

September 5, 2014

MAR 13 2015

RECEIVED

Devon Energy
333 West Sheridan Ave
Oklahoma City, Oklahoma 73102-5010

Attn: David Cook

Re: Hackberry 16 SWD 1

Please find enclosed a copy of the survey from 0.00' to 14650.00' 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.

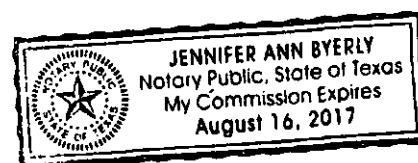
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 5 day of September A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas



devon



Company: Devon Energy
Lease/Well: Hackberry 16 SWD/1

Rig Name: Key Pulling Unit
State/County: New Mexico/Eddy
Latitude: 32.65, Longitude: -103.88

GRID North is 0.24 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : Ground Level

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 9/4/2014 / 11:43

VES Survey International
West Texas
(432) 563-5444
Surveyor: Neil Bates
Hackberry 16 SWD 1 / API 30-016-41783

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 13 2015

RECEIVED

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	****
200.00	0.80	71.80	199.99	0.44	1.33	0.44	1.40	71.80	0.40
400.00	0.13	28.71	399.99	1.07	2.77	1.07	2.97	68.88	0.36
600.00	0.32	222.27	599.99	0.86	2.50	0.86	2.65	71.13	0.22
800.00	0.58	199.05	799.98	-0.51	1.80	-0.51	1.87	105.72	0.16
1000.00	1.02	203.69	999.96	-3.09	0.76	-3.09	3.18	166.15	0.22
1200.00	0.89	189.23	1199.93	-6.24	-0.20	-6.24	6.25	181.84	0.13
1400.00	1.12	107.62	1399.91	-8.37	1.42	-8.37	8.49	170.38	0.66
1600.00	2.45	91.65	1599.81	-9.09	7.57	-9.09	11.83	140.23	0.70
1800.00	3.26	87.71	1799.56	-8.99	17.52	-8.99	19.69	117.15	0.42
2000.00	3.36	80.42	1999.23	-7.78	28.98	-7.78	30.00	105.04	0.22
2200.00	1.95	94.14	2199.01	-7.06	38.14	-7.06	38.78	100.48	0.77
2400.00	1.45	96.59	2398.92	-7.59	44.04	-7.59	44.69	99.78	0.25
2600.00	1.34	74.79	2598.86	-7.27	48.80	-7.27	49.34	98.47	0.27
2800.00	1.42	76.32	2798.81	-6.07	53.45	-6.07	53.79	96.48	0.05
3000.00	1.84	113.80	2998.73	-6.78	58.79	-6.78	59.18	96.58	0.56
3200.00	1.44	125.88	3198.65	-9.54	63.75	-9.54	64.46	98.51	0.26
3400.00	1.26	114.27	3398.59	-11.92	67.79	-11.92	68.83	99.97	0.16
3600.00	0.91	123.34	3598.56	-13.70	71.12	-13.70	72.43	100.90	0.19

