



May 1, 2015

Devon Energy Production Co., L. P.
333 West Sheridan Ave
Oklahoma City, Oklahoma 73102-5010

30-025-42311

Attn: Megan Moravec

Re: **Cobber 21 Federal 001H**

Please find enclosed a copy of the survey from 0' to 3789' ran on the above referenced well.

If I can be of any further service please do not hesitate to call me at 800-606-4976.

Sincerely,

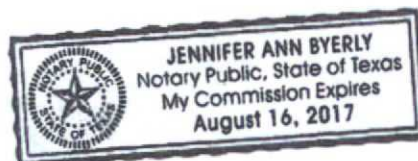
Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

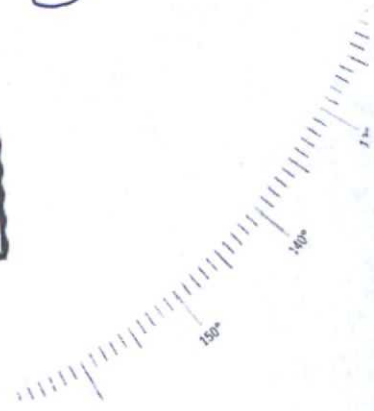
This instrument was acknowledged before me on the 1 day of May, A.D., 2015, by Keith Havelka.

Jennifer Ann Byerly
Notary Public, State of Texas

VES Survey International
P.O. Box 261021 Corpus Christi, TX 78426
T (361) 767-0602 F (361) 767-0612
www.vessurvey.com



NOV 04 2015





Company: Devon Energy
Lease/Well: Cobber 21 Federal/001H

Rig Name: Cactus 167
State/County: New Mexico/Lea
VS-Azi: 0.00 Degrees

Latitude: 32.02169, Longitude: -103.46628
Grid Convergence Applied = -0.46 degs
Grid North = True North -0.46 degs



Depth Reference : RKB= 23.6

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut
Minimum Curvature Method
Report Date/Time: 5/1/2015 / 14:01

VES Survey International
Ft. Worth, Texas
817-741-3610

Surveyor: Gregg Wilson

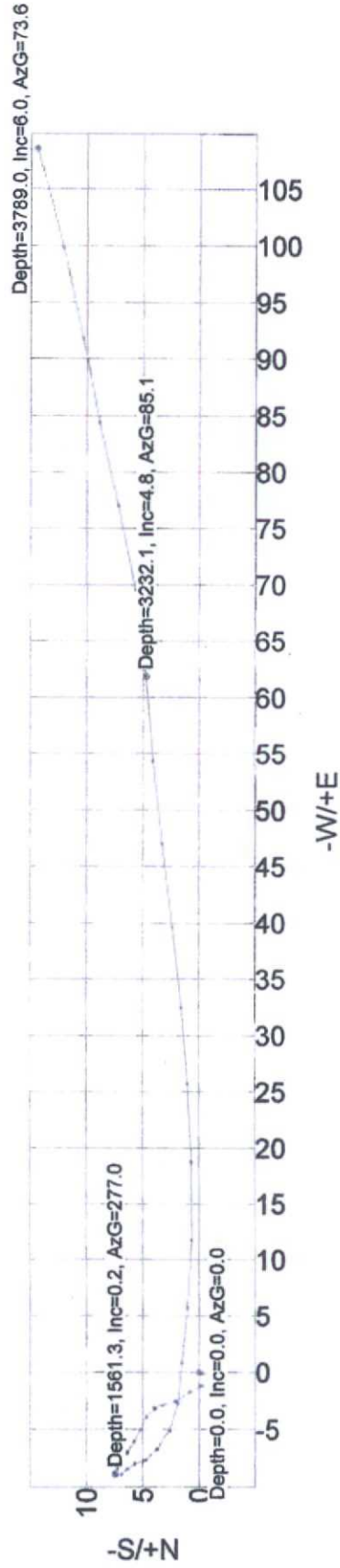
Cobber 21 Federal 001H / API 30-025-42311

