



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

November 14, 2016

Attn: Pam Johns

Re: Pioneer Natural Resources  
University 3-310 PU 4H  
Upton County, Texas  
API#: 461-40446

Enclosed, please find the original of the survey performed on the referenced well by SunDrill Energy Services (Operator No. 829286) Supervised by Cameron Stevens. Other information required by your office is as follows:

<u>Name &amp; Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
A Reagan	4H	0-1193	11/10/16-11/11/16	MWD

A certified plat on which the bottom-hole location is oriented to the surface location is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

A handwritten signature in black ink, appearing to read "CST", is written over a horizontal line.

Cameron Stevens  
MWD Manager  
SunDrill Energy Services

Enclosures

SunDrill Energy Services  
6230 Bingle Rd Houston, TX 77092  
Phone (832) 879-2560

### Minimum Curvature Calculation

**Client:** Pioneer Natural Resources  
**Well:** University 3-310 PU 4H  
**County:** Upton County, Texas  
**Rig:** Integrity Services Rig 1

M.W.D. Operators: Adam Regan  
 Directional Drillers:  
 Tool Azimuth to Grid North: 6.90  
 Job #: 16-PB-414

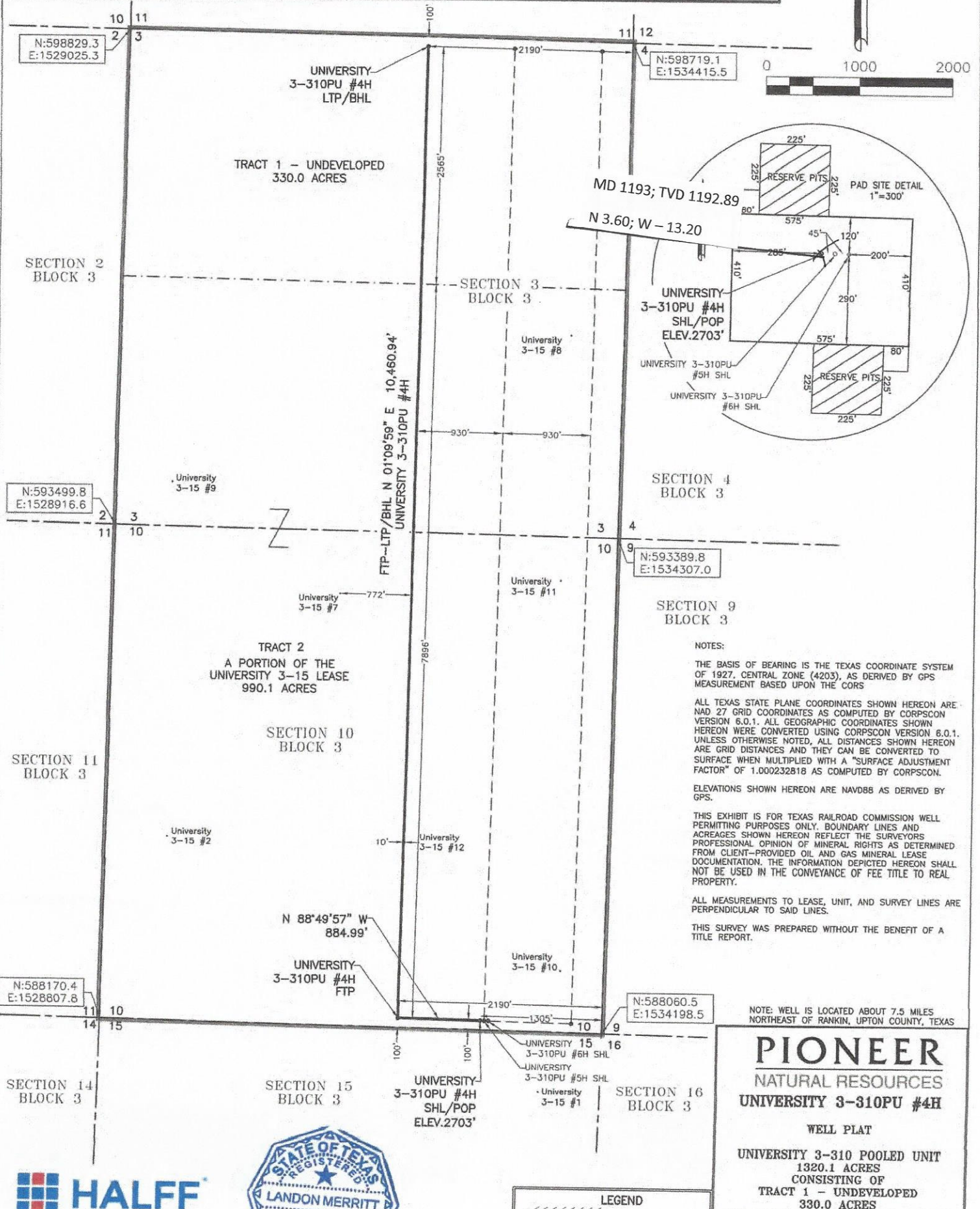
**Vertical Section Angle:** 0.00

**API#:** 42-461-40446

Sur #	Meas. Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N / -S	+E / -W	DLS
Tie In	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	93.00	0.80	236.60	93.00	-0.36	-0.36	-0.54	0.86
2	183.00	0.60	316.50	182.99	-0.36	-0.36	-1.39	1.01
3	266.00	0.80	362.50	265.99	0.53	0.53	-1.66	0.70
4	361.00	0.50	271.80	360.98	1.21	1.21	-2.05	1.00
5	456.00	1.10	276.90	455.97	1.33	1.33	-3.37	0.64
6	551.00	0.60	280.20	550.96	1.53	1.53	-4.76	0.53
7	647.00	0.60	285.90	646.96	1.76	1.76	-5.74	0.06
8	742.00	1.10	284.80	741.95	2.12	2.12	-7.10	0.53
9	837.00	0.80	297.60	836.93	2.66	2.66	-8.57	0.38
10	933.00	1.10	287.00	932.92	3.24	3.24	-10.05	0.36
11	1028.00	0.80	269.20	1027.91	3.50	3.50	-11.58	0.44
12	1123.00	0.80	297.60	1122.90	3.80	3.80	-12.83	0.41
13	1193.00	0.70	170.60	1192.89	3.60	3.60	-13.20	1.92
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POINT OF PENETRATION (SHL/POP)	588187.1	1532895.8	31.275328	101.828577	100' S	1305' E	100' S	1305' E
FIRST TAKE POINT (FTP)	588205.1	1532011.0	31.275345	101.831409	100' S	2190' E	100' S	2190' E
LAST TAKE POINT/ BOTTOM HOLE LOCATION (LTP/BHL)	598663.9	1532224.0	31.304106	101.831178	100' N	2190' E	100' N	2190' E



NOTES:

THE BASIS OF BEARING IS THE TEXAS COORDINATE SYSTEM OF 1927, CENTRAL ZONE (4203), AS DERIVED BY GPS MEASUREMENT BASED UPON THE CORN

ALL TEXAS STATE PLANE COORDINATES SHOWN HEREON ARE NAD 27 GRID COORDINATES AS COMPUTED BY CORPSCON VERSION 6.0.1. 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 1.000232818 AS COMPUTED BY CORPSCON.

ELEVATIONS SHOWN HEREON ARE NAVD88 AS DERIVED BY GPS.

THIS EXHIBIT IS FOR TEXAS RAILROAD COMMISSION WELL PERMITTING PURPOSES ONLY. BOUNDARY LINES AND ACRES 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.

**PIONEER**  
NATURAL RESOURCES  
**UNIVERSITY 3-310PU #4H**  
WELL PLAT  
UNIVERSITY 3-310 POOLED UNIT  
1320.1 ACRES  
CONSISTING OF  
TRACT 1 - UNDEVELOPED  
330.0 ACRES



November 14, 2016

STATE OF TEXAS

COUNTY OF HARRIS

I, Cameron Stevens, certify that; I am employed by SunDrill Energy Services ; that on the day(s) of November 10<sup>th</sup>, 2016-November 11<sup>th</sup>, 2016 we conducted and or supervised the taking of a MWD survey for University 3-310 PU 4H from a depth of 0 feet to a depth of 1193 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by SunDrill Energy Services; that I am authorized and qualified to make this report; that this survey was conducted at the request of Pioneer Natural Resources ; that I reviewed this report and find it conforms to the principles and procedures as set forth by SunDrill Energy Services .

A handwritten signature in black ink, appearing to read "CST", is written over a horizontal line.

