



Railroad Commission of Texas
Oil and Gas Division
P.O. Box 12967
Capitol Station
Austin, TX 78711

May 18, 2016

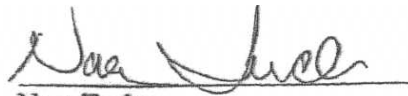
Attn: Pam Johns

RE: Pioneer Natural Resources
University 7- 43 #28H (OH)
Andrews County, Texas
API #: 42-003-47294

Enclosed, please find the original and one copy of the survey performed on the referenced well by LEAM Drilling Systems, LLC. (P-5 No. 491647). Other information required by your office is as follows:

<u>Name & Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Randy W. Rakowitz	(OH)	0' – 20,165'	02/08/16 – 03/30/16	MWD

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.


Nora Tucker
Well Planner

Enclosures

LEAM Drilling Systems LLC

Survey Report

Company:	PIONEER NATURAL RESOURCES	Local Co-ordinate Reference:	Well 28H
Project:	Andrews County, TX	TVD Reference:	GE 2960.00' + KB 29.00' @ 2989.00usft (Patterson 802)
Site:	University 7-43	MD Reference:	GE 2960.00' + KB 29.00' @ 2989.00usft (Patterson 802)
Well:	28H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Project	Andrews County, TX		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas Central 4203		

Site		University 7-43,			
Site Position:		Northing:	981,655.23 usft	Latitude:	32° 21' 5.060 N
From:	Map	Easting:	1,404,840.76 usft	Longitude:	102° 15' 36.847 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.99 °

Well	28H					
Well Position	+N/-S	0.00 usft	Northing:	981,840.30 usft	Latitude:	32° 21' 7.204 N
	+E/-W	0.00 usft	Easting:	1,406,675.50 usft	Longitude:	102° 15' 15.504 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	2,960.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	03/14/16	6.48	60.25	48,073

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	166.46	

Survey Program	Date	05/18/16			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
218.00	6,042.00	Survey #1 (OH)	LEAM MWD	MWD - Standard	
6,111.00	20,097.00	Survey #2 (OH)	MWD+IFR+MS	MWD + IFR + Multi Station	
20,165.00	20,165.00	Survey #3 (OH)	Project	Projection	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
218.00	0.50	317.20	218.00	0.70	-0.65	-0.83	0.23	0.23	0.00	
307.00	0.40	345.60	306.99	1.28	-0.99	-1.48	0.27	-0.11	31.91	
398.00	0.50	343.40	397.99	1.97	-1.18	-2.19	0.11	0.11	-2.42	
493.00	0.40	1.20	492.99	2.70	-1.29	-2.93	0.18	-0.11	18.74	
584.00	0.50	0.40	583.99	3.42	-1.28	-3.62	0.11	0.11	-0.88	
674.00	0.50	8.40	673.98	4.20	-1.22	-4.37	0.08	0.00	8.89	

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Survey									
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768.00	0.40	22.20	767.98	4.91	-1.04	-5.01	0.16	-0.11	14.68
862.00	0.50	12.10	861.98	5.61	-0.83	-5.65	0.14	0.11	-10.74
955.00	0.50	33.70	954.97	6.35	-0.52	-6.29	0.20	0.00	23.23
1,049.00	0.70	35.20	1,048.97	7.16	0.04	-6.95	0.21	0.21	1.60
1,143.00	0.40	59.40	1,142.96	7.79	0.65	-7.42	0.40	-0.32	25.74
1,237.00	0.10	124.30	1,236.96	7.91	1.00	-7.46	0.39	-0.32	69.04
1,330.00	0.30	176.00	1,329.96	7.62	1.09	-7.16	0.27	0.22	55.59
1,424.00	0.30	174.50	1,423.96	7.13	1.13	-6.67	0.01	0.00	-1.60
1,518.00	0.30	203.80	1,517.96	6.66	1.05	-6.23	0.16	0.00	31.17
1,612.00	0.20	180.80	1,611.96	6.27	0.95	-5.88	0.15	-0.11	-24.47
1,706.00	0.20	164.90	1,705.96	5.95	0.99	-5.55	0.06	0.00	-16.91
1,799.00	0.20	106.00	1,798.96	5.75	1.19	-5.31	0.21	0.00	-63.33
1,864.00	0.10	45.90	1,863.96	5.76	1.34	-5.28	0.27	-0.15	-92.46
1,987.00	0.10	97.50	1,986.96	5.82	1.52	-5.30	0.07	0.00	41.95
2,080.00	0.40	113.80	2,079.96	5.68	1.90	-5.07	0.33	0.32	17.53
2,174.00	1.10	331.50	2,173.95	6.34	1.77	-5.75	1.53	0.74	-151.38
2,268.00	1.80	326.00	2,267.92	8.36	0.52	-8.00	0.76	0.74	-5.85
2,361.00	1.60	326.50	2,360.88	10.65	-1.02	-10.59	0.22	-0.22	0.54
2,455.00	1.50	325.00	2,454.85	12.75	-2.45	-12.97	0.11	-0.11	-1.60
2,549.00	1.50	329.70	2,548.81	14.82	-3.77	-15.29	0.13	0.00	5.00
2,642.00	1.20	332.70	2,641.79	16.74	-4.84	-17.40	0.33	-0.32	3.23
2,736.00	1.10	339.10	2,735.77	18.45	-5.61	-19.26	0.17	-0.11	6.81
2,830.00	2.30	324.80	2,829.73	20.84	-7.02	-21.90	1.34	1.28	-15.21
2,924.00	4.80	332.30	2,923.54	25.86	-9.93	-27.47	2.70	2.66	7.98
3,018.00	7.00	336.00	3,017.04	34.58	-14.09	-36.92	2.37	2.34	3.94
3,111.00	9.10	335.20	3,109.11	46.43	-19.48	-49.70	2.26	2.26	-0.86
3,205.00	11.20	338.60	3,201.64	61.68	-25.93	-66.04	2.32	2.23	3.62
3,299.00	12.40	338.60	3,293.65	79.58	-32.95	-85.08	1.28	1.28	0.00
3,392.00	12.80	338.00	3,384.41	98.43	-40.45	-105.16	0.45	0.43	-0.65
3,486.00	12.80	338.50	3,476.07	117.77	-48.17	-125.78	0.12	0.00	0.53
3,580.00	14.00	338.00	3,567.51	138.00	-56.24	-147.33	1.28	1.28	-0.53
3,674.00	14.30	338.10	3,658.66	159.32	-64.83	-170.07	0.32	0.32	0.11
3,768.00	14.10	338.90	3,749.79	180.77	-73.28	-192.90	0.30	-0.21	0.85
3,861.00	13.80	339.30	3,840.05	201.71	-81.28	-215.14	0.34	-0.32	0.43
3,955.00	13.70	339.80	3,931.35	222.65	-89.09	-237.32	0.17	-0.11	0.53
4,049.00	13.70	341.60	4,022.68	243.66	-96.45	-259.47	0.45	0.00	1.91
4,080.00	13.76	340.50	4,052.79	250.62	-98.84	-266.79	0.86	0.20	-3.54
100' HL Crossing @ 4080.00' MD									
4,143.00	13.90	338.30	4,113.97	264.71	-104.13	-281.73	0.86	0.22	-3.49
4,236.00	14.10	337.40	4,204.20	285.55	-112.62	-303.98	0.32	0.22	-0.97
4,330.00	13.70	338.20	4,295.45	306.45	-121.15	-326.30	0.47	-0.43	0.85
4,424.00	13.50	339.50	4,386.82	327.07	-129.13	-348.21	0.39	-0.21	1.38

