

November 14, 2014

30015 42515

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

Attn: David Cook

Re: Cotton Draw Unit 173H

Please find enclosed a copy of the survey from 0.00' to 4322.00' 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,

Deb Salge
Deb Salge
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

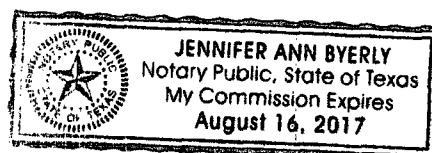
NM OIL CONSERVATION
ARTESIA DISTRICT

APR 23 2015

RECEIVED

This instrument was acknowledged before me on the 14 day of November A.D., 2014, by Keith Havelka.

Jennifer Ann Byerly
Jennifer Ann Byerly
Notary Public, State of Texas





Company: Devon Energy
Lease/Well: Cotton Draw Unit/173H

Location: S1 T25S R31E

Rig Name: Cactus 126

State/County: New Mexico/Eddy

Latitude: 32.15, Longitude: -103.73

GRID North is 0.32 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB = 25 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 11/14/2014 / 09:44

VES Survey International

Midland, TX

432-563-5444

Surveyor: Andrew Askew

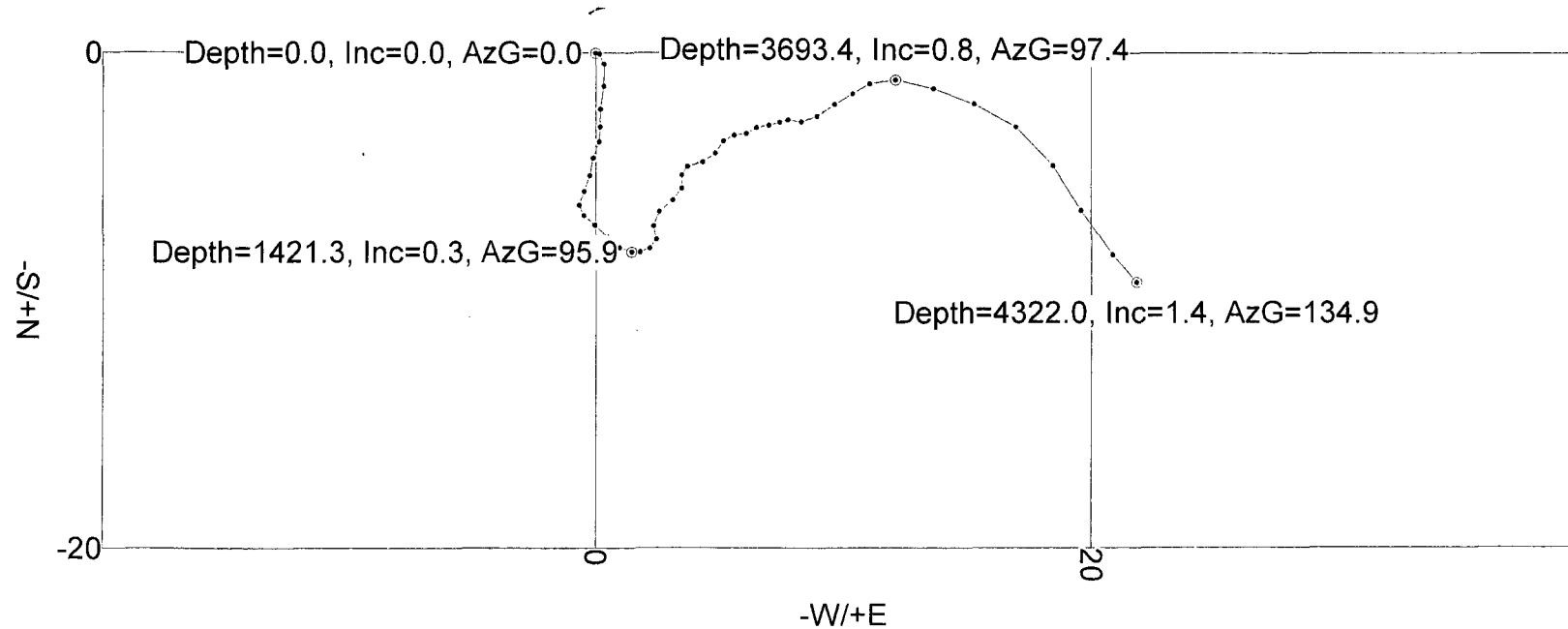
Cotton Draw Unit 173H / API 30-015-42515

