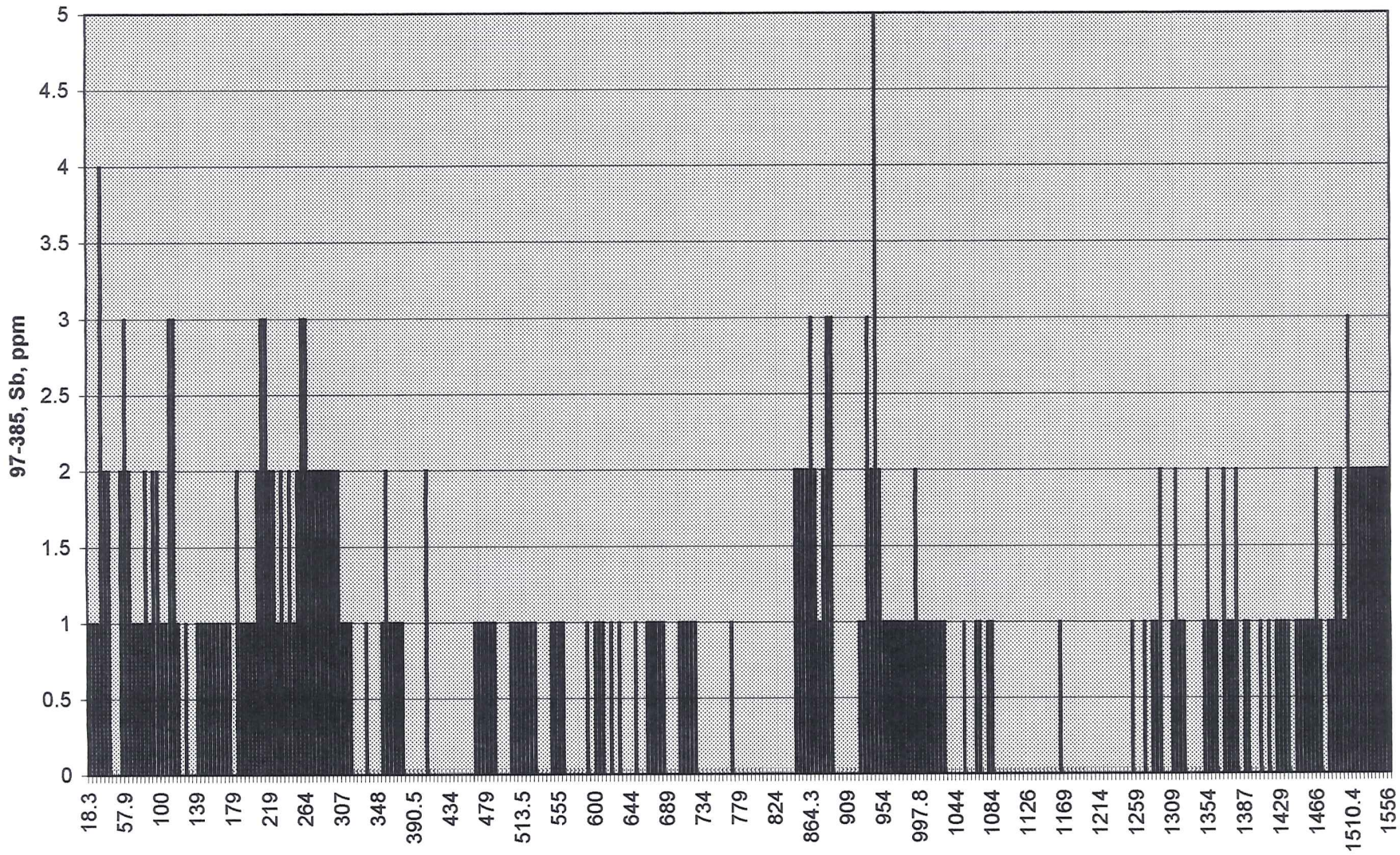
Au, ppb


97-385, Au, ppb
600
500
400
300
200
100
0
18.3
57.9
100
139
179
219
264
307
348
390.5
434
479
513.5
555
600
649
694
739
783.4
829
869
914
959
1003
1049
1089
1130
1174
1219
1264.3
1314
1359
1390
1434
1471
1514.9
alt'd
clast. Porph.
Fault
Drazer Ridge
Fault
SDK
Fault
JKe

Hg, ppb

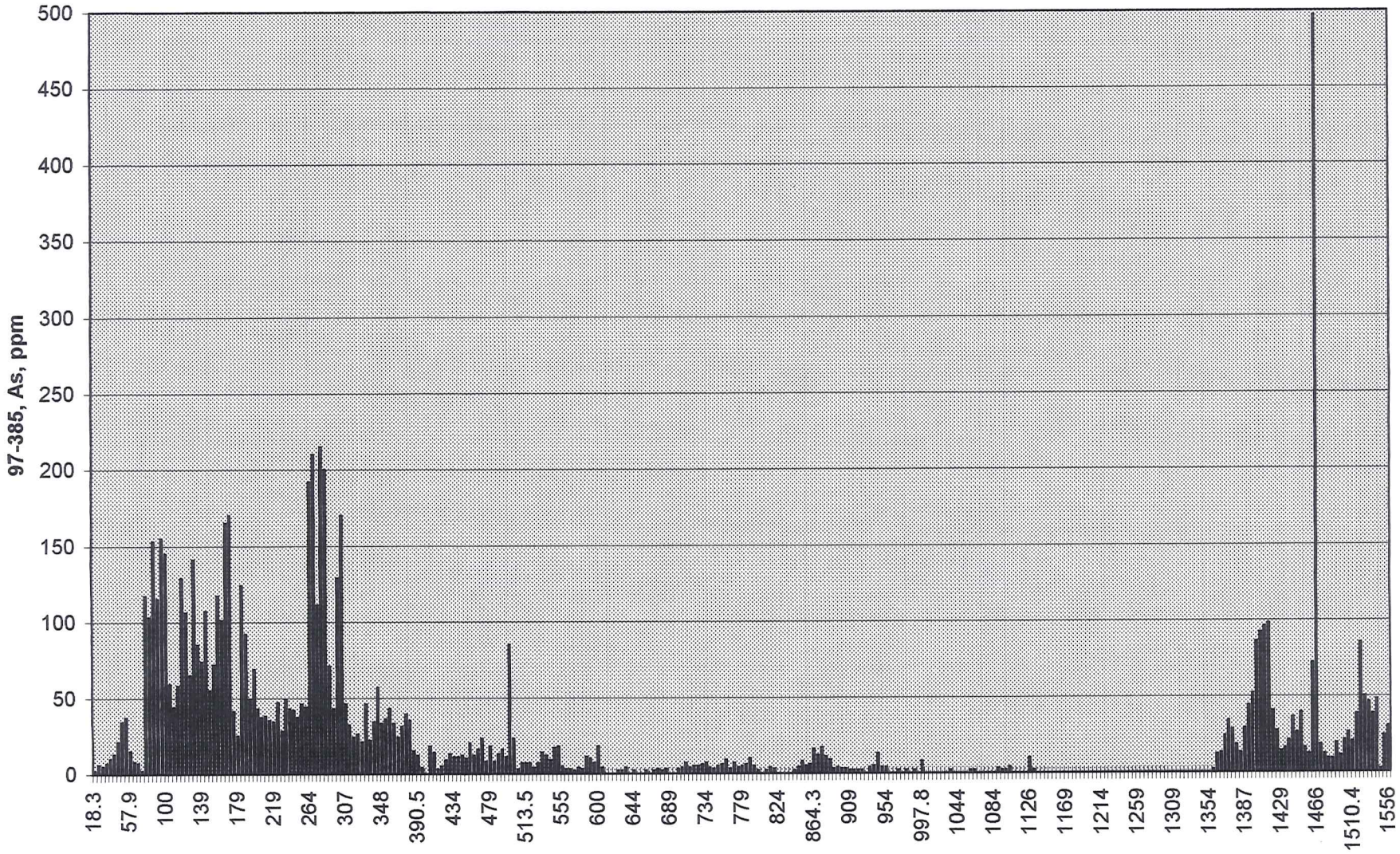

97-385, Hg, ppb
1000
900
800
700
600
500
400
300
200
100
0
18.3
57.9
100
139
179
219
264
307
348
390.5
434
479
513.5
555
600
644
689
734
779
824
864.3
909
954
997.8
1044
1084
1126
1169
1214
1259
1309
1354
1387
1429
1466
1510.4
1556

Sb, ppm


97-385, Sb, ppm
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
18.3
57.9
100
139
179
219
264
307
348
390.5
434
479
513.5
555
600
644
689
734
779
824
864.3
909
954
997.8
1044
1084
1126
1169
1214
1259
1309
1354
1387
1429
1466
1510.4
1556

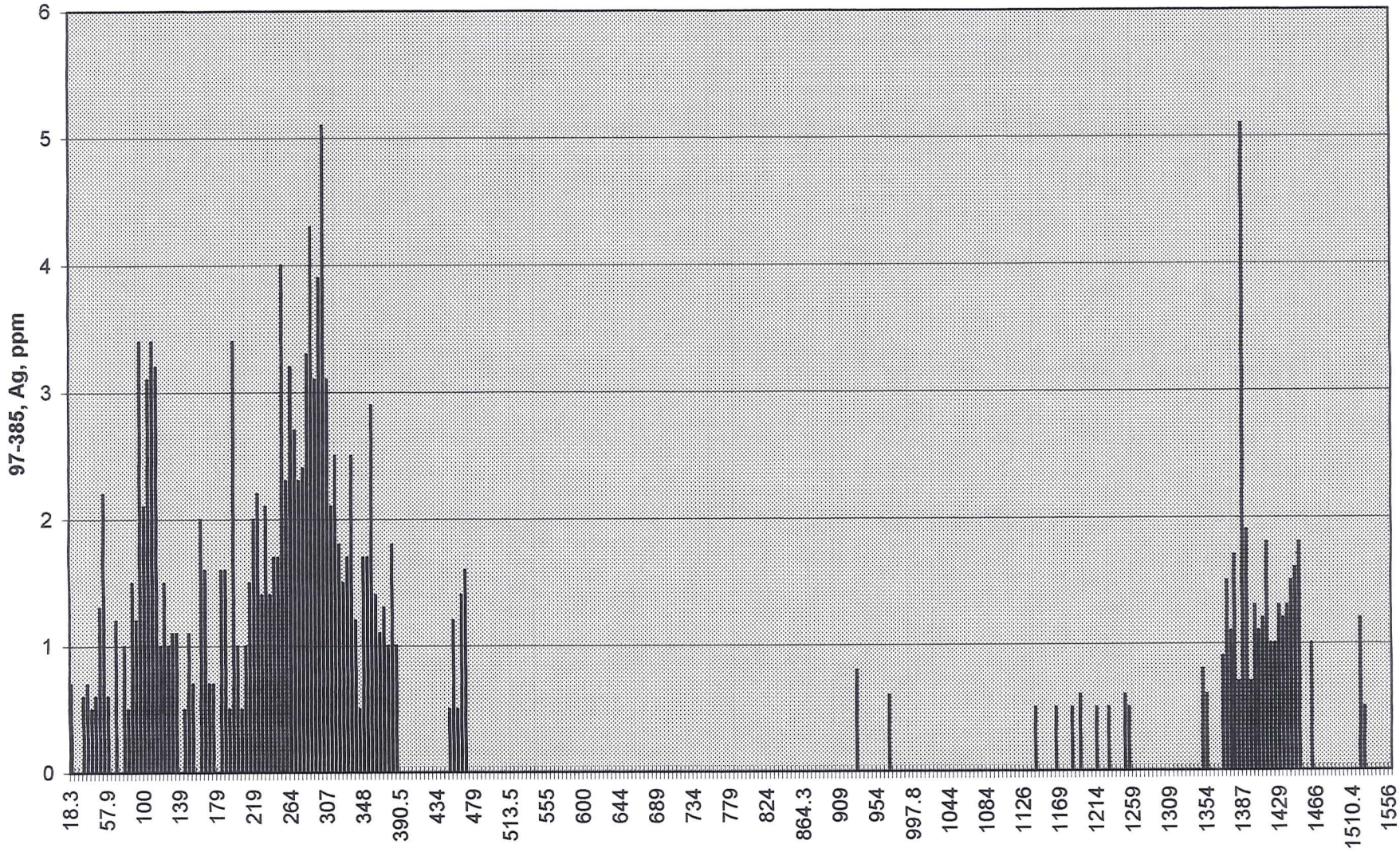
As

As, ppm


97-385, As, ppm
500
450
400
350
300
250
200
150
100
50
0
18.3
57.9
100
139
179
219
264
307
348
390.5
434
479
513.5
555
600
644
689
734
779
824
864.3
909
954
997.8
1044
1084
1126
1169
1214
1259
1309
1354
1387
1429
1466
1510.4
1556