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Survey										
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4,517.00	13.90	336.00	4,477.17	347.44	-137.47	-369.97	0.99	0.43	-3.76	
4,611.00	13.70	335.30	4,568.46	367.87	-146.72	-391.99	0.28	-0.21	-0.74	
4,704.00	13.10	336.80	4,658.93	387.56	-155.47	-413.19	0.75	-0.65	1.61	
4,798.00	12.60	335.30	4,750.57	406.67	-163.95	-433.75	0.64	-0.53	-1.60	
4,892.00	13.50	335.10	4,842.14	425.93	-172.86	-454.56	0.96	0.96	-0.21	
4,985.00	14.00	337.30	4,932.48	446.16	-181.77	-476.31	0.78	0.54	2.37	
5,079.00	13.50	337.60	5,023.78	466.79	-190.34	-498.38	0.54	-0.53	0.32	
5,173.00	13.30	338.10	5,115.23	486.97	-198.55	-519.92	0.25	-0.21	0.53	
5,266.00	13.10	338.00	5,205.77	506.66	-206.49	-540.93	0.22	-0.22	-0.11	
5,360.00	12.90	336.70	5,297.36	526.18	-214.63	-561.80	0.38	-0.21	-1.38	
5,453.00	13.00	336.80	5,387.99	545.33	-222.86	-582.35	0.11	0.11	0.11	
5,547.00	12.10	340.60	5,479.75	564.34	-230.29	-602.57	1.30	-0.96	4.04	
5,641.00	11.70	340.60	5,571.73	582.62	-236.73	-621.85	0.43	-0.43	0.00	
5,735.00	9.80	341.70	5,664.07	599.21	-242.41	-639.31	2.03	-2.02	1.17	
5,828.00	9.40	342.80	5,755.77	613.98	-247.14	-654.78	0.47	-0.43	1.18	
5,922.00	8.80	338.30	5,848.59	627.99	-252.07	-669.55	0.99	-0.64	-4.79	
6,016.00	8.10	339.60	5,941.57	640.88	-257.04	-683.25	0.77	-0.74	1.38	
6,042.00	7.90	340.50	5,967.32	644.28	-258.27	-686.84	0.91	-0.77	3.46	
6,111.00	7.70	340.10	6,035.68	653.10	-261.43	-696.15	0.30	-0.29	-0.58	
6,205.00	6.10	341.10	6,128.99	663.74	-265.19	-707.38	1.71	-1.70	1.06	
6,299.00	3.90	348.00	6,222.63	671.60	-267.47	-715.55	2.42	-2.34	7.34	
6,392.00	1.50	359.90	6,315.52	675.91	-268.13	-719.90	2.64	-2.58	12.80	
6,486.00	1.00	10.30	6,409.50	677.95	-267.99	-721.85	0.58	-0.53	11.06	
6,580.00	1.00	9.10	6,503.48	679.56	-267.71	-723.35	0.02	0.00	-1.28	
6,674.00	0.70	271.00	6,597.48	680.38	-268.16	-724.26	1.38	-0.32	-104.36	
6,767.00	0.70	256.20	6,690.47	680.26	-269.28	-724.40	0.19	0.00	-15.91	
6,861.00	0.60	252.90	6,784.46	679.98	-270.30	-724.36	0.11	-0.11	-3.51	
6,955.00	0.50	241.60	6,878.46	679.64	-271.14	-724.23	0.16	-0.11	-12.02	
7,049.00	0.40	227.40	6,972.46	679.22	-271.74	-723.96	0.16	-0.11	-15.11	
7,142.00	0.50	223.00	7,065.45	678.70	-272.25	-723.58	0.11	0.11	-4.73	
7,236.00	0.50	187.10	7,159.45	678.00	-272.58	-722.97	0.33	0.00	-38.19	
7,330.00	0.50	158.50	7,253.45	677.21	-272.48	-722.18	0.26	0.00	-30.43	
7,424.00	0.40	165.90	7,347.45	676.51	-272.25	-721.45	0.12	-0.11	7.87	
7,517.00	0.60	168.00	7,440.44	675.72	-272.07	-720.63	0.22	0.22	2.26	
7,611.00	0.60	170.60	7,534.44	674.75	-271.89	-719.65	0.03	0.00	2.77	
7,705.00	1.00	202.10	7,628.43	673.50	-272.12	-718.49	0.62	0.43	33.51	
7,799.00	1.40	236.40	7,722.41	672.11	-273.38	-717.43	0.86	0.43	36.49	
7,892.00	1.10	303.00	7,815.39	671.97	-275.08	-717.69	1.50	-0.32	71.61	
7,986.00	1.10	316.70	7,909.37	673.11	-276.45	-719.13	0.28	0.00	14.57	
8,080.00	1.10	54.60	8,003.36	674.29	-276.34	-720.25	1.76	0.00	104.15	
8,173.00	1.90	92.40	8,096.33	674.75	-274.07	-720.16	1.32	0.86	40.65	
8,267.00	0.70	91.20	8,190.31	674.67	-271.94	-719.58	1.28	-1.28	-1.28	

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8,361.00	0.40	108.00	8,284.30	674.55	-271.05	-719.27	0.36	-0.32	17.87	
8,455.00	0.80	123.50	8,378.30	674.09	-270.19	-718.61	0.46	0.43	16.49	
8,548.00	0.70	137.60	8,471.29	673.31	-269.27	-717.64	0.22	-0.11	15.16	
8,642.00	1.50	179.10	8,565.27	671.66	-268.86	-715.94	1.15	0.85	44.15	
8,736.00	0.90	180.10	8,659.25	669.69	-268.84	-714.02	0.64	-0.64	1.06	
8,829.00	0.90	186.40	8,752.24	668.23	-268.93	-712.62	0.11	0.00	6.77	
8,884.00	0.90	174.10	8,807.23	667.38	-268.93	-711.79	0.35	0.00	-22.36	
8,947.00	1.30	162.76	8,870.22	666.20	-268.67	-710.59	0.72	0.63	-18.00	
KOP @ 8947.00' MD										
9,041.00	11.80	150.33	8,963.48	656.80	-263.58	-700.26	11.21	11.17	-13.22	
9,134.00	21.20	157.19	9,052.56	632.99	-252.33	-674.47	10.31	10.11	7.38	
9,228.00	29.80	162.57	9,137.33	594.96	-238.71	-634.31	9.47	9.15	5.72	
9,321.00	37.00	157.10	9,214.94	547.06	-220.88	-583.56	8.38	7.74	-5.88	
9,415.00	44.10	163.31	9,286.35	489.57	-200.44	-522.89	8.68	7.55	6.61	
9,509.00	51.00	172.65	9,349.83	421.85	-186.34	-453.76	10.36	7.34	9.94	
9,603.00	59.60	167.36	9,403.32	345.89	-172.77	-376.73	10.25	9.15	-5.63	
9,697.00	67.20	166.52	9,445.38	264.08	-153.77	-292.74	8.12	8.09	-0.89	
9,726.00	71.65	167.54	9,455.56	237.63	-147.68	-265.60	15.71	15.36	3.52	
100' HL Crossing @ 9726.00' MD										
9,790.00	81.50	169.63	9,470.40	176.69	-135.40	-203.47	15.71	15.38	3.27	
9,884.00	89.00	168.48	9,478.18	84.78	-117.62	-109.96	8.07	7.98	-1.22	
Landing Pt @ 9884.00' MD										
9,978.00	88.10	165.63	9,480.56	-6.79	-96.57	-16.01	3.18	-0.96	-3.03	
10,072.00	89.20	166.47	9,482.78	-97.99	-73.92	77.96	1.47	1.17	0.89	
10,166.00	89.80	167.29	9,483.60	-189.53	-52.58	171.95	1.08	0.64	0.87	
10,259.00	88.90	165.04	9,484.65	-279.82	-30.34	264.94	2.61	-0.97	-2.42	
10,353.00	87.80	163.27	9,487.36	-370.21	-4.69	358.82	2.22	-1.17	-1.88	
10,447.00	86.70	164.79	9,491.87	-460.47	21.14	452.62	1.99	-1.17	1.62	
10,541.00	87.30	166.47	9,496.79	-551.40	44.44	546.48	1.90	0.64	1.79	
10,634.00	88.10	166.89	9,500.52	-641.83	65.85	639.40	0.97	0.86	0.45	
10,728.00	89.10	167.35	9,502.82	-733.43	86.79	733.37	1.17	1.06	0.49	
10,822.00	89.10	166.54	9,504.29	-824.99	108.02	827.35	0.86	0.00	-0.86	
10,916.00	90.00	166.59	9,505.03	-916.42	129.86	921.35	0.96	0.96	0.05	
11,010.00	90.80	166.06	9,504.38	-1,007.75	152.08	1,015.35	1.02	0.85	-0.56	
11,103.00	90.20	163.68	9,503.57	-1,097.51	176.35	1,108.30	2.64	-0.65	-2.56	
11,197.00	88.50	164.35	9,504.63	-1,187.87	202.24	1,202.20	1.94	-1.81	0.71	
11,291.00	89.20	167.31	9,506.52	-1,278.98	225.24	1,296.17	3.24	0.74	3.15	
11,384.00	91.00	168.58	9,506.36	-1,369.92	244.66	1,389.13	2.37	1.94	1.37	
11,478.00	92.00	168.31	9,503.90	-1,461.99	263.49	1,483.04	1.10	1.06	-0.29	
11,572.00	91.40	166.54	9,501.11	-1,553.69	283.94	1,576.98	1.99	-0.64	-1.88	
11,665.00	92.10	165.90	9,498.27	-1,643.97	306.08	1,669.94	1.02	0.75	-0.69	
11,759.00	92.40	165.14	9,494.58	-1,734.91	329.57	1,763.85	0.87	0.32	-0.81	
11,853.00	91.30	164.53	9,491.54	-1,825.59	354.15	1,857.76	1.34	-1.17	-0.65	

