

Natural Gamma Ray Rate Of Penetration



1 : 1200

County	: Harper		
Field	: Wildcat		
Location	: Lat: 37° 4' 50.30" North Long: 98° 4' 23.70" West		
Well	: Albright Croft Farms 3407 15-1H		
Company	: Shell Exploration & Production		
Rig	: Nabors 774		
LOCATION	Latitude	: 37° 4' 50.30" North	
	Longitude	: 98° 4' 23.70" West	
UTM Easting = UTM Northing =	: 2,124,500.95 ft		
	: 151,020.08 ft		
Other Services	Directional Services		
Company	: Shell Exploration & Production		
Rig	: Nabors 774		
Well	: Albright Croft Farms 3407 15-1H		
Field	: Wildcat		
County	: Harper		
API Number	: 15-077-21787		
Permanent Datum	: Ground Level	Elevation	: 1393.72 ft
Log Measured From	: Drill Floor	Elevation	: 21.68 ft Above Permanent Datum
Drilling Measured From	: Drill Floor		TVD LOG
Depth Logged	: 80.00 ft	To	: 4,749.41 ft
Date Logged	: 17-Feb-12	To	: 05-Apr-12
Total Depth MD	: 9,063.00 ft	TVD	: 4,749.41 ft
Spud Date	: 17-Feb-12	Plot Type	: Final
		Plot Date	: 18-Apr-12
		Unit No.	: PP 47
		Job No.	: OK-XX-0009199272
Run No.	Size	From	To
		Borehole Record (TVD)	
100	12.250 in	80.00 ft	823.46 ft
200	8.750 in	823.46 ft	3,980.08 ft
300	8.750 in	3,980.08 ft	4,764.31 ft
600	6.125 in	4,764.31 ft	4,749.41 ft
		Size	Weight
		Casing Record (TVD)	
		From	To
		9.625 in	36.00 lbpf
		7.000 in	23.00 lbpf
		4.500 in	11.60 lbpf
			SURFACE
			4,764.17 ft
			4,749.41 ft

WELL INFORMATION

MWD Run Number	100	200	300	600
Date run completed	19-Feb-12	19-Mar-12	23-Mar-12	06-Apr-12
Rig Bit Number	100	200	300	600
Bit Size (in)	12.250	8.750	8.750	6.125
Tool Nominal OD (in)	8.000	6.750	8.000	4.750
Log Start Depth (TVD, ft)	80.00	823.46	3,980.08	4,764.31
Log End Depth (TVD, ft)	823.46	3,980.08	4,764.31	4,749.41
Drill or Wipe	Drill	Drill	Drill	Drill
Drill/Wipe Start Date and Time	18-Feb-12 08:43	15-Mar-12 04:42	19-Mar-12 19:00	30-Mar-12 14:57
Drill/Wipe End Date and Time	19-Feb-12 16:54	18-Mar-12 20:00	23-Mar-12 04:50	05-Apr-12 13:25
Min Inc (deg) @ Depth (TVD, ft)	.42 @ 208.00	.04 @ 3,343.10	.22 @ 3,915.10	88.12 @ 4,764.79
Max Inc (deg) @ Depth (TVD, ft)	5.54 @ 609.22	3.79 @ 885.31	90.06 @ 4,764.55	93.08 @ 4,749.41
Bit TFA(in2) / Bit Type	.58 / Tricone	.66 / PDC	.66 / PDC	.68 / PDC
Flow Rate (gpm)	670.00	520.00	500.00	300.00
Max AV (fpm) / CV (fpm) @ MWD	214.0 / 506.0	432.1 / 532.2	405.0 / 495.0	552.0 / 257.0
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel
Density (ppg) / Viscosity (spqt)	8.80 / 55.00	9.10 / 46.00	9.30 / 46.00	8.60 / 33.00
Filtrate CL (ppm)	3,200.00	13,000.00	16,000.00	1,000.00
pH / Fluid Loss (mptm)	10.00 / 1	9.50 / 1	10.50 / 1	7.80 / 2
PV (cP) / YP (lhf2)	10 / 12.00	21 / 18.00	12 / 15.00	3 / 5.00
% Solids / % Sand	3.80 / 0.25	5.00 / 0.25	6.50 / 0.10	1.80 / 0.25
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A	N/A / N/A
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A

Max Tool Temp (degF) / Source	100.62 / PCM	128.73 / PCM	144.54 / PCM	146.84 / PCM	
Rm @ Max Tool Temp (degF)	N/A @ 100.62	N/A @ 128.73	N/A @ 144.54	N/A @ 146.84	
Lead MWD Engineer	John Blair	John Blair	Jared Howton	John Blair	
Customer Representative	Tyrome Russell	Tyrone Russell	Tyrone Russell	Tyrone Russell	