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section 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	0.00	****
76.20	0.40	211.84	76.20	-0.23	-0.14	-0.23	0.27	211.84	0.53
169.02	0.39	185.54	169.02	-0.82	-0.34	-0.82	0.89	202.84	0.19
261.84	0.19	278.25	261.84	-1.10	-0.53	-1.10	1.23	205.62	0.47
354.66	0.32	246.19	354.66	-1.19	-0.92	-1.19	1.50	217.81	0.20
447.48	0.45	356.83	447.47	-0.93	-1.17	-0.93	1.50	231.68	0.68
540.30	0.46	353.14	540.29	-0.19	-1.24	-0.19	1.25	261.08	0.04
633.12	0.95	322.22	633.10	0.78	-1.75	0.78	1.92	294.11	0.65
725.94	0.97	335.51	725.91	2.11	-2.55	2.11	3.31	309.57	0.24
818.76	0.49	358.31	818.72	3.22	-2.89	3.22	4.33	318.11	0.50
911.58	0.56	321.27	911.54	3.97	-3.18	3.97	5.09	321.28	0.36
1004.40	0.73	306.27	1004.35	4.67	-3.94	4.67	6.11	319.84	0.26
1097.22	0.75	289.04	1097.17	5.22	-5.00	5.22	7.23	316.26	0.24
1190.04	0.73	303.41	1189.98	5.74	-6.06	5.74	8.35	313.45	0.20
1282.86	0.66	305.29	1282.79	6.37	-6.99	6.37	9.46	312.37	0.08
1375.68	0.52	298.95	1375.61	6.88	-7.79	6.88	10.40	311.47	0.16
1468.50	0.41	303.82	1468.42	7.27	-8.43	7.27	11.13	310.78	0.13

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1561.32	0.19	277.01	1561.24	7.47	-8.85	7.47	11.58	310.17	0.27
1654.14	0.19	193.96	1654.06	7.34	-9.04	7.34	11.64	309.10	0.27
1746.96	0.42	151.13	1746.88	6.90	-8.91	6.90	11.27	307.76	0.33
1839.78	0.44	126.29	1839.70	6.39	-8.46	6.39	10.60	307.08	0.20
1932.60	0.59	159.71	1932.52	5.73	-8.00	5.73	9.84	305.60	0.36
2025.42	0.68	158.53	2025.33	4.77	-7.64	4.77	9.00	301.98	0.09
2118.24	1.08	125.65	2118.14	3.75	-6.72	3.75	7.70	299.13	0.68
2211.06	1.39	123.20	2210.94	2.62	-5.07	2.62	5.71	297.34	0.33
2303.88	1.74	95.03	2303.72	1.88	-2.73	1.88	3.31	304.64	0.90
2396.70	2.65	95.96	2396.47	1.54	0.82	1.54	1.74	28.02	0.98
2489.52	3.39	95.85	2489.16	1.03	5.69	1.03	5.78	79.71	0.80
2582.34	4.19	91.63	2581.78	0.66	11.81	0.66	11.83	86.82	0.91
2675.16	4.45	88.16	2674.34	0.67	18.80	0.67	18.81	87.94	0.39
2767.98	4.13	85.91	2766.90	1.03	25.73	1.03	25.75	87.71	0.38
2860.80	4.20	85.20	2859.47	1.55	32.46	1.55	32.49	87.26	0.10
2953.62	4.68	82.48	2952.01	2.33	39.60	2.33	39.67	86.63	0.56
3046.44	4.53	83.05	3044.53	3.27	47.00	3.27	47.11	86.02	0.18
3139.26	4.61	84.57	3137.06	4.07	54.34	4.07	54.49	85.72	0.16
3232.08	4.76	85.08	3229.57	4.75	61.89	4.75	62.07	85.61	0.18
3324.90	4.81	81.31	3322.06	5.67	69.58	5.67	69.81	85.34	0.34
3417.72	4.58	75.35	3414.57	7.20	77.02	7.20	77.35	84.66	0.58
3510.54	4.74	79.26	3507.09	8.85	84.38	8.85	84.84	84.01	0.38
3603.36	4.64	78.17	3599.60	10.34	91.82	10.34	92.40	83.58	0.14
3696.18	5.41	77.29	3692.06	12.07	99.77	12.07	100.50	83.10	0.83
3789.00	5.95	73.61	3784.42	14.39	108.66	14.39	109.61	82.46	0.70



VES Survey International
Ft. Worth, Texas
817-741-3610
Surveyor: Gregg Wilson
Cobber 21 Federal 001H / API 30-025-42311