Ag

Ag, ppm


97-385, Ag, ppm
0
1
2
3
4
5
6
18.3
57.9
100
139
179
219
264
307
348
390.5
434
479
513.5
555
600
644
689
734
779
824
864.3
909
954
997.8
1044
1084
1126
1169
1214
1259
1309
1354
1387
1429
1466
1510.4
1556

SP 97-385c

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: SANTA FE PACIFIC GOLD

Address: 250 SOUTH ROCK BLVD., SUITE 100

City RENO State NV Zip 89820

Telephone Number: (702) 858-8000 Fax Number: (702) 858-2011

Project Name: ROSEBUD EXPLORATION Purchase Order Number: 97-385C

Date Submitted: 04-09-97 Number of Samples: 187

04-09-97

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

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
97-385c	CORE	
0 → 894		Au } FA30
		Ag, As, Sb, Hg } IN PPM BY AA } D210
		Hg → ppb

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:

RADU CONELEA - SFPG
250 S. ROCK BLVD.
RENO, NV 89502

Results to:

RADU CONELEA - SFPG

CHARLIE MIXERHOFF
ROSEBUD MINE - HECLA

Comments:

CLIENT FILE COPY

SP

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Other Offices
Lima, Peru
Santiago, Chile
Mendoza, Argentina

Company: SANTA FE PACIFIC GOLD

Address: 250 SOUTH ROCK BLVD., SUITE 100

City RENO State NV Zip 89502

Telephone Number: (702) 858-8000 Fax Number: (702) 858-8011

Project Name: ROSEBUD EXPLORATION Purchase Order Number: 97-385C

Date Submitted: 04-~~22~~ 10-97 Number of Samples: 71

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

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
97-385.	CORE	AU } FA 30
894 → 1244.3		Ag
		As
		Sb } PPM BY AA D210
		Hg → PPB
		Se

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:

RADU CONELEA - SFPG
250 S. ROCK BLVD.
RENO, NV 89502

Results to:

RADU CONELEA - SFPG

CHARLIE MUERHOFF
ROSEBUD MINE - HECLA

Comments:

CLIENT FILE COPY

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Telephone/Fax
011-52-69-170035

Other Offices
Lima, Peru
Santiago, Chile
Mendoza, Argentina

Company: SANTA FE PACIFIC GOLD

Address: 250 S. ROCK BLVD., SUITE 100

City RENO State NV Zip 89820

Telephone Number: (702) 858-8000 Fax Number: (702) 858-8011

Project Name: ROSEBUD EXPLORATION Purchase Order Number: 97-385C

Date Submitted: 04-16-97 Number of Samples: 55

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

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
97-385.	CORE	Au 3 FA 30
1244.3 → ~~[illegible]~~		
1499.3		Ag } ppm BY AA D210
		As }
		Sb }
		Hg → ppb

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:

RADU CONELEA - SFPG
250 S. ROCK BLVD.
RENO NV 89502

Results to:

RADU CONELEA - SFPG

CHARLIE MUERHOFF
ROSEBUD MINE - HECLA

Comments:

CLIENT FILE COPY

SP

SUBMITTAL FORM

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

Other Offices
Lima, Peru
Santiago, Chile
Mendoza, Argentina

Company: SANTA FE PACIFIC GOLD

Address: 250 S. ROCK BLVD., STE. 100

City RENO State NV Zip 89820

Telephone Number: (702) 858-8000 Fax Number: (702) 858-8011

Project Name: ROSEBUD Purchase Order Number: 97-385

Date Submitted: 04-19-97 Number of Samples: 11

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

SAMPLE IDENTIFICATION	TYPE	ELEMENTS REQUIRED
97-385. 1499.3 → 1556.7 (TD)	CORE	Au } FA 30
		Ag
		As } PPM By AA D210
		Sb
		Hg → ppb

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:

RADU CONELEA - SFPG
250 S. ROCK BLVD.
RENO, NV 89502

Results to:

RADU CONELEA - SFPG

CHARLIE MUERHOFF
ROSEBUD MINE - HECLA

Comments:

CLIENT FILE COPY

SANTA FE PACIFIC GOLD CORP.
DRILL HOLE ABANDONMENT

Project: RoseBud #4
Date Completed: 4-10-97
Hole No.: 97-385
Hole Size: 3.895
Hole Depth: 1557
Depth: _____ ft.
Artesian: no
Est. flow: _____ g.p.m.
Non-Artesian: _____

BENTONITE SLURRY ABANDONMENT

Mud Viscosity: _____ sec./qt. (at completion) (Fluid-drilled holes only)
Mud Viscosity: _____ sec./qt.(abandonment fluid) (All holes)
Mud Weight: 9 lbs./gal. (abandonment fluid) (All holes)

SURFACE SEAL

Cement Weight: _____ lbs./gal.
Placed in Hole: From _____ ft. to _____ ft.

CEMENT ABANDONMENT (Artesian Holes)

Cement Weight: _____ lbs./gal.
Placed in Hole: From _____ ft. to _____ ft.
From _____ ft. to _____ ft.

MATERIALS MIXED

Qty.	Size	Product	Brand Name
	50 lb	Enviroplug Coarse	Wyo-Ben
	94 lb	Cement	Nevada Cement
29	50 lb	Abandonite	Wyo-Ben

GROUND WATER INFORMATION

Depth/ft.	GPM	Temp.	Depth/ft.	GPM	Temp.
100					
200					
300					
400					
500					
600					
700					
800					

OTHER

SANTA FE PACIFIC GOLD CORP.

By: _____
Title: _____

CONTRACTOR Boart Longyear
Rig No. 474
By: M. D. Williams
Title: Rig Sup. Driller

SANTA FE PACIFIC GOLD CORP.
DRILL HOLE ABANDONMENT AND SURFACE SEAL

LABOR CONTRACTOR

Project: Rosebud

Hole #: 97-385

Drilled By: Longyear

Date Completed: 4-24-97

Hole Depth: 1556

Hole Size: 3.895

Wet Hole: Y

Dry Hole:

SURFACE SEAL

Cement Weight: 15 lbs./gal.

Placed in Hole: From 10 ft. to 0 ft.

MATERIALS MIXED

Qty.	Size	Product	Brand Name
25	50 lbs.	Enviroplug Coarse	Wyo-Ben
2	94 lbs.	Cement	Nevada Cement

REMARKS

SANTA FE PACIFIC GOLD CORP.

By: GM

Title:

TAYLOR SERVICES INC.

By: Ramon Romero

Title:

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* SANTA FE PACIFIC GOLD *
****

JOB NUMBER: 29-0521-311

WELL NAME: CSF97-385 / VERTICAL

LOCATION: ROSE BUD

SURVEY DATE: 04/10/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 294.50
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
**** MATT EBERT ****
** MIKE WILLIAMS **
PROJECTED F/1551' T/1600'.

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

150

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

JOB NUMBER: 29-0521-311 WELL NAME: CSF97-385 / 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.
0.0	0.00	0.00	0.000	-88.77	166.51	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	1.14	0.242	-88.55	157.12	1.10 S	0.37 E	0.62	0.31	1.17	AT 161.43	053.42
100.0	99.97	2.46	0.458	-88.39	160.30	2.35 S	0.85 E	0.36	0.18	2.50	AT 160.02	055.86
150.0	149.95	3.76	0.539	-88.60	144.67	3.51 S	1.44 E	0.92	0.46	3.79	AT 157.63	057.16
200.0	199.94	4.90	0.328	-88.72	132.82	4.39 S	2.21 E	0.60	0.30	4.91	AT 153.29	058.74
250.0	249.93	6.00	0.077	-88.69	140.27	5.21 S	2.98 E	0.34	0.17	6.00	AT 150.19	060.03
300.0	299.91	7.21	-0.022	-88.51	148.82	6.20 S	3.68 E	0.55	0.28	7.21	AT 149.29	061.32
350.0	349.89	8.57	0.011	-88.37	152.68	7.39 S	4.35 E	0.35	0.18	8.57	AT 149.53	062.76
400.0	399.87	9.96	0.016	-88.45	146.50	8.58 S	5.05 E	0.38	0.19	9.96	AT 149.55	064.20
450.0	449.86	11.27	-0.094	-88.53	142.77	9.66 S	5.81 E	0.25	0.13	11.27	AT 148.98	065.64
500.0	499.84	12.56	-0.193	-88.51	147.33	10.72 S	6.55 E	0.24	0.12	12.56	AT 148.58	066.86
550.0	549.82	13.73	-0.375	-88.75	132.62	11.63 S	7.30 E	0.85	0.42	13.73	AT 147.90	068.59
600.0	599.81	14.81	-0.651	-88.70	137.45	12.42 S	8.08 E	0.24	0.12	14.82	AT 146.94	069.81
650.0	649.80	15.84	-0.878	-88.87	136.70	13.20 S	8.81 E	0.34	0.17	15.87	AT 146.29	071.18
700.0	699.79	16.82	-1.103	-88.83	136.23	13.92 S	9.50 E	0.08	0.04	16.85	AT 145.71	072.69
750.0	749.78	17.79	-1.264	-88.91	144.23	14.68 S	10.13 E	0.35	0.18	17.83	AT 145.40	073.99
800.0	799.77	18.74	-1.200	-88.87	161.98	15.53 S	10.56 E	0.69	0.34	18.78	AT 145.80	075.36
850.0	849.76	19.65	-1.209	-88.99	134.22	16.31 S	11.03 E	1.05	0.53	19.69	AT 145.94	076.87
900.0	899.75	20.58	-1.441	-88.82	136.38	16.99 S	11.70 E	0.35	0.17	20.63	AT 145.45	078.02
950.0	949.74	21.52	-1.699	-88.94	131.68	17.67 S	12.40 E	0.30	0.15	21.59	AT 144.95	079.47
1000.0	999.74	22.41	-1.848	-88.97	148.45	18.36 S	12.98 E	0.61	0.31	22.48	AT 144.75	080.76
1050.0	1049.73	23.40	-1.773	-88.75	158.22	19.25 S	13.42 E	0.59	0.29	23.46	AT 145.13	081.99
1100.0	1099.72	24.41	-1.571	-88.88	163.57	20.23 S	13.76 E	0.34	0.17	24.46	AT 145.78	083.36
1150.0	1149.71	25.36	-1.293	-88.85	167.88	21.18 S	14.00 E	0.18	0.09	25.39	AT 146.54	084.59
1200.0	1199.70	26.33	-1.091	-88.86	154.47	22.12 S	14.32 E	0.54	0.27	26.35	AT 147.09	085.96
1250.0	1249.69	27.33	-0.979	-88.84	157.32	23.04 S	14.73 E	0.12	0.06	27.35	AT 147.41	087.12
1300.0	1299.68	28.30	-0.730	-88.85	170.43	24.00 S	15.01 E	0.53	0.26	28.31	AT 147.98	088.20
1350.0	1349.67	29.23	-0.407	-88.89	166.62	24.97 S	15.20 E	0.17	0.09	29.23	AT 148.66	089.21
1400.0	1399.66	30.07	-0.232	-89.12	154.35	25.78 S	15.48 E	0.62	0.31	30.08	AT 149.02	090.29
1450.0	1449.65	30.88	-0.207	-89.03	148.33	26.49 S	15.87 E	0.26	0.13	30.88	AT 149.08	091.23
1500.0	1499.65	31.69	-0.202	-89.11	151.43	27.19 S	16.28 E	0.19	0.09	31.69	AT 149.09	091.74
1551.0	1550.64	32.39	-0.123	-89.30	161.53	27.84 S	16.57 E	0.46	0.24	32.39	AT 149.24	092.46
1600.0	1599.64	32.98	0.002	-89.30	161.62	28.40 S	16.76 E	0.00	0.00	32.98	AT 149.46	092.61

```
*************************************************************
*                         ********                          *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                         ********                          *
*  1600.0 FEET EQUALS      32.98    FEET AT   149.46        *
*                         ********                          *
*************************************************************
```

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* SANTA FE PACIFIC GOLD *
****

JOB NUMBER: 29-0521-311

WELL NAME: CSF97-385 / VERTICAL

LOCATION: ROSE BUD

SURVEY DATE: 04/10/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 294.50
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
**** MATT EBERT ****
** MIKE WILLIAMS **
PROJECTED F/1551' T/1600'.