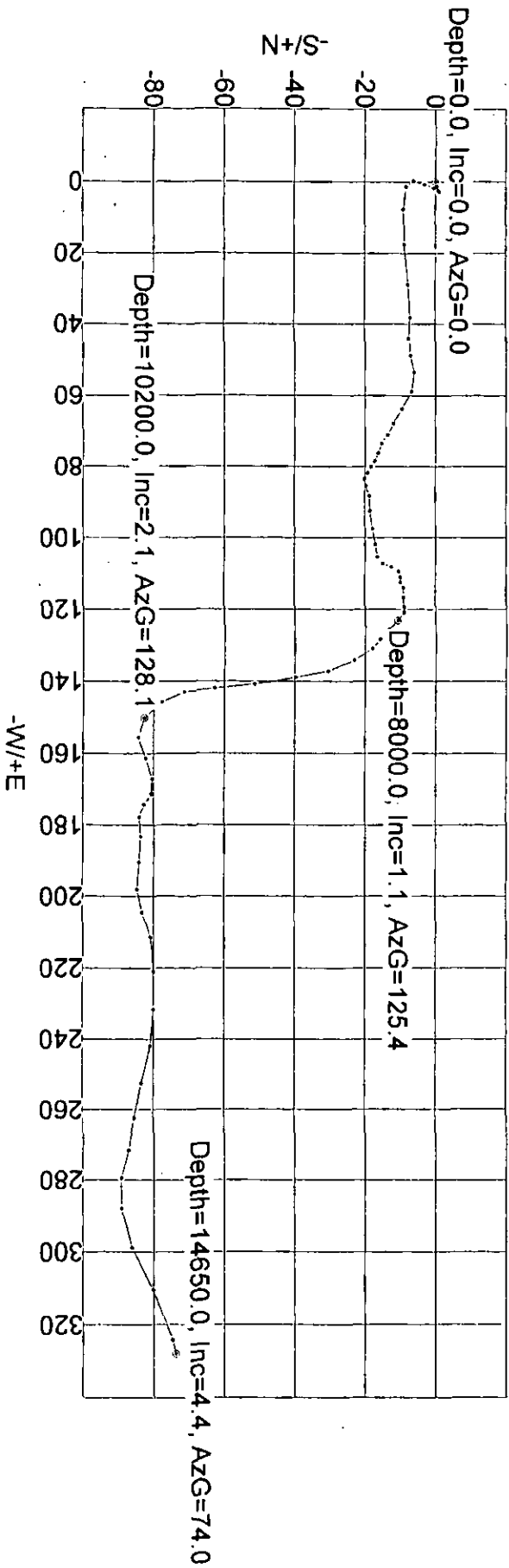
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
3800.00	0.79	125.21	3798.54	-15.37	73.58	-15.37	75.17	101.80	0.06
4000.00	0.82	95.50	3998.52	-16.30	76.13	-16.30	77.86	102.09	0.21
4200.00	0.67	134.19	4198.50	-17.25	78.39	-17.25	80.27	102.41	0.26
4400.00	0.47	110.92	4398.49	-18.36	80.00	-18.36	82.08	102.93	0.15
4600.00	0.69	121.83	4598.48	-19.29	81.79	-19.29	84.03	103.27	0.12
4800.00	0.40	117.93	4798.47	-20.25	83.42	-20.25	85.85	103.64	0.15
5000.00	0.89	59.72	4998.46	-19.79	85.38	-19.79	87.65	103.05	0.38
5200.00	0.87	83.79	5198.44	-18.84	88.24	-18.84	90.23	102.05	0.18
5400.00	1.54	87.43	5398.39	-18.55	92.45	-18.55	94.29	101.35	0.34
5600.00	1.34	77.20	5598.33	-17.91	97.42	-17.91	99.06	100.42	0.16
5800.00	1.23	83.33	5798.28	-17.14	101.83	-17.14	103.26	99.56	0.09
6000.00	0.81	76.76	5998.25	-16.57	105.35	-16.57	106.65	98.94	0.22
6200.00	0.74	21.23	6198.23	-15.04	107.20	-15.04	108.25	97.99	0.36
6400.00	0.80	19.47	6398.21	-12.52	108.14	-12.52	108.86	96.60	0.04
6600.00	0.61	46.00	6598.20	-10.45	109.37	-10.45	109.87	95.46	0.19
6800.00	0.53	105.80	6798.19	-9.96	111.04	-9.96	111.48	95.13	0.29
7000.00	0.33	57.14	6998.18	-9.91	112.42	-9.91	112.85	95.04	0.20
7200.00	0.68	65.15	7198.18	-9.10	113.97	-9.10	114.33	94.56	0.18
7400.00	0.99	104.82	7398.16	-8.04	116.71	-9.04	117.06	94.43	0.32
7600.00	0.60	59.52	7598.14	-8.96	119.27	-8.96	119.61	94.29	0.35
7800.00	0.55	129.19	7798.13	-9.04	120.92	-9.04	121.26	94.28	0.33
8000.00	1.06	125.40	7998.11	-10.72	123.17	-10.72	123.53	94.97	0.25
8200.00	1.10	143.62	8198.07	-13.33	125.80	-13.33	126.51	96.05	0.17
8400.00	0.98	123.71	8398.04	-15.83	128.37	-15.83	129.35	97.03	0.19
8600.00	0.98	136.11	8598.01	-18.02	130.99	-18.02	132.22	97.83	0.11
8800.00	2.47	152.09	8797.92	-23.07	134.20	-23.07	136.17	99.75	0.78
9000.00	2.19	164.93	8997.75	-30.57	137.21	-30.57	140.57	102.56	0.30
9200.00	3.15	171.79	9197.53	-39.68	138.98	-39.68	144.54	105.94	0.51
9400.00	3.66	169.63	9397.18	-61.39	140.92	-51.39	149.99	110.04	0.26
9600.00	2.91	180.68	9596.85	-62.73	142.00	-62.73	155.24	113.83	0.49
9800.00	2.09	162.84	9796.67	-71.29	143.02	-71.29	159.80	116.49	0.56
10000.00	1.85	150.28	9996.55	-77.58	145.70	-77.58	165.07	118.04	0.25
10200.00	2.09	128.06	10196.43	-82.64	150.17	-82.64	171.41	118.82	0.40
10400.00	1.53	76.17	10396.34	-84.25	155.64	-84.25	176.98	118.43	0.83
10600.00	2.01	65.90	10596.25	-82.17	161.44	-82.17	181.15	116.98	0.29
10800.00	1.49	81.66	10796.16	-80.36	167.22	-80.36	185.53	115.67	0.35
11000.00	0.95	107.92	10996.11	-80.49	171.38	-80.49	189.34	115.16	0.38
11200.00	1.21	141.11	11196.08	-82.66	174.29	-82.66	192.90	115.37	0.33
11400.00	1.28	80.55	11396.04	-83.94	177.83	-83.94	196.65	115.27	0.63