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM	PCM	
Software Version	5.76	5.76	5.76	5.76	
Sub Serial Number	11812725	11619281	11619281	11595279	
Insert Serial Number	11680736	11620306	11680736	11620306	
Date and Time Initialized	17-Feb-12 02:49	10-Mar-12 19:44	17-Mar-12 06:04	25-Mar-12 06:20	
Date and Time Read	19-Feb-12 23:44	19-Mar-12 06:27	23-Mar-12 18:56	06-Apr-12 04:39	
ECMB SW Version	N/A	N/A	N/A	N/A	

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC	PCDC	
Distance From Bit (ft)	64.37	65.30	57.66	46.52	
Software Version	6.21	6.21	6.21	6.21	
Sub Serial Number	11812725	11619281	11619281	11595279	
Sonde Serial Number	11477997	11833024	11477997	11833024	
Sensor ID Number	N/A	N/A	N/A	N/A	
Toolface Offset (deg)	120.44	20.73	197.57	263.85	

Gamma Ray Sensor Information

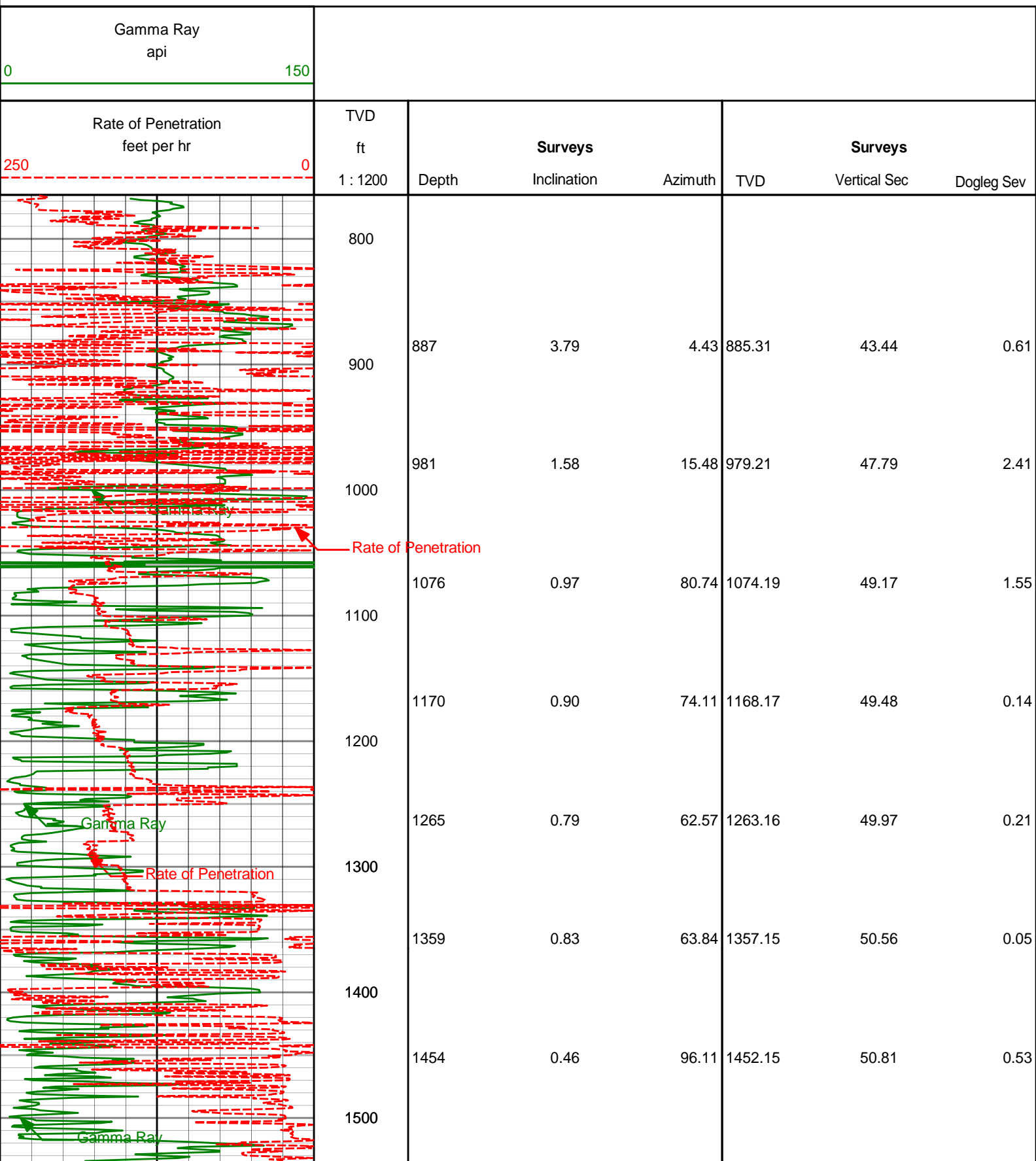
Tool Type	N/A	PCG	PCG	PCG	
Distance From Bit (ft)	N/A	60.60	52.49	51.11	
Recorded Sample Period (sec)	N/A	10	10	10	
Software Version	N/A	8.15	8.15	8.15	
Sub Serial Number	N/A	11619281	11619281	11595279	
Insert/Sonde Serial Number	N/A	11293413	11120602	11293413	