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	****
95.94	0.19	104.09	95.94	-0.04	0.15	-0.04	0.16	104.09	0.20
190.61	0.45	175.57	190.61	-0.45	0.33	-0.45	0.56	143.36	0.45
285.28	0.64	184.79	285.27	-1.34	0.32	-1.34	1.38	166.78	0.22
379.95	0.49	194.20	379.94	-2.27	0.17	-2.27	2.27	175.66	0.19
474.62	0.40	164.21	474.61	-2.98	0.16	-2.98	2.98	176.86	0.26
569.29	0.37	204.88	569.27	-3.58	0.13	-3.58	3.58	177.96	0.29
663.96	0.49	197.67	663.94	-4.24	-0.12	-4.24	4.24	181.66	0.14
758.63	0.38	181.45	758.61	-4.93	-0.25	-4.93	4.94	182.94	0.17
853.30	0.47	213.60	853.28	-5.57	-0.48	-5.57	5.59	184.90	0.27
947.97	0.28	177.02	947.95	-6.13	-0.68	-6.13	6.17	186.34	0.31
1042.64	0.31	135.45	1042.61	-6.55	-0.49	-6.55	6.56	184.26	0.23
1137.31	0.41	128.82	1137.28	-6.94	-0.04	-6.94	6.94	180.37	0.11
1231.98	0.45	137.16	1231.95	-7.43	0.47	-7.43	7.44	176.37	0.08
1326.65	0.32	125.17	1326.62	-7.85	0.94	-7.85	7.91	173.18	0.17
1421.32	0.34	95.85	1421.29	-8.03	1.43	-8.03	8.15	169.91	0.18
1515.99	0.09	71.82	1515.96	-8.03	1.78	-8.03	8.23	167.52	0.27
1610.66	0.43	68.54	1610.62	-7.88	2.18	-7.88	8.18	164.54	0.36
1705.33	0.29	346.11	1705.29	-7.52	2.45	-7.52	7.91	161.94	0.51

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
1800.00	0.39	354.24	1799.96	-6.97	2.36	-6.97	7.36	161.28	0.11
1894.67	0.44	44.18	1894.63	-6.39	2.59	-6.39	6.90	157.98	0.37
1989.34	0.43	55.50	1989.30	-5.93	3.13	-5.93	6.71	152.14	0.09
2084.01	0.34	12.76	2083.96	-5.45	3.49	-5.45	6.47	147.37	0.31
2178.68	0.33	346.36	2178.63	-4.91	3.49	-4.91	6.02	144.62	0.16
2273.35	0.37	76.29	2273.30	-4.57	3.72	-4.57	5.90	140.85	0.53
2368.02	0.40	70.65	2367.97	-4.39	4.33	-4.39	6.17	135.40	0.05
2462.69	0.38	38.98	2462.64	-4.04	4.83	-4.04	6.30	129.90	0.22
2557.36	0.35	26.95	2557.31	-3.54	5.16	-3.54	6.26	124.46	0.09
2652.03	0.36	95.34	2651.97	-3.31	5.58	-3.31	6.49	120.66	0.42
2746.70	0.26	64.32	2746.64	-3.25	6.07	-3.25	6.88	118.15	0.20
2841.37	0.32	55.63	2841.31	-3.01	6.47	-3.01	7.14	114.91	0.08
2936.04	0.36	100.27	2935.98	-2.91	6.98	-2.91	7.56	112.63	0.27
3030.71	0.27	39.19	3030.65	-2.79	7.41	-2.79	7.92	110.64	0.35
3125.38	0.25	111.22	3125.32	-2.69	7.74	-2.69	8.20	109.18	0.32
3220.05	0.43	90.21	3219.99	-2.77	8.29	-2.77	8.74	108.47	0.23
3314.72	0.42	51.68	3314.65	-2.56	8.92	-2.56	9.28	105.98	0.30
3409.39	0.62	57.80	3409.32	-2.06	9.63	-2.06	9.85	102.09	0.22
3504.06	0.41	65.06	3503.99	-1.64	10.38	-1.64	10.51	99.00	0.23
3598.73	0.54	55.19	3598.65	-1.24	11.06	-1.24	11.13	96.42	0.16
3693.40	0.81	97.38	3693.32	-1.07	12.09	-1.07	12.14	95.08	0.58
3788.07	1.10	107.88	3787.97	-1.44	13.62	-1.44	13.70	96.03	0.35
3882.74	1.05	113.03	3882.63	-2.06	15.28	-2.06	15.42	97.67	0.11
3977.41	1.28	123.41	3977.28	-2.98	16.97	-2.98	17.23	99.96	0.33
4072.08	1.38	148.64	4071.92	-4.54	18.45	-4.54	19.00	103.82	0.62
4166.75	1.22	146.53	4166.57	-6.35	19.60	-6.35	20.60	107.97	0.18
4261.42	1.44	143.29	4261.21	-8.15	20.86	-8.15	22.39	111.33	0.25
4322.00	1.36	134.91	4321.77	-9.26	21.83	-9.26	23.71	113.00	0.36