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
11600.00	1.85	90.56	11595.96	-83.60	183.27	-83.60	201.44	114.52	0.32
11800.00	2.22	96.76	11795.84	-84.09	190.35	-84.09	208.09	113.83	0.21
12000.00	2.26	91.04	11995.68	-84.62	198.12	-84.62	215.44	113.13	0.11
12200.00	1.73	58.70	12195.57	-83.11	204.65	-83.11	220.86	112.10	0.61
12400.00	2.46	80.39	12395.44	-80.83	211.46	-80.83	226.38	110.92	0.53
12600.00	3.05	87.75	12595.20	-79.90	221.01	-79.90	235.01	109.88	0.35
12800.00	2.92	92.89	12794.93	-79.95	231.41	-79.95	244.83	109.06	0.15
13000.00	3.19	96.66	12994.65	-80.85	242.03	-80.85	255.18	108.47	0.17
13200.00	3.07	109.41	13194.35	-83.28	252.61	-83.28	265.98	108.25	0.35
13400.00	2.78	93.83	13394.10	-85.38	262.51	-85.38	276.04	108.02	0.42
13600.00	2.56	108.46	13593.88	-87.12	271.58	-87.12	285.21	107.79	0.38
13800.00	2.07	98.38	13793.72	-89.06	279.38	-89.06	293.23	107.68	0.32
14000.00	2.95	83.19	13993.53	-88.97	288.06	-88.97	301.49	107.16	0.55
14200.00	3.49	67.55	14193.21	-86.04	298.79	-86.04	310.94	106.06	0.51
14400.00	3.99	58.13	14392.79	-80.04	310.32	-80.04	320.48	104.46	0.39
14600.00	4.60	77.73	14592.24	-74.67	324.06	-74.67	332.55	102.97	0.79
14800.00	4.42	73.99	14642.08	-73.71	327.87	-73.71	336.06	102.67	0.69

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VES Survey International
West Texas
(432) 563-5444
Surveyor: Neil Bates
Hackberry 16 SWD 1 / API 30-015-41783