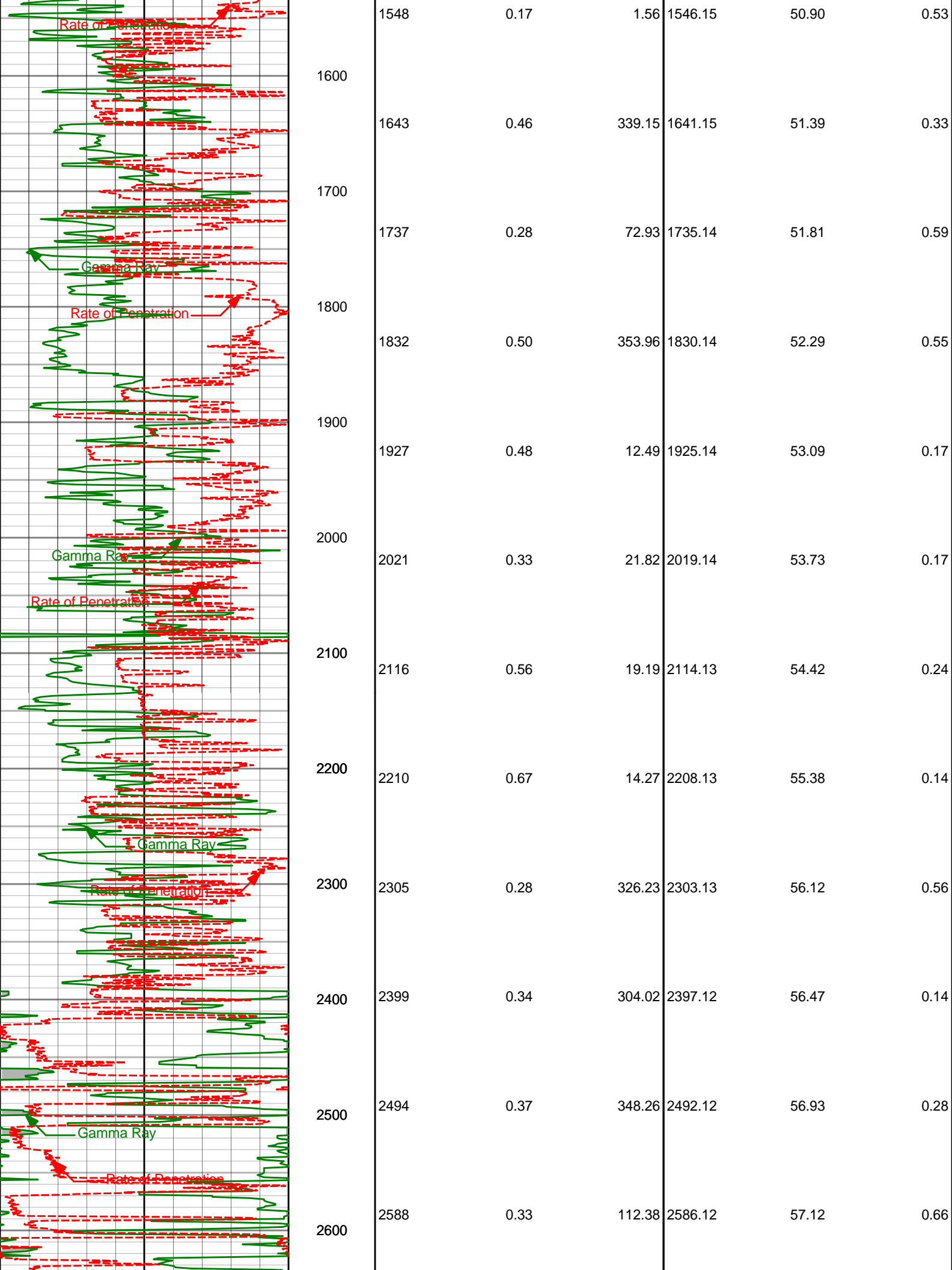
REMARKS

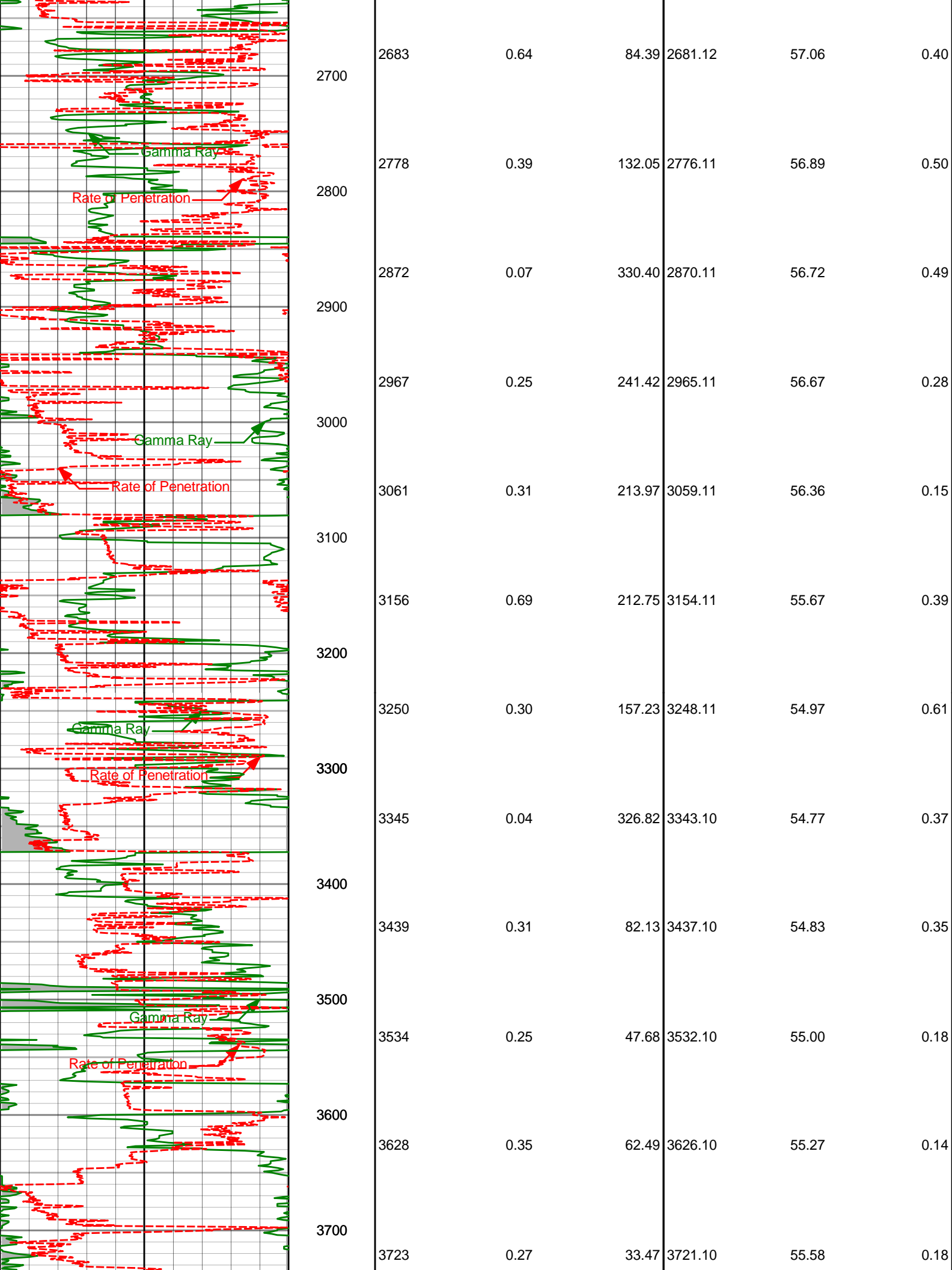
1. All depths are calibrated to the driller's pipe tally and are measured from the rotary table.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
4. The following smoothing parameters have been applied to the data:
 - ROP: 1.0 ft interval, 3.0 ft coercion distance.
 - GAMMA: 0.5 ft interval, 0.6 ft coercion distance.
5. Runs 400 and 500 were reamer runs only, no MWD.