Cameron Stevens  
MWD Manager  
SunDrill Energy Services



# DIRECTIONAL SURVEY REPORT



Report Date:	12/18/2016	Job Start Date:	11/27/2016	Time Zone:	GMT -06:00	North Reference:	Grid
Operator:	Pioneer Natural Resources	Map System:	US State Plane 1927	Reference Datum (ft.):	RotaryTable	Vertical Section Az (deg):	1.17
Well Name:	University 3-310 PU #4H - ST1	Map Ellipsoid:	Clarke 1866	Survey Calc. Method:	Minimum Curvature	Magnetic Model:	IFR
Rig:	H&P 643	Map Datum:	NAD 1927	Ground Elevation (ft.):	2703	Calc. Date:	11/28/2016
Job Number:	HD11160PM206	Map Zone:	Texas Central 4203	RKB Above MSL (ft.):	26	Field Strength (nT):	47709
State:	Tx	Well Latitude:	31° 16' 31.188" N	Non Mag Above (ft.):	49.14	Dip Angle (deg):	59.56
County:	Upton	Well Longitude:	101° 49' 42.888" W	Non Mag Below (ft.):	20.1	Mag. Declination (deg):	6.51
Field:	Spraberry	Well Northings:				Grid Convergence (deg):	-0.77
Survey Correction Co.:	Gyrodata Inc.	Well Eastings:				Total Correction (deg):	7.28

								Accelerometer (g)			Magnetometer (nT)			Corrected Survey QC		Raw Survey QC									
Depth (ft.)	Inclination (°)	Azimuth (°)	DLS (°/100)	TVD (ft.)	N/S (+/-) (ft.)	E/W (+/-) (ft.)	Vertical Section (ft.)	Ax	Ay	Az	Mx	My	Mz	Magnetic Dip Angle (°)	Mag Field (nT)	Magnetic Dip Angle (°)	Mag Field (nT)	Gravity Total (g)	Temp (°F)	Mud Type	Survey Type	Survey #	Run #	Date & Time	
0.00	0.00	0.00		0.00	0.00	0.00																			
121.00	0.75	240.13	0.62	121.00	-0.39	-0.68	-0.41												0.00	Water	External	1	1	1/0/00 0:00	
221.00	0.60	327.78	0.94	220.99	-0.27	-1.53	-0.30												0.00	Water	External	2	1	1/0/00 0:00	
321.00	0.54	343.22	0.17	320.99	0.63	-1.95	0.59												0.00	Water	External	3	1	1/0/00 0:00	
421.00	0.75	274.89	0.74	420.98	1.13	-2.73	1.08												0.00	Water	External	4	1	1/0/00 0:00	
521.00	0.87	277.96	0.13	520.97	1.29	-4.13	1.21												0.00	Water	External	5	1	1/0/00 0:00	
621.00	0.60	283.11	0.28	620.96	1.52	-5.39	1.41												0.00	Water	External	6	1	1/0/00 0:00	
721.00	0.88	285.13	0.28	720.96	1.84	-6.64	1.70												0.00	Water	External	7	1	1/0/00 0:00	
821.00	0.91	291.62	0.11	820.94	2.33	-8.12	2.16												0.00	Water	External	8	1	1/0/00 0:00	
921.00	0.99	289.92	0.09	920.93	2.92	-9.67	2.72												0.00	Water	External	9	1	1/0/00 0:00	
1021.00	0.88	275.68	0.26	1020.92	3.29	-11.25	3.06												0.00	Water	External	10	1	1/0/00 0:00	
1121.00	0.78	290.84	0.24	1120.91	3.61	-12.65	3.35												0.00	Water	External	11	1	1/0/00 0:00	
1214.00	0.70	170.60	1.38	1213.90	3.27	-13.15	3.00												0.00	Water	External	12	1	1/0/00 0:00	
1321.00	0.29	247.40	0.65	1320.90	2.52	-13.30	2.25	0.000244	0.005128	0.999512	-21557	-11264	43059	59.51	47732	60.69	49453	0.99953	62.60	Water	MWD+IFR1+AX	13	1	11/27/16 17:46	
1416.00	0.41	222.96	0.20	1415.90	2.18	-13.75	1.90	-0.005693	0.002686	0.999023	13132	-20568	42949	59.57	47705	60.73	49397	0.99905	64.40	Water	MWD+IFR1+AX	14	1	11/27/16 18:19	
1511.00	0.32	199.81	0.18	1510.89	1.68	-14.07	1.40	0.005617	-0.000244	0.999512	-23608	6282	42876	59.53	47726	60.64	49347	0.99953	64.40	Water	MWD+IFR1+AX	15	1	11/27/16 18:49	
1606.00	1.07	262.52	1.02	1605.89	1.32	-15.04	1.01	-0.017827	0.005617	0.999023	-421	-24414	42912	59.52	47729	60.65	49373	0.99920	64.40	Water	MWD+IFR1+AX	16	1	11/27/16 20:08	
1700.00	2.72	277.66	1.82	1699.83	1.50	-18.12	1.13	-0.045665	0.012454	0.998047	-4634	-23791	42985	59.56	47710	60.67	49348	0.99917	66.20	Water	MWD+IFR1+AX	17	1	11/27/16 20:44	
1795.00	4.72	279.71	2.11	1794.63	2.46	-24.21	1.97	-0.076923	-0.029060	0.996093	10751	-21777	42949	59.54	47720	60.63	49340	0.99948	66.20	Water	MWD+IFR1+AX	18	1	11/27/16 21:18	
1890.00	6.16	278.80	1.52	1889.20	3.90	-33.10	3.22	-0.107204	0.000244	0.993651	3718	-24194	42802	59.54	47721	60.61	49307	0.99942	64.40	Water	MWD+IFR1+AX	19	1	11/27/16 22:21	
1985.00	7.30	274.80	1.30	1983.54	5.19	-44.15	4.28	0.114530	-0.054945	0.991209	4780	24451	42473	59.60	47691	60.66	49240	0.99932	66.20	Water	MWD+IFR1+AX	20	1	11/27/16 23:05	
2080.00	8.28	273.56	1.05	2077.67	6.12	-56.99	4.95	-0.137485	-0.042735	0.988767	14304	-20824	42326	59.55	47715	60.64	49292	0.99919	66.20	Water	MWD+IFR1+AX	21	1	11/27/16 23:50	
2175.00	9.18	273.58	0.95	2171.56	7.01	-71.38	5.55	-0.153602	0.042735	0.986325	1337	-25440	42216	59.53	47724	60.63	49307	0.99913	68.00	Water	MWD+IFR1+AX	22	1	11/28/16 0:40	
2269.00	10.46	272.90	1.37	2264.18	7.91	-87.39	6.13	-0.108669	0.145299	0.982418	-13755	-21886	41923	59.54	47721	60.61	49252	0.99903	68.00	Water	MWD+IFR1+AX	23	1	11/28/16 1:20	
2364.00	10.66	273.05	0.21	2357.58	8.82	-104.78	6.68	0.117949	-0.142369	0.981929	12582	22582	41886	59.57	47704	60.63	49221	0.99918	68.00	Water	MWD+IFR1+AX	24	1	11/28/16 1:54	
2459.00	11.39	273.93	0.79	2450.82	9.93	-122.91	7.42	0.109158	0.164347	0.979487	-25440	5476	41850	59.47	47756	60.53	49281	0.99916	68.00	Water	MWD+IFR1+AX	25	1	11/28/16 3:15	
2554.00	13.81	274.99	2.56	2543.53	11.56	-143.57	8.62	-0.114530	0.209280	0.970208	-16099	-21081	41557	59.47	47756	60.54	49300	0.99911	66.20	Water	MWD+IFR1+AX	26	1	11/28/16 4:47	
2648.00	13.91	275.14	0.11	2634.79	13.55	-166.00	10.15	0.146764	0.190232	0.970208	-25769	6282	41557	59.47	47753	60.54	49300	0.99952	68.00	Water	MWD+IFR1+AX	27	1	11/28/16 5:13	
2743.00	13.33	274.75	0.62	2727.12	15.48	-188.28	11.63	0.113553	-0.200488	0.972161	15806	21044	41593	59.58	47697	60.64	49221	0.99909	69.80	Water	MWD+IFR1+AX	28	1	11/28/16 5:39	
2838.00	12.88	275.86	0.54	2819.64	17.46	-209.73	13.18	0.121368	0.186813	0.974115	-25659	5037	41777	59.46	47759	60.51	49285	0.99926	69.80	Water	MWD+IFR1+AX	29	1	11/28/16 6:09	
2933.00	13.30	275.33	0.46	2912.17	19.56	-231.14	14.84	-0.211722	-0.089622	0.972650	18	-26282	41703	59.52	47729	60.60	49294	0.99945	69.80	Water	MWD+IFR1+AX	30	1	11/28/16 8:25	
3028.00	14.03	272.21	1.09	3004.49	21.02	-253.53	15.84	-0.185348	0.156044	0.969719	-6319	-26209	41227	59.52	47731	60.60	49260	0.99953	69.80	Water	MWD+IFR1+AX	31	1	11/28/16 9:33	
3123.00	13.89	270.35	0.49	3096.68	21.53	-276.44	15.88	0.082296	0.225397	0.970208	-27015	-3681	41007	59.44	47773	60.51	49244	0.99944	69.80	Water	MWD+IFR1+AX	32	1	11/28/16 10:39	
3217.00	14.19	269.95	0.34	3187.87	21.59	-299.24	15.48	0.139438	-0.201465	0.968742	12253	24377	40934	59.59	47695	60.68	49193	0.99925	69.80	Water	MWD+IFR1+AX	33	1	11/28/16 12:08	
3312.00	14.06	272.51	0.67	3280.00	22.09	-322.42	15.50	0.242003	-0.019780	0.969231	-9945	25073	41227	59.47	47758	60.54	49267	0.99918	71.60	Water	MWD+IFR1+AX	34	1	11/28/16 12:42	
3407.00	13.20	272.94	0.91	3372.33	23.15	-344.78	16.10	-0.196581	0.115995	0.973138	-2656	-26502	41484	59.49	47747	60.58	49298	0.99955	71.60	Water	MWD+IFR1+AX	35	1	11/28/16 13:28	
3501.00	13.16	269.53	0.83	3463.85	23.61	-366.20	16.13	0.167766	-0.153602	0.973138	6905	26099	41154	59.60	47688	60.71	49219	0.99937	71.60	Water	MWD+IFR1+AX	36	1	11/28/16 15:00	
3596.00	14.16	267.74	1.14	3556.16	23.06	-388.62	15.12	0.238584	-0.052991	0.968742	-8443	26355	40714	59.50	47743	60.60	49230	0.99910	73.40	Water	MWD+IFR1+AX	37	1	11/28/16 16:38	
3691.00	14.97	269.13	0.93	3648.11	22.42	-412.50	13.99	-0.164347	0.199023	0.965324	-9615	-26026	40678	59.50	47741	60.60	49239	0.99923	73.40	Water	MWD+IFR1+AX	38	1	11/28/16 18:11	
3786.00	15.84	269.90	0.94	3739.70	22.21	-437.74	13.27	0.124786	-0.242491	0.961416	14817	23608	40568	59.55	47712	60.66	49220	0.99935	75.20	Water	MWD+IFR1+AX	39	1	11/28/16 19:34	
3881.00	14.73	270.47	1.18	3831.33	22.29	-462.78	12.83	-0.101448	-0.253724	0.966300	24707	11850	40897	59.57	47706	60.67	49229	0.99916	71.60	Water	MWD+IFR1+AX	40	1	11/28/16 20:33	
3976.00	14.68	271.45	0.27	3923.22	22.69	-486.89	12.74	0.252259	0.023199	0.966789	-14963	22839	40971	59.49	47745	60.56	49235	0.99943	78.80	Water	MWD+IFR1+AX	41	1	11/28/16 22:26	
4071.00	16.96	272.13	2.41	4014.62	23.51	-512.77	13.03	0.084249	0.279121	0.956044	-27198	-6502	40531	59.47	47755	60.54	49242	0.99951	86.00	Water	MWD+IFR1+AX	42	1	11/28/16 23:39	
4166.00	16.50	271.73	0.50	4105.60	24.43	-540.10	13.40	0.218071	-0.181929	0.958486	4707	27381	40604	59.58	47700	60.66	49200	0.99967	87.80	Water	MWD+IFR1+AX	43	1	11/29/16 0:24	
4261.00	15.85	272.86	0.76	4196.84	25.49	-566.55	13.91	-0.270330	0.036386	0.960928	9689	-25696	40934	59.48	47748	60.58	49293	0.99889	91.40	Water	MWD+IFR1+AX	44	1	11/29/16 0:54	
4356.00	15.28	272.70	0.																						