HACKBERRY 16 SWD 1

DELAWARE BASIN UNRESTRICTED

Directional Survey

Sub-Division DELAWARE BASIN	County EDDY	Field Name HACKBERRY	Region DELAWARE SLOPE EAST	State/Province NM
Surface Legal Location SEC16 T19S R31E	APN/VWIR 3001541783	Latitude (°) 32° 39' 14.68" N	Longitude (°) 103° 52' 55.071" W	Ground Elev M. 3,466.20
				Orig KB Elev (ft) 3,491.20
				Tubing Head Elevation (ft)

Wellbores	Wellbore Name OH	Parent Wellbore OH	SAP Well ID 35735	Vertical Section Direction (°)
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Kick Offs & Key Depths	Date	Type	Top Depth (ftKB)
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Actual Deviation Survey TELE-DRIFT, Proposed? No	Definitive? Yes	Proposed? No	Proposed Deviation Survey TELE-DRIFT, Proposed? No
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Deviation Survey

Date 6/16/2014		Description TELE-DRIFT			
MD Tie In (ftKB) 0.00	TVD Tie In (ftKB) 0.00	Inclination Tie In (°) 0.00	Azimuth Tie In (°) 0.00	NS Tie In (ft) 0.00	EW Tie In (ft) 0.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
6/16/2014	168.00	0.80	77.40	167.99	1.10	0.26	1.14	0.48	INC	PRODRIFT
6/16/2014	286.00	0.40	87.40	285.99	2.27	0.45	2.36	0.35	INC	PRODRIFT
6/16/2014	380.00	0.40	86.00	379.99	2.91	0.49	3.02	0.01	INC	PRODRIFT
6/16/2014	468.00	0.40	86.00	467.98	3.51	0.53	3.63	0.00	INC	PRODRIFT
6/16/2014	600.00	0.50	273.00	599.98	3.39	0.60	3.51	0.68	INC	PRODRIFT
6/16/2014	637.00	0.50	234.40	636.98	3.11	0.51	3.22	0.89	INC	PRODRIFT
6/16/2014	880.00	0.60	198.40	879.97	2.13	1.31	1.96	0.15	INC	PRODRIFT
6/16/2014	1,156.00	1.00	189.40	1,155.94	1.83	5.06	1.11	0.15	INC	PRODRIFT
6/16/2014	1,248.00	0.90	208.00	1,247.93	1.58	6.49	0.64	0.35	INC	PRODRIFT
6/16/2014	1,338.00	0.90	157.40	1,337.92	1.70	7.77	0.58	0.85	INC	PRODRIFT
6/16/2014	1,433.00	1.00	111.40	1,432.91	2.89	8.76	1.63	0.79	INC	PRODRIFT
6/16/2014	1,528.00	1.80	93.40	1,527.88	5.19	9.15	3.90	0.95	INC	PRODRIFT
6/16/2014	1,623.00	2.30	80.00	1,622.82	8.48	8.91	7.26	0.73	INC	PRODRIFT
6/16/2014	1,717.00	2.70	84.40	1,716.73	12.42	8.36	11.32	0.47	INC	PRODRIFT
6/16/2014	1,812.00	3.10	90.40	1,811.61	17.14	8.16	16.12	0.53	INC	PRODRIFT
6/16/2014	1,907.00	3.80	90.40	1,906.44	22.80	8.20	21.84	0.74	INC	PRODRIFT
6/16/2014	2,002.00	4.10	91.40	2,001.21	29.29	8.31	28.38	0.32	INC	PRODRIFT