****
****
*** 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: CSF97-385 / 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.
0.0	0.00	0.00	0.000	-88.77	166.51	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	1.14	0.242	-88.55	157.12	1.10 S	0.37 E	0.62	0.31	1.17	AT 161.43	053.42
100.0	99.97	2.46	0.458	-88.39	160.30	2.35 S	0.85 E	0.36	0.18	2.50	AT 160.02	055.86
150.0	149.95	3.76	0.539	-88.60	144.67	3.51 S	1.44 E	0.92	0.46	3.79	AT 157.63	057.16
200.0	199.94	4.90	0.328	-88.72	132.82	4.39 S	2.21 E	0.60	0.30	4.91	AT 153.29	058.74
250.0	249.93	6.00	0.077	-88.69	140.27	5.21 S	2.98 E	0.34	0.17	6.00	AT 150.19	060.03
300.0	299.91	7.21	-0.022	-88.51	148.82	6.20 S	3.68 E	0.55	0.28	7.21	AT 149.29	061.32
350.0	349.89	8.57	0.011	-88.37	152.68	7.39 S	4.35 E	0.35	0.18	8.57	AT 149.53	062.76
400.0	399.87	9.96	0.016	-88.45	146.50	8.58 S	5.05 E	0.38	0.19	9.96	AT 149.55	064.20
450.0	449.86	11.27	-0.094	-88.53	142.77	9.66 S	5.81 E	0.25	0.13	11.27	AT 148.98	065.64
500.0	499.84	12.56	-0.193	-88.51	147.33	10.72 S	6.55 E	0.24	0.12	12.56	AT 148.58	066.86
550.0	549.82	13.73	-0.375	-88.75	132.62	11.63 S	7.30 E	0.85	0.42	13.73	AT 147.90	068.59
600.0	599.81	14.81	-0.651	-88.70	137.45	12.42 S	8.08 E	0.24	0.12	14.82	AT 146.94	069.81
650.0	649.80	15.84	-0.878	-88.87	136.70	13.20 S	8.81 E	0.34	0.17	15.87	AT 146.29	071.18
700.0	699.79	16.82	-1.103	-88.83	136.23	13.92 S	9.50 E	0.08	0.04	16.85	AT 145.71	072.69
750.0	749.78	17.79	-1.264	-88.91	144.23	14.68 S	10.13 E	0.35	0.18	17.83	AT 145.40	073.99
800.0	799.77	18.74	-1.200	-88.87	161.98	15.53 S	10.56 E	0.69	0.34	18.78	AT 145.80	075.36
850.0	849.76	19.65	-1.209	-88.99	134.22	16.31 S	11.03 E	1.05	0.53	19.69	AT 145.94	076.87
900.0	899.75	20.58	-1.441	-88.82	136.38	16.99 S	11.70 E	0.35	0.17	20.63	AT 145.45	078.02
950.0	949.74	21.52	-1.699	-88.94	131.68	17.67 S	12.40 E	0.30	0.15	21.59	AT 144.95	079.47
1000.0	999.74	22.41	-1.848	-88.97	148.45	18.36 S	12.98 E	0.61	0.31	22.48	AT 144.75	080.76
1050.0	1049.73	23.40	-1.773	-88.75	158.22	19.25 S	13.42 E	0.59	0.29	23.46	AT 145.13	081.99
1100.0	1099.72	24.41	-1.571	-88.88	163.57	20.23 S	13.76 E	0.34	0.17	24.46	AT 145.78	083.36
1150.0	1149.71	25.36	-1.293	-88.85	167.88	21.18 S	14.00 E	0.18	0.09	25.39	AT 146.54	084.59
1200.0	1199.70	26.33	-1.091	-88.86	154.47	22.12 S	14.32 E	0.54	0.27	26.35	AT 147.09	085.96
1250.0	1249.69	27.33	-0.979	-88.84	157.32	23.04 S	14.73 E	0.12	0.06	27.35	AT 147.41	087.12
1300.0	1299.68	28.30	-0.730	-88.85	170.43	24.00 S	15.01 E	0.53	0.26	28.31	AT 147.98	088.20
1350.0	1349.67	29.23	-0.407	-88.89	166.62	24.97 S	15.20 E	0.17	0.09	29.23	AT 148.66	089.21
1400.0	1399.66	30.07	-0.232	-89.12	154.35	25.78 S	15.48 E	0.62	0.31	30.08	AT 149.02	090.29
1450.0	1449.65	30.88	-0.207	-89.03	148.33	26.49 S	15.87 E	0.26	0.13	30.88	AT 149.08	091.23
1500.0	1499.65	31.69	-0.202	-89.11	151.43	27.19 S	16.28 E	0.19	0.09	31.69	AT 149.09	091.74
1551.0	1550.64	32.39	-0.123	-89.30	161.53	27.84 S	16.57 E	0.46	0.24	32.39	AT 149.24	092.46
1600.0	1599.64	32.98	0.002	-89.30	161.62	28.40 S	16.76 E	0.00	0.00	32.98	AT 149.46	092.61

****
* ******** *
* THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF *
* ******** *
* 1600.0 FEET EQUALS 32.98 FEET AT 149.46 *
* ******** *
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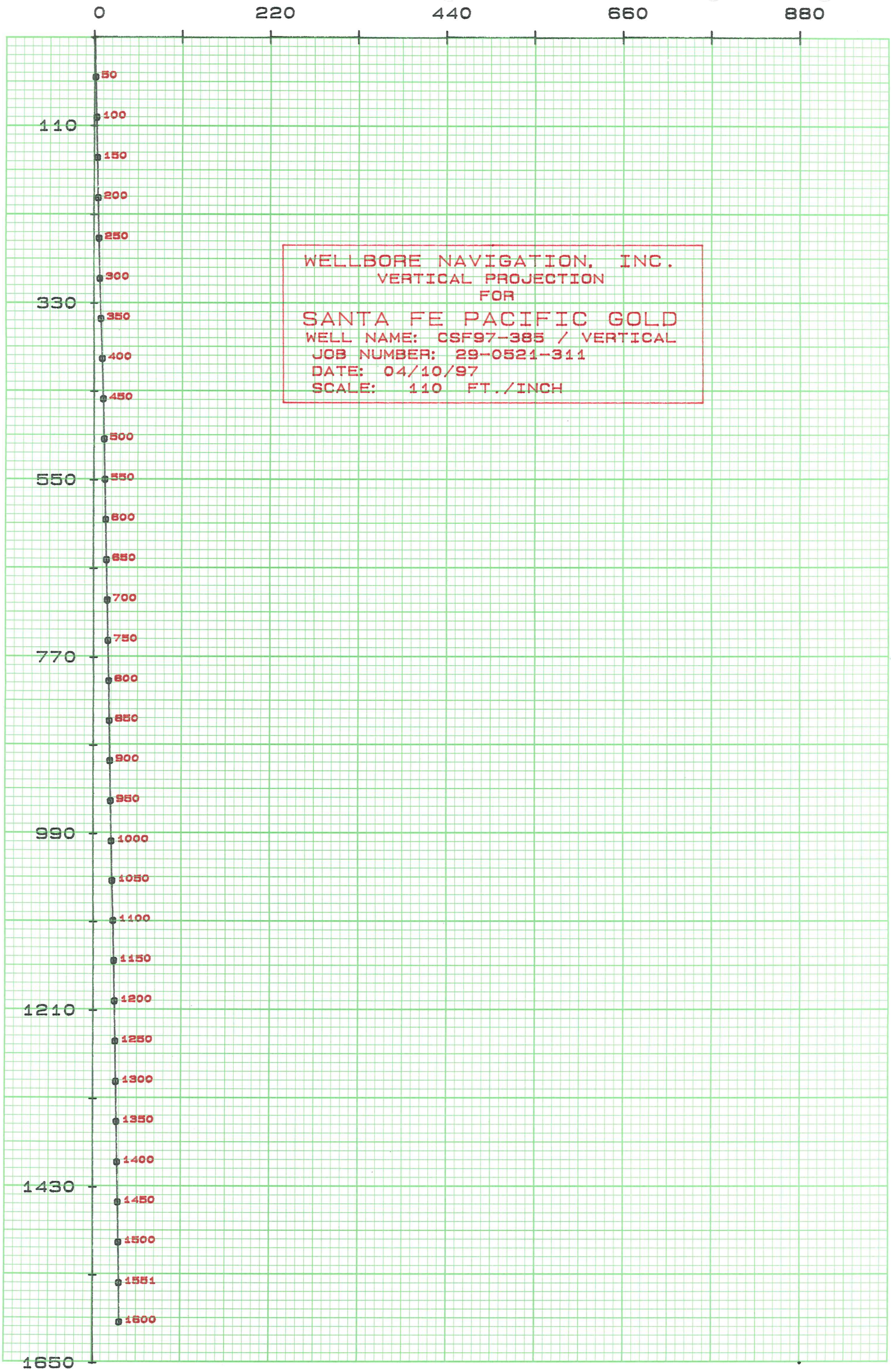
CK PRINTING CENTER (801) 467-2841