# DIRECTIONAL SURVEY REPORT



Report Date:	12/18/2016	Job Start Date:	11/27/2016	Time Zone:	GMT -06:00	North Reference:	Grid
Operator:	Pioneer Natural Resources	Map System:	US State Plane 1927	Reference Datum (ft.):	RotaryTable	Vertical Section Az (deg):	1.17
Well Name:	University 3-310 PU #4H - ST1	Map Ellipsoid:	Clarke 1866	Survey Calc. Method:	Minimum Curvature	Magnetic Model:	IFR
Rig:	H&P 643	Map Datum:	NAD 1927	Ground Elevation (ft.):	2703	Calc. Date:	11/28/2016
Job Number:	HD1116DPM206	Map Zone:	Texas Central 4203	RKB Above MSL (ft.):	2606	Field Strength (nT):	47709
State:	Tx	Well Latitude:	31° 16' 31.188" N	Non Mag Above (ft.):	49.14	Dip Angle (deg):	59.56
County:	Upton	Well Longitude:	101° 49' 42.888" W	Non Mag Below (ft.):	20.1	Mag. Declination (deg):	6.51
Field:	Spraberry	Well Northings:				Grid Convergence (deg):	-0.77
Survey Correction Co.:	Gyrodata Inc.	Well Eastings:				Total Correction (deg):	7.28

Depth (ft.)	Inclination (°)	Azimuth (°)	DLS (°/100)	TVD (ft.)	N/S (+/-) (ft.)	E/W (+/-) (ft.)	Vertical Section (ft.)	Accelerometer (g)			Magnetometer (nT)			Corrected Survey QC		Raw Survey QC				Temp (°F)	Mud Type	Survey Type	Survey #	Run #	Date & Time
								Ax	Ay	Az	Mx	My	Mz	Magnetic Dip Angle (°)	Mag Field (nT)	Magnetic Dip Angle (°)	Mag Field (nT)	Gravity Total (g)							
5495.00	4.90	270.25	0.91	5402.31	25.36	-817.99	8.65	-0.080342	-0.029060	0.995605	14231	-20348	42619	59.57	47702	60.70	49325	0.99926	107.60	Water	MWD+IFR1+AX	57	1	11/29/16 20:41	
5590.00	3.78	272.79	1.20	5497.04	25.53	-825.18	8.68	-0.057875	0.031502	0.997070	-7491	-23388	42802	59.53	47723	60.65	49347	0.99924	109.40	Water	MWD+IFR1+AX	58	1	11/29/16 21:23	
5684.00	2.92	272.80	0.91	5590.88	25.80	-830.66	8.83	0.015385	0.048596	0.998535	-24267	3498	42839	59.46	47757	60.56	49359	0.99984	113.00	Water	MWD+IFR1+AX	59	1	11/29/16 22:07	
5779.00	2.42	269.62	0.55	5685.77	25.90	-835.08	8.85	-0.037851	-0.018803	0.998535	15073	-19213	42876	59.60	47687	60.74	49342	0.99943	113.00	Water	MWD+IFR1+AX	60	1	11/29/16 22:51	
5873.00	1.86	266.90	0.61	5779.71	25.81	-838.59	8.68	-0.000733	-0.032479	0.999023	23865	5147	42876	59.59	47692	60.73	49339	0.99955	116.60	Water	MWD+IFR1+AX	61	1	11/29/16 23:39	
5968.00	1.50	270.67	0.40	5874.67	25.74	-841.38	8.55	0.011966	0.023199	0.998535	-23169	7601	42876	59.49	47742	60.58	49324	0.99888	116.60	Water	MWD+IFR1+AX	62	1	11/30/16 0:24	
6063.00	1.35	274.36	0.19	5969.64	25.84	-843.73	8.61	-0.021734	0.009035	0.999512	-7234	-23132	42985	59.56	47708	60.68	49347	0.99979	120.20	Water	MWD+IFR1+AX	63	1	11/30/16 1:10	
6158.00	0.83	273.44	0.55	6064.62	25.97	-845.54	8.70	0.010989	0.009524	0.999512	-17564	16868	42912	59.42	47777	60.49	49340	0.99962	118.40	Water	MWD+IFR1+AX	64	1	11/30/16 2:00	
6253.00	0.55	285.42	0.33	6159.61	26.13	-846.66	8.83	-0.007333	0.009524	0.999512	-24158	1191	42985	59.49	47744	60.56	49323	0.99956	118.40	Water	MWD+IFR1+AX	65	1	11/30/16 2:49	
6348.00	0.22	287.75	0.35	6254.61	26.31	-847.28	9.00	-0.001221	-0.003663	0.999512	21191	-11520	43059	59.58	47697	60.70	49354	0.99952	120.20	Water	MWD+IFR1+AX	66	1	11/30/16 3:39	
6442.00	0.28	206.11	0.35	6348.61	26.15	-847.55	8.84	-0.003663	0.003175	0.999512	12326	-21007	42912	59.56	47707	60.68	49343	0.99952	120.20	Water	MWD+IFR1+AX	67	1	11/30/16 4:23	
6537.00	0.66	190.13	0.42	6443.61	25.41	-847.75	8.09	-0.011477	-0.001221	0.999512	24597	1410	42729	59.57	47706	60.69	49323	0.99958	120.20	Water	MWD+IFR1+AX	68	1	11/30/16 5:04	
6632.00	0.61	165.92	0.29	6538.60	24.38	-847.72	7.06	0.009524	-0.004640	0.999512	-24560	2143	42729	59.48	47749	60.58	49331	0.99957	116.60	Water	MWD+IFR1+AX	69	1	11/30/16 6:55	
6727.00	0.68	133.08	0.39	6633.60	23.50	-847.19	6.20	-0.005617	-0.010501	0.999512	-10421	22216	42766	59.48	47749	60.56	49306	0.99958	116.60	Water	MWD+IFR1+AX	70	1	11/30/16 7:48	
6822.00	0.63	113.40	0.24	6728.59	22.91	-846.30	5.62	-0.005617	-0.009524	0.999512	-16429	18040	42876	59.46	47759	60.54	49332	0.99957	118.40	Water	MWD+IFR1+AX	71	1	11/30/16 8:47	
6917.00	0.46	127.30	0.23	6823.59	22.47	-845.51	5.20	-0.000733	-0.008059	0.999023	21923	-10458	42912	59.61	47684	60.72	49310	0.99906	120.20	Water	MWD+IFR1+AX	72	1	11/30/16 10:18	
7011.00	0.40	60.21	0.51	6917.58	22.41	-844.93	5.15	-0.006593	-0.002198	0.999512	-19725	13828	43059	59.47	47754	60.54	49339	0.99954	120.20	Water	MWD+IFR1+AX	73	1	11/30/16 11:14	
7106.00	0.12	201.64	0.53	7012.58	22.48	-844.68	5.23	-0.001709	-0.001221	0.999023	22582	8773	42949	59.59	47695	60.69	49310	0.99903	123.80	Water	MWD+IFR1+AX	74	1	11/30/16 12:12	
7201.00	0.50	218.35	0.41	7107.58	22.06	-844.97	4.80	-0.008547	-0.001221	0.999023	-19176	15403	42766	59.44	47721	60.52	49334	0.99906	122.00	Water	MWD+IFR1+AX	75	1	11/30/16 13:14	
7296.00	0.55	230.40	0.13	7202.58	21.44	-845.58	4.17	-0.006593	0.007082	0.999512	202	-24414	42839	59.61	47684	60.73	49308	0.99956	123.80	Water	MWD+IFR1+AX	76	1	11/30/16 14:16	
7391.00	0.22	63.44	0.81	7297.58	21.24	-845.77	3.96	0.001221	-0.003663	0.999512	-14890	43022	42948	59.48	47749	60.56	49343	0.99952	125.60	Water	MWD+IFR1+AX	77	1	11/30/16 15:18	
7486.00	0.29	80.06	0.11	7392.58	21.36	-845.37	4.09	0.004640	-0.002198	0.999512	-3608	-23828	43059	59.57	47704	60.68	49344	0.99953	127.40	Water	MWD+IFR1+AX	78	1	11/30/16 16:32	
7580.00	0.19	97.21	0.13	7486.57	21.38	-844.98	4.12	0.001221	0.003175	0.999512	22509	-8773	43022	59.57	47702	60.68	49341	0.99952	129.20	Water	MWD+IFR1+AX	79	1	11/30/16 17:44	
7675.00	0.52	88.57	0.35	7581.57	21.37	-844.39	4.13	-0.009035	0.001221	0.999512	-55	24158	42985	59.52	47729	60.59	49308	0.99955	131.00	Water	MWD+IFR1+AX	80	1	11/30/16 19:00	
7770.00	0.81	76.70	0.34	7676.57	21.54	-843.31	4.31	-0.013919	-0.002198	0.999512	-11410	21227	43059	59.43	47773	60.49	49344	0.99961	127.40	Water	MWD+IFR1+AX	81	1	11/30/16 20:28	
7865.00	0.83	83.66	0.11	7771.56	21.77	-841.97	4.57	0.014408	0.001221	0.999512	7051	-22949	43132	59.59	47694	60.71	49363	0.99962	129.20	Water	MWD+IFR1+AX	82	1	11/30/16 21:53	
7934.00	0.90	95.53	0.28	7840.55	21.77	-840.93	4.59	-0.013431	0.008059	0.999512	12363	20788	42985	59.53	47722	60.62	49322	0.99963	129.20	Water	MWD+IFR1+AX	83	1	11/30/16 22:57	
8011.00	0.55	105.28	0.48	7917.54	21.61	-839.98	4.46	-0.001221	-0.009524	0.998535	-23205	6758	43095	59.62	47679	60.80	49410	0.99858	105.80	Oil	MWD+IFR1+AX	84	2	12/3/16 16:32	
8106.00	0.21	107.58	0.36	8012.54	21.44	-839.37	4.30	0.001709	0.003175	0.998535	18883	-15256	42582	59.48	47749	60.35	49016	0.99854	114.80	Oil	MWD+IFR1+AX	85	2	12/3/16 17:48	
8201.00	0.61	125.13	0.44	8107.54	21.10	-838.79	3.97	-0.004640	-0.009524	0.998535	-13974	19762	42546	59.74	47620	60.65	48949	0.99859	120.20	Oil	MWD+IFR1+AX	86	2	12/3/16 19:03	
8295.00	0.62	154.34	0.33	8201.53	20.35	-838.16	3.23	-0.006593	0.008547	0.999023	23132	-8407	42363	59.49	47744	60.37	48993	0.99908	125.60	Oil	MWD+IFR1+AX	87	2	12/3/16 20:41	
8390.00	0.59	148.55	0.07	8296.53	19.47	-837.68	2.36	-0.002686	0.010012	0.999023	19652	-14744	42399	59.50	47741	60.38	49003	0.99908	127.40	Oil	MWD+IFR1+AX	88	2	12/3/16 21:57	
8485.00	0.47	119.00	0.31	8391.52	18.86	-837.09	1.77	0.008059	-0.001709	0.998535	-13718	-20055	42473	60.40	48932	60.40	48932	0.99857	131.00	Oil	MWD+IFR1+MS	89	2	12/4/16 0:56	
8580.00	8.26	8.23	8.88	8486.20	25.44	-835.77	8.37	0.141880	0.021245	0.988279	17784	2289	45550	60.25	48952	60.25	48952	0.99864	134.60	Oil	MWD+IFR1+MS	90	2	12/4/16 4:10	
8674.00	17.87	8.14	10.22	8577.66	46.45	-832.75	29.44	0.284005	-0.115995	0.951648	9396	-4194	47784	59.98	48879	59.98	48879	0.99987	129.20	Oil	MWD+IFR1+MS	91	3	12/4/16 23:02	
8770.00	19.94	8.74	2.17	8668.48	77.21	-828.18	60.29	-0.318681	-0.120879	0.939438	-8260	-2509	47674	59.81	48449	59.81	48449	0.99936	129.20	Oil	MWD+IFR1+MS	92	4	12/9/16 10:26	
8833.00	26.83	9.60	10.95	8726.27	101.88	-824.17	85.03	-0.213675	0.397314	0.892064	-568	3059	48407	59.65	48506	59.65	48506	0.99965	131.00	Oil	MWD+IFR1+MS	93	4	12/9/16 11:32	
8864.00	31.24	7.47	14.61	8753.36	116.76	-821.96	99.95	-0.441758	-0.271795	0.854945	714	495	48443	59.78	48451	59.78	48451	0.99998	132.80	Oil	MWD+IFR1+MS	94	4	12/9/16 12:33	
8896.00	32.89	6.18	5.58	8780.48	133.62	-819.94	116.85	-0.542369	0.019292	0.839316	2106	-568	48407	59.62	48456	59.62	48456	0.99949	132.80	Oil	MWD+IFR1+MS	95	4	12/9/16 13:25	
8928.00	35.31	2.84	9.56	8806.98	151.50	-818.55	134.76	-0.532112	0.225397	0.815873	3132	-3388	48260	59.60	48480	59.60	48480	0.99980	132.80	Oil	MWD+IFR1+MS	96	4	12/9/16 14:23	
8959.00	39.29	1.78	13.00	8831.64	170.27	-817.80	153.53	0.302076	0.056044	0.773382	-5659	-5513	4												