6/16/2014	2,096.00	3.10	92.40	2,095.02	35.15	8.50	34.28	1.07	INC	PRODRIFT
6/16/2014	2,191.00	2.30	93.40	2,189.92	39.60	8.72	38.75	0.84	INC	PRODRIFT
6/16/2014	2,286.00	1.80	92.40	2,284.86	42.99	8.89	42.14	0.53	INC	PRODRIFT
6/27/2014	2,482.00	1.40	92.40	2,480.78	48.43	9.12	47.61	0.20	INC	PRODRIFT
6/27/2014	2,577.00	1.50	87.40	2,575.75	50.80	9.11	50.01	0.17	INC	PRODRIFT
6/27/2014	2,672.00	1.60	54.40	2,670.72	52.98	8.29	52.33	0.93	INC	PRODRIFT
6/27/2014	2,781.00	1.50	79.40	2,779.68	55.42	7.14	54.97	0.62	INC	PRODRIFT
6/27/2014	3,053.00	1.80	98.40	3,051.57	63.06	7.11	62.70	0.23	INC	PRODRIFT
6/27/2014	3,143.00	1.70	126.40	3,141.53	65.65	8.10	65.17	0.95	INC	PRODRIFT
6/27/2014	3,243.00	1.70	126.40	3,241.48	68.27	9.87	67.56	0.00	INC	PRODRIFT
6/27/2014	3,342.00	1.10	113.40	3,340.45	70.49	11.11	69.61	0.68	INC	PRODRIFT
6/27/2014	3,622.00	1.30	131.40	3,620.39	75.75	14.28	74.46	0.15	INC	PRODRIFT
6/27/2014	4,010.00	0.50	103.40	4,008.34	81.12	17.58	79.41	0.23	INC	PRODRIFT
6/27/2014	4,283.00	0.50	268.40	4,281.34	81.14	17.89	79.38	0.36	INC	PRODRIFT
6/27/2014	4,563.00	0.30	130.40	4,561.34	80.56	18.40	78.71	0.27	INC	PRODRIFT
6/27/2014	4,757.00	0.40	127.40	4,755.33	81.58	19.14	79.64	0.05	INC	PRODRIFT
6/27/2014	4,878.00	0.50	87.40	4,876.33	82.47	19.38	80.50	0.27	INC	PRODRIFT
6/27/2014	4,946.00	0.80	78.40	4,944.32	83.20	19.27	81.26	0.46	INC	PRODRIFT
6/27/2014	5,041.00	0.60	66.40	5,039.32	84.25	18.94	82.37	0.26	INC	PRODRIFT
6/27/2014	5,136.00	1.10	69.40	5,134.31	85.47	18.42	83.68	0.53	INC	PRODRIFT
6/27/2014	5,231.00	1.20	67.40	5,229.29	87.12	17.71	85.45	0.11	INC	PRODRIFT
7/3/2014	5,325.00	1.70	78.40	5,323.26	89.27	17.05	87.72	0.61	INC	PRODRIFT
7/3/2014	5,418.00	1.70	86.40	5,416.22	91.92	16.69	90.45	0.25	INC	PRODRIFT
7/3/2014	5,514.00	1.60	80.40	5,512.18	94.59	16.38	93.19	0.21	INC	PRODRIFT
7/3/2014	5,608.00	2.00	89.40	5,606.13	97.45	16.14	96.13	0.52	INC	PRODRIFT
7/3/2014	5,703.00	1.20	76.40	5,701.09	100.01	15.89	98.75	0.92	INC	PRODRIFT
7/3/2014	5,793.00	1.10	66.40	5,791.07	101.62	15.32	100.46	0.25	INC	PRODRIFT
7/3/2014	5,892.00	1.10	74.40	5,890.06	103.30	14.69	102.25	0.16	INC	PRODRIFT
7/3/2014	5,987.00	0.60	75.40	5,985.04	104.59	14.32	103.61	0.53	INC	PRODRIFT
7/3/2014	6,084.00	0.50	68.40	6,082.04	105.42	14.03	104.49	0.12	INC	PRODRIFT