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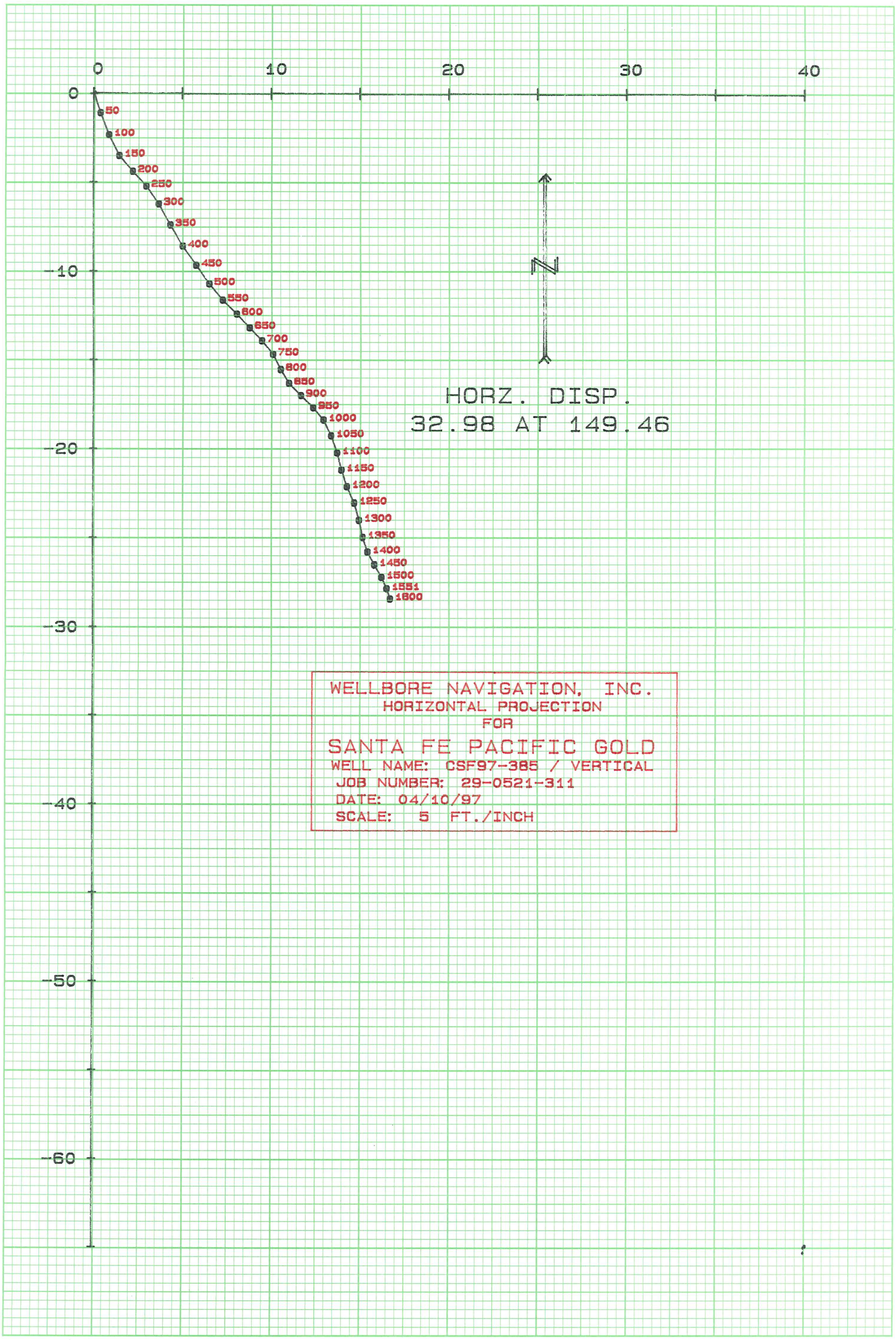

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* SANTA FE PACIFIC GOLD *
****

JOB NUMBER: 29-0521-311

WELL NAME: CSF97-385 / VERTICAL

LOCATION: ROSE BUD

SURVEY DATE: 04/10/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 294.50
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

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

COMMENTS: ** BOART LONGYEAR **
**** MATT EBERT ****
** MIKE WILLIAMS **
PROJECTED F/1551' T/1600'.

****
****
*** 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: CSF97-385 / 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	-88.77	166.51	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	1.14	0.242	-88.55	157.12	1.10 S	0.37 E	0.62	0.31	1.17	AT 161.43	053.42
100.0	99.97	2.46	0.458	-88.39	160.30	2.35 S	0.85 E	0.36	0.18	2.50	AT 160.02	055.86
150.0	149.95	3.76	0.539	-88.60	144.67	3.51 S	1.44 E	0.92	0.46	3.79	AT 157.63	057.16
200.0	199.94	4.90	0.328	-88.72	132.82	4.39 S	2.21 E	0.60	0.30	4.91	AT 153.29	058.74
250.0	249.93	6.00	0.077	-88.69	140.27	5.21 S	2.98 E	0.34	0.17	6.00	AT 150.19	060.03
300.0	299.91	7.21	-0.022	-88.51	148.82	6.20 S	3.68 E	0.55	0.28	7.21	AT 149.29	061.32
350.0	349.89	8.57	0.011	-88.37	152.68	7.39 S	4.35 E	0.35	0.18	8.57	AT 149.53	062.76
400.0	399.87	9.96	0.016	-88.45	146.50	8.58 S	5.05 E	0.38	0.19	9.96	AT 149.55	064.20
450.0	449.86	11.27	-0.094	-88.53	142.77	9.66 S	5.81 E	0.25	0.13	11.27	AT 148.98	065.64
500.0	499.84	12.56	-0.193	-88.51	147.33	10.72 S	6.55 E	0.24	0.12	12.56	AT 148.58	066.86
550.0	549.82	13.73	-0.375	-88.75	132.62	11.63 S	7.30 E	0.85	0.42	13.73	AT 147.90	068.59
600.0	599.81	14.81	-0.651	-88.70	137.45	12.42 S	8.08 E	0.24	0.12	14.82	AT 146.94	069.81
650.0	649.80	15.84	-0.878	-88.87	136.70	13.20 S	8.81 E	0.34	0.17	15.87	AT 146.29	071.18
700.0	699.79	16.82	-1.103	-88.83	136.23	13.92 S	9.50 E	0.08	0.04	16.85	AT 145.71	072.69
750.0	749.78	17.79	-1.264	-88.91	144.23	14.68 S	10.13 E	0.35	0.18	17.83	AT 145.40	073.99
800.0	799.77	18.74	-1.200	-88.87	161.98	15.53 S	10.56 E	0.69	0.34	18.78	AT 145.80	075.36
850.0	849.76	19.65	-1.209	-88.99	134.22	16.31 S	11.03 E	1.05	0.53	19.69	AT 145.94	076.87
900.0	899.75	20.58	-1.441	-88.82	136.38	16.99 S	11.70 E	0.35	0.17	20.63	AT 145.45	078.02
950.0	949.74	21.52	-1.699	-88.94	131.68	17.67 S	12.40 E	0.30	0.15	21.59	AT 144.95	079.47
1000.0	999.74	22.41	-1.848	-88.97	148.45	18.36 S	12.98 E	0.61	0.31	22.48	AT 144.75	080.76
1050.0	1049.73	23.40	-1.773	-88.75	158.22	19.25 S	13.42 E	0.59	0.29	23.46	AT 145.13	081.99
1100.0	1099.72	24.41	-1.571	-88.88	163.57	20.23 S	13.76 E	0.34	0.17	24.46	AT 145.78	083.36
1150.0	1149.71	25.36	-1.293	-88.85	167.88	21.18 S	14.00 E	0.18	0.09	25.39	AT 146.54	084.59
1200.0	1199.70	26.33	-1.091	-88.86	154.47	22.12 S	14.32 E	0.54	0.27	26.35	AT 147.09	085.96
1250.0	1249.69	27.33	-0.979	-88.84	157.32	23.04 S	14.73 E	0.12	0.06	27.35	AT 147.41	087.12
1300.0	1299.68	28.30	-0.730	-88.85	170.43	24.00 S	15.01 E	0.53	0.26	28.31	AT 147.98	088.20
1350.0	1349.67	29.23	-0.407	-88.89	166.62	24.97 S	15.20 E	0.17	0.09	29.23	AT 148.66	089.21
1400.0	1399.66	30.07	-0.232	-89.12	154.35	25.78 S	15.48 E	0.62	0.31	30.08	AT 149.02	090.29
1450.0	1449.65	30.88	-0.207	-89.03	148.33	26.49 S	15.87 E	0.26	0.13	30.88	AT 149.08	091.23
1500.0	1499.65	31.69	-0.202	-89.11	151.43	27.19 S	16.28 E	0.19	0.09	31.69	AT 149.09	091.74
1551.0	1550.64	32.39	-0.123	-89.30	161.53	27.84 S	16.57 E	0.46	0.24	32.39	AT 149.24	092.46
1600.0	1599.64	32.98	0.002	-89.30	161.62	28.40 S	16.76 E	0.00	0.00	32.98	AT 149.46	092.61

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*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*  1600.0 FEET EQUALS     32.98    FEET AT   149.46         *
*                          ********                         *
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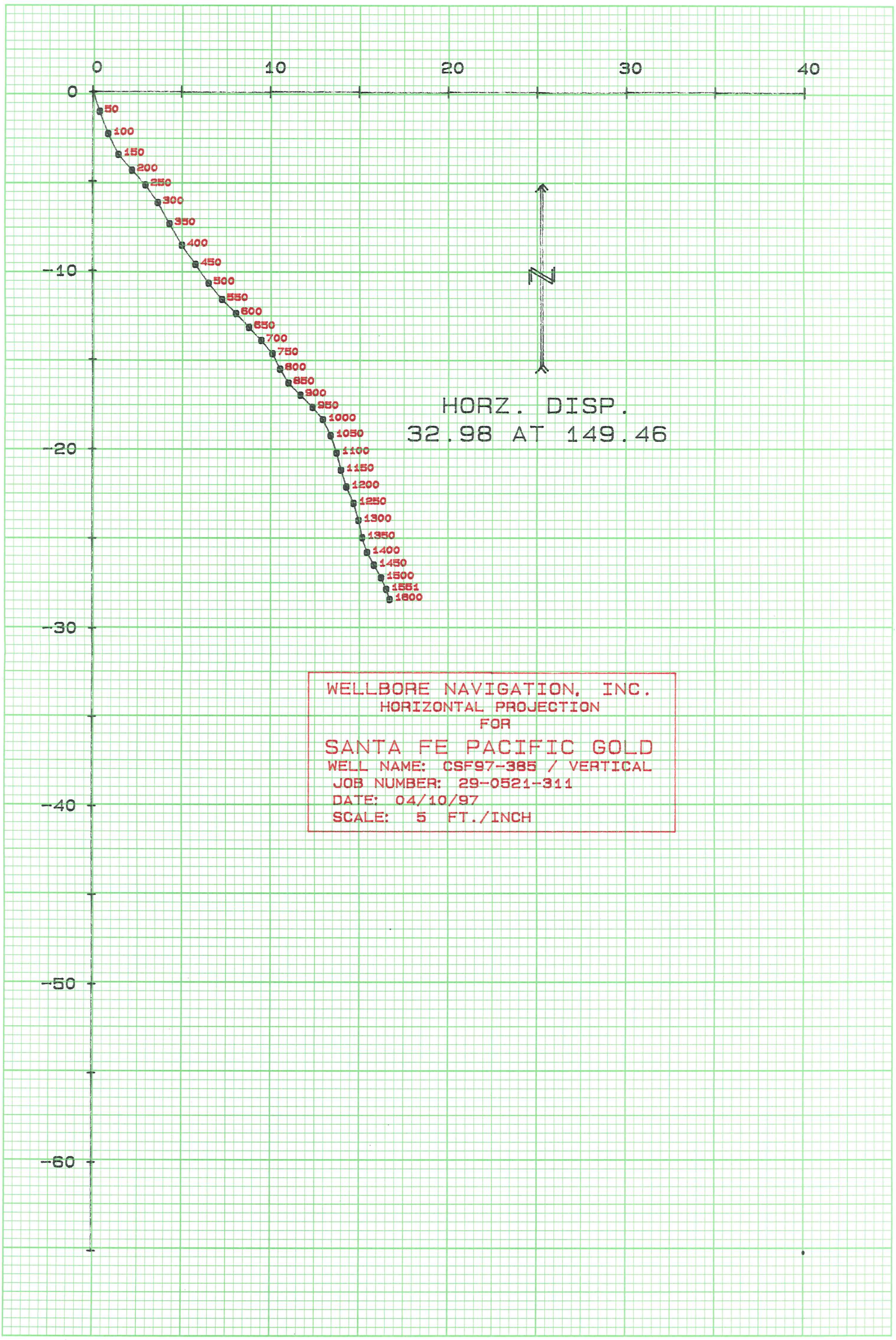

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* SANTA FE PACIFIC GOLD *
****

JOB NUMBER: 29-0521-311

WELL NAME: CSF97-385 / S-N SECTION

LOCATION: ROSE BUD

SURVEY DATE: 04/10/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 294.50
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 000.00

WELNAV

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

COMMENTS: ** BOART LONGYEAR **
**** MATT EBERT ****
** MIKE WILLIAMS **
PROJECTED F/1551' T/1600'.

