

Results of Directional Survey

API number:	30-025-40349		
OGRID:		Operator:	THREE RIVERS OPERATING COMPANY LLC
		Property:	LOBO 26 STATE # 1H

surface	ULSTR:	D	26	T	21S	R	33E
				660	FNL	330	FWL

BH Loc	ULSTR:	A	26	T	21S	R	33E
15312	MD	11004.8	TVD	653	FNL	333	FEL
						4947	FWL

Top Perf/OH	ULSTR:	D	26	T	21S	R	33E
11164	MD	10981.0	TVD	600	FNL	802	FWL

Bot Perf/OH	ULSTR:	A	26	T	21S	R	33E
15246	MD	11006.1	TVD	652	FNL	399	FEL
						4881	FWL

	MD	N/S	E/W	VD
	11636	23.86	942.28	10988.89
TOP PERFS/OH	11164	59.65	471.71	10981.02
	11732	16.58	1037.99	10990.49
	15246	7.74	4551.04	11006.13
BOT PERFS/OH	15246	7.74	4551.04	11006.13
	15312	6.70	4617.02	11004.75

NEXT TO LAST	15246	7.74	4551.04	11006.13
LAST READING	15312	6.70	4617.02	11004.75
TD	15312	6.70	4617.02	11004.75

Surface Location	660	FN	330	FW
Projected BHL	653	FN	4947	FW
Location of				
Top Perfs/OH	600	FN	802	FW
Bottom Perfs/OH	652	FN	4881	FW

SUMMARY of Subsurface Locations

Surface Location	D-26-21S-33E	660	FN	330	FW	Vert. Depth
Top Perfs/OH	D-26-21S-33E	600	FN	802	FW	10981.02
Bottom Perfs/OH	A-26-21S-33E	652	FN	4881	FW	11006.13
Projected TD	A-26-21S-33E	653	FN	4947	FW	11004.75

Company: COG Operating LLC (Concho)
Lease/Well: Lobo 26 State / No. 001H



Rig Name: Nabors F03
State/County: New Mexico / Lea

Latitude: 32.46

GRID North is 0.69 Degrees East of True North
VS-Azi: 0.00 Degrees



SUR: D-26-21s-33e, 660/N & 330/W
BHL: A-26-21s-33e, 653/N & 4947/W
API # 30-025-40349

Depth Reference : 30'

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: lobo 26 state 1h_int_ed.ut

Minimum Curvature Method

Report Date/Time: 7/25/2012 / 14:30

Vaughn Energy Services
Woodward, Oklahoma
580-254-5000

Surveyor: Nick Harding

Lobo 26 State No. 001H / API 30-025-40349

HOBBS OCD

NOV 14 2012

RECEIVED

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.17	71.30	100.00	0.05	0.14	0.15	71.30	0.17
200.00	0.33	142.60	200.00	-0.14	0.45	0.47	106.95	0.32
300.00	0.22	187.99	300.00	-0.56	0.60	0.82	132.85	0.24
400.00	0.11	233.38	400.00	-0.80	0.50	0.95	148.03	0.16
500.00	0.12	313.68	500.00	-0.79	0.35	0.86	155.83	0.14
600.00	0.13	33.98	600.00	-0.63	0.34	0.71	151.36	0.16
700.00	0.15	83.18	700.00	-0.52	0.53	0.74	134.12	0.12
800.00	0.18	132.39	800.00	-0.61	0.78	0.99	127.88	0.14
900.00	0.18	142.03	900.00	-0.84	0.99	1.30	130.14	0.03
1000.00	0.19	151.68	1000.00	-1.11	1.17	1.61	133.46	0.03
1100.00	0.18	127.73	1100.00	-1.35	1.37	1.92	134.54	0.08
1200.00	0.17	103.78	1199.99	-1.48	1.63	2.20	132.13	0.07
1300.00	0.28	97.92	1299.99	-1.54	2.01	2.54	127.50	0.11
1400.00	0.39	92.06	1399.99	-1.59	2.59	3.04	121.53	0.12
1500.00	0.44	123.41	1499.99	-1.81	3.25	3.72	119.16	0.23
1600.00	0.49	154.75	1599.99	-2.41	3.75	4.46	122.74	0.26
1700.00	0.45	153.47	1699.98	-3.15	4.11	5.18	127.48	0.04
1800.00	0.41	152.19	1799.98	-3.82	4.45	5.87	130.61	0.04