HACKBERRY 16 SWD 1

DELAWARE BASIN UNRESTRICTED

Directional Survey

Sub-Division DELAWARE BASIN	County EDDY	Field Name HACKBERRY	Region DELAWARE SLOPE EAST	State/Province NM
Surface Legal Location SEC16 T19S R31E	API/UWI 3001541783	Latitude (°) 32° 39' 14.68" N	Longitude (°) 103° 52' 55.071" W	Ground Elev M. 3,466.20
				Ong KB Elev (ft) 3,491.20
				Tubing Head Elevation (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS' (°/100ft)	Survey Tool	Survey Company
7/3/2014	6,176.00	0.70	38.40	6,174.04	106.05	-13.44	105.21	0.40	INC	PRODRIFT
7/3/2014	6,271.00	0.70	20.40	6,269.03	106.46	-12.44	105.78	0.23	INC	PRODRIFT
7/3/2014	6,365.00	0.70	19.00	6,363.02	106.69	-11.36	106.16	0.02	INC	PRODRIFT
7/3/2014	6,450.00	0.80	17.40	6,448.01	106.88	-10.31	106.51	0.12	INC	PRODRIFT
7/3/2014	6,554.00	0.60	35.40	6,552.01	107.24	-9.17	107.04	0.28	INC	PRODRIFT
7/3/2014	6,649.00	0.60	24.40	6,647.00	107.60	-8.31	107.54	0.12	INC	PRODRIFT
7/3/2014	6,744.00	0.30	80.40	6,742.00	107.97	-7.82	107.99	0.52	INC	PRODRIFT
7/3/2014	6,838.00	0.40	59.40	6,836.00	108.46	-7.61	108.51	0.17	INC	PRODRIFT
7/3/2014	6,933.00	0.50	121.40	6,930.99	109.10	-7.66	109.15	0.50	INC	PRODRIFT
7/3/2014	7,027.00	0.40	91.40	7,024.99	109.81	-7.88	109.83	0.27	INC	PRODRIFT
7/3/2014	7,122.00	0.10	324.40	7,119.99	110.08	-7.82	110.11	0.49	INC	PRODRIFT
7/3/2014	7,217.00	0.30	84.40	7,214.99	110.26	-7.73	110.31	0.38	INC	PRODRIFT
7/3/2014	7,311.00	0.60	86.40	7,308.99	110.98	-7.67	111.05	0.32	INC	PRODRIFT
7/3/2014	7,406.00	1.00	95.40	7,403.98	112.30	-7.72	112.37	0.44	INC	PRODRIFT
7/3/2014	7,501.00	0.70	73.40	7,498.97	113.65	-7.63	113.75	0.46	INC	PRODRIFT
7/3/2014	7,596.00	0.80	43.40	7,593.96	114.56	-6.98	114.76	0.42	INC	PRODRIFT
7/3/2014	7,691.00	0.50	9.40	7,688.95	114.94	-6.09	115.29	0.50	INC	PRODRIFT
7/3/2014	7,785.00	0.40	67.40	7,782.95	115.23	-5.56	115.66	0.47	INC	PRODRIFT
7/3/2014	7,879.00	0.60	161.40	7,876.95	115.74	-5.90	116.12	0.79	INC	PRODRIFT
7/3/2014	7,973.00	1.00	147.40	7,970.94	116.50	-7.06	116.72	0.47	INC	PRODRIFT
7/3/2014	8,068.00	1.20	144.40	8,065.92	117.73	-8.57	117.74	0.22	INC	PRODRIFT
7/3/2014	8,162.00	1.20	136.40	8,159.90	119.19	-10.08	118.99	0.18	INC	PRODRIFT
7/3/2014	8,257.00	1.10	139.40	8,254.88	120.66	-11.49	120.27	0.12	INC	PRODRIFT
7/3/2014	8,352.00	1.10	139.40	8,349.87	122.04	-12.88	121.46	0.00	INC	PRODRIFT
7/3/2014	8,447.00	1.10	129.40	8,444.85	123.51	-14.15	122.76	0.20	INC	PRODRIFT
7/3/2014	8,542.00	1.40	141.40	8,539.83	125.14	-15.63	124.19	0.42	INC	PRODRIFT