## DIRECTIONAL SURVEY REPORT



Report Date: 12/18/2016	Job Start Date: 11/27/2016	Time Zone: GMT -06:00	North Reference: Grid
Operator: Pioneer Natural Resources	Map System: US State Plane 1927	Reference Datum (ft.): RotaryTable	Vertical Section Az (deg): 1.17
Well Name: University 3-310 PU #4H - ST1	Map Ellipsoid: Clarke 1866	Survey Calc. Method: Minimum Curvature	Magnetic Model: IFR
Rig: H&P 643	Map Datum: NAD 1927	Ground Elevation (ft.): 2703	Calc. Date: 11/28/2016
Job Number: HD1116DPM206	Map Zone: Texas Central 4203	RKB Above MSL (ft.): 26	Field Strength (nT): 47709
State: Tx	Well Latitude: 31° 16' 31.188" N	Non Mag Above (ft.): 49.14	Dip Angle (deg): 59.56
County: Upton	Well Longitude: 101° 49' 42.888" W	Non Mag Below (ft.): 20.1	Mag. Declination (deg): 6.51
Field: Spraberry	Well Northings:		Grid Convergence (deg): -0.77
Survey Correction Co.: Gyrodata Inc.	Well Eastings:		Total Correction (deg): 7.28

Depth (ft.)	Inclination (°)	Azimuth (°)	DLS (°/100)	TVD (ft.)	N/S (+/-) (ft.)	E/W (+/-) (ft.)	Vertical Section (ft.)	Accelerometer (g)			Magnetometer (nT)			Corrected Survey QC		Raw Survey QC				Temp (°F)	Mud Type	Survey Type	Survey #	Run #	Date & Time
								Ax	Ay	Az	Mx	My	Mz	Magnetic Dip Angle (°)	Mag Field (nT)	Magnetic Dip Angle (°)	Mag Field (nT)	Gravity Total (g)							
9741.00	89.15	356.32	2.43	8984.37	902.84	-864.65	884.99	0.213675	-0.976557	0.014896	-4194	40861	24634	59.28	47896	59.28	47896	0.99977	143.60	Oil	MWD+IFR1+MS	114	5	12/11/16 0:45	
9835.00	90.71	0.11	4.36	8984.48	996.77	-867.58	978.85	-0.843712	-0.534554	-0.012454	36612	19579	23755	59.24	47833	59.24	47833	0.99888	143.60	Oil	MWD+IFR1+MS	115	5	12/11/16 2:01	
9930.00	91.22	1.15	1.22	8982.88	1091.75	-866.53	1073.83	-0.740171	0.670818	-0.021245	29066	-29872	23571	59.10	47883	59.10	47883	0.99915	147.20	Oil	MWD+IFR1+MS	116	5	12/11/16 2:58	
10025.00	90.88	1.42	0.46	8981.14	1186.71	-864.40	1168.81	-0.690842	-0.722100	-0.015385	30495	28260	23791	59.16	47902	59.16	47902	0.99946	147.20	Oil	MWD+IFR1+MS	117	5	12/11/16 4:25	
10120.00	92.14	1.46	1.33	8978.64	1281.64	-862.02	1263.78	0.353846	-0.933578	-0.037363	-12582	42022	22839	59.22	47918	59.22	47918	0.99909	150.80	Oil	MWD+IFR1+MS	118	5	12/11/16 5:10	
10215.00	90.77	0.40	1.82	8976.23	1376.60	-860.48	1358.74	0.345055	-0.937485	-0.013431	-17088	-37894	23938	59.05	47968	59.05	47968	0.99906	149.00	Oil	MWD+IFR1+MS	119	5	12/11/16 6:43	
10310.00	90.49	359.62	0.87	8975.18	1471.59	-860.46	1453.71	-0.615140	-0.787546	-0.008547	28004	30568	23938	59.21	47871	59.21	47871	0.99935	152.60	Oil	MWD+IFR1+MS	120	5	12/11/16 7:28	
10405.00	90.41	359.60	0.09	8974.44	1566.59	-861.11	1548.68	0.998535	-0.031013	-0.007082	-41191	4560	24121	59.09	47951	59.09	47951	0.99904	154.40	Oil	MWD+IFR1+MS	121	5	12/11/16 8:14	
10499.00	90.24	359.46	0.23	8973.90	1660.58	-861.88	1642.64	-0.059341	-0.997558	-0.004151	5769	41007	24121	59.23	47924	59.23	47924	0.99933	158.00	Oil	MWD+IFR1+MS	122	5	12/11/16 9:00	
10594.00	90.91	0.15	1.01	8972.95	1755.57	-862.20	1737.60	0.856899	0.513553	-0.015873	-37198	-18736	23828	59.06	47984	59.06	47984	0.99913	158.00	Oil	MWD+IFR1+MS	123	5	12/11/16 10:01	
10689.00	91.02	0.08	0.14	8971.35	1850.56	-862.01	1832.57	-0.444200	0.894994	-0.017827	15733	-38590	23645	59.14	47914	59.14	47914	0.99932	161.60	Oil	MWD+IFR1+MS	124	5	12/11/16 10:42	
10784.00	90.66	2.00	2.06	8969.96	1945.53	-860.29	1927.56	-0.866178	0.497924	-0.011477	34744	-22582	24048	59.07	47910	59.07	47910	0.99916	161.60	Oil	MWD+IFR1+MS	125	5	12/11/16 11:49	
10878.00	89.82	1.25	1.20	8969.56	2039.49	-857.62	2021.55	-0.779731	0.624420	0.003175	30385	-27637	24634	59.04	47894	59.04	47894	0.99894	165.20	Oil	MWD+IFR1+MS	126	5	12/11/16 12:28	
10973.00	89.12	0.90	0.82	8970.44	2134.47	-855.84	2116.55	-0.751893	-0.657143	-0.015385	-28919	28883	25037	59.18	47931	59.18	47931	0.99871	168.80	Oil	MWD+IFR1+MS	127	5	12/11/16 13:07	
11068.00	89.26	1.55	0.70	8971.79	2229.44	-853.81	2211.54	-0.373871	0.926252	0.012943	12985	-38736	25073	59.03	47935	59.03	47935	0.99894	170.60	Oil	MWD+IFR1+MS	128	5	12/11/16 13:53	
11163.00	89.17	1.34	0.24	8973.09	2324.40	-851.41	2306.53	0.296215	-0.954090	0.014408	-9689	39725	24963	59.24	47908	59.24	47908	0.99912	172.40	Oil	MWD+IFR1+MS	129	5	12/11/16 14:53	
11258.00	88.47	0.90	0.87	8975.04	2419.36	-849.56	2401.51	0.988767	-0.140903	0.026618	-39689	8407	25550	59.11	47944	59.11	47944	0.99911	174.20	Oil	MWD+IFR1+MS	130	5	12/11/16 15:31	
11353.00	89.57	1.89	1.56	8976.67	2514.31	-847.24	2496.49	-0.067643	0.996581	0.007570	458	-40934	24890	59.08	47910	59.08	47910	0.99890	172.40	Oil	MWD+IFR1+MS	131	5	12/11/16 16:43	
11447.00	90.01	1.85	0.47	8977.01	2608.26	-844.18	2590.48	0.828083	0.558486	-0.002244	-35366	-21044	24560	59.00	47925	59.00	47925	0.99881	174.20	Oil	MWD+IFR1+MS	132	5	12/11/16 17:21	
11542.00	89.26	1.08	1.13	8977.62	2703.23	-841.75	2685.48	0.405617	-0.913065	0.012943	-14158	38370	24927	59.18	47896	59.18	47896	0.99919	176.00	Oil	MWD+IFR1+MS	133	5	12/11/16 18:00	
11637.00	89.37	1.68	0.64	8978.75	2798.19	-839.46	2780.47	-0.595116	-0.803175	0.010989	26245	31410	24854	59.20	47887	59.20	47887	0.99969	177.80	Oil	MWD+IFR1+MS	134	5	12/11/16 18:38	
11732.00	90.27	2.58	1.34	8979.05	2893.13	-835.93	2875.45	-0.772894	-0.633700	-0.004640	33169	24597	24267	59.18	47896	59.18	47896	0.99948	179.60	Oil	MWD+IFR1+MS	135	5	12/11/16 19:12	
11827.00	91.16	3.08	1.07	8977.87	2988.00	-831.24	2970.41	0.988279	-0.143834	-0.020269	-40934	7784	23718	59.10	47945	59.10	47945	0.99890	179.60	Oil	MWD+IFR1+MS	136	5	12/11/16 19:50	
11922.00	92.31	3.55	1.31	8974.99	3082.80	-825.75	3065.29	0.131136	-0.990232	-0.040293	-3938	41923	22766	59.22	47868	59.22	47868	0.99969	181.40	Oil	MWD+IFR1+MS	137	5	12/11/16 20:25	
12016.00	90.35	2.80	2.23	8972.81	3176.62	-820.54	3159.21	0.638584	-0.768987	-0.006105	-24890	32985	24267	59.12	47921	59.12	47921	0.99958	177.80	Oil	MWD+IFR1+MS	138	5	12/11/16 21:41	
12111.00	89.71	2.22	0.91	8972.76	3271.53	-816.38	3254.18	0.936508	0.347497	0.005128	-39176	-12216	24817	59.00	47957	59.00	47957	0.99891	181.40	Oil	MWD+IFR1+MS	139	5	12/11/16 22:21	
12206.00	89.34	1.47	0.88	8973.55	3366.48	-813.33	3349.17	-0.852503	-0.520879	0.011477	36136	19176	24890	59.16	47885	59.16	47885	0.99910	181.40	Oil	MWD+IFR1+MS	140	5	12/11/16 23:01	
12301.00	90.43	1.39	1.15	8973.74	3461.45	-810.95	3444.17	-0.927717	0.371429	-0.007570	37381	-17674	24121	59.13	47870	59.13	47870	0.99934	183.20	Oil	MWD+IFR1+MS	141	5	12/11/16 23:49	
12396.00	90.83	1.87	0.66	8972.69	3556.40	-808.25	3539.16	0.499878	-0.864713	-0.014408	-18773	37088	23828	59.20	47913	59.20	47913	0.99891	181.40	Oil	MWD+IFR1+MS	142	5	12/12/16 0:46	
12490.00	90.49	0.99	1.00	8971.61	3650.36	-805.91	3633.15	0.425641	-0.904274	-0.008547	-15183	38553	24048	59.18	47908	59.18	47908	0.99948	183.20	Oil	MWD+IFR1+MS	143	5	12/12/16 1:42	
12585.00	89.71	359.59	1.69	8971.44	3745.36	-805.43	3728.13	-0.769475	0.637119	-0.005128	29469	-28663	24670	59.02	47944	59.02	47944	0.99902	183.20	Oil	MWD+IFR1+MS	144	5	12/12/16 2:26	
12680.00	89.76	359.55	0.07	8971.88	3840.36	-806.14	3823.10	0.996093	-0.077411	0.004151	-40641	6465	24597	59.06	47943	59.06	47943	0.99911	185.00	Oil	MWD+IFR1+MS	145	5	12/12/16 3:06	
12775.00	89.40	358.90	0.78	8972.58	3935.34	-807.42	3918.04	0.907692	-0.417338	0.010501	-35659	20311	24744	59.15	47921	59.15	47921	0.99909	186.80	Oil	MWD+IFR1+MS	146	5	12/12/16 3:51	
12870.00	89.90	358.65	0.59	8973.16	4030.32	-809.45	4012.95	-0.943346	-0.329914	0.001709	39982	10092	24377	59.12	47902	59.12	47902	0.99937	183.20	Oil	MWD+IFR1+MS	147	5	12/12/16 5:08	
12964.00	89.90	358.59	0.06	8973.33	4124.29	-811.72	4106.86	0.747009	0.663492	0.001709	-33169	-24487	24524	58.96	47971	58.96	47971	0.99912	183.20	Oil	MWD+IFR1+MS	148	5	12/12/16 6:47	
13059.00	90.88	0.80	2.54	8972.68	4219.28	-812.22	4201.82	0.852992	0.520391	-0.015385	-36832	-19213	23901	58.99	47926	58.99	47926	0.99932	183.20	Oil	MWD+IFR1+MS	149	5	12/12/16 8:32	
13154.00	90.07	0.14	1.10	8971.89	4314.27	-811.45	4296.81	0.253236	-0.966789	-0.001221	-7491	40604	24304	59.18	47912	59.18	47912	0.99941	186.80	Oil	MWD+IFR1+MS	150	5	12/12/16 9:16	
13249.00	91.69	1.68	2.35	8970.43	4409.25	-809.94	4391.79	-0.757753	-0.650305	-0.029548	33278	25403	23205	59.15	47867	59.15	47867	0.99898	185.00	Oil	MWD+IFR1+MS	151	5	12/12/16 10:59	
13344.00	91.98	1.75	0.31	8967.39	4504.15	-807.10	4486.74	0.824664	-0.562882	-0.034432	-33278	25586	23059	59.09	47894	59.09	47894</								