VES Survey International
Midland, TX
432-563-5444
Surveyor: Andrew Askew
Cotton Draw Unit 173H / API 30-015-42515





Directional Survey

Sub-Division DELAWARE BASIN		County EDDY	Field Name PADUCA		Region DELAWARE BASIN WEST		State/Province NM			
Surface Legal Location Sec. 1 25S 31E		E/L/W 30015 25 15		Latitude (°) 32° 9' 9.41" N	Longitude (°) 103° 43' 37.79" W	Ground Elev M. 3,445.50	Orig KB Elev (ft) 3,470.50	Tubing Head Elevation (ft)		
Wellbores										
Wellbore Name OH		Parent Wellbore		SAP Well ID 37253		Vertical Section Direction (°) 7.34				
Kick Offs & Key Depths										
Date				Type			Top Depth (ftKB)			
Actual Deviation Survey GYRO, Proposed? No				Definitive? Yes	Proposed? No	Proposed Deviation Survey				
Deviation Survey										
Date 10/31/2014		Description GYRO								
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
10/31/2...	60.56	6.20	115.20	60.44	-1.00	-1.39	2.96	10.24	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	95.94	0.19	104.09	95.75	-1.60	-2.22	4.75	17.00	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	190.61	0.45	175.57	190.42	-1.98	-2.63	4.93	0.45	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	285.28	0.64	184.79	285.09	-2.87	-3.53	4.91	0.22	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	379.95	0.49	194.20	379.75	-3.80	-4.45	4.77	0.19	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	474.62	0.40	164.21	474.42	-4.51	-5.16	4.76	0.26	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	569.29	0.37	204.88	569.09	-5.10	-5.75	4.72	0.28	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	663.96	0.49	197.67	663.75	-5.79	-6.42	4.47	0.14	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	758.63	0.38	181.45	758.42	-6.50	-7.12	4.34	0.17	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	853.30	0.47	213.60	853.09	-7.16	-7.75	4.12	0.26	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	947.97	0.28	177.02	947.76	-7.74	-8.31	3.92	0.31	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,042.64	0.31	135.45	1,042.42	-8.13	-8.72	4.11	0.22	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,137.31	0.41	128.82	1,137.09	-8.46	-9.12	4.55	0.11	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,231.98	0.45	137.16	1,231.76	-8.88	-9.60	5.07	0.08	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,326.65	0.32	125.17	1,326.43	-9.24	-10.03	5.54	0.16	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,421.32	0.34	95.85	1,421.10	-9.35	-10.21	6.03	0.18	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,515.99	0.09	71.82	1,515.77	-9.31	-10.21	6.38	0.28	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,610.66	0.43	68.54	1,610.43	-9.11	-10.06	6.78	0.36	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,705.33	0.29	346.11	1,705.10	-8.72	-9.70	7.06	0.51	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,800.00	0.39	354.24	1,799.77	-8.18	-9.14	6.97	0.12	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,894.67	0.44	44.18	1,894.44	-7.57	-8.56	7.19	0.37	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	1,989.34	0.43	55.50	1,989.11	-7.05	-8.10	7.73	0.09	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,084.01	0.34	12.76	2,083.77	-6.53	-7.63	8.09	0.31	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,178.68	0.33	346.36	2,178.44	-6.00	-7.09	8.09	0.16	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,273.35	0.37	76.29	2,273.11	-5.63	-6.75	8.32	0.52	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,368.02	0.40	70.65	2,367.78	-5.37	-6.57	8.93	0.05	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,462.69	0.38	38.98	2,462.45	-4.96	-6.21	9.44	0.23	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,557.36	0.35	26.95	2,557.12	-4.42	-5.71	9.76	0.09	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,652.03	0.36	95.34	2,651.78	-4.13	-5.48	10.19	0.42	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,746.70	0.26	64.32	2,746.45	-4.01	-5.42	10.68	0.20	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,841.37	0.32	55.63	2,841.12	-3.71	-5.17	11.09	0.08	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	2,936.04	0.36	100.27	2,935.79	-3.55	-5.08	11.60	0.28	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,030.71	0.27	39.19	3,030.46	-3.38	-4.96	12.04	0.35	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,125.38	0.25	111.22	3,125.13	-3.24	-4.86	12.37	0.32	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,220.05	0.43	90.21	3,219.80	-3.24	-4.94	12.92	0.23	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,314.72	0.42	51.68	3,314.46	-2.95	-4.72	13.55	0.30	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,409.39	0.62	57.80	3,409.13	-2.38	-4.23	14.25	0.22	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,504.06	0.41	65.06	3,503.80	-1.87	-3.82	14.99	0.23	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,598.73	0.54	55.19	3,598.46	-1.39	-3.42	15.67	0.16	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,693.40	0.81	97.38	3,693.13	-1.09	-3.25	16.70	0.58	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,788.07	1.10	107.88	3,787.78	-1.26	-3.62	18.22	0.36	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,882.74	1.05	113.03	3,882.44	-1.66	-4.24	19.89	0.11	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	3,977.41	1.28	123.41	3,977.09	-2.36	-5.16	21.57	0.33	GYRO	VAUHGN ENERGY SERVICES
10/31/2...	4,072.08	1.38	148.64	4,071.73	-3.71	-6.71	23.04	0.62	GYRO	VAUHGN ENERGY SERVICES