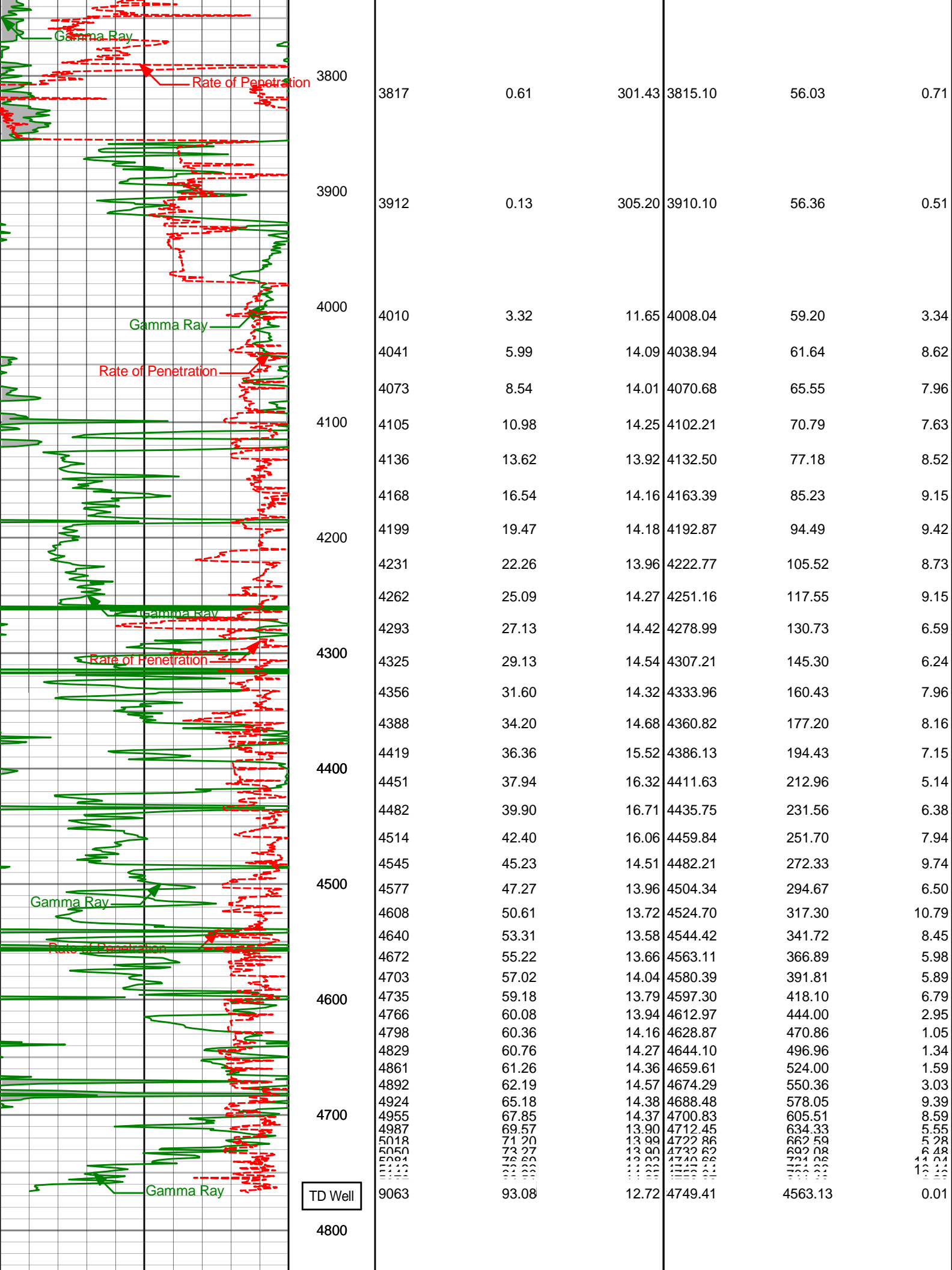
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Rate of Penetration feet per hr 250	TVD ft 1 : 1200	Surveys Depth Inclination Azimuth			Surveys TVD Vertical Sec Dogleg Sev		
Gamma Ray api 0	150						



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Shell Exploration _Production
Albright Croft Farms 3407 15-1H
Wildcat
Harper Kansas
U.S.A.

OK-XX-0009199272

MWD Surveys from 208' to 9013'. The final survey at 9063' is a straight line projection from the last MWD survey at 9013'.