****
****
*** 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: CSF97-385 / S-N SECTION

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	-88.77	166.51	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	-1.10	0.371	-88.55	157.12	1.10 S	0.37 E	0.62	0.31	1.17	AT 161.43	053.42
100.0	99.97	-2.35	0.854	-88.39	160.30	2.35 S	0.85 E	0.36	0.18	2.50	AT 160.02	055.86
150.0	149.95	-3.51	1.444	-88.60	144.67	3.51 S	1.44 E	0.92	0.46	3.79	AT 157.63	057.16
200.0	199.94	-4.39	2.207	-88.72	132.82	4.39 S	2.21 E	0.60	0.30	4.91	AT 153.29	058.74
250.0	249.93	-5.21	2.982	-88.69	140.27	5.21 S	2.98 E	0.34	0.17	6.00	AT 150.19	060.03
300.0	299.91	-6.20	3.684	-88.51	148.82	6.20 S	3.68 E	0.55	0.28	7.21	AT 149.29	061.32
350.0	349.89	-7.39	4.347	-88.37	152.68	7.39 S	4.35 E	0.35	0.18	8.57	AT 149.53	062.76
400.0	399.87	-8.58	5.046	-88.45	146.50	8.58 S	5.05 E	0.38	0.19	9.96	AT 149.55	064.20
450.0	449.86	-9.66	5.808	-88.53	142.77	9.66 S	5.81 E	0.25	0.13	11.27	AT 148.98	065.64
500.0	499.84	-10.72	6.547	-88.51	147.33	10.72 S	6.55 E	0.24	0.12	12.56	AT 148.58	066.86
550.0	549.82	-11.63	7.299	-88.75	132.62	11.63 S	7.30 E	0.85	0.42	13.73	AT 147.90	068.59
600.0	599.81	-12.42	8.084	-88.70	137.45	12.42 S	8.08 E	0.24	0.12	14.82	AT 146.94	069.81
650.0	649.80	-13.20	8.805	-88.87	136.70	13.20 S	8.81 E	0.34	0.17	15.87	AT 146.29	071.18
700.0	699.79	-13.92	9.497	-88.83	136.23	13.92 S	9.50 E	0.08	0.04	16.85	AT 145.71	072.69
750.0	749.78	-14.68	10.128	-88.91	144.23	14.68 S	10.13 E	0.35	0.18	17.83	AT 145.40	073.99
800.0	799.77	-15.53	10.558	-88.87	161.98	15.53 S	10.56 E	0.69	0.34	18.78	AT 145.80	075.36
850.0	849.76	-16.31	11.026	-88.99	134.22	16.31 S	11.03 E	1.05	0.53	19.69	AT 145.94	076.87
900.0	899.75	-16.99	11.697	-88.82	136.38	16.99 S	11.70 E	0.35	0.17	20.63	AT 145.45	078.02
950.0	949.74	-17.67	12.398	-88.94	131.68	17.67 S	12.40 E	0.30	0.15	21.59	AT 144.95	079.47
1000.0	999.74	-18.36	12.978	-88.97	148.45	18.36 S	12.98 E	0.61	0.31	22.48	AT 144.75	080.76
1050.0	1049.73	-19.25	13.416	-88.75	158.22	19.25 S	13.42 E	0.59	0.29	23.46	AT 145.13	081.99
1100.0	1099.72	-20.23	13.757	-88.88	163.57	20.23 S	13.76 E	0.34	0.17	24.46	AT 145.78	083.36
1150.0	1149.71	-21.18	14.000	-88.85	167.88	21.18 S	14.00 E	0.18	0.09	25.39	AT 146.54	084.59
1200.0	1199.70	-22.12	14.320	-88.86	154.47	22.12 S	14.32 E	0.54	0.27	26.35	AT 147.09	085.96
1250.0	1249.69	-23.04	14.729	-88.84	157.32	23.04 S	14.73 E	0.12	0.06	27.35	AT 147.41	087.12
1300.0	1299.68	-24.00	15.008	-88.85	170.43	24.00 S	15.01 E	0.53	0.26	28.31	AT 147.98	088.20
1350.0	1349.67	-24.97	15.204	-88.89	166.62	24.97 S	15.20 E	0.17	0.09	29.23	AT 148.66	089.21
1400.0	1399.66	-25.78	15.482	-89.12	154.35	25.78 S	15.48 E	0.62	0.31	30.08	AT 149.02	090.29
1450.0	1449.65	-26.49	15.870	-89.03	148.33	26.49 S	15.87 E	0.26	0.13	30.88	AT 149.08	091.23
1500.0	1499.65	-27.19	16.278	-89.11	151.43	27.19 S	16.28 E	0.19	0.09	31.69	AT 149.09	091.74
1551.0	1550.64	-27.84	16.566	-89.30	161.53	27.84 S	16.57 E	0.46	0.24	32.39	AT 149.24	092.46
1600.0	1599.64	-28.40	16.755	-89.30	161.62	28.40 S	16.76 E	0.00	0.00	32.98	AT 149.46	092.61

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*************************************************************
*                          ********                         *
*      THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF          *
*                          ********                         *
*  1600.0 FEET EQUALS     32.98    FEET AT   149.46         *
*                          ********                         *
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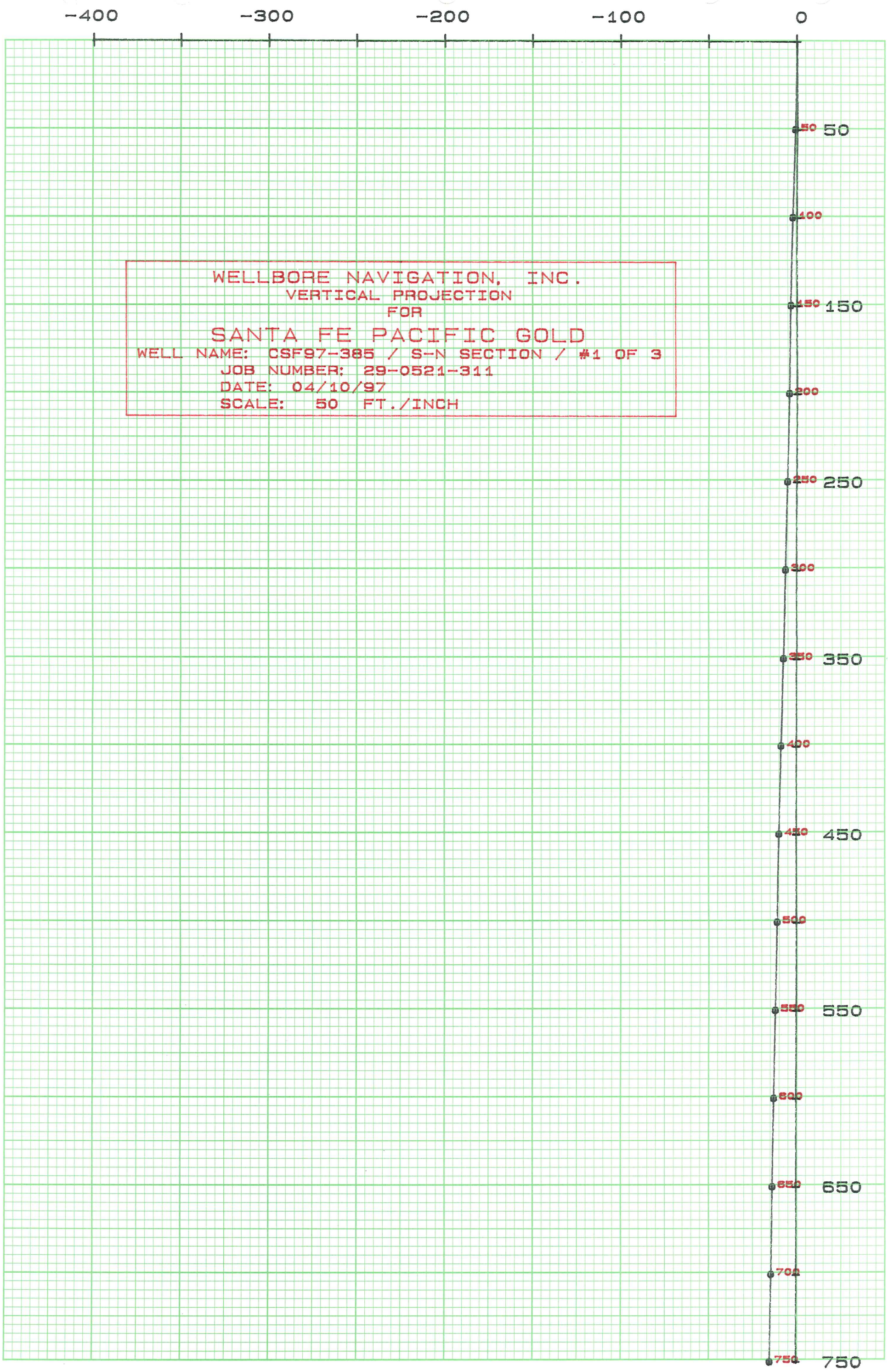
CK PRINTING CENTER (801) 467-2841



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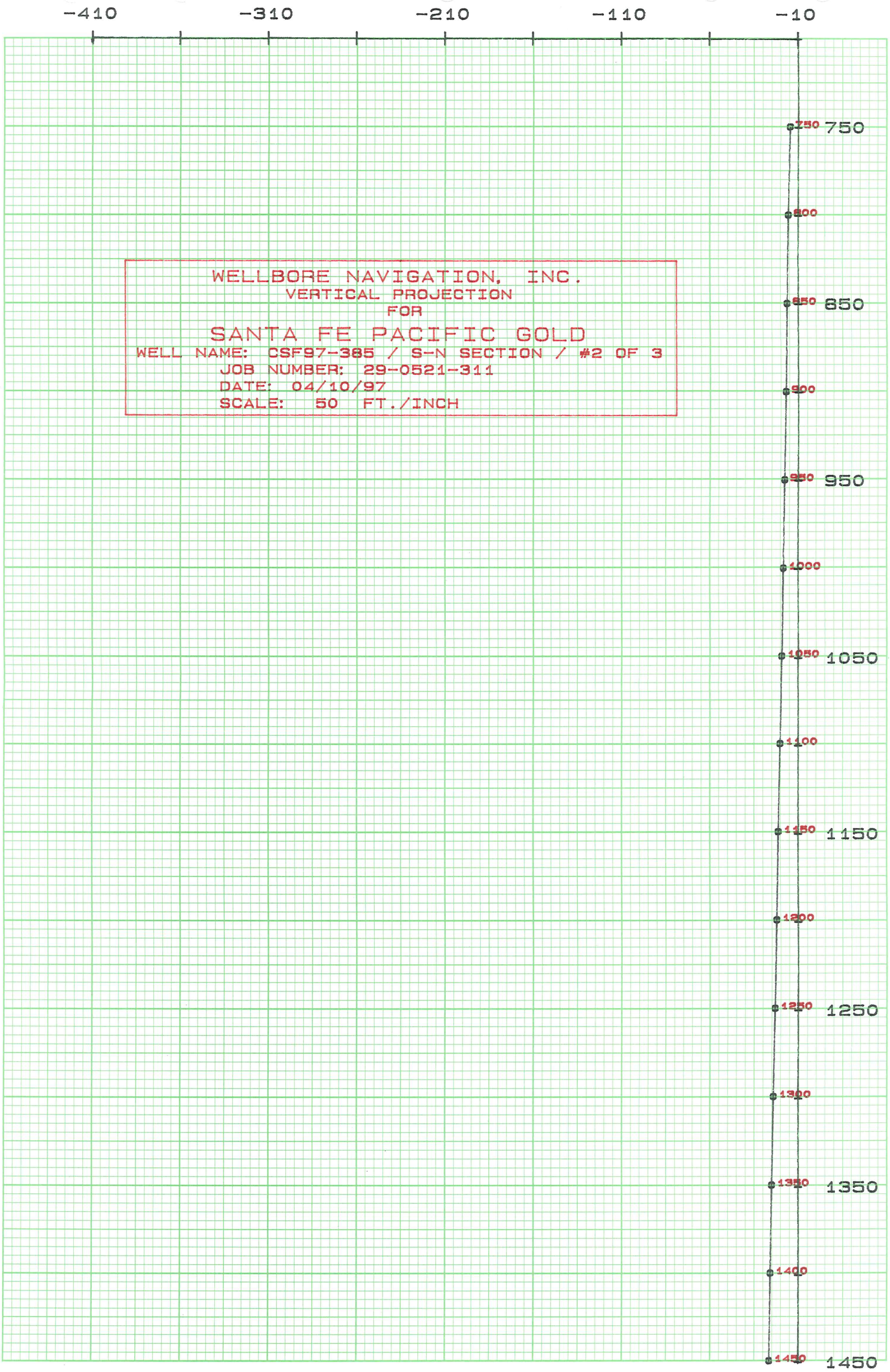