Directional Survey

Sub-Division		County	Field Name		Region		State/Province			
DELAWARE BASIN		EDDY	PADUCA		DELAWARE BASIN WEST		NM			
Surface Legal Location			AP/WVI	Latitude (°)	Longitude (°)	Ground Elev. M.	Orig KB Elev. (ft)	Tubing Head Elevation (ft)		
Sec. 12S, 31E			3001542515	32° 9' 9.41" N	103° 43' 37.79" W	3,445.50	3,470.50			
Survey Data										
Date	MD (ftKB)	Ind. (°)	Azm. (°)	TVD (ftKB)	VS. (ft)	N/S (ft)	E/W (ft)	DLS (7/100ft)	Survey Tool	Survey Company
10/31/2...	4,166.75	1.22	146.53	4,166.38	5.37	-8.53	24.19	0.18	GYRO	VAUHG N ENERGY SERVICES
10/31/2...	4,261.42	1.44	143.29	4,261.02	6.98	-10.32	25.46	0.25	GYRO	VAUHG N ENERGY SERVICES
10/31/2...	4,322.00	1.36	134.91	4,321.59	7.97	-11.44	26.42	0.36	GYRO	VAUHG N ENERGY SERVICES
10/31/2...	4,448.00	1.30	144.60	4,447.55	9.93	-13.66	28.31	0.18	MWD	LEAM DRILLING SYSTEMS
10/31/2...	4,543.00	1.70	135.90	4,542.52	11.60	-15.55	29.92	0.48	MWD	LEAM DRILLING SYSTEMS
10/31/2...	4,637.00	2.60	129.40	4,636.45	13.60	-17.90	32.53	0.99	MWD	LEAM DRILLING SYSTEMS
10/31/2...	4,732.00	3.50	126.10	4,731.32	16.14	-20.98	36.54	0.96	MWD	LEAM DRILLING SYSTEMS
10/31/2...	4,826.00	4.30	123.30	4,825.10	19.06	-24.61	41.81	0.87	MWD	LEAM DRILLING SYSTEMS
10/31/2...	4,921.00	5.80	121.50	4,919.73	22.59	-29.07	48.88	1.59	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,016.00	7.00	117.80	5,014.13	26.58	-34.28	58.09	1.34	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,110.00	7.00	116.30	5,107.43	30.44	-39.49	68.29	0.19	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,205.00	6.90	116.80	5,201.73	34.22	-44.62	78.58	0.12	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,299.00	6.70	117.00	5,295.07	37.95	-49.66	88.50	0.21	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,394.00	6.10	119.40	5,389.48	41.71	-54.65	97.84	0.69	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,488.00	6.20	115.70	5,482.94	45.18	-59.31	106.76	0.43	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,583.00	6.10	113.40	5,577.39	48.19	-63.54	116.02	0.28	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,677.00	6.30	111.70	5,670.84	50.85	-67.43	125.39	0.29	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,772.00	6.30	114.00	5,765.27	53.64	-71.47	135.00	0.27	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,866.00	6.60	114.20	5,858.68	56.69	-75.79	144.64	0.32	MWD	LEAM DRILLING SYSTEMS
10/31/2...	5,961.00	6.10	115.40	5,953.09	59.84	-80.19	154.18	0.54	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,056.00	6.20	115.20	6,047.55	62.97	-84.54	163.38	0.11	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,150.00	6.10	112.60	6,141.00	65.84	-88.62	172.58	0.31	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,245.00	6.80	112.90	6,235.40	68.68	-92.75	182.42	0.74	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,339.00	6.50	116.60	6,328.77	71.93	-97.30	192.31	0.56	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,433.00	6.40	117.50	6,422.18	75.49	-102.10	201.71	0.15	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,527.00	6.70	116.10	6,515.56	79.06	-106.93	211.28	0.36	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,622.00	6.60	112.00	6,609.92	82.22	-111.41	221.32	0.51	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,716.00	6.40	111.70	6,703.32	84.89	-115.37	231.20	0.22	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,811.00	6.30	115.40	6,797.74	87.82	-119.57	240.82	0.44	MWD	LEAM DRILLING SYSTEMS