LEAM Drilling Systems LLC

Survey Report

Company:	PIONEER NATURAL RESOURCES	Local Co-ordinate Reference:	Well 28H
Project:	Andrews County, TX	TVD Reference:	GE 2960.00' + KB 29.00' @ 2989.00usft (Patterson 802)
Site:	University 7-43	MD Reference:	GE 2960.00' + KB 29.00' @ 2989.00usft (Patterson 802)
Well:	28H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,947.00	88.70	163.38	9,491.54	-1,915.92	380.12	1,951.66	3.02	-2.77	-1.22
12,041.00	89.80	166.36	9,492.77	-2,006.64	404.65	2,045.61	3.38	1.17	3.17
12,134.00	89.80	166.48	9,493.10	-2,097.04	426.49	2,138.61	0.13	0.00	0.13
12,228.00	88.80	163.45	9,494.25	-2,187.80	450.87	2,232.55	3.39	-1.06	-3.22
12,322.00	90.00	165.36	9,495.23	-2,278.33	476.14	2,326.48	2.40	1.28	2.03
12,416.00	91.50	167.35	9,494.00	-2,369.66	498.31	2,420.47	2.65	1.60	2.12
12,509.00	91.30	165.58	9,491.73	-2,460.05	520.07	2,513.44	1.91	-0.22	-1.90
12,603.00	89.50	164.88	9,491.07	-2,550.94	544.03	2,607.41	2.05	-1.91	-0.74
12,697.00	89.20	163.59	9,492.14	-2,641.39	569.57	2,701.33	1.41	-0.32	-1.37
12,791.00	89.80	165.57	9,492.96	-2,732.00	594.56	2,795.27	2.20	0.64	2.11
12,884.00	91.10	166.55	9,492.23	-2,822.25	616.96	2,888.26	1.75	1.40	1.05
12,978.00	90.90	165.59	9,490.59	-2,913.48	639.59	2,982.24	1.04	-0.21	-1.02
13,072.00	89.30	163.99	9,490.42	-3,004.18	664.25	3,076.20	2.41	-1.70	-1.70
13,166.00	90.50	166.43	9,490.59	-3,095.05	688.24	3,170.17	2.89	1.28	2.60
13,260.00	91.90	166.90	9,488.62	-3,186.50	709.92	3,264.14	1.57	1.49	0.50
13,353.00	90.90	164.90	9,486.35	-3,276.66	732.56	3,357.10	2.40	-1.08	-2.15
13,447.00	91.40	166.19	9,484.46	-3,367.67	756.02	3,451.07	1.47	0.53	1.37
13,541.00	91.10	165.94	9,482.41	-3,458.88	778.65	3,545.05	0.42	-0.32	-0.27
13,634.00	88.40	163.40	9,482.81	-3,548.55	803.24	3,637.98	3.99	-2.90	-2.73
13,725.00	87.20	162.83	9,486.31	-3,635.56	829.65	3,728.76	1.46	-1.32	-0.63
13,815.00	85.60	163.54	9,491.96	-3,721.54	855.63	3,818.43	1.94	-1.78	0.79
13,904.00	85.90	166.51	9,498.56	-3,807.27	878.56	3,907.15	3.34	0.34	3.34
13,995.00	87.50	168.55	9,503.79	-3,895.97	898.18	3,997.97	2.85	1.76	2.24
14,085.00	88.10	168.76	9,507.25	-3,984.15	915.87	4,087.84	0.71	0.67	0.23
14,175.00	91.50	169.57	9,507.56	-4,072.53	932.78	4,177.73	3.88	3.78	0.90
14,266.00	90.10	166.92	9,506.29	-4,161.60	951.32	4,268.66	3.29	-1.54	-2.91
14,360.00	89.60	168.83	9,506.54	-4,253.50	971.06	4,362.63	2.10	-0.53	2.03
14,454.00	91.50	171.06	9,505.64	-4,346.04	987.47	4,456.44	3.12	2.02	2.37
14,547.00	93.10	170.59	9,501.90	-4,437.77	1,002.29	4,549.09	1.79	1.72	-0.51
14,641.00	93.00	167.76	9,496.90	-4,529.96	1,019.92	4,642.85	3.01	-0.11	-3.01
14,735.00	92.80	166.66	9,492.15	-4,621.51	1,040.70	4,736.72	1.19	-0.21	-1.17
14,829.00	92.10	165.29	9,488.13	-4,712.62	1,063.46	4,830.62	1.64	-0.74	-1.46
14,923.00	91.40	163.51	9,485.26	-4,803.11	1,088.72	4,924.51	2.03	-0.74	-1.89
14,948.00	90.74	163.57	9,484.79	-4,827.08	1,095.80	4,949.48	2.67	-2.66	0.24
SL Crossing: 14948.00' MD; 9484.79' TVD									
15,017.00	88.90	163.74	9,485.01	-4,893.29	1,115.22	5,018.39	2.67	-2.66	0.24
15,110.00	91.70	166.49	9,484.52	-4,983.15	1,139.11	5,111.35	4.22	3.01	2.96
15,204.00	91.10	166.00	9,482.23	-5,074.43	1,161.45	5,205.32	0.82	-0.64	-0.52
15,298.00	90.20	164.98	9,481.16	-5,165.42	1,185.00	5,299.30	1.45	-0.96	-1.09
15,392.00	90.10	165.38	9,480.91	-5,256.29	1,209.04	5,393.27	0.44	-0.11	0.43
15,485.00	87.80	162.68	9,482.62	-5,345.68	1,234.62	5,486.16	3.81	-2.47	-2.90
15,579.00	88.70	164.98	9,485.49	-5,435.91	1,260.78	5,580.01	2.63	0.96	2.45