# DIRECTIONAL SURVEY REPORT



Report Date: 12/18/2016	Job Start Date: 11/27/2016	Time Zone: GMT -06:00	North Reference: Grid
Operator: Pioneer Natural Resources	Map System: US State Plane 1927	Reference Datum (ft.): RotaryTable	Vertical Section Az (deg): 1.17
Well Name: University 3-310 PU #4H - ST1	Map Ellipsoid: Clarke 1866	Survey Calc. Method: Minimum Curvature	Magnetic Model: IFR
Rig: H&P 643	Map Datum: NAD 1927	Ground Elevation (ft.): 2703	Calc. Date: 11/28/2016
Job Number: HD1116DPM206	Map Zone: Texas Central 4203	RKB Above MSL (ft.): 26	Field Strength (nT): 47709
State: Tx	Well Latitude: 31° 16' 31.188" N	Non Mag Above (ft.): 49.14	Dip Angle (deg): 59.56
County: Upton	Well Longitude: 101° 49' 42.888" W	Non Mag Below (ft.): 20.1	Mag. Declination (deg): 6.51
Field: Spraberry	Well Northings: Well Eastings:		Grid Convergence (deg): -0.77
Survey Correction Co.: Gyrodata Inc.			Total Correction (deg): 7.28

Depth (ft.)	Inclination (°)	Azimuth (°)	DLS (°/100)	TVD (ft.)	N/S (+/-) (ft.)	E/W (+/-) (ft.)	Vertical Section (ft.)	Accelerometer (g)			Magnetometer (nT)			Corrected Survey QC		Raw Survey QC				Temp (°F)	Mud Type	Survey Type	Survey #	Run #	Date & Time
								Ax	Ay	Az	Mx	My	Mz	Magnetic Dip Angle (°)	Mag Field (nT)	Magnetic Dip Angle (°)	Mag Field (nT)	Gravity Total (g)							
15145.00	87.97	0.47	1.99	8952.00	6303.80	-761.06	6286.95	0.245910	-0.968254	0.035409	-7088	39725	25806	59.18	47899	59.18	47899	0.99962	201.20	Oil	MWD+IFR1+MS	171	5	12/13/16 19:26	
15240.00	90.21	1.37	2.54	8953.50	6398.77	-759.53	6381.93	0.818315	-0.573626	-0.003663	-32289	25733	24304	59.13	47911	59.13	47911	0.99935	201.20	Oil	MWD+IFR1+MS	172	5	12/13/16 22:49	
15335.00	90.94	1.12	0.81	8952.55	6493.74	-757.47	6476.92	-0.591209	0.805617	-0.016361	22363	-34963	23901	58.93	47894	58.93	47894	0.99941	203.00	Oil	MWD+IFR1+MS	173	5	12/14/16 0:06	
15430.00	91.36	0.94	0.48	8950.64	6588.71	-755.76	6571.90	0.094506	0.994628	-0.023687	-6648	-41117	23535	58.96	47840	58.96	47840	0.99939	204.80	Oil	MWD+IFR1+MS	174	5	12/14/16 1:27	
15525.00	88.84	0.46	2.70	8950.48	6683.69	-754.60	6666.89	-0.083272	0.995116	0.020269	458	-40641	25330	58.98	47890	58.98	47890	0.99880	206.60	Oil	MWD+IFR1+MS	175	5	12/14/16 2:41	
15619.00	92.34	2.39	4.25	8949.51	6777.64	-752.27	6760.87	0.870574	0.888156	-0.040781	-37674	-18700	22912	58.96	47895	58.96	47895	0.99893	203.00	Oil	MWD+IFR1+MS	176	5	12/14/16 5:04	
15714.00	89.76	2.41	2.72	8947.77	6872.53	-748.29	6855.82	0.255189	-0.966789	0.004151	-8443	40202	24634	59.16	47899	59.16	47899	0.99991	206.60	Oil	MWD+IFR1+MS	177	5	12/14/16 6:25	
15809.00	91.22	2.82	1.60	8946.96	6967.43	-743.96	6950.78	0.850550	0.522833	-0.021245	-36392	-20092	23828	58.85	47915	58.85	47915	0.99862	203.00	Oil	MWD+IFR1+MS	178	5	12/14/16 8:51	
15904.00	89.09	2.09	2.37	8946.70	7062.33	-739.89	7045.75	0.000244	0.915873	-2253	-40641	25256	58.95	47903	58.95	47903	0.99915	204.80	Oil	MWD+IFR1+MS	179	5	12/14/16 10:20		
15999.00	90.60	2.45	1.63	8946.96	7157.26	-736.12	7140.73	0.081319	0.996093	-0.010501	-5440	-40934	24194	58.91	47860	58.91	47860	0.99946	208.40	Oil	MWD+IFR1+MS	180	5	12/14/16 11:27	
16094.00	89.45	1.91	1.34	8946.92	7252.18	-732.51	7235.72	0.924298	-0.379243	0.009524	-36905	17637	24890	59.07	47881	59.07	47881	0.99912	208.40	Oil	MWD+IFR1+MS	181	5	12/14/16 12:39	
16188.00	92.28	2.56	3.09	8945.50	7346.09	-728.84	7329.68	0.622955	-0.780708	-0.039805	-24634	34121	22766	59.19	47847	59.19	47847	0.99958	208.40	Oil	MWD+IFR1+MS	182	5	12/14/16 14:06	
16283.00	90.49	1.66	2.11	8943.20	7441.00	-725.35	7424.63	-0.837851	0.545788	-0.008547	33205	-24524	23901	59.27	47700	59.27	47700	0.99998	181.40	Oil	MWD+IFR1+MS	183	6	12/16/16 4:01	
16378.00	89.34	1.23	1.29	8943.34	7535.96	-722.95	7519.63	0.989744	0.011477	-40751	-3169	24634	59.38	47723	59.38	47723	0.99979	185.00	Oil	MWD+IFR1+MS	184	6	12/16/16 4:48		
16472.00	89.59	2.28	1.15	8944.22	7629.91	-720.07	7613.62	-0.479365	-0.877900	0.007082	21520	34890	24451	59.46	47731	59.46	47731	1.00027	188.60	Oil	MWD+IFR1+MS	185	6	12/16/16 5:27	
16567.00	89.48	2.21	0.14	8944.99	7724.84	-716.35	7708.60	-0.520391	0.853968	0.009035	19359	-35989	24670	59.26	47735	59.26	47735	1.00007	190.40	Oil	MWD+IFR1+MS	186	6	12/16/16 6:13	
16662.00	89.62	2.11	0.18	8945.74	7819.77	-712.77	7803.58	-0.585348	0.810989	0.006593	22106	-34451	24524	59.31	47717	59.31	47717	1.00019	192.20	Oil	MWD+IFR1+MS	187	6	12/16/16 6:54	