10/31/2...	6,906.00	5.40	114.50	6,892.24	90.75	-123.66	249.60	0.95	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,000.00	5.20	116.80	6,985.84	93.48	-127.41	257.43	0.31	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,095.00	4.20	117.10	7,080.52	96.09	-130.94	264.37	1.05	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,190.00	3.50	118.90	7,175.30	98.33	-133.92	270.00	0.75	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,284.00	2.60	123.10	7,269.17	100.31	-136.47	274.30	0.99	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,379.00	2.30	127.00	7,364.08	102.19	-138.80	277.63	0.36	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,473.00	1.60	131.00	7,458.03	103.85	-140.79	280.13	0.76	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,591.00	2.60	14.70	7,575.98	102.11	-139.29	282.05	3.06	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,622.00	6.10	6.60	7,606.89	99.77	-136.97	282.42	11.43	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,654.00	9.30	3.40	7,638.60	95.48	-132.70	282.77	10.09	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,686.00	12.60	1.50	7,670.01	89.43	-126.63	283.01	10.37	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,717.00	15.50	1.50	7,700.08	81.94	-119.10	283.21	9.35	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,749.00	18.50	5.20	7,730.68	72.62	-109.77	283.78	9.96	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,780.00	21.60	6.20	7,759.80	61.99	-99.20	284.84	10.06	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,812.00	25.10	6.70	7,789.17	49.31	-86.60	286.27	10.95	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,843.00	28.80	7.30	7,816.80	35.27	-72.65	287.99	11.97	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,875.00	32.30	6.70	7,844.35	19.00	-56.51	289.96	10.98	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,907.00	34.09	7.10	7,871.13	1.49	-39.12	292.07	5.64	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,938.00	37.00	7.80	7,896.35	16.53	-21.25	294.41	9.48	MWD	LEAM DRILLING SYSTEMS
10/31/2...	7,969.00	39.70	7.60	7,920.66	35.77	-2.19	296.99	8.72	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,000.00	43.10	7.80	7,943.91	56.26	18.12	299.73	10.98	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,031.00	46.60	7.60	7,965.88	78.12	39.78	302.66	11.30	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,063.00	49.10	7.50	7,987.36	101.84	63.30	305.78	7.82	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,095.00	51.00	6.70	8,007.90	126.37	87.64	308.81	6.24	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,126.00	53.00	7.30	8,026.99	150.80	111.88	311.79	6.63	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,158.00	55.60	6.40	8,045.66	176.78	137.68	314.88	8.44	MWD	LEAM DRILLING SYSTEMS