LEAM Drilling Systems LLC

Survey Report

Company:	PIONEER NATURAL RESOURCES	Local Co-ordinate Reference:	Well 28H
Project:	Andrews County, TX	TVD Reference:	GE 2960.00' + KB 29.00' @ 2989.00usft (Patterson 802)
Site:	University 7-43	MD Reference:	GE 2960.00' + KB 29.00' @ 2989.00usft (Patterson 802)
Well:	28H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
15,673.00	88.50	165.50	9,487.79	-5,526.78	1,284.73	5,673.96	0.59	-0.21	0.55	
15,767.00	88.20	165.51	9,490.49	-5,617.75	1,308.24	5,767.91	0.32	-0.32	0.01	
15,860.00	92.20	166.48	9,490.17	-5,707.97	1,330.75	5,860.88	4.43	4.30	1.04	
15,954.00	90.40	164.92	9,488.04	-5,799.02	1,353.96	5,954.84	2.53	-1.91	-1.66	
16,048.00	91.50	166.25	9,486.48	-5,890.05	1,377.35	6,048.81	1.84	1.17	1.41	
16,142.00	90.20	164.43	9,485.08	-5,980.97	1,401.14	6,142.78	2.38	-1.38	-1.94	
16,235.00	91.70	166.69	9,483.54	-6,071.01	1,424.33	6,235.75	2.92	1.61	2.43	
16,329.00	91.80	166.53	9,480.67	-6,162.41	1,446.08	6,329.70	0.20	0.11	-0.17	
16,423.00	90.70	166.43	9,478.62	-6,253.79	1,468.05	6,423.68	1.18	-1.17	-0.11	
16,517.00	93.50	168.71	9,475.17	-6,345.51	1,488.27	6,517.58	3.84	2.98	2.43	
16,611.00	90.00	165.23	9,472.30	-6,437.01	1,509.45	6,611.51	5.25	-3.72	-3.70	
16,704.00	90.00	165.66	9,472.30	-6,527.03	1,532.82	6,704.49	0.46	0.00	0.46	
16,798.00	91.60	166.97	9,470.99	-6,618.35	1,555.06	6,798.48	2.20	1.70	1.39	
16,892.00	93.10	168.37	9,467.14	-6,710.10	1,575.11	6,892.37	2.18	1.60	1.49	
16,986.00	91.90	168.11	9,463.04	-6,802.03	1,594.25	6,986.24	1.31	-1.28	-0.28	
17,080.00	92.20	169.39	9,459.67	-6,894.17	1,612.58	7,080.10	1.40	0.32	1.36	
17,173.00	92.50	169.56	9,455.86	-6,985.52	1,629.55	7,172.89	0.37	0.32	0.18	
17,267.00	91.10	166.45	9,452.91	-7,077.41	1,649.08	7,266.80	3.63	-1.49	-3.31	
17,361.00	89.50	163.71	9,452.42	-7,168.23	1,673.28	7,360.76	3.38	-1.70	-2.91	
17,454.00	92.00	165.52	9,451.20	-7,257.88	1,697.95	7,453.69	3.32	2.69	1.95	
17,548.00	93.90	165.13	9,446.36	-7,348.69	1,721.73	7,547.54	2.06	2.02	-0.41	
17,642.00	90.40	164.20	9,442.83	-7,439.26	1,746.56	7,641.41	3.85	-3.72	-0.99	
17,736.00	94.40	165.73	9,438.90	-7,529.94	1,770.92	7,735.28	4.56	4.26	1.63	
17,829.00	93.50	164.27	9,432.49	-7,619.56	1,794.94	7,828.02	1.84	-0.97	-1.57	
17,946.00	90.00	163.10	9,428.92	-7,731.77	1,827.78	7,944.81	3.15	-2.99	-1.00	
18,040.00	89.60	165.86	9,429.25	-7,822.34	1,852.93	8,038.75	2.97	-0.43	2.94	
18,134.00	89.80	166.55	9,429.74	-7,913.62	1,875.35	8,132.74	0.76	0.21	0.73	
18,227.00	89.80	165.41	9,430.06	-8,003.85	1,897.88	8,225.74	1.23	0.00	-1.23	
18,321.00	89.50	165.55	9,430.64	-8,094.85	1,921.44	8,319.72	0.35	-0.32	0.15	
18,415.00	91.70	165.76	9,429.65	-8,185.91	1,944.73	8,413.70	2.35	2.34	0.22	
18,508.00	94.10	166.05	9,424.95	-8,275.98	1,967.35	8,506.57	2.60	2.58	0.31	
18,601.00	89.60	165.32	9,421.95	-8,366.03	1,990.33	8,599.49	4.90	-4.84	-0.78	
18,695.00	90.30	164.93	9,422.03	-8,456.87	2,014.46	8,693.46	0.85	0.74	-0.41	
18,788.00	92.00	166.54	9,420.16	-8,546.98	2,037.37	8,786.43	2.52	1.83	1.73	
18,882.00	91.30	166.71	9,417.46	-8,638.39	2,059.10	8,880.39	0.77	-0.74	0.18	
18,976.00	91.60	165.06	9,415.08	-8,729.52	2,082.02	8,974.35	1.78	0.32	-1.76	
19,070.00	93.40	164.73	9,410.98	-8,820.19	2,106.49	9,068.22	1.95	1.91	-0.35	
19,163.00	93.30	164.98	9,405.54	-8,909.80	2,130.74	9,161.03	0.29	-0.11	0.27	
19,257.00	90.10	165.34	9,402.76	-9,000.62	2,154.80	9,254.95	3.43	-3.40	0.38	
19,351.00	89.30	165.23	9,403.25	-9,091.53	2,178.68	9,348.93	0.86	-0.85	-0.12	
19,445.00	89.90	164.99	9,403.90	-9,182.37	2,202.84	9,442.90	0.69	0.64	-0.26	
19,538.00	90.20	164.24	9,403.82	-9,272.04	2,227.51	9,535.85	0.87	0.32	-0.81	