16756.00	88.87	359.88	2.50	8946.98	7913.74	-711.14	7897.57	0.921368	0.388523	0.019780	-38626	-12839	24927	59.36	47730	59.36	47730	1.00013	190.40	Oil	MWD+IFR1+MS	188	6	12/16/16 9:29	
16851.00	89.34	0.53	0.84	8948.46	8008.73	-710.80	7992.54	-0.323077	-0.946276	0.011477	15916	7637	24560	59.41	47677	59.41	47677	0.99997	194.00	Oil	MWD+IFR1+MS	189	6	12/16/16 11:23	
16946.00	88.95	359.94	0.74	8949.88	8103.71	-710.41	8087.52	-0.513065	0.857876	0.018315	18114	-36429	24890	59.30	47693	59.30	47693	0.99976	194.00	Oil	MWD+IFR1+MS	190	6	12/16/16 12:17	
17041.00	87.66	359.59	1.41	8952.69	8198.67	-710.80	8182.45	-0.983394	0.178510	0.040782	38736	-10385	25769	59.29	47670	59.29	47670	1.00030	197.60	Oil	MWD+IFR1+MS	191	6	12/16/16 12:59	
17135.00	89.09	358.90	1.69	8955.35	8292.62	-712.04	8276.35	-0.477411	0.878877	0.015873	16245	-37418	24744	59.30	47710	59.30	47710	1.00030	197.60	Oil	MWD+IFR1+MS	192	6	12/16/16 15:17	
17230.00	90.66	358.39	1.74	8955.56	8387.59	-714.29	8371.26	0.601954	0.798291	-0.011477	-27894	-30678	23608	59.27	47713	59.27	47713	0.99987	199.40	Oil	MWD+IFR1+MS	193	6	12/16/16 18:13	
17325.00	91.36	359.55	1.43	8953.89	8482.56	-715.99	8466.17	0.430525	0.902320	-0.023687	-20897	-36099	23169	59.28	47714	59.28	47714	1.00005	199.40	Oil	MWD+IFR1+MS	194	6	12/16/16 21:20	
17420.00	91.11	359.25	0.41	8951.84	8577.53	-716.99	8561.10	-0.597070	0.802198	-0.019292	21996	-35330	23352	59.26	47721	59.26	47721	1.00019	203.00	Oil	MWD+IFR1+MS	195	6	12/16/16 22:36	
17514.00	92.03	0.55	1.69	8949.26	8671.49	-717.15	8655.04	0.914530	-0.402686	-0.035409	-37198	19542	22656	59.40	47737	59.40	47737	0.99989	201.20	Oil	MWD+IFR1+MS	196	6	12/17/16 0:43	
17609.00	91.47	0.33	0.63	8946.36	8766.44	-716.42	8749.99	-0.123809	0.992186	-0.025641	2180	-41703	23169	59.26	47757	59.26	47757	1.00021	203.00	Oil	MWD+IFR1+MS	197	6	12/17/16 1:53	
17704.00	92.06	1.86	1.73	8943.43	8861.38	-714.61	8844.94	0.839316	-0.542369	-0.035897	-33974	24744	22692	59.42	47764	59.42	47764	0.99995	203.00	Oil	MWD+IFR1+MS	198	6	12/17/16 3:50	
17798.00	93.15	2.91	1.61	8939.16	8955.20	-710.70	8938.82	0.077900	-0.995604	-0.054945	-1410	42363	21923	59.40	47720	59.40	47720	1.00016	204.80	Oil	MWD+IFR1+MS	199	6	12/17/16 4:26	
17893.00	91.52	0.89	2.73	8935.29	9050.06	-707.55	9033.72	0.860318	-0.509646	-0.026618	-34524	23645	23022	59.44	47760	59.44	47760	1.00030	206.60	Oil	MWD+IFR1+MS	200	6	12/17/16 5:31	
17987.00	91.30	0.41	0.56	8932.98	9144.02	-706.49	9127.69	-0.522344	0.852503	-0.022711	19176	-36978	23315	59.21	47735	59.21	47735	1.00006	206.60	Oil	MWD+IFR1+MS	201	6	12/17/16 6:22	
18081.00	89.59	359.53	2.05	8932.25	9238.02	-706.54	9221.66	0.845666	0.534066	0.007082	-36319	-18993	24451	59.27	47724	59.27	47724	1.00021	201.20	Oil	MWD+IFR1+MS	202	6	12/17/16 8:36	
18176.00	90.29	2.29	3.00	8932.35	9332.99	-705.03	9316.65	0.011966	-0.999512	-0.005128	1667	41227	23974	59.41	47720	59.41	47720	0.99960	201.20	Oil	MWD+IFR1+MS	203	6	12/17/16 10:43	
18271.00	90.41	2.09	0.25	8931.77	9427.92	-701.40	9411.64	0.620513	-0.783639	-0.007082	-23865	33755	23865	59.45	47733	59.45	47733	0.99959	204.80	Oil	MWD+IFR1+MS	204	6	12/17/16 11:25	
18365.00	90.38	2.02	0.08	8931.12	9521.86	-698.03	9505.62	-0.500366	-0.865201	-0.006593	22619	34560	23938	59.38	47739	59.38	47739	0.99949	206.60	Oil	MWD+IFR1+MS	205	6	12/17/16 12:55	
18460.00	90.35	2.11	0.10	8930.51	9616.80	-694.61	9600.61	0.294750	-0.955556	-0.006105	-10018	40092	23901	59.46	47739	59.46	47739	1.00000	208.40	Oil	MWD+IFR1+MS	206	6	12/17/16 13:52	
18555.00	90.77	1.68	0.63	8929.59	9711.74	-691.46	9695.60	-0.791941	-0.609768	-0.013431	34267	23315	23645	59.36	47717	59.36	47717	0.99958	203.00	Oil	MWD+IFR1+MS	207	6	12/17/16 16:34	
18650.00	92.03	2.45	1.55	8927.27	9806.65	-688.04	9790.55	-0.515995	0.855922	-0.035409	19799	-36941	22912	59.18	47766	59.18	47766	1.00005	204.80	Oil	MWD+IFR1+MS	208	6	12/17/16 17:41	
18745.00	91.92	1.74	0.76	8923.99	9901.53	-684.57	9885.48	0.117460	0.992186	-0.033455	-7308	-41191	22949	59.17	47715	59.17	47715	0.99967	208.40	Oil	MWD+IFR1+MS	209	6	12/17/16 19:02	
18839.00	90.77	1.78	1.22	8921.78	9995.45	-681.69	9979.45	-0.734310	-0.678632	-0.013431	31996	26319	23681	59.32	47720	59.32	47720	0.99997	197.60	Oil	MWD+IFR1+MS	210	6	12/18/16 4:32	
18934.00	88.73	1.98	2.1																						