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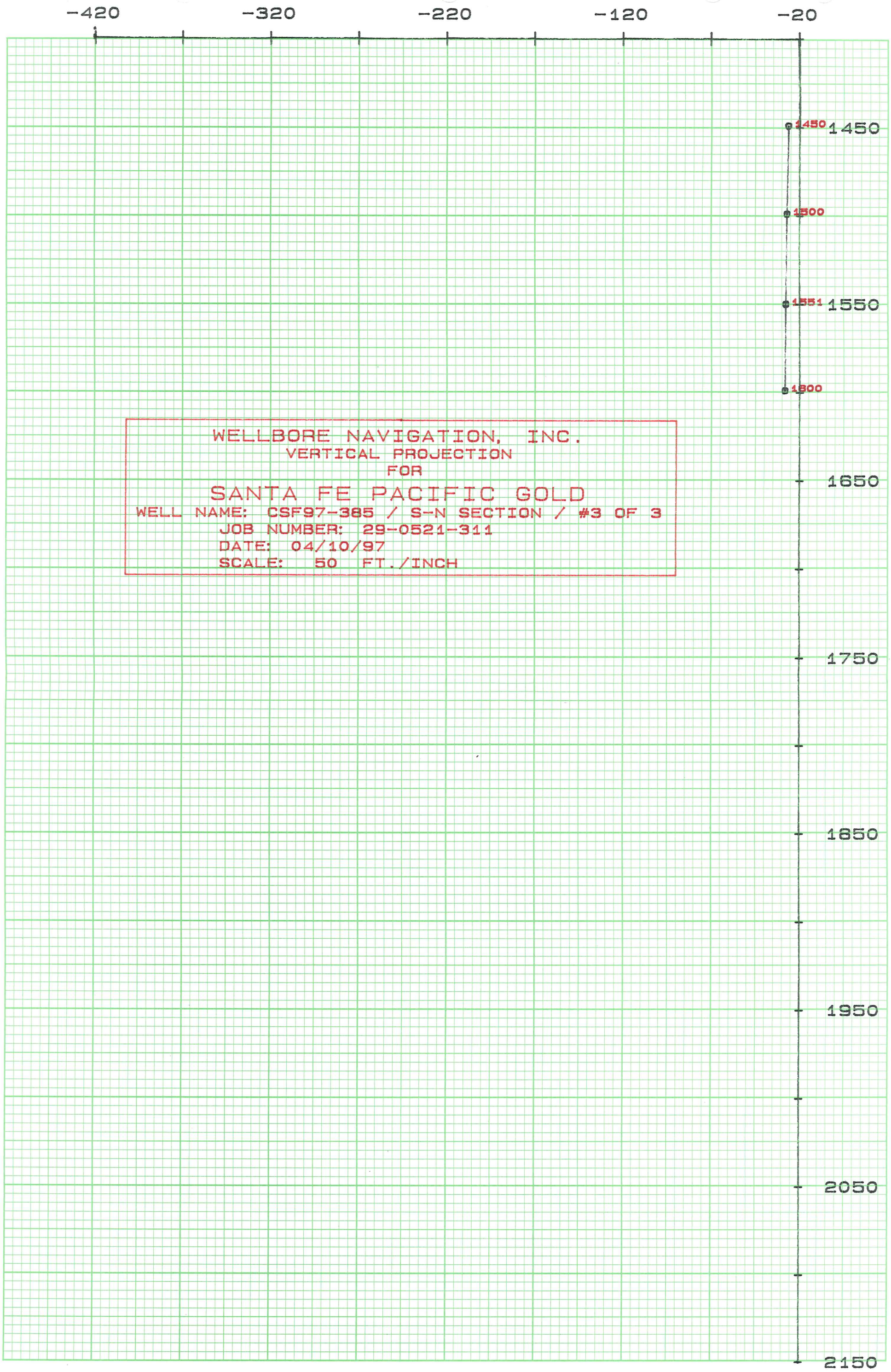

WELLBORE NAVIGATION, INC.
WINNEMUCCA, NEVADA

GYROSCOPIC DIRECTIONAL SURVEY
BY MINIMUM CURVATURE

FOR

****
* SANTA FE PACIFIC GOLD *
****

JOB NUMBER: 29-0521-311

WELL NAME: CSF97-385 / W-E SECTION

LOCATION: ROSE BUD

SURVEY DATE: 04/10/97

SURVEY ENGINEER: VERN REID

GYRO REFERENCE BEARING: 294.50
TIE-ON COORDINATES AT: 0 M.D.
TAKEN FROM: COLLAR

VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: 090.00

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

COMMENTS: ** BOART LONGYEAR **
**** MATT EBERT ****
** MIKE WILLIAMS **
PROJECTED F/1551' T/1600'.

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*** 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

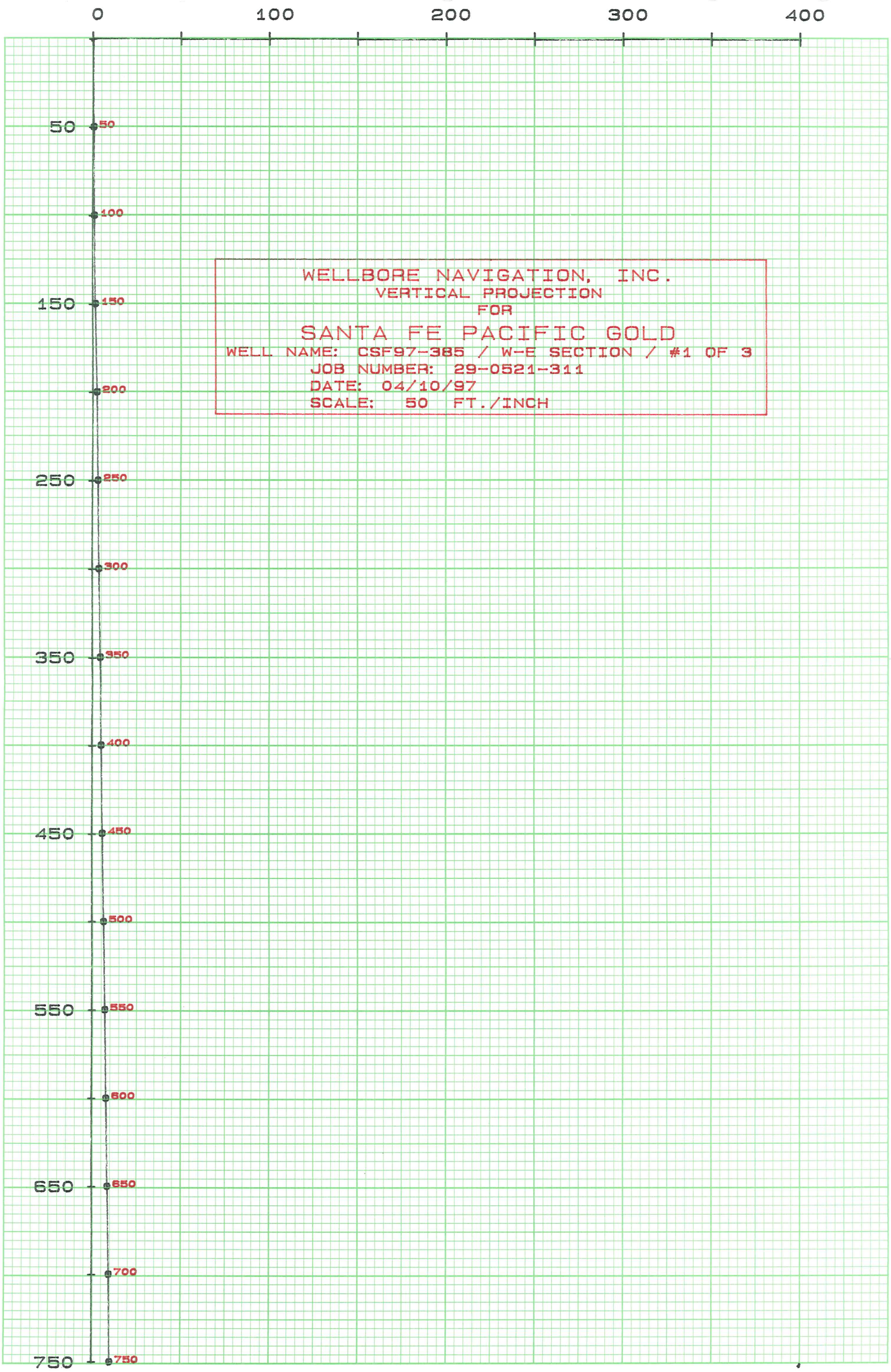
JOB NUMBER: 29-0521-311 WELL NAME: CSF97-385 / W-E SECTION