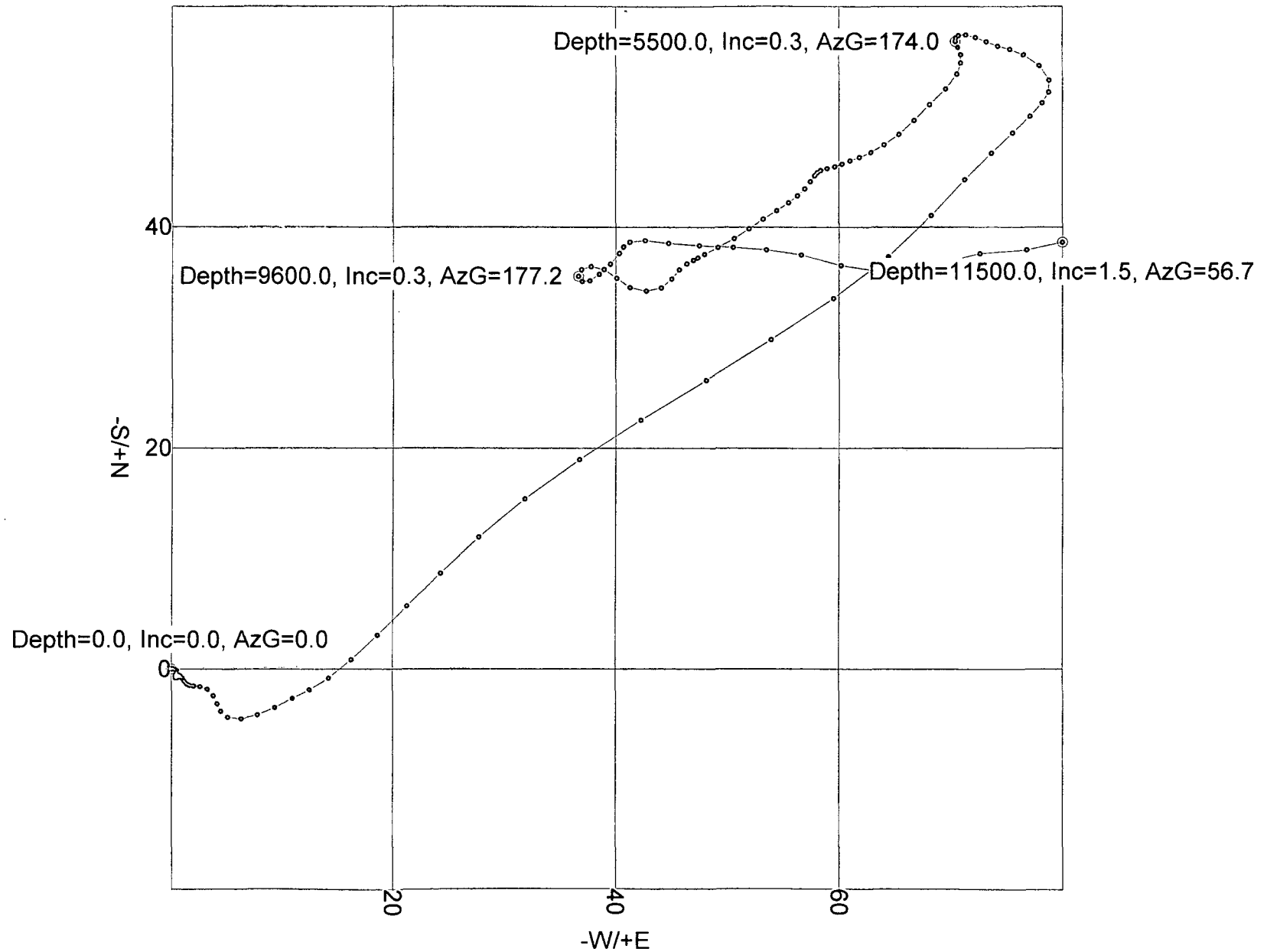
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.62	117.06	1899.98	-4.38	5.10	6.72	130.64	0.37
2000.00	0.83	81.94	1999.97	-4.52	6.30	7.76	125.66	0.48
2100.00	0.93	72.10	2099.96	-4.17	7.80	8.84	118.15	0.18
2200.00	1.03	62.25	2199.94	-3.50	9.36	10.00	110.52	0.19
2300.00	1.02	62.90	2299.93	-2.68	10.95	11.27	103.76	0.02
2400.00	1.01	63.55	2399.91	-1.89	12.53	12.67	98.56	0.02
2500.00	1.35	55.24	2499.89	-0.82	14.28	14.30	93.30	0.38
2600.00	1.69	46.93	2599.85	0.85	16.32	16.35	87.00	0.40
2700.00	1.98	45.76	2699.80	3.07	18.64	18.89	80.65	0.30
2800.00	2.28	44.58	2799.73	5.69	21.27	22.02	75.03	0.30
2900.00	2.58	45.77	2899.64	8.67	24.28	25.78	70.34	0.31
3000.00	2.88	46.96	2999.53	11.96	27.73	30.20	66.67	0.31
3100.00	3.28	52.85	3099.39	15.41	31.85	35.38	64.19	0.51
3200.00	3.68	55.02	3199.20	18.97	36.76	41.37	62.70	0.42
3300.00	3.84	58.44	3298.99	22.56	42.24	47.89	61.89	0.28
3400.00	4.00	58.14	3398.75	26.16	48.06	54.72	61.44	0.17
3500.00	3.91	57.01	3498.51	29.86	53.88	61.60	61.01	0.13
3600.00	3.81	55.88	3598.29	33.57	59.49	68.31	60.56	0.12
3700.00	3.32	49.03	3698.09	37.34	64.42	74.46	59.91	0.65
3800.00	2.83	42.18	3797.95	41.06	68.27	79.66	58.97	0.61
3900.00	2.24	43.95	3897.85	44.29	71.28	83.92	58.14	0.60
4000.00	1.64	45.72	3997.79	46.70	73.66	87.22	57.62	0.60
4100.00	1.37	45.96	4097.76	48.53	75.54	89.79	57.28	0.28
4200.00	1.09	46.19	4197.74	50.02	77.08	91.89	57.02	0.28
4300.00	0.79	34.88	4297.72	51.24	78.17	93.46	56.75	0.35
4400.00	0.50	23.58	4397.72	52.21	78.73	94.47	56.45	0.32
4500.00	0.80	348.80	4497.71	53.29	78.77	95.11	55.92	0.48
4600.00	1.10	311.16	4597.70	54.61	77.91	95.15	54.97	0.68
4700.00	0.87	298.70	4697.68	55.61	76.52	94.59	53.99	0.31
4800.00	0.64	283.38	4797.67	56.10	75.31	93.91	53.31	0.30
4900.00	0.64	288.63	4897.67	56.41	74.23	93.23	52.77	0.06
5000.00	0.63	293.88	4997.66	56.81	73.20	92.66	52.18	0.06
5100.00	0.56	287.65	5097.66	57.18	72.23	92.13	51.63	0.10
5200.00	0.48	281.42	5197.65	57.41	71.36	91.59	51.18	0.09
5300.00	0.31	241.48	5297.65	57.37	70.71	91.06	50.95	0.32
5400.00	0.13	201.53	5397.65	57.14	70.44	90.70	50.95	0.22
5500.00	0.27	173.97	5497.65	56.80	70.42	90.47	51.11	0.16
5600.00	0.40	146.41	5597.65	56.28	70.64	90.32	51.46	0.21
5700.00	0.43	168.26	5697.64	55.62	70.91	90.12	51.89	0.16