COTTON DRAW UNIT 173H

DELAWARE BASIN UNRESTRICTED

Directional Survey

Sub-Division	County	Field Name	Region	State/Province		
DELAWARE BASIN	EDDY	PADUCA	DELAWARE BASIN WEST	NM		
Surface Legal Location	API/UM	Latitude (°)	Longitude (°)	Ground Elev M	Orig KB Elev (ft)	Tubing Head Elevation (ft)
Sec: 1 25S 31E	3001542515	32° 9' 9.41" N	103° 43' 37.79" W	3,445.50	3,470.50	

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/1000)	Survey Tool	Survey Company
10/31/2...	8,190.00	58.50	6.60	8,063.06	203.63	164.36	317.92	9.08	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,221.00	61.40	6.00	8,078.59	230.46	191.03	320.86	9.50	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,253.00	64.50	6.20	8,093.14	258.95	219.36	323.89	9.70	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,285.00	67.10	6.70	8,106.25	288.13	248.36	327.17	8.25	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,316.00	69.60	8.00	8,117.69	316.94	276.94	330.86	8.96	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,348.00	71.80	8.00	8,128.27	347.13	306.84	335.06	6.88	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,379.00	74.30	8.20	8,137.30	376.78	336.20	339.24	8.09	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,411.00	77.20	8.50	8,145.18	407.79	366.88	343.75	9.11	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,442.00	79.70	8.20	8,151.38	438.16	396.93	348.16	8.12	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,474.00	82.70	7.50	8,156.28	469.77	428.25	352.47	9.62	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,505.00	85.00	6.20	8,159.60	500.59	458.85	356.15	8.51	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,536.00	87.60	5.50	8,161.60	531.51	489.62	359.30	8.68	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,568.00	89.70	4.60	8,162.36	563.48	521.49	362.12	7.14	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,631.00	90.80	3.90	8,162.08	626.38	584.31	366.79	2.07	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,725.00	87.80	0.20	8,163.23	719.95	678.22	370.15	5.07	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,820.00	90.90	3.10	8,164.31	814.45	773.15	372.88	4.47	MWD	LEAM DRILLING SYSTEMS
10/31/2...	8,915.00	91.40	2.50	8,162.40	909.14	868.02	377.52	0.82	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,010.00	90.80	1.30	8,160.58	1,003.69	962.95	380.67	1.41	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,105.00	91.20	1.50	8,158.92	1,098.16	1,057.90	382.99	0.47	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,199.00	87.80	358.80	8,159.74	1,191.40	1,151.88	383.24	4.62	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,294.00	91.70	3.60	8,160.15	1,285.81	1,246.81	385.23	6.51	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,389.00	91.10	3.60	8,157.83	1,380.58	1,341.59	391.19	0.63	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,484.00	90.70	4.30	8,156.34	1,475.40	1,436.35	397.74	0.85	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,579.00	89.80	4.80	8,155.93	1,570.28	1,531.05	405.27	1.08	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,674.00	88.90	4.50	8,157.00	1,665.17	1,625.73	412.97	1.00	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,768.00	89.90	5.50	8,157.99	1,759.08	1,719.37	421.17	1.50	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,863.00	89.60	5.30	8,158.40	1,854.03	1,813.94	430.11	0.38	MWD	LEAM DRILLING SYSTEMS