INRUN SURVEY
BY MINIMUM CURVATURE

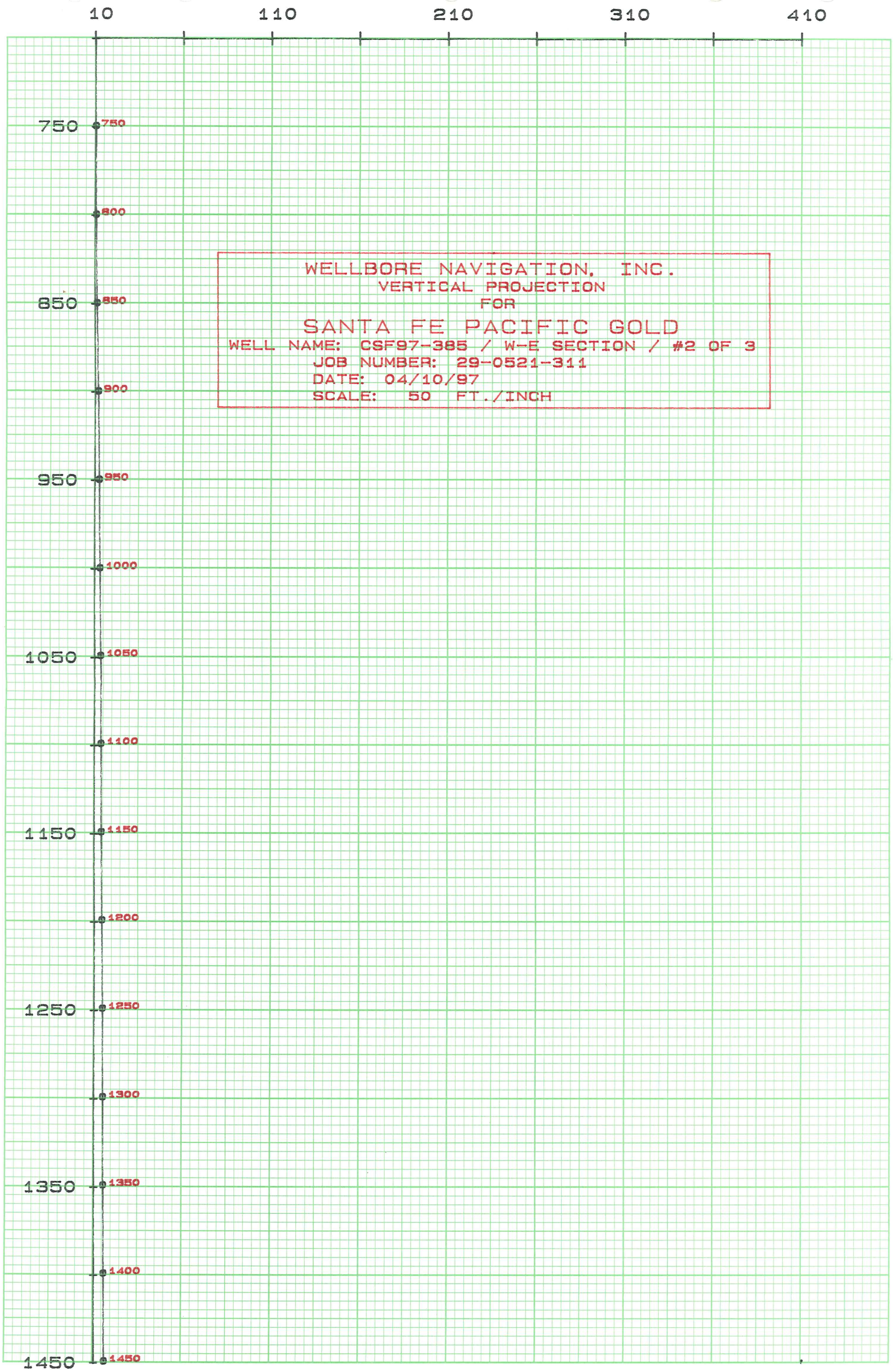
MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	L/R PROP.	INCL HORZ	BEARING AZIMUTH	COORDINATES LATITUDE	COORDINATES DEPARTURE	D-LEG /100	D-LEG /CL	STATION DISP.	DISPLACEMENT DIRECTION	TEMP. DEG. F.
0.0	0.00	0.00	0.000	-88.77	166.51	0.00 N	0.00 E	0.00		0.00	AT 000.00	
50.0	49.99	0.37	1.105	-88.55	157.12	1.10 S	0.37 E	0.62	0.31	1.17	AT 161.43	053.42
100.0	99.97	0.85	2.349	-88.39	160.30	2.35 S	0.85 E	0.36	0.18	2.50	AT 160.02	055.86
150.0	149.95	1.44	3.508	-88.60	144.67	3.51 S	1.44 E	0.92	0.46	3.79	AT 157.63	057.16
200.0	199.94	2.21	4.386	-88.72	132.82	4.39 S	2.21 E	0.60	0.30	4.91	AT 153.29	058.74
250.0	249.93	2.98	5.205	-88.69	140.27	5.21 S	2.98 E	0.34	0.17	6.00	AT 150.19	060.03
300.0	299.91	3.68	6.201	-88.51	148.82	6.20 S	3.68 E	0.55	0.28	7.21	AT 149.29	061.32
350.0	349.89	4.35	7.389	-88.37	152.68	7.39 S	4.35 E	0.35	0.18	8.57	AT 149.53	062.76
400.0	399.87	5.05	8.585	-88.45	146.50	8.58 S	5.05 E	0.38	0.19	9.96	AT 149.55	064.20
450.0	449.86	5.81	9.659	-88.53	142.77	9.66 S	5.81 E	0.25	0.13	11.27	AT 148.98	065.64
500.0	499.84	6.55	10.717	-88.51	147.33	10.72 S	6.55 E	0.24	0.12	12.56	AT 148.58	066.86
550.0	549.82	7.30	11.634	-88.75	132.62	11.63 S	7.30 E	0.85	0.42	13.73	AT 147.90	068.59
600.0	599.81	8.08	12.421	-88.70	137.45	12.42 S	8.08 E	0.24	0.12	14.82	AT 146.94	069.81
650.0	649.80	8.81	13.197	-88.87	136.70	13.20 S	8.81 E	0.34	0.17	15.87	AT 146.29	071.18
700.0	699.79	9.50	13.925	-88.83	136.23	13.92 S	9.50 E	0.08	0.04	16.85	AT 145.71	072.69
750.0	749.78	10.13	14.679	-88.91	144.23	14.68 S	10.13 E	0.35	0.18	17.83	AT 145.40	073.99
800.0	799.77	10.56	15.534	-88.87	161.98	15.53 S	10.56 E	0.69	0.34	18.78	AT 145.80	075.36
850.0	849.76	11.03	16.310	-88.99	134.22	16.31 S	11.03 E	1.05	0.53	19.69	AT 145.94	076.87
900.0	899.75	11.70	16.990	-88.82	136.38	16.99 S	11.70 E	0.35	0.17	20.63	AT 145.45	078.02
950.0	949.74	12.40	17.671	-88.94	131.68	17.67 S	12.40 E	0.30	0.15	21.59	AT 144.95	079.47
1000.0	999.74	12.98	18.361	-88.97	148.45	18.36 S	12.98 E	0.61	0.31	22.48	AT 144.75	080.76
1050.0	1049.73	13.42	19.250	-88.75	158.22	19.25 S	13.42 E	0.59	0.29	23.46	AT 145.13	081.99
1100.0	1099.72	13.76	20.226	-88.88	163.57	20.23 S	13.76 E	0.34	0.17	24.46	AT 145.78	083.36
1150.0	1149.71	14.00	21.185	-88.85	167.88	21.18 S	14.00 E	0.18	0.09	25.39	AT 146.54	084.59
1200.0	1199.70	14.32	22.124	-88.86	154.47	22.12 S	14.32 E	0.54	0.27	26.35	AT 147.09	085.96
1250.0	1249.69	14.73	23.040	-88.84	157.32	23.04 S	14.73 E	0.12	0.06	27.35	AT 147.41	087.12
1300.0	1299.68	15.01	24.002	-88.85	170.43	24.00 S	15.01 E	0.53	0.26	28.31	AT 147.98	088.20
1350.0	1349.67	15.20	24.968	-88.89	166.62	24.97 S	15.20 E	0.17	0.09	29.23	AT 148.66	089.21
1400.0	1399.66	15.48	25.785	-89.12	154.35	25.78 S	15.48 E	0.62	0.31	30.08	AT 149.02	090.29
1450.0	1449.65	15.87	26.491	-89.03	148.33	26.49 S	15.87 E	0.26	0.13	30.88	AT 149.08	091.23
1500.0	1499.65	16.28	27.193	-89.11	151.43	27.19 S	16.28 E	0.19	0.09	31.69	AT 149.09	091.74
1551.0	1550.64	16.57	27.836	-89.30	161.53	27.84 S	16.57 E	0.46	0.24	32.39	AT 149.24	092.46
1600.0	1599.64	16.76	28.404	-89.30	161.62	28.40 S	16.76 E	0.00	0.00	32.98	AT 149.46	092.61

****
* ******** *
* THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF *
* ******** *
* 1600.0 FEET EQUALS 32.98 FEET AT 149.46 *
* ******** *
****