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.45	190.12	5797.64	54.87	70.92	89.66	52.27	0.17
5900.00	0.80	207.00	5897.64	53.86	70.53	88.74	52.63	0.39
6000.00	1.16	223.89	5997.62	52.50	69.51	87.11	52.93	0.45
6100.00	1.14	226.01	6097.60	51.09	68.09	85.13	53.12	0.04
6200.00	1.13	221.68	6197.58	49.66	66.72	83.17	53.34	0.09
6300.00	1.00	232.43	6297.56	48.39	65.38	81.33	53.49	0.24
6400.00	0.87	236.75	6397.55	47.44	64.05	79.71	53.47	0.15
6500.00	0.71	243.79	6497.54	46.75	62.86	78.34	53.36	0.18
6600.00	0.56	249.97	6597.54	46.31	61.84	77.26	53.17	0.17
6700.00	0.48	248.98	6697.53	45.99	60.99	76.39	52.98	0.08
6800.00	0.40	247.14	6797.53	45.71	60.28	75.65	52.83	0.08
6900.00	0.41	253.72	6897.53	45.47	59.62	74.98	52.67	0.05
7000.00	0.41	260.30	6997.52	45.31	58.92	74.33	52.44	0.05
7100.00	0.28	242.15	7097.52	45.14	58.35	73.77	52.28	0.17
7200.00	0.14	224.00	7197.52	44.94	58.05	73.41	52.26	0.15
7300.00	0.30	218.98	7297.52	44.65	57.81	73.04	52.32	0.16
7400.00	0.45	213.96	7397.52	44.12	57.42	72.42	52.46	0.16
7500.00	0.49	221.71	7497.51	43.47	56.92	71.62	52.63	0.08
7600.00	0.54	229.45	7597.51	42.85	56.27	70.73	52.71	0.08
7700.00	0.67	233.85	7697.50	42.20	55.45	69.68	52.73	0.14
7800.00	0.80	238.25	7797.50	41.49	54.39	68.41	52.66	0.14
7900.00	0.85	236.57	7897.49	40.72	53.18	66.98	52.56	0.06
8000.00	0.91	234.89	7997.47	39.85	51.91	65.45	52.49	0.06
8100.00	0.94	238.85	8097.46	38.98	50.57	63.84	52.38	0.07
8200.00	0.96	242.82	8197.45	38.17	49.12	62.21	52.15	0.07
8300.00	0.58	242.75	8297.44	37.55	47.92	60.88	51.92	0.38
8400.00	0.20	242.67	8397.44	37.24	47.31	60.21	51.79	0.38
8500.00	0.32	241.12	8497.43	37.02	46.91	59.76	51.72	0.11
8600.00	0.43	239.58	8597.43	36.70	46.34	59.12	51.62	0.11
8700.00	0.56	226.31	8697.43	36.17	45.67	58.26	51.62	0.17
8800.00	0.68	213.05	8797.42	35.34	44.99	57.21	51.85	0.19
8900.00	0.77	242.36	8897.42	34.52	44.07	55.98	51.92	0.38
9000.00	0.86	271.67	8997.41	34.23	42.73	54.75	51.30	0.42
9100.00	0.86	293.35	9097.39	34.55	41.29	53.84	50.08	0.32
9200.00	0.86	315.55	9197.38	35.39	40.08	53.47	48.56	0.33
9300.00	0.75	293.29	9297.37	36.18	38.95	53.16	47.11	0.33
9400.00	0.64	271.54	9397.37	36.45	37.79	52.51	46.03	0.28
9500.00	0.49	223.38	9497.36	36.16	36.94	51.69	45.61	0.48
9600.00	0.33	177.21	9597.36	35.56	36.66	51.08	45.88	0.35