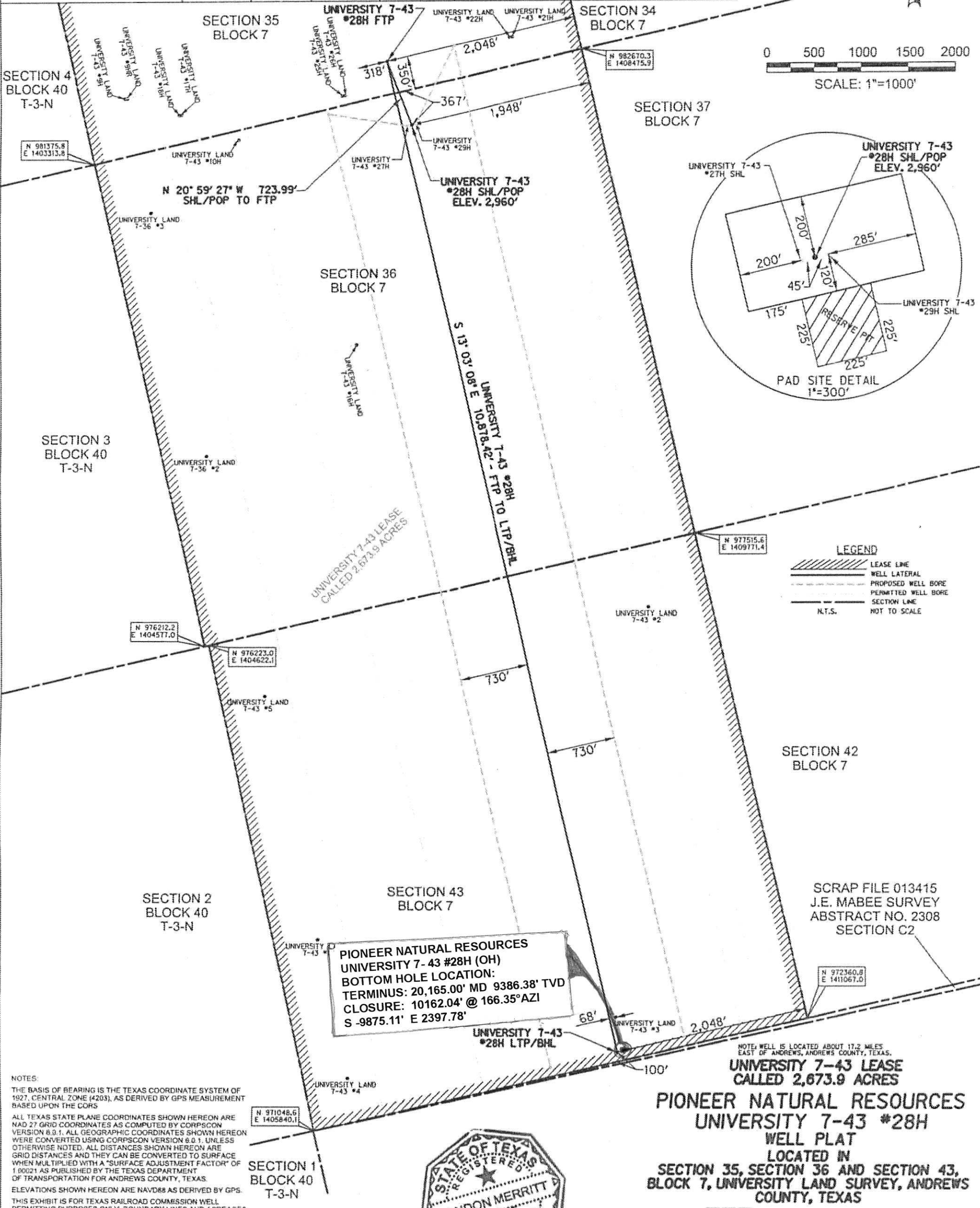
LEAM Drilling Systems LLC

Survey Report

Company:	PIONEER NATURAL RESOURCES	Local Co-ordinate Reference:	Well 28H
Project:	Andrews County, TX	TVD Reference:	GE 2960.00' + KB 29.00' @ 2989.00usft (Patterson 802)
Site:	University 7-43	MD Reference:	GE 2960.00' + KB 29.00' @ 2989.00usft (Patterson 802)
Well:	28H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
19,632.00	90.20	163.79	9,403.49	-9,362.40	2,253.39	9,629.76	0.48	0.00	-0.48	
19,725.00	91.10	164.88	9,402.44	-9,451.94	2,278.50	9,722.69	1.52	0.97	1.17	
19,819.00	92.60	165.19	9,399.40	-9,542.70	2,302.76	9,816.61	1.63	1.60	0.33	
19,913.00	91.80	164.83	9,395.80	-9,633.43	2,327.06	9,910.51	0.93	-0.85	-0.38	
20,007.00	92.00	163.89	9,392.68	-9,723.90	2,352.39	10,004.39	1.02	0.21	-1.00	
20,097.00	92.40	163.05	9,389.22	-9,810.12	2,377.97	10,094.21	1.03	0.44	-0.93	
20,165.00	92.40	163.05	9,386.38	-9,875.11	2,397.78	10,162.03	0.00	0.00	0.00	
Projection										

UNIVERSITY 7-43 #28H	NORTHING (NAD27)	EASTING (NAD27)	LATITUDE (NAD 27)	LONGITUDE (NAD 27)	SECTION LINE		LEASE LINE	
SURFACE HOLE LOCATION/ POINT OF PENETRATION (SHL/POP)	981840.3	1406675.5	32.3520015	102.2543068	367' N (SECT 36)	1948' E (SECT 36)	3,375' W (SECT 36)	10,261' S (SECT 43)
FIRST TAKE POINT (FTP)	982511.5	1406403.7	32.3538329	102.2552243	350' S (SECT 35)	2,048' E (SECT 35)	3,270' W (SECT 35)	10,978' S (SECT 43)
LAST TAKE POINT/ BOTTOM HOLE LOCATION (LTP/BHL)	971959.0	1409055.9	32.3249617	102.2460514	100' S (SECT 43)	2,048' E (SECT 43)	3,338' W (SECT 43)	100' S (SECT 43)



NOTES:
THE BASIS OF BEARING IS THE TEXAS COORDINATE SYSTEM OF 1927, CENTRAL ZONE (4203), AS DERIVED BY GPS MEASUREMENT BASED UPON THE CORS
ALL TEXAS STATE PLANE COORDINATES SHOWN HEREON ARE NAD 27 GRID COORDINATES AS COMPUTED BY CORPSCON VERSION 8.3.1. ALL GEOGRAPHIC COORDINATES SHOWN HEREON WERE CONVERTED USING CORPSCON VERSION 6.0.1. UNLESS OTHERWISE NOTED, ALL DISTANCES SHOWN HEREON ARE GRID DISTANCES AND THEY CAN BE CONVERTED TO SURFACE WHEN MULTIPLIED WITH A "SURFACE ADJUSTMENT FACTOR" OF 1.00021 AS PUBLISHED BY THE TEXAS DEPARTMENT OF TRANSPORTATION FOR ANDREWS COUNTY, TEXAS.
ELEVATIONS SHOWN HEREON ARE NAVD83 AS DERIVED BY GPS.
THIS EXHIBIT IS FOR TEXAS RAILROAD COMMISSION WELL PERMITTING PURPOSES ONLY. BOUNDARY LINES AND ACREAGES SHOWN HEREON REFLECT THE SURVEYORS PROFESSIONAL OPINION OF MINERAL RIGHTS AS DETERMINED FROM CLIENT-PROVIDED OIL AND GAS MINERAL LEASE DOCUMENTATION. THE INFORMATION DEPICTED HEREON SHALL NOT BE USED IN THE CONVEYANCE OF FEE TITLE TO REAL PROPERTY.
ALL MEASUREMENTS TO LEASE, UNIT, AND SURVEY LINES ARE PERPENDICULAR TO SAID LINES.
THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT.

"Peer review Boundary Reconstruction Certification on file with Halff Associates in 1:29000s\29678\W060\Docs\"

PIONEER
NATURAL RESOURCES



UNIVERSITY 7-43 LEASE
CALLED 2,673.9 ACRES
PIONEER NATURAL RESOURCES
UNIVERSITY 7-43 #28H
WELL PLAT
LOCATED IN
SECTION 35, SECTION 36 AND SECTION 43,
BLOCK 7, UNIVERSITY LAND SURVEY, ANDREWS
COUNTY, TEXAS
HALFF
DATED: 11/17/2015
BY: JUAN GONZALEZ
TBPLS FIRM NO. 10193998
HALFF ASSOCIATES INC., ENGINEERS - SURVEYORS
4500 W Illinois Ave Ste 301 D- Midland, TEXAS - 79703
SCALE: 1"=1000' (432)-695-6110 AVO. 29678-W060



Survey Certification Form

State of Texas
Andrews County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Systems LLC, that I did on the day(s) of February 8, 2016 through March 30, 2016, conduct or supervise the taking of MWD Survey from a depth of 0' MD to 20,165' MD; that the data is true, correct, complete and within the limitations of the tools as set forth by LEAM Drilling Systems LLC, that I am authorized and qualified to make this report; that this survey was conducted at the request of Pioneer Natural Resources for the University 7-43 #28H in Andrews County, Texas; and that I reviewed this report and find that it conforms to the principals and procedures as set forth by LEAM Drilling Systems LLC.

A handwritten signature in black ink, appearing to read 'Randy W. Rakowitz', is written over a solid black horizontal line.

Randy W. Rakowitz
MWD Operations Coordinator



LEAM Drilling Systems, LLC. 2027A Airport Rd., Conroe, TX 77301

Survey Report

MINIMUM CURVATURE CALCULATION

Operator: Pioneer Natural Resources
 Well Name: University 7-43 28H
 Location: Andrews County, TX
 Start Date: 2/7/2016
 End Date: 3/29/2016
 Direction: 166.46