Well Name: COBBER 21 FEDERAL 1H

Sub-Division DELAWARE BASIN		Region DELAWARE BASIN EAST		Field Name RATTLESNAKE (NM)		County LEA		State/Province NM	
Surface Legal Location SEC 21 26S 34E		APLUM 3002542311		Latitude (°) 32° 1' 18.072" N		Longitude (°) 103° 28' 4.611" W		Orig KB Elevation (ft) 3,309.80	
								Ground Elev MSL (ft) 3,286.00	
								KB - GL (ft) 23.60	
Wellbore Name OH		Parent Wellbore OH		SAP Well ID 38312		Vertical Section Direction (°)			
Kick Offs & Key Depths									
Date 5/13/2015				Type Kick Off				Top Depth (ft) 9,230.0	
Actual Deviation Survey				Definitive?		Proposed?		Proposed Deviation Survey	
Deviation Survey									
Date		Description							
MD Tie in (ft)		TVD Tie in (ft)		Inclination Tie in (°)		Azimuth Tie in (°)		NS Tie in (ft)	
EW Tie in (ft)									
Survey Data									
Date	MD (ft)	Incl (°)	Azm (°)	TVD (ft)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool
Wellbore Name ST01		Parent Wellbore OH		SAP Well ID		Vertical Section Direction (°) 2.79			
Kick Offs & Key Depths									
Date 5/13/2015				Type Kick Off				Top Depth (ft) 9,219.9	
Actual Deviation Survey				Definitive?		Proposed?		Proposed Deviation Survey	
Deviation Survey									
Date		Description							
MD Tie in (ft)		TVD Tie in (ft)		Inclination Tie in (°)		Azimuth Tie in (°)		NS Tie in (ft)	
EW Tie in (ft)									
Survey Data									
Date	MD (ft)	Incl (°)	Azm (°)	TVD (ft)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool
Wellbore Name ST02		Parent Wellbore ST01		SAP Well ID		Vertical Section Direction (°) 2.79			
Kick Offs & Key Depths									
Date 5/19/2015				Type Kick Off				Top Depth (ft) 11,490.0	
Actual Deviation Survey				Definitive?		Proposed?		Proposed Deviation Survey	
LEAM MWD ST02, Proposed? No				Yes		No			
Deviation Survey									
Date 5/19/2015		Description LEAM MWD ST02							
MD Tie in (ft)		TVD Tie in (ft)		Inclination Tie in (°)		Azimuth Tie in (°)		NS Tie in (ft)	
EW Tie in (ft)									
Survey Data									
Date	MD (ft)	Incl (°)	Azm (°)	TVD (ft)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool
4/28/2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00		GYRO
4/28/2015	76.20	0.40	211.84	76.20	-0.23	-0.23	-0.14	0.52	GYRO
4/28/2015	169.02	0.39	185.54	169.02	-0.83	-0.82	-0.34	0.19	GYRO
4/28/2015	261.84	0.19	278.25	261.84	-1.13	-1.11	-0.52	0.48	GYRO