7/3/2014	8,636.00	2.00	139.40	8,633.78	127.22	-17.78	125.97	0.64	INC	PRODRIFT
7/3/2014	8,731.00	2.40	153.40	8,728.71	129.61	-20.81	127.94	0.70	INC	PRODRIFT
7/3/2014	8,826.00	2.40	160.00	8,823.63	131.69	-24.46	129.51	0.29	INC	PRODRIFT
7/3/2014	8,921.00	2.10	151.40	8,918.56	133.69	-27.86	131.02	0.47	INC	PRODRIFT
7/3/2014	9,016.00	2.40	167.40	9,013.49	135.44	-31.33	132.29	0.73	INC	PRODRIFT
7/3/2014	9,110.00	2.60	170.40	9,107.40	136.81	-35.35	133.08	0.25	INC	PRODRIFT
7/3/2014	9,205.00	3.00	177.40	9,202.28	137.95	-39.96	133.55	0.55	INC	PRODRIFT
7/3/2014	9,300.00	3.90	171.40	9,297.11	139.36	-45.64	134.14	1.02	INC	PRODRIFT
7/3/2014	9,394.00	3.70	168.40	9,390.90	141.33	-51.77	135.23	0.30	INC	PRODRIFT
7/3/2014	9,489.00	3.60	173.40	9,485.71	143.15	-57.73	136.19	0.35	INC	PRODRIFT
7/3/2014	9,584.00	3.30	172.40	9,580.54	144.68	-63.41	136.90	0.32	INC	PRODRIFT
7/3/2014	9,679.00	2.60	171.40	9,675.41	146.06	-68.25	137.58	0.74	INC	PRODRIFT
7/3/2014	9,773.00	2.10	173.40	9,769.33	147.13	-72.07	138.10	0.54	INC	PRODRIFT
7/3/2014	9,868.00	1.80	166.40	9,864.28	148.13	-75.25	138.65	0.40	INC	PRODRIFT
7/3/2014	9,962.00	1.70	152.40	9,958.23	149.51	-77.92	139.64	0.47	INC	PRODRIFT
7/3/2014	10,057.00	1.80	132.40	10,053.19	151.57	-80.17	141.39	0.65	INC	PRODRIFT
7/3/2014	10,151.00	1.60	150.40	10,147.15	153.60	-82.31	143.13	0.60	INC	PRODRIFT
7/3/2014	10,246.00	2.00	144.40	10,242.10	155.57	-84.81	144.75	0.46	INC	PRODRIFT
7/3/2014	10,342.00	1.30	134.40	10,338.06	157.61	-86.93	146.51	0.79	INC	PRODRIFT
7/3/2014	10,436.00	1.40	64.40	10,432.04	159.43	-87.18	148.30	1.65	INC	PRODRIFT
7/3/2014	10,531.00	1.90	50.40	10,527.00	161.44	-85.68	150.56	0.67	INC	PRODRIFT
7/3/2014	10,625.00	1.80	55.40	10,620.95	163.57	-83.85	152.98	0.20	INC	PRODRIFT
7/3/2014	10,720.00	1.80	58.40	10,715.91	165.80	-82.22	155.48	0.10	INC	PRODRIFT
7/3/2014	10,815.00	1.50	67.40	10,810.87	168.01	-80.96	157.90	0.42	INC	PRODRIFT
7/3/2014	10,910.00	1.30	101.40	10,905.84	170.15	-80.69	160.10	0.88	INC	PRODRIFT
7/3/2014	11,004.00	1.10	105.40	10,999.82	172.11	-81.14	162.02	0.23	INC	PRODRIFT
7/3/2014	11,098.00	1.30	119.40	11,093.80	174.00	-81.91	163.82	0.38	INC	PRODRIFT
7/3/2014	11,194.00	1.30	115.40	11,189.78	176.06	-82.91	165.75	0.09	INC	PRODRIFT
7/3/2014	11,288.00	1.40	112.40	11,283.75	178.20	-83.80	167.77	0.13	INC	PRODRIFT
7/3/2014	11,383.00	1.60	102.40	11,378.72	180.65	-84.53	170.14	0.35	INC	PRODRIFT
7/3/2014	11,478.00	2.00	100.40	11,473.67	183.63	-85.11	173.07	0.43	INC	PRODRIFT
7/3/2014	11,572.00	1.90	102.40	11,567.62	186.82	-85.75	176.20	0.13	INC	PRODRIFT