Survey Number	MD ft	INC °	AZM °	TVD ft	N-S ft	E-W ft	SECT ft	DLS °/100'	A/B ft	L/R ft
TIE IN	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1	218	0.50	317.20	218.00	0.70	-0.65	-0.83	0.23	OTL	OTL
2	307	0.40	345.60	306.99	1.28	-0.99	-1.48	0.27	OTL	OTL
3	398	0.50	343.40	397.99	1.97	-1.18	-2.19	0.11	1.0A	OTL
4	493	0.40	1.20	492.99	2.70	-1.29	-2.93	0.18	2.9A	0.5L
5	584	0.50	0.40	583.99	3.42	-1.28	-3.62	0.11	3.0A	OTL
6	674	0.50	8.40	673.98	4.20	-1.22	-4.37	0.08	4.5A	0.5R
7	768	0.40	22.20	767.98	4.91	-1.04	-5.01	0.16	5.0A	0.5R
8	862	0.50	12.10	861.98	5.61	-0.83	-5.65	0.14	5.6A	1.0R
9	955	0.50	33.70	954.97	6.35	-0.52	-6.29	0.20	6.3A	1.2R
10	1049	0.70	35.20	1048.97	7.16	0.04	-6.95	0.21	6.8A	2.2R
11	1143	0.40	59.40	1142.96	7.79	0.65	-7.42	0.40	7.4A	2.8R
12	1237	0.10	124.30	1236.96	7.91	1.00	-7.46	0.39	7.5A	2.8R
13	1330	0.30	176.00	1329.96	7.62	1.09	-7.16	0.27	7.1A	4.1R
14	1424	0.30	174.50	1423.96	7.13	1.13	-6.67	0.01	6.6A	3.9R
15	1518	0.30	203.80	1517.96	6.66	1.05	-6.23	0.16	6.2A	3.6R
16	1612	0.20	180.80	1611.96	6.27	0.95	-5.88	0.15	4.4A	2.6R
17	1706	0.20	164.90	1705.96	5.95	0.99	-5.55	0.06	5.4A	2.6R
18	1799	0.20	106.00	1798.96	5.75	1.19	-5.31	0.21	5.3A	2.4R
19	1864	0.10	45.90	1863.96	5.76	1.34	-5.28	0.27	5.3A	2.4R
20	1987	0.10	97.50	1986.96	5.82	1.52	-5.30	0.07	5.3A	2.7R
21	2080	0.40	113.80	2079.96	5.68	1.90	-5.07	0.33	5.0A	2.3R
22	2174	1.10	331.50	2173.95	6.34	1.77	-5.75	1.53	5.7A	3.0R
23	2268	1.80	326.00	2267.92	8.36	0.52	-8.00	0.76	8.0A	3.0R
24	2361	1.60	326.50	2360.88	10.65	-1.02	-10.59	0.22	10.6A	2.8R
25	2455	1.50	325.00	2454.85	12.75	-2.45	-12.97	0.11	13.0A	2.6R
26	2549	1.50	329.70	2548.81	14.82	-3.77	-15.29	0.13	15.2A	1.3R
27	2642	1.20	332.70	2641.79	16.74	-4.84	-17.40	0.33	17.4A	0.5R
28	2736	1.10	339.10	2735.77	18.45	-5.61	-19.26	0.17	19.2A	1.9R
29	2830	2.30	324.80	2829.73	20.84	-7.02	-21.90	1.34	21.0A	1.5R
30	2924	4.80	332.30	2923.54	25.86	-9.93	-27.47	2.70	24.3A	1.0R
31	3018	7.00	336.00	3017.04	34.58	-14.09	-36.92	2.37	28.9A	OTL
32	3111	9.10	335.20	3109.11	46.43	-19.48	-49.70	2.26	33.5A	0.5L
33	3205	11.20	338.60	3201.64	61.68	-25.93	-66.04	2.32	38.0A	0.5L
34	3299	12.40	338.60	3293.65	79.58	-32.95	-85.08	1.28	42.4A	0.5L
35	3392	12.80	338.00	3384.41	98.43	-40.45	-105.16	0.45	45.3A	OTL
36	3486	12.80	338.50	3476.07	117.77	-48.17	-125.78	0.12	44.0A	0.2L
37	3580	14.00	338.00	3567.51	138.00	-56.24	-147.33	1.28	44.2A	0.1L
38	3674	14.30	338.10	3658.66	159.32	-64.83	-170.07	0.32	47.4A	OTL

39	3768	14.10	338.90	3749.79	180.77	-73.28	-192.90	0.30	50.0A	OTL
40	3861	13.80	339.30	3840.05	201.71	-81.28	-215.14	0.34	53.0A	0.2R
41	3955	13.70	339.80	3931.35	222.65	-89.09	-237.32	0.17	52.9A	0.8R
42	4049	13.70	341.60	4022.68	243.66	-96.45	-259.47	0.45	54.1A	2.3R
43	4143	13.90	338.30	4113.97	264.71	-104.13	-281.73	0.86	55.6A	2.4R
44	4236	14.10	337.40	4204.20	285.55	-112.62	-303.98	0.32	56.4A	2.1R
45	4330	13.70	338.20	4295.45	306.45	-121.15	-326.30	0.47	56.4A	2.5R
46	4424	13.50	339.50	4386.82	327.07	-129.13	-348.21	0.39	60.5A	3.0R
47	4517	13.90	336.00	4477.17	347.44	-137.47	-369.97	0.99	62.0A	2.9R
48	4611	13.70	335.30	4568.46	367.87	-146.72	-391.99	0.28	63.4A	2.0R
49	4704	13.10	336.80	4658.93	387.56	-155.47	-413.19	0.75	63.6A	1.2R
50	4798	12.60	335.30	4750.57	406.67	-163.95	-433.75	0.64	63.5A	OTL
51	4892	13.50	335.10	4842.14	425.93	-172.86	-454.56	0.96	64.0A	OTL
52	4985	14.00	337.30	4932.48	446.16	-181.77	-476.31	0.78	65.1A	1.2L
53	5079	13.50	337.60	5023.78	466.79	-190.34	-498.38	0.54	65.0A	1.3L
54	5173	13.30	338.10	5115.23	486.97	-198.55	-519.92	0.25	65.0A	1.1L
55	5266	13.10	338.00	5205.77	506.66	-206.49	-540.93	0.22	65.0A	1.1L
56	5360	12.90	336.70	5297.36	526.18	-214.63	-561.80	0.38	63.0A	1.4L
57	5453	13.00	336.80	5387.99	545.33	-222.86	-582.35	0.11	63.0A	1.9L
58	5547	12.10	340.60	5479.75	564.34	-230.29	-602.57	1.30	62.5A	2.1L
59	5641	11.70	340.60	5571.73	582.62	-236.73	-621.85	0.43	62.0A	1.5L
60	5735	9.80	341.70	5664.07	599.21	-242.41	-639.31	2.03	60.0A	OTL
61	5828	9.40	342.80	5755.77	613.98	-247.14	-654.78	0.47	54.0A	1.0R
62	5922	8.80	338.30	5848.59	627.99	-252.07	-669.55	0.99	48.5A	2.0R
63	6016	8.10	339.60	5941.57	640.88	-257.04	-683.25	0.77	40.0A	2.2R
64	6042	7.90	340.50	5967.32	644.28	-258.27	-686.84	0.91	39.0A	2.5R
65	6111	7.70	340.10	6035.68	653.10	-261.43	-696.15	0.30	OTL	OTL
66	6205	6.10	341.10	6128.99	663.74	-265.19	-707.38	1.71	1.0B	0.5L
67	6299	3.90	348.00	6222.63	671.60	-267.47	-715.55	2.42	1.5B	0.5R
68	6392	1.50	359.90	6315.52	675.91	-268.13	-719.90	2.64	OTL	1.4R
69	6486	1.00	10.30	6409.50	677.95	-267.99	-721.85	0.58	OTL	1.5R
70	6580	1.00	9.10	6503.48	679.56	-267.71	-723.35	0.02	OTL	1.5R
71	6674	0.70	271.00	6597.48	680.38	-268.16	-724.26	1.38	3.9A	3.5R
72	6767	0.70	256.20	6690.47	680.26	-269.28	-724.40	0.19	3.6A	3.6R
73	6861	0.60	252.90	6784.46	679.98	-270.30	-724.36	0.11	3.7A	2.0R
74	6955	0.50	241.60	6878.46	679.64	-271.14	-724.23	0.16	3.0A	OTL
75	7049	0.40	227.40	6972.46	679.22	-271.74	-723.96	0.16	3.4A	0.5L
76	7142	0.50	223.00	7065.45	678.70	-272.25	-723.58	0.11	2.2A	1.0L
77	7236	0.50	187.10	7159.45	678.00	-272.58	-722.97	0.33	1.7A	1.9L
78	7330	0.50	158.50	7253.45	677.21	-272.48	-722.18	0.26	1.0A	2.0L
79	7424	0.40	165.90	7347.44	676.51	-272.25	-721.45	0.12	OTL	2.5L
80	7517	0.60	168.00	7440.44	675.72	-272.07	-720.63	0.22	OTL	2.2L
81	7611	0.60	170.60	7534.44	674.75	-271.89	-719.65	0.03	1.0B	2.4L
82	7705	1.00	202.10	7628.43	673.50	-272.12	-718.49	0.62	1.0B	3.2L
83	7799	1.40	236.40	7722.41	672.11	-273.38	-717.43	0.86	2.0B	4.6L
84	7892	1.10	303.00	7815.39	671.97	-275.08	-717.69	1.50	2.6B	6.0L
85	7986	1.10	316.70	7909.37	673.11	-276.45	-719.13	0.28	2.0B	7.4L
86	8080	1.10	54.60	8003.36	674.29	-276.34	-720.25	1.76	OTL	7.0L
87	8173	1.90	92.40	8096.33	674.75	-274.07	-720.16	1.32	OTL	5.0L
88	8267	0.70	91.20	8190.31	674.67	-271.94	-719.58	1.28	OTL	2.8R
89	8361	0.40	108.00	8284.30	674.55	-271.05	-719.27	0.36	OTL	2.0R
90	8455	0.80	123.50	8378.30	674.09	-270.19	-718.61	0.46	2.0B	1.9R
91	8548	0.70	137.60	8471.29	673.31	-269.27	-717.64	0.22	2.3B	0.7R
92	8642	1.50	179.10	8565.27	671.66	-268.86	-715.94	1.15	5.0A	1.0R
93	8736	0.90	180.10	8659.25	669.69	-268.84	-714.02	0.64	5.7A	1.5R
94	8829	0.90	186.40	8752.24	668.23	-268.93	-712.62	0.11	7.0A	1.5R