4/28/2015	354.66	0.32	246.19	354.66	-1.23	-1.19	-0.91	0.20	GYRO
4/28/2015	447.48	0.45	356.83	447.47	-0.99	-0.93	-1.17	0.69	GYRO
4/28/2015	540.30	0.46	353.14	540.29	-0.26	-0.20	-1.24	0.03	GYRO
4/28/2015	633.12	0.95	322.22	633.10	0.69	0.78	-1.75	0.65	GYRO
4/28/2015	725.94	0.97	335.51	725.91	1.98	2.10	-2.55	0.24	GYRO
4/28/2015	818.76	0.49	358.31	818.72	3.07	3.22	-2.89	0.59	GYRO
4/28/2015	911.58	0.56	321.27	911.54	3.81	3.97	-3.18	0.37	GYRO
4/28/2015	1,004.40	0.73	306.27	1,004.35	4.47	4.67	-3.94	0.26	GYRO
4/28/2015	1,097.22	0.75	289.04	1,097.17	4.97	5.22	-4.99	0.24	GYRO
4/28/2015	1,190.04	0.73	303.41	1,189.98	5.44	5.74	-6.06	0.20	GYRO
4/28/2015	1,282.86	0.66	305.29	1,282.79	6.03	6.38	-6.99	0.08	GYRO
4/28/2015	1,375.68	0.52	298.95	1,375.61	6.50	6.89	-7.80	0.17	GYRO
4/28/2015	1,468.50	0.41	303.82	1,468.42	6.86	7.28	-8.44	0.13	GYRO
4/28/2015	1,561.32	0.19	277.01	1,561.24	7.04	7.48	-8.87	0.27	GYRO
4/28/2015	1,654.14	0.19	193.96	1,654.06	6.90	7.35	-9.06	0.27	GYRO
4/28/2015	1,746.96	0.42	151.13	1,746.88	6.46	6.90	-8.93	0.33	GYRO
4/28/2015	1,839.78	0.44	126.29	1,839.70	5.97	6.39	-8.48	0.20	GYRO
4/28/2015	1,932.60	0.59	159.71	1,932.52	5.34	5.74	-8.03	0.35	GYRO
4/28/2015	2,025.42	0.68	158.53	2,025.33	4.40	4.77	-7.66	0.10	GYRO
4/28/2015	2,118.24	1.08	125.65	2,118.14	3.42	3.75	-6.75	0.68	GYRO
4/28/2015	2,211.06	1.39	123.20	2,210.94	2.37	2.63	-5.09	0.34	GYRO
4/28/2015	2,303.88	1.74	95.03	2,303.72	1.75	1.89	-2.75	0.90	GYRO
4/28/2015	2,396.70	2.65	95.96	2,396.47	1.58	1.54	0.79	0.98	GYRO
4/28/2015	2,489.52	3.39	95.85	2,489.17	1.31	1.04	5.65	0.80	GYRO
4/28/2015	2,582.34	4.19	91.63	2,581.78	1.23	0.66	11.77	0.91	GYRO
4/28/2015	2,675.16	4.45	88.16	2,674.34	1.59	0.68	18.76	0.40	GYRO
4/28/2015	2,767.98	4.13	85.91	2,766.90	2.28	1.03	25.69	0.39	GYRO
4/28/2015	2,860.80	4.20	85.20	2,859.47	3.13	1.56	32.42	0.09	GYRO
4/28/2015	2,953.62	4.68	82.48	2,952.01	4.26	2.34	39.56	0.56	GYRO
4/28/2015	3,046.44	4.53	83.05	3,044.53	5.56	3.28	46.95	0.17	GYRO
4/28/2015	3,139.26	4.61	84.57	3,137.06	6.71	4.07	54.30	0.16	GYRO
4/28/2015	3,232.08	4.76	85.08	3,229.57	7.76	4.76	61.85	0.17	GYRO
4/28/2015	3,324.90	4.81	81.31	3,322.07	9.05	5.67	69.54	0.34	GYRO
4/28/2015	3,417.72	4.58	75.35	3,414.57	10.94	7.20	76.97	0.58	GYRO
4/28/2015	3,510.54	4.74	79.28	3,507.09	12.94	8.85	84.32	0.38	GYRO