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
208.00	0.42	86.12	208.00	0.05 N	0.76 E	0.04	0.20
303.00	1.27	5.32	302.99	1.12 N	1.21 E	1.11	1.34
334.00	1.66	358.20	333.98	1.91 N	1.22 E	1.90	1.40
365.00	2.49	6.81	364.96	3.03 N	1.29 E	3.02	2.84
395.00	3.16	355.28	394.92	4.50 N	1.30 E	4.49	2.91
433.00	3.75	1.68	432.85	6.79 N	1.25 E	6.77	1.86
464.00	4.24	2.14	463.78	8.94 N	1.32 E	8.93	1.58
495.00	4.70	5.57	494.68	11.35 N	1.49 E	11.34	1.72
526.00	4.77	3.41	525.58	13.90 N	1.69 E	13.88	0.62
549.00	5.15	353.03	548.49	15.88 N	1.62 E	15.87	4.23
579.00	5.48	348.90	578.36	18.63 N	1.18 E	18.61	1.68
610.00	5.54	344.11	609.22	21.52 N	0.48 E	21.51	1.50
702.00	5.16	349.14	700.82	29.85 N	1.51 W	29.87	0.66
743.00	4.36	355.12	741.68	33.21 N	1.99 W	33.23	2.28
887.00	3.79	4.43	885.31	43.42 N	2.09 W	43.44	0.61
981.00	1.58	15.48	979.21	47.77 N	1.50 W	47.79	2.41
1076.00	0.97	80.74	1074.19	49.16 N	0.36 W	49.17	1.55
1170.00	0.90	74.11	1168.17	49.49 N	1.13 E	49.48	0.14
1265.00	0.79	62.57	1263.16	50.00 N	2.42 E	49.97	0.21
1359.00	0.83	63.84	1357.15	50.60 N	3.61 E	50.56	0.05
1454.00	0.46	96.11	1452.15	50.86 N	4.61 E	50.81	0.53
1548.00	0.17	1.56	1546.15	50.96 N	4.99 E	50.90	0.53
1643.00	0.46	339.15	1641.15	51.45 N	4.86 E	51.39	0.33
1737.00	0.28	72.93	1735.14	51.87 N	4.94 E	51.81	0.59
1832.00	0.50	353.96	1830.14	52.35 N	5.12 E	52.29	0.55
1927.00	0.48	12.49	1925.14	53.15 N	5.16 E	53.09	0.17
2021.00	0.33	21.82	2019.14	53.79 N	5.35 E	53.73	0.17
2116.00	0.56	19.19	2114.13	54.48 N	5.60 E	54.42	0.24
2210.00	0.67	14.27	2208.13	55.45 N	5.89 E	55.38	0.14
2305.00	0.28	326.23	2303.13	56.19 N	5.90 E	56.12	0.56
2399.00	0.34	304.02	2397.12	56.53 N	5.54 E	56.47	0.14
2494.00	0.37	348.26	2492.12	56.99 N	5.24 E	56.93	0.28
2588.00	0.33	112.38	2586.12	57.19 N	5.44 E	57.12	0.66
2683.00	0.64	84.39	2681.12	57.13 N	6.22 E	57.06	0.40
2778.00	0.39	132.05	2776.11	56.97 N	6.98 E	56.89	0.50
2872.00	0.07	330.40	2870.11	56.80 N	7.19 E	56.72	0.49
2967.00	0.25	241.42	2965.11	56.75 N	6.98 E	56.67	0.28
3061.00	0.31	213.97	3059.11	56.44 N	6.65 E	56.36	0.15
3156.00	0.69	212.75	3154.11	55.75 N	6.20 E	55.67	0.39
3250.00	0.30	157.23	3248.11	55.04 N	6.00 E	54.97	0.61
3345.00	0.04	326.82	3343.10	54.84 N	6.07 E	54.77	0.37
3439.00	0.31	82.13	3437.10	54.91 N	6.30 E	54.83	0.35
3534.00	0.25	47.68	3532.10	55.08 N	6.71 E	55.00	0.18