95	8884	0.90	174.10	8807.23	667.38	-268.93	-711.79	0.35	8.2A	1.7R
96	8947	1.30	162.76	8870.22	666.20	-268.67	-710.59	0.72	16.0A	1.3R
97	9041	11.80	150.33	8963.48	656.80	-263.58	-700.26	11.21	25.0A	4.0L
98	9134	21.20	157.19	9052.56	632.99	-252.33	-674.47	10.31	34.0A	8.3L
99	9228	29.80	162.57	9137.33	594.96	-238.71	-634.31	9.47	48.0A	11.0L
100	9321	37.00	157.10	9214.94	547.06	-220.88	-583.56	8.38	54.0A	19.8L
101	9415	44.10	163.31	9286.35	489.57	-200.44	-522.89	8.68	55.0A	20.6L
102	9509	51.00	172.65	9349.83	421.85	-186.34	-453.76	10.36	45.0A	11.7L
103	9603	59.60	167.36	9403.32	345.89	-172.77	-376.73	10.25	38.0A	9.9L
104	9697	67.20	166.52	9445.38	264.08	-153.77	-292.74	8.12	23.0A	9.7L
105	9790	81.50	169.63	9470.40	176.69	-135.40	-203.47	15.71	22.0A	2.0L
106	9884	89.00	168.48	9478.18	84.78	-117.62	-109.96	8.07	20.8A	0.2L
107	9978	88.10	165.63	9480.56	-6.79	-96.57	-16.01	3.18	18.5A	1.2L
108	10072	89.20	166.47	9482.78	-97.99	-73.92	77.96	1.47	16.2A	0.4L
109	10166	89.80	167.29	9483.60	-189.53	-52.58	171.95	1.08	15.3A	1.4R
110	10259	88.90	165.04	9484.65	-279.82	-30.34	264.94	2.61	14.2A	0.5R
111	10353	87.80	163.27	9487.36	-370.21	-4.69	358.82	2.22	11.5A	2.4L
112	10447	86.70	164.79	9491.87	-460.47	21.14	452.62	1.99	6.9A	5.5L
113	10541	87.30	166.47	9496.79	-551.40	44.44	546.48	1.90	1.9A	6.0L
114	10634	88.10	166.89	9500.52	-641.83	65.85	639.40	0.97	1.9B	4.8L
115	10728	89.10	167.35	9502.82	-733.43	86.79	733.37	1.17	4.3B	2.9L
116	10822	89.10	166.54	9504.29	-824.99	108.02	827.35	0.86	5.8B	1.2L
117	10916	90.00	166.59	9505.03	-916.42	129.86	921.35	0.96	6.6B	0.2L
118	11010	90.80	166.06	9504.38	-1007.75	152.08	1015.35	1.02	6.0B	0.5R
119	11103	90.20	163.68	9503.56	-1097.51	176.35	1108.30	2.64	5.2B	1.0L
120	11197	88.50	164.35	9504.63	-1187.87	202.24	1202.20	1.94	6.4B	4.3L
121	11291	89.20	167.31	9506.52	-1278.98	225.24	1296.17	3.24	8.3B	4.3L
122	11384	91.00	168.58	9506.36	-1369.92	244.66	1389.13	2.37	8.3B	1.8L
123	11478	92.00	168.31	9503.90	-1461.99	263.49	1483.04	1.10	5.8B	3.0R
124	11572	91.40	166.54	9501.11	-1553.69	283.94	1576.98	1.99	3.2B	4.9R
125	11665	92.10	165.90	9498.27	-1643.97	306.08	1669.94	1.02	0.3B	6.0R
126	11759	92.40	165.14	9494.58	-1734.91	329.57	1763.85	0.87	3.2A	5.0R
127	11853	91.30	164.53	9491.54	-1825.59	354.15	1857.76	1.34	6.0A	3.3R
128	11947	88.70	163.38	9491.54	-1915.92	380.12	1951.66	3.02	6.1A	0.3R
129	12041	89.80	166.36	9492.77	-2006.64	404.65	2045.61	3.38	4.8A	1.4L
130	12134	89.80	166.48	9493.10	-2097.04	426.49	2138.61	0.13	4.4A	OTL
131	12228	88.80	163.45	9494.25	-2187.80	450.87	2232.55	3.39	3.3A	2.4L
132	12322	90.00	165.36	9495.23	-2278.33	476.14	2326.48	2.40	2.0A	5.0L
133	12416	91.50	167.35	9494.00	-2369.66	498.31	2420.47	2.65	3.3A	4.2L
134	12509	91.30	165.58	9491.73	-2460.05	520.07	2513.44	1.91	5.6A	3.4L
135	12603	89.50	164.88	9491.07	-2550.94	544.03	2607.41	2.05	6.2A	4.6L
136	12697	89.20	163.59	9492.14	-2641.39	569.57	2701.33	1.41	5.0A	7.4L
137	12791	89.80	165.57	9492.96	-2732.00	594.56	2795.27	2.20	4.2A	9.6L
138	12884	91.10	166.55	9492.23	-2822.25	616.96	2888.26	1.75	4.8A	9.3L
139	12978	90.90	165.59	9490.59	-2913.48	639.59	2982.24	1.04	5.2A	9.3L
140	13072	89.30	163.99	9490.42	-3004.18	664.25	3076.20	2.41	6.5A	10.9L
141	13166	90.50	166.43	9490.59	-3095.05	688.24	3170.17	2.89	6.3A	12.1L
142	13260	91.90	166.90	9488.62	-3186.50	709.92	3264.14	1.57	7.0A	10.5L
143	13353	90.90	164.90	9486.35	-3276.66	732.56	3357.10	2.40	10.4A	11.0L
144	13447	91.40	166.19	9484.46	-3367.67	756.02	3451.07	1.47	12.2A	11.6L
145	13541	91.10	165.94	9482.41	-3458.88	778.65	3545.05	0.42	14.1A	11.1L
146	13634	88.40	163.40	9482.81	-3548.55	803.24	3637.98	3.99	13.7A	13.2L
147	13725	87.20	162.83	9486.31	-3635.56	829.65	3728.76	1.46	10.0A	17.0L
148	13815	85.60	163.54	9491.96	-3721.54	855.63	3818.43	1.94	4.7A	21.6L
149	13904	85.90	166.51	9498.56	-3807.27	878.56	3907.15	3.34	2.1B	23.5L
150	13995	87.50	168.55	9503.79	-3895.97	898.18	3997.97	2.85	7.5B	20.9L