Well Name: COBBER 21 FEDERAL 1H

Sub-Division		Region	Field Name		County	State/Province				
DELAWARE BASIN		DELAWARE BASIN EAST	RATTLESNAKE (NM)		LEA	NM				
Surface Legal Location		API#	Latitude (°)	Longitude (°)	Orig KB Elevation (ft)	Ground Elev MSL (ft)	KB - GL (ft)			
SEC 21 26S 34E		3002542311	32° 1' 18.072" N	103° 28' 4.611" W	3,309.60	3,286.00	23.60			
Survey Data										
Date	MO (RKB)	Incl (°)	Azm (°)	TVD (RKB)	VS (ft)	N/S (ft)	E/W (ft)	CLS (°/100)	Survey Tool	Survey Company
4/28/2015	3,603.36	4.64	78.17	3,599.60	14.79	10.34	91.76	0.14	GYRO	VAUHG N ENERGY SERVICES
4/28/2015	3,696.18	5.41	77.29	3,692.06	16.91	12.07	99.71	0.83	GYRO	VAUHG N ENERGY SERVICES
4/28/2015	3,789.00	5.95	73.81	3,784.42	19.66	14.39	108.59	0.70	GYRO	VAUHG N ENERGY SERVICES
4/30/2015	3,833.00	6.51	77.18	3,828.16	21.08	15.58	113.21	1.55	MWD	LEAM DRILLING SYSTEMS
4/30/2015	3,927.00	5.98	74.72	3,921.61	24.03	18.06	123.13	0.63	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,023.00	5.89	71.38	4,017.09	27.38	20.95	132.62	0.37	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,119.00	5.45	73.31	4,112.62	30.70	23.83	141.66	0.50	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,213.00	4.40	74.72	4,208.27	33.30	26.06	149.41	1.12	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,309.00	3.43	72.08	4,302.05	35.48	27.92	155.70	1.03	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,404.00	3.52	68.92	4,396.87	37.65	29.84	161.12	0.22	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,498.00	3.43	69.10	4,490.70	39.94	31.88	166.44	0.10	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,593.00	2.29	61.54	4,585.58	42.07	33.80	170.76	1.26	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,688.00	1.76	26.73	4,680.53	44.39	36.01	173.09	1.38	MWD	LEAM DRILLING SYSTEMS
4/30/2015	4,783.00	2.55	27.43	4,775.46	47.64	39.19	174.72	0.83	MWD	LEAM DRILLING SYSTEMS
5/1/2015	4,878.00	2.29	45.89	4,870.37	50.95	42.38	177.06	0.86	MWD	LEAM DRILLING SYSTEMS
5/1/2015	4,974.00	1.93	67.34	4,966.31	53.05	44.34	179.92	0.90	MWD	LEAM DRILLING SYSTEMS
5/1/2015	5,069.00	1.32	110.93	5,061.28	53.39	44.57	182.42	1.40	MWD	LEAM DRILLING SYSTEMS
5/1/2015	5,165.00	0.35	125.35	5,157.26	52.89	44.00	183.69	1.03	MWD	LEAM DRILLING SYSTEMS
5/1/2015	5,272.00	0.04	344.37	5,264.26	52.75	43.85	183.95	0.36	MWD	LEAM DRILLING SYSTEMS
5/3/2015	5,514.00	1.01	333.68	5,508.25	54.69	45.84	182.98	0.40	MWD	EXTREME
5/3/2015	5,609.00	0.88	346.95	5,601.24	56.13	47.30	182.45	0.27	MWD	EXTREME
5/3/2015	5,706.00	0.70	350.95	5,698.23	57.42	48.61	182.19	0.19	MWD	EXTREME
5/3/2015	5,801.00	0.70	345.68	5,793.22	58.55	49.75	181.95	0.07	MWD	EXTREME
5/3/2015	5,896.00	0.79	334.87	5,888.21	59.68	50.90	181.53	0.18	MWD	EXTREME
5/3/2015	5,991.00	0.70	341.06	5,983.21	60.80	52.05	181.06	0.13	MWD	EXTREME
5/3/2015	6,086.00	0.70	343.26	6,078.20	61.88	53.15	180.71	0.03	MWD	EXTREME
5/3/2015	6,182.00	0.70	341.15	6,174.19	62.98	54.27	180.35	0.03	MWD	EXTREME
5/3/2015	6,277.00	0.70	343.65	6,269.18	64.07	55.37	180.00	0.03	MWD	EXTREME
5/4/2015	6,372.00	0.70	331.17	6,364.18	65.11	56.44	179.55	0.16	MWD	EXTREME
5/4/2015	6,468.00	0.62	328.19	6,460.17	66.04	57.39	179.00	0.09	MWD	EXTREME
5/4/2015	6,563.00	0.48	333.28	6,555.17	66.81	58.19	178.55	0.18	MWD	EXTREME
5/4/2015	6,658.00	0.40	340.97	6,650.16	67.46	58.85	178.26	0.10	MWD	EXTREME
5/4/2015	6,753.00	0.40	332.98	6,745.16	68.06	59.46	178.00	0.06	MWD	EXTREME
5/4/2015	6,849.00	0.40	335.26	6,841.16	68.64	60.07	177.71	0.02	MWD	EXTREME
5/4/2015	6,944.00	0.31	328.19	6,936.16	69.15	60.59	177.44	0.11	MWD	EXTREME
5/4/2015	7,039.00	0.31	331.88	7,031.16	69.58	61.03	177.18	0.02	MWD	EXTREME
5/4/2015	7,134.00	0.22	350.55	7,126.15	69.98	61.44	177.03	0.13	MWD	EXTREME