3628.00	0.35	62.49	3626.10	55.35 N	7.12 E	55.27	0.14
3723.00	0.27	33.47	3721.10	55.67 N	7.50 E	55.58	0.18
3817.00	0.61	301.43	3815.10	56.11 N	7.19 E	56.03	0.71
3912.00	0.13	305.20	3910.10	56.43 N	6.68 E	56.36	0.51
4010.00	3.32	11.65	4008.04	59.28 N	7.16 E	59.20	3.34
4041.00	5.99	14.09	4038.94	61.73 N	7.74 E	61.64	8.62
4073.00	8.54	14.01	4070.68	65.65 N	8.72 E	65.55	7.96
4105.00	10.98	14.25	4102.21	70.91 N	10.04 E	70.79	7.63
4136.00	13.62	13.92	4132.50	77.31 N	11.65 E	77.18	8.52
4168.00	16.54	14.16	4163.39	85.39 N	13.67 E	85.23	9.15
4199.00	19.47	14.18	4192.87	94.68 N	16.01 E	94.49	9.42
4231.00	22.26	13.96	4222.77	105.73 N	18.78 E	105.52	8.73
4262.00	25.09	14.27	4251.16	117.80 N	21.82 E	117.55	9.15
4293.00	27.13	14.42	4278.99	131.02 N	25.20 E	130.73	6.59
4325.00	29.13	14.54	4307.21	145.63 N	28.97 E	145.30	6.24
4356.00	31.60	14.32	4333.96	160.80 N	32.88 E	160.43	7.96
4388.00	34.20	14.68	4360.82	177.63 N	37.23 E	177.20	8.16
4419.00	36.36	15.52	4386.13	194.91 N	41.90 E	194.43	7.15
4451.00	37.94	16.32	4411.63	213.50 N	47.20 E	212.96	5.14
4482.00	39.90	16.71	4435.75	232.17 N	52.74 E	231.56	6.38
4514.00	42.40	16.06	4459.84	252.37 N	58.67 E	251.70	7.94
4545.00	45.23	14.51	4482.21	273.07 N	64.32 E	272.33	9.74
4577.00	47.27	13.96	4504.34	295.47 N	70.00 E	294.67	6.50
4608.00	50.61	13.72	4524.70	318.17 N	75.59 E	317.30	10.79
4640.00	53.31	13.58	4544.42	342.65 N	81.54 E	341.72	8.45
4672.00	55.22	13.66	4563.11	367.90 N	87.66 E	366.89	5.98
4703.00	57.02	14.04	4580.39	392.88 N	93.82 E	391.81	5.89
4735.00	59.18	13.79	4597.30	419.25 N	100.35 E	418.10	6.79
4766.00	60.08	13.94	4612.97	445.22 N	106.76 E	444.00	2.95
4798.00	60.36	14.16	4628.87	472.16 N	113.50 E	470.86	1.05
4829.00	60.76	14.27	4644.10	498.33 N	120.13 E	496.96	1.34
4861.00	61.26	14.36	4659.61	525.45 N	127.05 E	524.00	1.59
4892.00	62.19	14.57	4674.29	551.89 N	133.86 E	550.36	3.03
4924.00	65.18	14.38	4688.48	579.66 N	141.03 E	578.05	9.39
4955.00	67.85	14.37	4700.83	607.20 N	148.09 E	605.51	8.59
4987.00	69.57	13.90	4712.45	636.11 N	155.37 E	634.33	5.55
5018.00	71.20	13.99	4722.86	664.45 N	162.41 E	662.59	5.28
5050.00	73.27	13.90	4732.62	694.02 N	169.75 E	692.08	6.48
5081.00	76.69	13.92	4740.66	723.08 N	176.95 E	721.06	11.04
5113.00	79.92	14.29	4747.14	753.47 N	184.59 E	751.36	10.14
5144.00	81.90	14.65	4752.04	783.11 N	192.23 E	780.91	6.49
5176.00	82.53	14.69	4756.37	813.78 N	200.26 E	811.49	1.98
5207.00	84.31	14.52	4759.93	843.58 N	208.02 E	841.20	5.78
5239.00	86.76	13.72	4762.42	874.51 N	215.81 E	872.05	8.05
5270.00	88.70	13.75	4763.64	904.60 N	223.16 E	902.05	6.26
5302.00	89.29	13.88	4764.20	935.67 N	230.80 E	933.04	1.88
5333.00	89.69	14.30	4764.47	965.74 N	238.35 E	963.02	1.88
5370.00	90.06	14.34	4764.55	1001.59 N	247.50 E	998.76	1.00
5466.00	90.62	14.51	4763.99	1094.56 N	271.41 E	1091.46	0.61
5497.00	90.96	13.77	4763.56	1124.62 N	278.99 E	1121.43	2.62
5528.00	90.77	13.55	4763.09	1154.74 N	286.31 E	1151.47	0.93
5558.00	90.25	13.45	4762.83	1183.91 N	293.31 E	1180.56	1.78
5589.00	89.35	13.74	4762.94	1214.04 N	300.59 E	1210.61	3.03
5620.00	89.54	13.59	4763.24	1244.16 N	307.92 E	1240.64	0.76
5651.00	89.75	13.54	4763.43	1274.29 N	315.19 E	1270.69	0.72
5681.00	90.22	13.41	4763.44	1303.47 N	322.18 E	1299.79	1.60
5774.00	88.12	12.79	4764.79	1394.03 N	343.26 E	1390.11	2.35
5869.00	88.89	12.45	4767.27	1486.71 N	364.01 E	1482.55	0.89
5963.00	90.00	11.71	4768.18	1578.62 N	383.67 E	1574.23	1.42
6057.00	90.83	11.28	4767.49	1670.73 N	402.40 E	1666.13	1.00
6152.00	90.65	11.99	4766.27	1763.77 N	421.56 E	1758.95	0.77
6246.00	90.89	12.49	4765.00	1855.62 N	441.49 E	1850.58	0.59
6341.00	91.26	13.31	4763.21	1948.21 N	462.69 E	1942.92	0.95
6435.00	90.56	14.96	4761.72	2039.35 N	485.65 E	2033.79	1.91
6530.00	90.09	14.90	4761.18	2131.14 N	510.12 E	2125.31	0.49
6625.00	91.39	14.14	4759.95	2223.09 N	533.94 E	2216.99	1.58
6719.00	90.06	15.00	4758.77	2314.06 N	557.59 E	2307.69	1.68
6814.00	89.78	15.03	4758.89	2405.82 N	582.20 E	2399.16	0.29
6908.00	90.86	14.73	4758.36	2496.66 N	606.33 E	2489.73	1.19
7003.00	89.54	15.60	4758.03	2588.35 N	631.19 E	2581.14	1.67
7097.00	90.31	15.52	4758.16	2678.90 N	656.40 E	2671.40	0.83
7192.00	88.80	15.85	4758.90	2770.36 N	682.08 E	2762.57	1.63
7287.00	89.41	15.40	4760.38	2861.84 N	707.66 E	2853.75	0.80
7381.00	90.34	14.83	4760.58	2952.58 N	732.18 E	2944.22	1.16
7476.00	89.26	15.77	4761.66	3044.20 N	757.24 E	3035.56	2.20