HACKBERRY 16 SWD 1

DELAWARE BASIN UNRESTRICTED

Directional Survey

Sub-Division DELAWARE BASIN	County EDDY	Field Name HACKBERRY	Region DELAWARE SLORE EAST	State/Province NM
Surface Legal Location SEC16 T19S R31E	API(UW) 3001541783	Latitude (°) 32° 39' 14.68" N	Longitude (°) 103° 52' 55.071" W	Ground Elev. M. 3,466.20
				Orig KB Elev (ft) 3,491.20
				Tubing Head Elevation (ft)

Survey Data

Date	MD (ft)	Incl. (°)	Azm. (°)	TVD (ft)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
7/3/2014	11,667.00	2.00	107.70	11,662.56	190.03	-86.59	179.32	0.22	INC	PRODRIFT
7/3/2014	11,762.00	2.00	96.40	11,757.50	193.32	-87.28	182.55	0.41	INC	PRODRIFT
7/3/2014	11,856.00	2.10	103.40	11,851.44	196.67	-87.86	185.85	0.29	INC	PRODRIFT
7/3/2014	11,951.00	2.00	91.40	11,946.38	200.05	-88.30	189.20	0.46	INC	PRODRIFT
7/3/2014	12,046.00	2.20	99.40	12,041.32	203.52	-88.64	192.66	0.37	INC	PRODRIFT
7/3/2014	12,141.00	1.80	72.40	12,136.26	206.69	-88.49	195.88	1.06	INC	PRODRIFT
7/3/2014	12,265.00	1.70	78.40	12,260.21	210.16	-87.53	199.54	0.17	INC	PRODRIFT
7/3/2014	12,339.00	2.00	70.40	12,334.17	212.34	-86.87	201.83	0.53	INC	PRODRIFT
7/3/2014	12,434.00	2.40	78.40	12,429.10	215.67	-85.92	205.34	0.53	INC	PRODRIFT
7/3/2014	12,518.00	2.90	79.40	12,513.01	219.33	-85.17	209.15	0.60	INC	PRODRIFT
7/3/2014	12,612.00	3.00	81.40	12,606.88	223.93	-84.37	213.92	0.15	INC	PRODRIFT
7/3/2014	12,689.00	3.10	87.40	12,683.77	227.90	-83.97	217.99	0.43	INC	PRODRIFT
7/3/2014	12,774.00	3.00	88.40	12,768.65	232.35	-83.81	222.51	0.13	INC	PRODRIFT
7/3/2014	12,879.00	3.10	89.40	12,873.50	237.86	-83.70	228.10	0.11	INC	PRODRIFT
7/3/2014	12,973.00	3.10	90.40	12,967.37	242.89	-83.69	233.18	0.06	INC	PRODRIFT
7/3/2014	13,059.00	3.10	85.40	13,053.24	247.46	-83.52	237.82	0.31	INC	PRODRIFT
7/3/2014	13,154.00	3.10	89.40	13,148.10	252.50	-83.29	242.95	0.23	INC	PRODRIFT
7/3/2014	13,519.00	2.40	89.40	13,512.68	269.80	-83.10	260.46	0.19	INC	PRODRIFT
7/3/2014	14,091.00	3.20	60.40	14,084.02	294.21	-75.09	286.32	0.28	INC	PRODRIFT
7/3/2014	14,185.00	2.70	62.40	14,177.89	298.07	-72.77	290.57	0.54	INC	PRODRIFT
7/3/2014	14,247.00	4.10	77.40	14,239.79	301.32	-71.61	294.02	2.66	INC	PRODRIFT
7/3/2014	14,280.00	3.80	60.40	14,272.71	303.29	-70.81	296.13	3.65	INC	PRODRIFT
7/3/2014	14,375.00	4.60	63.40	14,367.45	308.89	-67.55	302.27	0.87	INC	PRODRIFT
7/3/2014	14,765.00	4.60	36.40	14,756.24	329.05	-47.96	325.54	0.55	BIT	PRODRIFT