5/4/2015	7,230.00	0.31	11.78	7,222.15	70.42	61.87	177.05	0.14	MWD	EXTREME
5/4/2015	7,326.00	0.22	48.65	7,318.15	70.80	62.25	177.24	0.20	MWD	EXTREME
5/4/2015	7,421.00	0.22	84.07	7,413.15	70.96	62.39	177.56	0.14	MWD	EXTREME
5/4/2015	7,515.00	0.31	129.29	7,507.15	70.83	62.25	177.94	0.23	MWD	EXTREME
5/4/2015	7,612.00	0.48	129.77	7,604.15	70.43	61.82	178.45	0.18	MWD	EXTREME
5/4/2015	7,707.00	0.48	139.57	7,699.15	69.90	61.26	179.02	0.09	MWD	EXTREME
5/4/2015	7,803.00	0.62	148.19	7,795.14	69.18	60.52	179.55	0.17	MWD	EXTREME
5/4/2015	7,899.00	0.62	145.55	7,891.14	68.34	59.65	180.12	0.03	MWD	EXTREME
5/4/2015	7,994.00	0.70	149.69	7,986.13	67.45	58.72	180.70	0.10	MWD	EXTREME
5/4/2015	8,089.00	0.48	141.08	8,081.12	66.66	57.91	181.24	0.25	MWD	EXTREME
5/4/2015	8,184.00	0.70	153.37	8,176.12	65.86	57.08	181.75	0.27	MWD	EXTREME
5/4/2015	8,279.00	0.88	161.85	8,271.11	64.67	55.87	182.24	0.23	MWD	EXTREME
5/4/2015	8,375.00	0.88	174.38	8,367.10	63.26	54.44	182.54	0.20	MWD	EXTREME
5/4/2015	8,469.00	1.10	171.17	8,461.08	61.66	52.83	182.75	0.24	MWD	EXTREME
5/4/2015	8,563.00	1.10	172.27	8,555.07	59.89	51.04	183.01	0.02	MWD	EXTREME
5/5/2015	8,658.00	1.32	162.25	8,650.05	57.97	49.09	183.47	0.32	MWD	EXTREME
5/5/2015	8,754.00	1.41	159.96	8,746.02	55.84	46.93	184.21	0.11	MWD	EXTREME
5/5/2015	8,850.00	1.41	160.05	8,841.99	53.66	44.71	185.02	0.00	MWD	EXTREME
5/5/2015	8,945.00	1.49	163.67	8,936.96	51.42	42.43	185.76	0.13	MWD	EXTREME
5/5/2015	9,039.00	1.49	166.95	9,030.93	49.09	40.06	186.38	0.09	MWD	EXTREME
5/13/2015	9,135.00	1.33	169.37	9,126.90	46.80	37.75	186.86	0.18	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,263.00	4.84	8.87	9,254.77	50.73	41.63	187.97	4.77	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,294.00	6.86	5.53	9,285.61	53.88	44.77	188.35	6.61	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,326.00	9.67	3.77	9,317.28	58.48	49.35	188.71	8.82	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,358.00	12.84	3.24	9,348.66	64.72	55.58	189.09	9.91	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,390.00	16.71	2.72	9,379.59	72.88	63.73	189.51	12.10	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,422.00	20.40	1.49	9,409.92	83.06	73.91	189.87	11.60	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,454.00	24.18	0.08	9,439.53	95.19	86.04	190.03	11.93	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,486.00	28.05	358.85	9,468.26	109.24	100.12	189.89	12.21	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,517.00	31.57	358.50	9,495.15	124.61	115.53	189.53	11.37	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,549.00	34.91	358.50	9,521.91	142.10	133.06	189.07	10.44	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,581.00	37.55	359.55	9,547.72	160.97	151.97	188.75	8.47	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,613.00	40.10	0.26	9,572.65	181.01	172.03	188.72	8.09	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,644.00	42.91	0.78	9,595.86	201.53	192.57	188.91	9.13	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,676.00	45.46	0.08	9,618.81	223.81	214.87	189.07	8.11	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,708.00	47.04	0.26	9,640.94	246.91	237.98	189.14	4.95	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,740.00	48.63	0.26	9,662.41	270.60	261.70	189.25	4.97	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,772.00	51.27	0.26	9,683.00	295.07	286.19	189.36	8.25	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,804.00	54.52	359.90	9,702.31	320.56	311.71	189.40	10.20	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,835.00	57.16	359.90	9,719.71	346.18	337.36	189.35	8.52	MWD	LEAM DRILLING SYSTEMS