7476.00	88.38	15.77	4761.66	3044.20 N	737.24 E	3033.36	2.30
7570.00	89.14	15.59	4763.71	3134.68 N	782.65 E	3125.74	0.84
7665.00	90.65	15.42	4763.89	3226.22 N	808.04 E	3216.99	1.60
7759.00	92.10	14.69	4761.64	3316.97 N	832.45 E	3307.46	1.72
7854.00	91.11	15.77	4758.98	3408.59 N	857.40 E	3398.80	1.54
7948.00	89.60	16.95	4758.39	3498.78 N	883.88 E	3488.69	2.04
8043.00	91.21	17.54	4757.73	3589.50 N	912.04 E	3579.09	1.80
8137.00	89.17	17.27	4757.42	3679.19 N	940.16 E	3668.46	2.19
8232.00	90.03	17.17	4758.08	3769.93 N	968.28 E	3758.88	0.92
8326.00	90.86	16.81	4757.35	3859.83 N	995.74 E	3848.46	0.97
8421.00	89.72	15.23	4756.86	3951.13 N	1021.95 E	3939.47	2.05
8515.00	90.31	13.83	4756.84	4042.12 N	1045.53 E	4030.19	1.62
8610.00	88.86	13.01	4757.53	4134.53 N	1067.58 E	4122.34	1.75
8704.00	89.66	12.48	4758.75	4226.20 N	1088.31 E	4213.78	1.02
8799.00	90.62	12.80	4758.51	4318.90 N	1109.10 E	4306.24	1.07
8893.00	91.45	12.34	4756.82	4410.63 N	1129.55 E	4397.73	1.01
8988.00	92.72	12.36	4753.36	4503.37 N	1149.86 E	4490.24	1.34
9013.00	93.08	12.72	4752.10	4527.74 N	1155.28 E	4514.55	2.04
9063.00	93.08	12.72	4749.41	4576.44 N	1166.27 E	4563.13	0.01

CALCULATION BASED ON MINIMUM CURVATURE METHOD

**SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT**

VERTICAL SECTION RELATIVE TO WELL HEAD

**VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 359.36 DEGREES (TRUE)
A TOTAL CORRECTION OF 4.75 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 9063.00 FEET
IS 4722.71 FEET ALONG 14.30 DEGREES (TRUE)**