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
9700.00	0.41	117.16	9697.36	35.10	37.00	51.00	46.51	0.38
9800.00	0.50	59.10	9797.36	35.16	37.69	51.55	46.99	0.45
9900.00	0.68	51.39	9897.35	35.75	38.53	52.56	47.14	0.20
10000.00	0.87	43.67	9997.34	36.68	39.52	53.92	47.14	0.21
10100.00	0.56	34.96	10097.33	37.62	40.32	55.15	46.98	0.33
10200.00	0.24	26.26	10197.33	38.22	40.70	55.83	46.80	0.32
10300.00	0.63	62.19	10297.33	38.66	41.28	56.55	46.87	0.45
10400.00	1.01	98.13	10397.32	38.79	42.63	57.64	47.70	0.62
10500.00	1.39	95.64	10497.30	38.55	44.71	59.04	49.23	0.38
10600.00	1.76	93.16	10597.26	38.35	47.45	61.01	51.06	0.38
10700.00	1.72	93.63	10697.21	38.17	50.48	63.29	52.91	0.05
10800.00	1.67	94.09	10797.17	37.97	53.43	65.55	54.60	0.05
10900.00	1.98	101.62	10897.12	37.52	56.58	67.89	56.45	0.39
11000.00	2.29	107.94	10997.05	36.55	60.17	70.40	58.72	0.39
11100.00	2.41	89.87	11096.97	35.94	64.17	73.55	60.75	0.75
11200.00	2.54	72.65	11196.87	36.61	68.38	77.57	61.84	0.75
11300.00	2.46	80.67	11296.78	37.62	72.61	81.78	62.61	0.36
11400.00	2.37	90.76	11396.69	37.94	76.79	85.65	63.71	0.43
11500.00	1.52	56.73	11496.64	38.64	79.97	88.81	64.21	1.40