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Well Name: COBBER 21 FEDERAL 1H

Sub-Division DELAWARE BASIN	Region DELAWARE BASIN EAST	Field Name RATTLESNAKE (NM)	County LEA	State/Province NM
Surface Legal Location SEC 21 26S 34E	APN/UV 3002542311	Latitude (°) 32° 1' 18.072" N	Longitude (°) 103° 28' 4.611" W	Orig KB Elevation (ft) 3,309.60
			Ground Elev MSL (ft) 3,286.00	KB - GL (ft) 23.60

Survey Data

Date	MD (RKB)	Incl (°)	Azm (°)	TVD (RKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
5/13/2015	9,867.00	59.00	0.61	9,736.63	373.31	364.52	189.47	6.05	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,899.00	61.64	0.78	9,752.47	401.09	392.32	189.81	8.26	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,931.00	64.63	1.49	9,766.93	429.62	420.85	190.38	9.55	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,962.00	68.06	1.31	9,779.37	458.00	449.24	191.07	11.08	MWD	LEAM DRILLING SYSTEMS
5/13/2015	9,994.00	71.31	1.31	9,790.48	488.00	479.23	191.76	10.16	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,026.00	74.57	0.96	9,799.86	518.57	509.81	192.36	10.24	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,058.00	77.56	0.96	9,807.57	549.61	540.87	192.88	9.34	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,090.00	80.46	1.66	9,813.67	581.01	572.27	193.60	9.31	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,122.00	83.98	1.66	9,818.00	612.71	603.95	194.52	11.00	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,185.00	90.31	1.84	9,821.14	675.59	666.81	196.44	10.05	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,217.00	90.84	2.19	9,820.82	707.58	698.79	197.57	1.98	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,312.00	90.04	2.72	9,820.09	802.58	793.70	201.64	1.01	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,406.00	89.08	0.43	9,820.81	896.54	887.66	204.22	2.84	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,502.00	90.75	0.26	9,820.95	992.45	983.65	204.80	1.75	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,598.00	89.08	1.31	9,821.09	1,088.39	1,079.64	206.11	2.05	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,693.00	89.52	1.31	9,822.25	1,183.35	1,174.60	208.28	0.46	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,788.00	89.60	1.66	9,822.98	1,278.32	1,269.57	210.75	0.38	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,883.00	89.52	2.01	9,823.71	1,373.31	1,364.52	213.79	0.38	MWD	LEAM DRILLING SYSTEMS
5/13/2015	10,978.00	89.60	1.66	9,824.44	1,468.29	1,459.47	216.83	0.38	MWD	LEAM DRILLING SYSTEMS
5/13/2015	11,074.00	90.40	1.49	9,824.44	1,564.27	1,555.43	219.47	0.85	MWD	LEAM DRILLING SYSTEMS
5/13/2015	11,170.00	91.10	2.01	9,823.19	1,660.24	1,651.38	222.40	0.91	MWD	LEAM DRILLING SYSTEMS
5/13/2015	11,265.00	94.26	2.37	9,818.74	1,755.12	1,746.19	226.03	3.35	MWD	LEAM DRILLING SYSTEMS
5/13/2015	11,361.00	92.51	1.31	9,813.08	1,850.94	1,841.97	229.10	2.13	MWD	LEAM DRILLING SYSTEMS
5/19/2015	11,456.00	92.77	1.66	9,808.70	1,945.81	1,936.83	231.56	0.46	MWD	LEAM DRILLING SYSTEMS
5/20/2015	11,488.00	91.45	2.01	9,807.52	1,977.78	1,968.80	232.59	4.27	MWD	LEAM DRILLING SYSTEMS
5/20/2015	11,520.00	90.13	2.37	9,807.06	2,009.78	2,000.77	233.81	4.28	MWD	LEAM DRILLING SYSTEMS
5/20/2015	11,552.00	90.48	2.54	9,806.91	2,041.78	2,032.74	235.18	1.22	MWD	LEAM DRILLING SYSTEMS