**Gyrodata** Incorporated  
23000 Northwest Lake Dr.  
Houston, Texas 77095  
T: (281) 213-6300 • F: (281) 213-6301



December 21, 2016

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

Attn: Ms. Pamela Johns

**RE:  
Pioneer Natural Resources USA Inc.  
University 3-310 PU, Well #4H  
Permit No. 819033  
UNIVERSITY LANDS, Abstract  
Spraberry (Trend Area)  
Upton County, Texas  
API No. 42-461-40446**

Ms. Johns:

Enclosed, please find the original and one copy of the survey performed on the referenced well by Gyrodata, Inc (P-5 No. 339711). Other information required by your office is as follows:

Name & Title Of Surveyor	Drainhole Number	Surveyed Depths	Dates Performed	Type of Survey
David Gutierrez Matthew Turner Matthew Dinges Surveyors	Original Hole	121' – 19265'	11/27/16-12/19/16	Magnetic Measurement While Drilling

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 the 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.

Sincerely,

Brittany A. Hebert  
Operations

Enclosure



A Gyrodata Directional Survey

FINAL DEFINITIVE COPY

for

PIONEER NATURAL RESOURCES

Lease: University 3-310 PU Well: #4H - ST1, 12.25" and 8.5" Hole  
Location: H&P 643, Spraberry/Upton, Texas

Job Number: HD1116DPM206

Run Date: 27 Nov 2016 to 19 Dec 2016

Surveyor: David Gutierrez, Matt Turner, Matt Dinges

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 31.275328 deg. N Longitude: 101.828577 deg. W

Grid Convergence: -0.77 deg.

Magnetic Declination: 6.51 deg.

Total Correction: 7.28 deg. to Grid North

Proposed Well Direction: 1.17 deg.

Depth Reference: Rotary Table

Air Gap (RKB to Ground / RKB to MSL): 26.00

Ground Elevation (Ground to MSL / MSL to Mudline): 2703.00

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Well Head Location

# A Gyrodata Directional Survey

Pioneer Natural Resources

Lease: University 3-310 PU Well: #4H - ST1, 12.25" and 8.5" Hole

Location: H&P 643, Spraberry/Upton, Texas

Job Number: HD1116DPM206

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. feet	AZIMUTH deg.	HORIZONTAL COORDINATES feet	
0.00	0.00	0.00	0.0	0.00	0.00	0.0	0.0	0.00 N	0.00 E
121.0 FT. to 19265.0 FT. MAGNETIC MEASUREMENT WHILE DRILLING SURVEY ALL MEASURED DEPTHS AND COORDINATES REFERENCED TO H&P 643									
121.00	0.75	240.13	-0.4	0.62	121.00	0.8	240.1	0.39 S	0.68 W
221.00	0.60	327.78	-0.3	0.94	220.99	1.6	259.9	0.27 S	1.53 W
321.00	0.54	343.22	0.6	0.17	320.99	2.0	287.8	0.63 N	1.95 W
421.00	0.75	274.89	1.1	0.74	420.98	3.0	292.5	1.13 N	2.73 W
521.00	0.87	277.96	1.2	0.13	520.97	4.3	287.4	1.29 N	4.13 W
621.00	0.60	283.11	1.4	0.28	620.96	5.6	285.7	1.52 N	5.39 W
721.00	0.88	285.13	1.7	0.28	720.96	6.9	285.5	1.84 N	6.64 W
821.00	0.91	291.62	2.2	0.11	820.94	8.4	286.0	2.33 N	8.12 W
921.00	0.99	289.92	2.7	0.09	920.93	10.1	286.8	2.92 N	9.67 W
1021.00	0.88	275.68	3.1	0.26	1020.92	11.7	286.3	3.29 N	11.25 W
1121.00	0.78	290.84	3.4	0.24	1120.91	13.2	285.9	3.61 N	12.65 W
1214.00	0.70	170.60	3.0	1.38	1213.90	13.6	284.0	3.27 N	13.15 W
1321.00	0.29	247.40	2.3	0.65	1320.90	13.5	280.7	2.52 N	13.30 W
1416.00	0.41	222.96	1.9	0.20	1415.90	13.9	279.0	2.18 N	13.75 W
1511.00	0.32	199.81	1.4	0.18	1510.89	14.2	276.8	1.68 N	14.07 W
1606.00	1.07	262.52	1.0	1.02	1605.89	15.1	275.0	1.32 N	15.04 W
1700.00	2.72	277.66	1.1	1.82	1699.83	18.2	274.7	1.50 N	18.12 W
1795.00	4.72	279.71	2.0	2.11	1794.63	24.3	275.8	2.46 N	24.21 W
1890.00	6.16	278.80	3.2	1.52	1889.20	33.3	276.7	3.90 N	33.10 W
1985.00	7.30	274.80	4.3	1.30	1983.54	44.5	276.7	5.19 N	44.15 W
2080.00	8.28	273.56	5.0	1.05	2077.67	57.3	276.1	6.12 N	56.99 W
2175.00	9.18	273.58	5.5	0.95	2171.56	71.7	275.6	7.01 N	71.38 W
2269.00	10.46	272.90	6.1	1.37	2264.18	87.7	275.2	7.91 N	87.39 W
2364.00	10.66	273.05	6.7	0.21	2357.58	105.1	274.8	8.82 N	104.78 W
2459.00	11.39	273.93	7.4	0.79	2450.82	123.3	274.6	9.93 N	122.91 W
2554.00	13.81	274.99	8.6	2.56	2543.53	144.0	274.6	11.56 N	143.57 W
2648.00	13.91	275.14	10.2	0.11	2634.79	166.5	274.7	13.55 N	166.00 W
2743.00	13.33	274.75	11.6	0.62	2727.12	188.9	274.7	15.48 N	188.28 W
2838.00	12.88	275.86	13.2	0.54	2819.64	210.5	274.8	17.46 N	209.73 W