10/31/2...	9,957.00	90.30	5.30	8,158.48	1,947.97	1,907.54	438.79	0.74	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,051.00	91.70	5.70	8,156.84	2,041.90	2,001.09	447.80	1.55	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,145.00	90.80	5.20	8,154.79	2,135.83	2,094.64	456.72	1.10	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,241.00	92.00	5.20	8,152.45	2,231.73	2,190.22	465.42	1.25	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,336.00	91.50	5.20	8,149.55	2,326.62	2,284.78	474.03	0.53	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,430.00	89.40	4.50	8,148.81	2,420.52	2,378.44	481.97	2.35	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,524.00	88.50	3.40	8,150.53	2,514.34	2,472.20	488.45	1.51	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,618.00	89.30	3.20	8,152.34	2,608.09	2,566.02	493.86	0.88	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,713.00	88.00	3.10	8,154.57	2,702.81	2,660.85	499.08	1.37	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,807.00	89.20	3.80	8,156.87	2,796.56	2,754.65	504.73	1.48	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,902.00	87.90	3.20	8,159.27	2,891.31	2,849.44	510.53	1.51	MWD	LEAM DRILLING SYSTEMS
10/31/2...	10,998.00	87.60	1.70	8,163.04	2,986.89	2,945.27	514.63	1.59	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,092.00	89.00	2.50	8,165.83	3,080.45	3,039.17	518.07	1.72	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,187.00	89.20	1.30	8,167.32	3,175.01	3,134.10	521.22	1.28	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,282.00	91.30	5.00	8,166.91	3,269.73	3,228.94	526.44	4.48	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,376.00	90.50	4.30	8,165.43	3,363.62	3,322.61	534.06	1.13	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,470.00	90.00	3.10	8,165.02	3,457.42	3,416.41	540.12	1.38	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,566.00	90.90	3.80	8,164.35	3,543.22	3,502.25	545.30	1.33	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,661.00	90.90	2.50	8,162.70	3,647.93	3,607.08	551.07	1.24	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,845.00	91.50	2.50	8,158.84	3,831.23	3,790.86	559.09	0.33	MWD	LEAM DRILLING SYSTEMS
10/31/2...	11,948.00	89.60	2.00	8,157.86	3,933.81	3,893.78	563.14	1.91	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,043.00	90.10	3.20	8,158.10	4,028.48	3,998.67	567.45	1.37	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,138.00	87.50	3.80	8,160.09	4,123.24	4,083.47	573.24	2.81	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,234.00	88.60	4.50	8,163.36	4,219.04	4,179.16	580.19	1.36	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,329.00	88.60	3.80	8,165.68	4,313.86	4,273.88	587.06	0.74	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,424.00	90.00	3.90	8,166.84	4,408.67	4,368.66	593.44	1.48	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,519.00	88.50	4.30	8,168.09	4,503.51	4,463.40	600.23	1.63	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,614.00	89.30	4.60	8,169.91	4,598.37	4,558.10	607.60	0.90	MWD	LEAM DRILLING SYSTEMS



Directional Survey

Sub-Division	County	Field Name	Region	State/Province		
DELAWARE BASIN	EDDY	PADUCA	DELAWARE BASIN WEST	NM		
Surface Legal Location	API No.	Latitude (°)	Longitude (°)	Ground Elev. M.	Orig KB Elev. (ft)	Tubing Head Elevation (ft)
Sec. 1-25S-31E	2001542515	32° 9' 9.41" N	103° 43' 37.79" W	3,445.50	3,470.50	

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
10/31/2...	12,710.00	90.00	5.30	8,170.50	4,694.29	4,653.74	615.88	1.03	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,753.00	90.00	5.50	8,170.50	4,737.26	4,696.55	619.93	0.47	MWD	LEAM DRILLING SYSTEMS
10/31/2...	12,811.00	90.00	5.50	8,170.50	4,795.23	4,754.28	625.49	0.00	BIT	LEAM DRILLING SYSTEMS