151	14085	88.10	168.76	9507.25	-3984.15	915.87	4087.84	0.71	11.1B	16.6L
152	14175	91.50	169.57	9507.56	-4072.53	932.78	4177.73	3.88	12.1B	11.7L
153	14266	90.10	166.92	9506.29	-4161.60	951.32	4268.66	3.29	11.6B	7.9L
154	14360	89.60	168.83	9506.54	-4253.50	971.06	4362.63	2.10	12.6B	4.6L
155	14454	91.50	171.06	9505.64	-4346.04	987.47	4456.44	3.12	12.5B	2.1R
156	14547	93.10	170.59	9501.90	-4437.77	1002.29	4549.09	1.79	9.6B	10.0R
157	14641	93.00	167.76	9496.90	-4529.96	1019.92	4642.85	3.01	5.3B	15.4R
158	14735	92.80	166.66	9492.15	-4621.51	1040.70	4736.72	1.19	1.3B	17.5R
159	14829	92.10	165.29	9488.13	-4712.62	1063.46	4830.62	1.64	1.9A	17.7R
160	14923	91.40	163.51	9485.26	-4803.11	1088.72	4924.51	2.03	4.0A	15.5R
161	15017	88.90	163.74	9485.01	-4893.29	1115.22	5018.39	2.67	3.5A	11.6R
162	15110	91.70	166.49	9484.52	-4983.15	1139.11	5111.35	4.22	3.2A	10.3R
163	15204	91.10	166.00	9482.23	-5074.43	1161.45	5205.32	0.82	4.5A	10.8R
164	15298	90.20	164.98	9481.16	-5165.42	1185.00	5299.30	1.45	5.0A	10.2R
165	15392	90.10	165.38	9480.91	-5256.29	1209.04	5393.27	0.44	4.5A	9.0R
166	15485	87.80	162.68	9482.62	-5345.68	1234.62	5486.16	3.81	2.3A	6.2R
167	15579	88.70	164.98	9485.49	-5435.91	1260.78	5580.01	2.63	1.5B	2.6R
168	15673	88.50	165.50	9487.79	-5526.78	1284.73	5673.96	0.59	4.6B	1.6R
169	15767	88.20	165.51	9490.49	-5617.75	1308.24	5767.91	0.32	8.1B	0.9R
170	15860	92.20	166.48	9490.17	-5707.96	1330.75	5860.88	4.43	8.6B	1.1R
171	15954	90.40	164.92	9488.04	-5799.02	1353.96	5954.84	2.53	7.2B	0.8R
172	16048	91.50	166.25	9486.48	-5890.05	1377.35	6048.81	1.84	6.4B	0.3R
173	16142	90.20	164.43	9485.08	-5980.97	1401.14	6142.78	2.38	5.8B	0.6L
174	16235	91.70	166.69	9483.54	-6071.01	1424.33	6235.75	2.92	5.0B	1.2L
175	16329	91.80	166.53	9480.67	-6162.41	1446.08	6329.70	0.20	2.9B	OTL
176	16423	90.70	166.43	9478.62	-6253.79	1468.05	6423.68	1.18	1.6B	1.0R
177	16517	93.50	168.71	9475.17	-6345.51	1488.27	6517.58	3.84	1.1A	3.8R
178	16611	90.00	165.23	9472.30	-6437.01	1509.45	6611.51	5.25	3.1A	5.4R
179	16704	90.00	165.66	9472.30	-6527.03	1532.82	6704.49	0.46	2.3A	4.7R
180	16798	91.60	166.97	9470.99	-6618.35	1555.06	6798.48	2.20	3.1A	5.5R
181	16892	93.10	168.37	9467.14	-6710.10	1575.11	6892.37	2.18	6.5A	8.4R
182	16986	91.90	168.11	9463.04	-6802.03	1594.25	6986.24	1.31	9.0A	12.0R
183	17080	92.20	169.39	9459.67	-6894.17	1612.58	7080.10	1.40	10.6A	16.5R
184	17173	92.50	169.56	9455.86	-6985.52	1629.55	7172.89	0.37	12.1A	22.7R
185	17267	91.10	166.45	9452.91	-7077.41	1649.08	7266.80	3.63	12.7A	26.0R
186	17361	89.50	163.71	9452.41	-7168.23	1673.28	7360.76	3.38	11.0A	24.7R
187	17454	92.00	165.52	9451.20	-7257.88	1697.95	7453.69	3.32	9.8A	22.7R
188	17548	93.90	165.13	9446.36	-7348.69	1721.73	7547.54	2.06	12.3A	21.8R
189	17642	90.40	164.20	9442.83	-7439.26	1746.56	7641.41	3.85	13.5A	19.8R
190	17736	94.40	165.73	9438.90	-7529.94	1770.92	7735.28	4.56	15.0A	18.2R
191	17829	93.50	164.27	9432.49	-7619.56	1794.94	7828.02	1.84	19.0A	16.7R
192	17946	90.00	163.10	9428.92	-7731.77	1827.78	7944.81	3.15	19.8A	12.6R
193	18040	89.60	165.86	9429.25	-7822.34	1852.93	8038.74	2.97	17.1A	10.80
194	18134	89.80	166.55	9429.74	-7913.62	1875.35	8132.74	0.76	14.6A	11.6R
195	18227	89.80	165.41	9430.06	-8003.85	1897.88	8225.74	1.23	11.6A	11.7R
196	18321	89.50	165.55	9430.64	-8094.85	1921.44	8319.72	0.35	8.7A	10.9R
197	18415	91.70	165.76	9429.65	-8185.91	1944.73	8413.70	2.35	7.4A	10.2R
198	18508	94.10	166.05	9424.95	-8275.98	1967.35	8506.57	2.60	9.8A	9.5R
199	18601	89.60	165.32	9421.95	-8366.03	1990.33	8599.49	4.90	10.0A	9.7R
200	18695	90.30	164.93	9422.03	-8456.87	2014.46	8693.46	0.85	9.0A	8.0R
201	18788	92.00	166.54	9420.16	-8546.98	2037.37	8786.43	2.52	7.5A	9.8R
202	18882	91.30	166.71	9417.46	-8638.39	2059.10	8880.39	0.77	7.9A	11.9R
203	18976	91.60	165.06	9415.08	-8729.52	2082.02	8974.35	1.78	7.9A	12.8R
204	19070	93.40	164.73	9410.98	-8820.19	2106.49	9068.22	1.95	9.7A	7.4R
205	19163	93.30	164.98	9405.54	-8909.80	2130.74	9161.03	0.29	12.8A	5.4R
206	19257	90.10	165.34	9402.75	-9000.61	2154.80	9254.95	3.43	13.3A	4.2R

207	19351	89.30	165.23	9403.25	-9091.53	2178.68	9348.93	0.86	10.5A	3.2R
208	19445	89.90	164.99	9403.90	-9182.37	2202.84	9442.90	0.69	7.5A	1.9R
209	19538	90.20	164.24	9403.82	-9272.04	2227.51	9535.85	0.87	6.5A	0.2L
210	19632	90.20	163.79	9403.49	-9362.40	2253.39	9629.76	0.48	3.2A	3.3L
211	19725	91.10	164.88	9402.44	-9451.94	2278.50	9722.69	1.52	2.5A	4.5L
212	19819	92.60	165.19	9399.40	-9542.70	2302.76	9816.61	1.63	2.6A	7.2L
213	19913	91.80	164.83	9395.80	-9633.43	2327.06	9910.51	0.93	3.8A	8.6L
214	20007	92.00	163.89	9392.68	-9723.90	2352.39	10004.39	1.02	4.6A	11.1L
215	20097	92.40	163.05	9389.22	-9810.12	2377.97	10094.20	1.03	5.8A	15.1L
PTB	20165	92.40	165.05	9386.38	-9875.44	2396.64	10162.08	2.94	-	-