5/20/2015	11,647.00	91.45	3.24	9,805.31	2,136.76	2,127.60	239.97	1.26	MWD	LEAM DRILLING SYSTEMS
5/20/2015	11,743.00	89.76	1.84	9,804.28	2,232.75	2,223.50	244.22	2.27	MWD	LEAM DRILLING SYSTEMS
5/20/2015	11,838.00	89.25	1.14	9,805.08	2,327.72	2,318.46	246.69	0.92	MWD	LEAM DRILLING SYSTEMS
5/20/2015	11,934.00	89.60	1.14	9,806.05	2,423.68	2,414.44	248.60	0.36	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,030.00	92.24	1.49	9,804.51	2,519.62	2,510.39	250.80	2.77	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,125.00	94.18	2.54	9,799.19	2,614.46	2,605.18	254.14	2.32	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,221.00	92.59	1.84	9,793.52	2,710.28	2,700.94	257.80	1.81	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,316.00	90.75	359.55	9,790.75	2,805.17	2,795.88	258.95	3.09	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,411.00	91.01	0.08	9,789.29	2,900.03	2,890.87	258.64	0.62	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,507.00	92.42	0.08	9,786.42	2,995.88	2,986.82	258.78	1.47	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,602.00	91.80	359.73	9,782.92	3,090.69	3,081.76	258.62	0.75	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,696.00	92.68	359.90	9,779.25	3,184.49	3,175.68	258.32	0.95	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,791.00	91.89	359.55	9,775.46	3,279.28	3,270.60	257.86	0.91	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,885.00	91.98	359.55	9,772.28	3,373.08	3,364.55	257.12	0.10	MWD	LEAM DRILLING SYSTEMS
5/20/2015	12,980.00	89.16	359.38	9,771.34	3,467.90	3,459.53	256.24	2.97	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,076.00	87.76	359.55	9,773.92	3,563.70	3,555.49	255.34	1.47	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,171.00	87.76	0.26	9,777.63	3,658.51	3,650.42	255.18	0.75	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,266.00	88.29	1.14	9,780.91	3,753.39	3,745.35	256.34	1.08	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,361.00	88.37	1.49	9,783.68	3,848.32	3,840.28	258.52	0.38	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,456.00	88.55	1.84	9,786.23	3,943.26	3,935.21	261.28	0.41	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,552.00	89.78	2.19	9,787.63	4,039.24	4,031.14	264.66	1.33	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,647.00	89.87	2.19	9,787.92	4,134.24	4,126.07	268.29	0.09	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,742.00	90.40	1.66	9,787.69	4,229.23	4,221.01	271.48	0.79	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,837.00	91.63	1.66	9,786.01	4,324.19	4,315.96	274.23	1.29	MWD	LEAM DRILLING SYSTEMS
5/20/2015	13,933.00	90.84	1.14	9,783.94	4,420.14	4,411.91	276.67	0.99	MWD	LEAM DRILLING SYSTEMS
5/20/2015	14,028.00	88.81	1.14	9,784.23	4,515.09	4,506.88	278.46	2.14	MWD	LEAM DRILLING SYSTEMS
5/20/2015	14,124.00	87.23	0.78	9,787.55	4,610.98	4,602.81	280.07	1.69	MWD	LEAM DRILLING SYSTEMS
5/20/2015	14,219.00	89.89	359.90	9,790.10	4,706.85	4,697.78	280.63	2.75	MWD	LEAM DRILLING SYSTEMS
5/20/2015	14,315.00	90.75	359.55	9,789.73	4,801.72	4,793.76	280.17	1.16	MWD	LEAM DRILLING SYSTEMS
5/20/2015	14,346.00	91.19	359.03	9,789.21	4,832.65	4,824.75	279.79	2.20	MWD	LEAM DRILLING SYSTEMS
5/20/2015	14,402.00	91.19	359.03	9,788.04	4,888.52	4,880.73	278.84	0.00	BIT	LEAM DRILLING SYSTEMS