Vaughn Energy Services
Woodward, Oklahoma
580-254-5000
Surveyor: Nick Harding
Lobo 26 State 1H / API 30-025-40349



VES Survey Date: 07/20/2012

Archer Survey Report

Company: ARCHER

Location: 32° 27' 18.438 N 103° 33' 0.765 W

Well: LOBO 23 STATE 1H

Rig: NABORS F03

API or UWI: 30-025-40349

Job Number: HL12223

State: NM

Operator: COG OPERATING, LLC

County: LEA

Magnetic Declination: 0.00

Comment

Proposed Azimuth: 89.62

North Reference: GRID

Tiein Survey Data:

MD	Inclination	Azimuth	TVD	NS	EW
10400.00	1.01	98.13	10397.33	38.79	42.63

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
10434.00	1.80	101.70	10431.32	38.64	43.45	48.35	58.15	43.70	2.34
10465.00	3.30	72.40	10462.29	38.81	44.78	49.08	59.26	45.03	6.26
10497.00	8.10	70.20	10494.12	39.85	47.78	50.17	62.22	48.04	15.01
10529.00	13.80	69.60	10525.53	41.95	53.48	51.89	67.97	53.76	17.82
10561.00	18.60	70.30	10556.25	45.00	61.87	53.97	76.50	62.16	15.01
10593.00	21.40	70.50	10586.31	48.67	72.18	56.01	87.05	72.50	8.75
10624.00	24.00	74.20	10614.91	52.28	83.58	57.97	98.58	83.92	9.56
10656.00	26.00	78.10	10643.91	55.50	96.70	60.15	111.50	97.07	8.10
10688.00	28.40	80.30	10672.37	58.22	111.07	62.34	125.41	111.46	8.13
10720.00	31.00	83.40	10700.17	60.45	126.76	64.50	140.44	127.16	9.43
10751.00	33.70	86.90	10726.36	61.84	143.28	66.66	156.06	143.69	10.60
10783.00	36.20	92.00	10752.59	61.99	161.60	69.01	173.08	162.01	12.01
10814.00	39.80	94.10	10777.02	60.96	180.65	71.35	190.66	181.05	12.34
10846.00	43.80	94.70	10800.87	59.32	201.91	73.63	210.45	202.30	12.56
10878.00	46.90	94.80	10823.35	57.43	224.60	75.66	231.82	224.97	9.69
10910.00	49.80	94.00	10844.62	55.60	248.44	77.38	254.58	248.80	9.25
10942.00	53.10	92.60	10864.56	54.17	273.42	78.79	278.73	273.77	10.86
10973.00	56.70	91.90	10882.38	53.18	298.75	79.91	303.45	299.10	11.76
11005.00	60.30	91.50	10899.10	52.37	326.02	80.87	330.20	326.36	11.30

SUR: D-26-21s-33e, 660/N & 330/W
BHL: A-26-21s-33e, 653/N & 4947/W
API # 30-025-40349