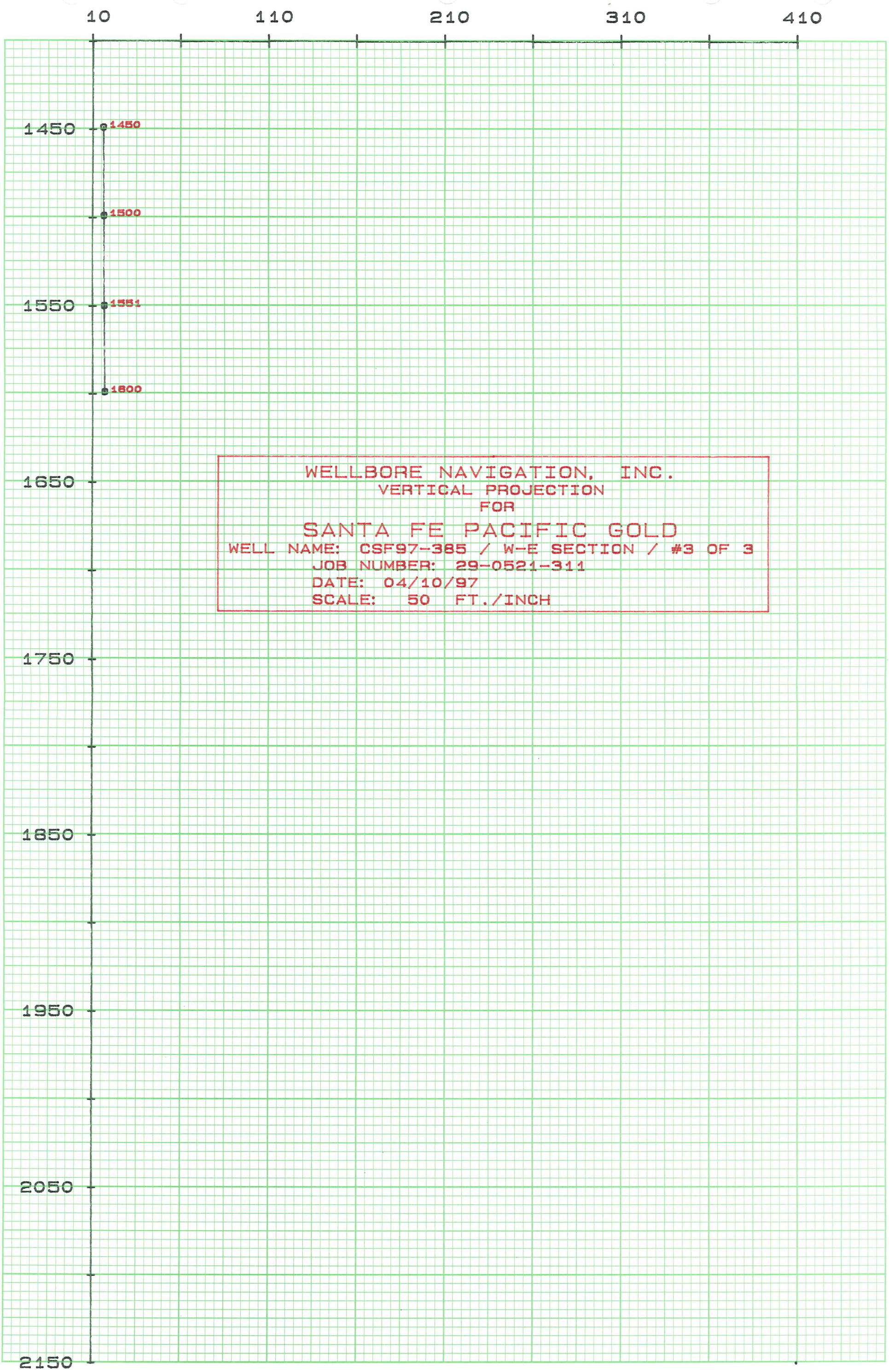
CK PRINTING CENTER (801) 467-2841



CK PRINTING CENTER (801) 467-2841



CK PRINTING CENTER (801) 467-2841



97-385

0'-938.5

24.2
24
29
97-385 BOX NO 2
DEPTH 20.3-30

19.2
6.1
17.7
7.7
START
97-385 BOX NO 1
DEPTH 0 - 20.3

45
39
43.2
44
97-385 BOX NO 4
DEPTH 38 - 47

31.2
30.7
34
35.3
97-385 BOX NO 3
DEPTH 30 - 38

97-385 BOX NO 6
DEPTH 56.4 – 66

97-385 BOX NO 5
DEPTH 47 – 56.4

97-385 BOX NO 8
DEPTH 75 – 84.2

97-385 BOX NO 7
DEPTH 66 – 75

95
100
97-385 BOX NO 10
DEPTH 93.3-102.4

85
90
97-385 BOX NO 9
DEPTH 84.2-93.3

113
118
123
97-385 BOX NO 12
DEPTH 111.4-126.4

103.4
108
97-385 BOX NO 11
DEPTH 102.4-111.4

134
97-385 BOX NO 14
DEPTH 129.4-138.4

129
121
124.5
124
97-385 BOX NO 13
DEPTH 120.4-129.4

139
144
97-385 BOX NO 15
DEPTH 138.4-147.4

139
144
97-385 BOX NO 15
DEPTH 138.4-147.4

159
164
97-385 BOX NO 17
DEPTH 156 -165

150
149
154
97-385 BOX NO 16
DEPTH 147.4-156

179
97-385 BOX NO 19
DEPTH 174 -182.5

174
169
97-385 BOX NO 18
DEPTH 165 -174

159
164
97-385 BOX NO 17
DEPTH 156 -165

150
149
154
97-385 BOX NO 16
DEPTH 147.4-156

179
97-385 BOX NO 19
DEPTH 174 -182.5

174
169
97-385 BOX NO 18
DEPTH 165 -174

97-385 BOX NO 21
DEPTH 191 -199

97-385 BOX NO 20
DEPTH 182.5-191

97-385 BOX NO 23
DEPTH 208 -217

97-385 BOX NO 22
DEPTH 199 -208

229
97-385 BOX NO 25
DEPTH 225 -234

219
224
97-385 BOX NO 24
DEPTH 217 -225

244
249
97-385 BOX NO 27
DEPTH 243 -252

239
97-385 BOX NO 26
DEPTH 234 -243

262
269
97-385 BOX NO 29
DEPTH 261 -270

Gold Gold Gold Gold
400 400 400 400
279
257
97-385 BOX NO 28
DEPTH 252 -261

400 400 400 400
284
97-385 BOX NO 31
DEPTH 279.5-288 .5

400 400 400 400
279
274
97-385 BOX NO 30
DEPTH 270-279.5

302
304
97-385 BOX NO 33
DEPTH 297.5 – 306.5

294
297
289
97-385 BOX NO 32
DEPTH 288.5 – 297.5

324
320
316
97-385 BOX NO 35
DEPTH 315 – 324

312
314
307
97-385 BOX NO 34
DEPTH 306.5 – 315

334
329
97-385 BOX NO 37
DEPTH 333 - 342

329
97-385 BOX NO 36
DEPTH 324 - 333

359
355
97-385 BOX NO 39
DEPTH 351 - 360

349
348
97-385 BOX NO 38
DEPTH 342 - 351

378
379
97-385 BOX NO 41
DEPTH 369.3- 378

363
367
368.5
97-385 BOX NO 40
DEPTH 360 - 369.3

395.5
394
97-385 BOX NO 43
DEPTH 386 - 395

384
385.5
97-385 BOX NO 42
DEPTH 378 - 386

409
97-385 BOX NO 45
DEPTH 404 - 413

400
400
400
400
404
405
97-385 BOX NO 44
DEPTH 395 - 404

429
424
97-385 BOX NO 47
DEPTH 422 - 431

400
400
400
400
414
419
97-385 BOX NO 46
DEPTH 413 - 422

97-385 BOX NO 49
DEPTH 440 – 449

97-385 BOX NO 48
DEPTH 431 – 440

97-385 BOX NO 51
DEPTH 458 – 467

97-385 BOX NO 50
DEPTH 449 – 458

479
484
97-385 BOX NO 53
DEPTH 476 – 484

469
474
97-385 BOX NO 52
DEPTH 467 – 476

497.2
498.7
97-385 BOX NO 55
DEPTH 493 –502

489
97-385 BOX NO 54
DEPTH 484 – 493

518.5
513.5
97-385 BOX NO 57
DEPTH 511 - 519

506
503.5
502
97-385 BOX NO 56
DEPTH 502 - 511

534
97-385 BOX NO 59
DEPTH 528.6 - 537

528.6
523.5
97-385 BOX NO 58
DEPTH 519 - 528.6

550.1
546.5
97-385 BOX NO 61
DEPTH 546 -555

542.5
544
538
97-385 BOX NO 60
DEPTH 537 -546

570.4
565
97-385 BOX NO 63
DEPTH 564 -573

560.4
555
97-385 BOX NO 62
DEPTH 555 -564

586
97-385 BOX NO 65
DEPTH 582 – 590.5

575
580
97-385 BOX NO 64
DEPTH 573 – 582

600
604
97-385 BOX NO 67
DEPTH 599 – 608

594
597
596
97-385 BOX NO 66
DEPTH 590.5 – 599

97-385 BOX NO 69
DEPTH 617 – 626

97-385 BOX NO 68
DEPTH 608 – 617

97-385 BOX NO 71
DEPTH 636 – 645

97-385 BOX NO 70
DEPTH 626 – 636

659
97-385 BOX NO 73
DEPTH 654 – 663.5

97-385 BOX NO 72
DEPTH 645 – 654

674
679
97-385 BOX NO 75
DEPTH 672 – 681

664
97-385 BOX NO 74
DEPTH 663.5 – 672

694
677
97-385 BOX NO 77
DEPTH 690 - 699

684
689
97-385 BOX NO 76
DEPTH 681 - 690

714
709
97-385 BOX NO 79
DEPTH 708 - 717

704
97-385 BOX NO 78
DEPTH 699 - 708

729
734
97-385 BOX NO 81
DEPTH 726 – 735

719
724
97-385 BOX NO 80
DEPTH 717 – 726

759
754
97-385 BOX NO 84
DEPTH 753.8– 763

749
97-385 BOX NO 83
DEPTH 744.3– 753.8

97-385 BOX NO 86
DEPTH 772 -781

97-385 BOX NO 85
DEPTH 763 -772

97-385 BOX NO 88
DEPTH 790 -799

97-385 BOX NO 87
DEPTH 781 -790

809
814
97-385 BOX NO 90
DEPTH 808.4-817.4

Gold Gold Gold
400 400 400
804
97-385 BOX NO 89
DEPTH 799 - 808.9

400 400 400
829
97-385 BOX NO 92
DEPTH 826.3-836

Gold Gold Gold
400 400 400
810
834
97-385 BOX NO 91
DEPTH 817.4-826.3

97-385 BOX NO 94
DEPTH 844.9-854.3

97-385 BOX NO 93
DEPTH 836 -844.9

97-385 BOX NO 96
DEPTH 864 -873.3

97-385 BOX NO 95
DEPTH 854.3-864

874
889
97-385 BOX NO 98
DEPTH 883 – 892

874
874
97-385 BOX NO 97
DEPTH 873.3–883

904
909
97-385 BOX NO 100
DEPTH 901 –910.5

894
899
97-385 BOX NO 99
DEPTH 892 –901

97-385 BOX NO 102
DEPTH 919 -929

97-385 BOX NO 101
DEPTH 910.5-919

97-385 BOX NO 103
DEPTH 929 -938.5

97-385

938.5' – 1556.7

949
954
97-385 BOX NO 105
DEPTH 947.5-957

939
944
97-385 BOX NO 104
DEPTH 938.5-947.5

969
974
97-385 BOX NO 107
DEPTH 965.9-975.3

964
959
97-385 BOX NO 106
DEPTH 957 -965.9

97-385 BOX NO 109
DEPTH 984.7-994

97-385 BOX NO 108
DEPTH 975.3-984.7

1003
97-385 BOX NO110
DEPTH 994 -1003.3

97-385 BOX NO 109
DEPTH 984.7-994

1014
0/0
R/0
1019
97-385 BOX NO112
DEPTH 1012.4-1022.

1008
1004
97-385 BOX NO111
DEPTH 1003.3-1012.4

1039
97-385 BOX NO114
DEPTH 1031. -1040.

1029
97-385 BOX NO113
DEPTH 1022. -1031.

1054
97-385 BOX N0116
DEPTH 1048.5-1058.5

1049
1044
97-385
DEPTH 1040. -1048.5

1079
1069
1076.5
97-385 BOX N0118
DEPTH 1068.4-1077.6

1064.2
1059
97-385 BOX N0117
DEPTH 1058.5-1068.4

1089
1094
97-385 BOX N0120
DEPTH 1086.5-1095.

1084
1080
97-385 BOX N0119
DEPTH 1077.6-1086.5

1114
1109
97-385 BOX N0122
DEPTH 1105. -1114.

1099
1104
97-385 BOX N0121
DEPTH 1095. -1105.

1130
1124
1124
97-385 BOX NO 124
DEPTH 1123.6-1132.

1120
97-385 BOX NO 123
DEPTH 1114. -1123.9

1144
1149
97-385 BOX NO 126
DEPTH 1141.3-1150.5

1139
1134
97-385 BOX NO 125
DEPTH 1132. -1141.3

1169
1164
97-385 BOX NO 128
DEPTH 1159.7-1169.4

1154
1159
97-385 BOX NO 127
DEPTH 1150.5-1159.7

1179
1184
97-385 BOX NO 130
DEPTH 1178.3-1187.5

1174
97-385 BOX NO 129
DEPTH 1169.4-1178.3

1204
1199
97-385 BOX NO 132
DEPTH 1196.9-1206.

1189
1194
97-385 BOX NO 131
DEPTH 1187.5-1196.9

1219
1224.5
97-385 BOX NO 134
DEPTH 1215.5-1224.9

1214
97-385 BOX NO 133
DEPTH 1206. -1215.5

1269
1263
97-385 BOX NO 136
DEPTH 1262.3-1271.1

1239
1229
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DEPTH 1224.9-1234.5

1254
1259
97-385 BOX NO 138
DEPTH 1253.1-1262.3

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1244
97-385 BOX NO 137
DEPTH 1243.5-1253.1

1274
1279
97-385 BOX NO 140
DEPTH 1271.1-1280.

1234
97-385 BOX NO 13
DEPTH 1234.5-1243.5

1294
97-385 BOX NO 142
DEPTH 1289.4-1298.5

1284
1289
97-385 BOX NO 141
DEPTH 1280. -1289.4

1307
1314
97-385 BOX NO 144
DEPTH 1307.7–1317.2

1304
1299
97-385 BOX NO 143
DEPTH 1298.5–1307.7

1324
1334
97-385 BOX NO 146
DEPTH 1326.5–1335.4

1319
1324
97-385 BOX NO 145
DEPTH 1317.2–1326.5

1354
1349
97-385 BOX NO 148
DEPTH 1344.8-1354.

1344
1339
97-385 BOX NO 147
DEPTH 1335.4-1344.8

1359
97-385 BOX NO 149
DEPTH 1354. - 1363.4

1354
1349
97-385 BOX NO 148
DEPTH 1344.8 - 1354.

1382
1377.5
97-385 BOX NO 151
DEPTH 1372.5 – 1381.9

1368
1364
97-385 BOX NO 150
DEPTH 1363.4 – 1372.5

1399
97-385 BOX NO 153
DEPTH 1390.8 – 1399.

1387
1390
1384
97-385 BOX NO 152
DEPTH 1381.9 – 1390.8

1414
97-385 BOX NO 155
DEPTH 1408.5 – 1417.5

1404
97-385 BOX NO 154
DEPTH 1399. – 1408.5

1429
1434
97-385 BOX NO 157
DEPTH 1426. – 1434.8

1424
1419
97-385 BOX NO 156
DEPTH 1417.5 – 1426.

1446.2
1444
1449.5
97-385 BOX NO 159
DEPTH 1443.7 – 1453.4

1443
1439
97-385 BOX NO 158
DEPTH 1434.8 – 1443.7

1471
1462.5
1466
97-385 BOX NO 161
DEPTH 1462.3–1471.5

1455.1
1460.5
97-385 BOX NO 160
DEPTH 1453.4 –1462.3

97-385 BOX NO 163
DEPTH 1480.5-1589.3

97-385 BOX NO 162
DEPTH 1471.5-1480.5

97-385 BOX NO 165
DEPTH 1498. -1507.1

97-385 BOX NO 164
DEPTH 1489.3-1598.

1516
1519.5
97-385 BOX NO 167
DEPTH 1514.9-1524.

1509
1514.9
97-385 BOX NO 166
DEPTH 1507.1-1514.9

1536
1534
1540.5
97-385 BOX NO 169
DEPTH 1532.8-1541.4

1529
1524
97-385 BOX NO 168
DEPTH 1524. -1532.8

1551
1556
97-385 BOX NO 171
DEPTH 1550. -1556.7

1542.9
1545.3
97-385 BOX NO 170
DEPTH 1541.4-1550.