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
11037.00	63.20	91.10	10914.24	51.73	354.20	81.69	357.96	354.54	9.13
11069.00	66.70	90.90	10927.79	51.23	383.18	82.39	386.59	383.51	10.95
11101.00	70.20	90.60	10939.54	50.84	412.94	82.98	416.06	413.27	10.97
11133.00	72.70	90.50	10949.72	50.55	443.27	83.49	446.14	443.60	7.82
11164.00	75.80	91.10	10958.13	50.13	473.10	83.95	475.75	473.42	10.17
11196.00	78.40	91.50	10965.28	49.42	504.28	84.40	506.70	504.60	8.22
11228.00	80.80	91.60	10971.05	48.57	535.74	84.82	537.94	536.05	7.51
11257.00	83.10	91.90	10975.11	47.69	564.44	85.17	566.45	564.75	8.00
11353.00	88.40	93.40	10982.23	43.26	660.04	86.25	661.45	660.31	5.74
11447.00	88.10	93.40	10985.10	37.69	753.83	87.14	754.77	754.06	0.32
11542.00	89.20	94.30	10987.34	31.31	848.59	87.89	849.16	848.78	1.50
11636.00	88.90	94.80	10988.89	23.86	942.28	88.55	942.58	942.41	0.62
11732.00	89.20	93.90	10990.49	16.58	1037.99	89.09	1038.12	1038.07	0.99
11828.00	89.70	91.30	10991.41	12.22	1133.87	89.38	1133.94	1133.93	2.76
11923.00	90.20	89.70	10991.49	11.39	1228.87	89.47	1228.92	1228.92	1.76
12017.00	90.80	88.80	10990.67	12.62	1322.85	89.45	1322.91	1322.91	1.15
12112.00	91.30	89.40	10988.93	14.12	1417.83	89.43	1417.90	1417.89	0.82
12207.00	91.60	89.50	10986.53	15.03	1512.79	89.43	1512.87	1512.86	0.33
12302.00	90.50	89.70	10984.78	15.69	1607.77	89.44	1607.85	1607.84	1.18
12398.00	89.40	89.40	10984.87	16.45	1703.77	89.45	1703.85	1703.84	1.19
12493.00	89.50	89.60	10985.78	17.27	1798.76	89.45	1798.84	1798.83	0.24
12588.00	89.80	89.20	10986.36	18.27	1893.75	89.45	1893.84	1893.83	0.53
12681.00	89.20	89.90	10987.17	19.00	1986.74	89.45	1986.83	1986.83	0.99
12777.00	89.80	90.60	10988.01	18.58	2082.74	89.49	2082.82	2082.82	0.96
12871.00	88.60	91.10	10989.32	17.19	2176.72	89.55	2176.78	2176.78	1.38
12964.00	87.90	91.60	10992.16	15.00	2269.65	89.62	2269.70	2269.70	0.92
13059.00	88.50	91.60	10995.15	12.35	2364.56	89.70	2364.59	2364.59	0.63
13155.00	89.70	91.70	10996.65	9.58	2460.51	89.78	2460.53	2460.52	1.25
13249.00	90.20	92.00	10996.74	6.55	2554.46	89.85	2554.47	2554.45	0.62
13345.00	89.80	90.20	10996.74	4.70	2650.44	89.90	2650.44	2650.41	1.92
13441.00	90.00	89.40	10996.90	5.04	2746.44	89.89	2746.44	2746.41	0.86
13537.00	90.20	89.30	10996.74	6.13	2842.43	89.88	2842.44	2842.41	0.23
13632.00	89.50	88.90	10996.99	7.62	2937.42	89.85	2937.43	2937.40	0.85
13728.00	89.80	89.00	10997.57	9.38	3033.40	89.82	3033.41	3033.39	0.33
13821.00	90.20	88.60	10997.57	11.33	3126.38	89.79	3126.40	3126.38	0.61

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
13917.00	89.80	88.70	10997.57	13.59	3222.35	89.76	3222.38	3222.37	0.43
14012.00	89.50	89.40	10998.15	15.16	3317.34	89.74	3317.37	3317.36	0.80
14106.00	88.70	89.30	10999.63	16.23	3411.32	89.73	3411.36	3411.35	0.86
14199.00	88.20	89.40	11002.14	17.28	3504.28	89.72	3504.32	3504.31	0.55
14295.00	88.60	89.40	11004.83	18.29	3600.23	89.71	3600.28	3600.28	0.42
14389.00	89.50	89.20	11006.38	19.44	3694.21	89.70	3694.26	3694.26	0.98
14485.00	90.20	89.50	11006.63	20.53	3790.21	89.69	3790.26	3790.26	0.79
14580.00	88.90	90.70	11007.38	20.36	3885.20	89.70	3885.25	3885.25	1.86
14675.00	89.60	91.10	11008.62	18.87	3980.18	89.73	3980.22	3980.22	0.85
14770.00	90.40	91.50	11008.62	16.71	4075.15	89.77	4075.19	4075.17	0.94
14865.00	89.70	91.10	11008.54	14.56	4170.13	89.80	4170.15	4170.13	0.85
14960.00	89.80	91.20	11008.96	12.65	4265.11	89.83	4265.13	4265.10	0.15
15056.00	90.40	91.10	11008.79	10.73	4361.09	89.86	4361.10	4361.06	0.63
15151.00	90.80	90.80	11007.79	9.15	4456.07	89.88	4456.08	4456.03	0.53
15246.00	91.20	90.90	11006.13	7.74	4551.04	89.90	4551.05	4551.00	0.43
15312.00	91.20	90.90	11004.75	6.70	4617.02	89.92	4617.03	4616.96	0.00