# A Gyrodata Directional Survey

Pioneer Natural Resources

Lease: University 3-310 PU Well: #4H - ST1, 12.25" and 8.5" Hole

Location: H&P 643, Spraberry/Upton, Texas

Job Number: HD1116DPM206

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
2933.00	13.30	275.33	14.8	0.46	2912.17	232.0 274.8	19.56 N 231.14 W
3028.00	14.03	272.21	15.8	1.09	3004.49	254.4 274.7	21.02 N 253.53 W
3123.00	13.89	270.35	15.9	0.49	3096.68	277.3 274.5	21.53 N 276.44 W
3217.00	14.19	269.95	15.5	0.34	3187.87	300.0 274.1	21.59 N 299.24 W
3312.00	14.06	272.51	15.5	0.67	3280.00	323.2 273.9	22.09 N 322.42 W
3407.00	13.20	272.94	16.1	0.91	3372.33	345.6 273.8	23.15 N 344.78 W
3501.00	13.16	269.53	16.1	0.83	3463.85	367.0 273.7	23.61 N 366.20 W
3596.00	14.16	267.74	15.1	1.14	3556.16	389.3 273.4	23.06 N 388.62 W
3691.00	14.97	269.13	14.0	0.93	3648.11	413.1 273.1	22.42 N 412.50 W
3786.00	15.84	269.90	13.3	0.94	3739.70	438.3 272.9	22.21 N 437.74 W
3881.00	14.73	270.47	12.8	1.18	3831.33	463.3 272.8	22.29 N 462.78 W
3976.00	14.68	271.45	12.7	0.27	3923.22	487.4 272.7	22.69 N 486.89 W
4071.00	16.96	272.13	13.0	2.41	4014.62	513.3 272.6	23.51 N 512.77 W
4166.00	16.50	271.73	13.4	0.50	4105.60	540.7 272.6	24.43 N 540.10 W
4261.00	15.85	272.86	13.9	0.76	4196.84	567.1 272.6	25.49 N 566.55 W
4356.00	15.28	272.70	14.6	0.60	4288.35	592.6 272.6	26.72 N 592.01 W
4451.00	14.36	273.10	15.4	0.97	4380.19	616.9 272.6	27.95 N 616.28 W
4545.00	14.32	270.78	15.7	0.61	4471.26	640.2 272.6	28.74 N 639.54 W
4640.00	14.63	267.22	14.8	0.99	4563.25	663.9 272.4	28.32 N 663.27 W
4735.00	15.25	267.32	13.1	0.65	4655.04	688.3 272.3	27.15 N 687.73 W
4830.00	14.77	268.30	11.7	0.57	4746.79	712.8 272.1	26.21 N 712.32 W
4925.00	13.49	269.69	10.8	1.39	4838.92	736.0 272.0	25.79 N 735.51 W
5020.00	11.74	270.83	10.4	1.86	4931.62	756.7 272.0	25.87 N 756.25 W
5115.00	9.68	268.94	10.1	2.20	5024.96	774.3 271.9	25.86 N 773.90 W
5210.00	7.04	268.34	9.5	2.78	5118.94	788.1 271.9	25.54 N 787.71 W
5305.00	6.57	270.05	9.1	0.54	5213.28	799.4 271.8	25.38 N 798.96 W
5400.00	5.76	269.75	8.8	0.85	5307.72	809.6 271.8	25.36 N 809.17 W
5495.00	4.90	270.25	8.7	0.91	5402.31	818.4 271.8	25.36 N 817.99 W
5590.00	3.78	272.79	8.7	1.20	5497.04	825.6 271.8	25.53 N 825.18 W
5684.00	2.92	272.80	8.8	0.91	5590.88	831.1 271.8	25.80 N 830.66 W
5779.00	2.42	269.62	8.8	0.55	5685.77	835.5 271.8	25.90 N 835.08 W
5873.00	1.86	266.90	8.7	0.61	5779.71	839.0 271.8	25.81 N 838.59 W
5968.00	1.50	270.67	8.6	0.40	5874.67	841.8 271.8	25.74 N 841.38 W
6063.00	1.35	274.36	8.6	0.19	5969.64	844.1 271.8	25.84 N 843.73 W

# A Gyrodata Directional Survey

Pioneer Natural Resources

Lease: University 3-310 PU Well: #4H - ST1, 12.25" and 8.5" Hole

Location: H&P 643, Spraberry/Upton, Texas

Job Number: HD1116DPM206

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
6158.00	0.83	273.44	8.7	0.55	6064.62	845.9 271.8	25.97 N 845.54 W
6253.00	0.55	285.42	8.8	0.33	6159.61	847.1 271.8	26.13 N 846.66 W
6348.00	0.22	287.75	9.0	0.35	6254.61	847.7 271.8	26.31 N 847.28 W
6442.00	0.28	206.11	8.8	0.35	6348.61	848.0 271.8	26.15 N 847.55 W
6537.00	0.66	190.13	8.1	0.42	6443.61	848.1 271.7	25.41 N 847.75 W
6632.00	0.61	165.92	7.1	0.29	6538.60	848.1 271.6	24.38 N 847.72 W
6727.00	0.68	133.08	6.2	0.39	6633.60	847.5 271.6	23.50 N 847.19 W
6822.00	0.63	113.40	5.6	0.24	6728.59	846.6 271.6	22.91 N 846.30 W
6917.00	0.46	127.30	5.2	0.23	6823.59	845.8 271.5	22.47 N 845.51 W
7011.00	0.40	60.21	5.2	0.51	6917.58	845.2 271.5	22.41 N 844.93 W
7106.00	0.12	201.64	5.2	0.53	7012.58	845.0 271.5	22.48 N 844.68 W
7201.00	0.50	218.35	4.8	0.41	7107.58	845.3 271.5	22.06 N 844.97 W
7296.00	0.55	230.40	4.2	0.13	7202.58	845.9 271.5	21.44 N 845.58 W
7391.00	0.22	63.44	4.0	0.81	7297.58	846.0 271.4	21.24 N 845.77 W
7486.00	0.29	80.06	4.1	0.11	7392.58	845.6 271.4	21.36 N 845.37 W
7580.00	0.19	97.21	4.1	0.13	7486.57	845.2 271.4	21.38 N 844.98 W
7675.00	0.52	88.57	4.1	0.35	7581.57	844.7 271.4	21.37 N 844.39 W
7770.00	0.81	76.70	4.3	0.34	7676.57	843.6 271.5	21.54 N 843.31 W
7865.00	0.83	83.66	4.6	0.11	7771.56	842.3 271.5	21.77 N 841.97 W
7934.00	0.90	95.53	4.6	0.28	7840.55	841.2 271.5	21.77 N 840.93 W

END 12.25 INCH HOLE SECTION  
START 8.5 INCH HOLE SECTION

8011.00	0.55	105.28	4.5	0.48	7917.54	840.3 271.5	21.61 N 839.98 W
8106.00	0.21	107.58	4.3	0.36	8012.54	839.6 271.5	21.44 N 839.37 W
8201.00	0.61	125.13	4.0	0.44	8107.54	839.1 271.4	21.10 N 838.79 W
8295.00	0.62	154.34	3.2	0.33	8201.53	838.4 271.4	20.35 N 838.16 W
8390.00	0.59	148.55	2.4	0.07	8296.53	837.9 271.3	19.47 N 837.68 W
8485.00	0.47	119.00	1.8	0.31	8391.52	837.3 271.3	18.86 N 837.09 W
8580.00	8.26	8.23	8.4	8.88	8486.20	836.2 271.7	25.44 N 835.77 W
8674.00	17.87	8.14	29.4	10.22	8577.66	834.0 273.2	46.45 N 832.75 W
8770.00	19.94	8.74	60.3	2.17	8668.48	831.8 275.3	77.21 N 828.18 W
8833.00	26.83	9.60	85.0	10.95	8726.27	830.4 277.0	101.88 N 824.17 W



# A Gyrodata Directional Survey

Pioneer Natural Resources

Lease: University 3-310 PU Well: #4H - ST1, 12.25" and 8.5" Hole

Location: H&P 643, Spraberry/Upton, Texas

Job Number: HD1116DPM206

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
8864.00	31.24	7.47	100.0	14.61	8753.36	830.2 278.1	116.76 N 821.96 W
8896.00	32.89	6.18	116.8	5.58	8780.48	830.8 279.3	133.62 N 819.94 W
8928.00	35.31	2.84	134.8	9.56	8806.98	832.5 280.5	151.50 N 818.55 W
8959.00	39.29	1.78	153.5	13.00	8831.64	835.3 281.8	170.27 N 817.80 W
8991.00	43.48	2.00	174.7	13.10	8855.64	839.2 283.2	191.41 N 817.10 W
9022.00	47.45	2.70	196.8	12.91	8877.38	843.6 284.7	213.48 N 816.19 W
9054.00	51.32	2.98	221.1	12.11	8898.20	849.0 286.3	237.74 N 814.98 W
9085.00	56.27	2.57	246.0	16.00	8916.51	855.1 287.9	262.72 N 813.78 W
9117.00	60.53	0.95	273.3	13.99	8933.27	863.1 289.6	289.95 N 812.95 W
9148.00	64.86	0.84	300.8	13.97	8947.49	872.3 291.3	317.49 N 812.52 W
9180.00	70.54	0.19	330.4	17.85	8959.63	883.3 293.1	347.08 N 812.26 W
9211.00	75.82	359.89	360.1	17.06	8968.60	895.4 294.9	376.74 N 812.24 W
9243.00	80.20	358.11	391.4	14.73	8975.24	909.5 296.7	408.03 N 812.79 W
9274.00	85.36	355.92	422.0	18.06	8979.14	925.0 298.3	438.73 N 814.39 W
9338.00	88.81	353.48	485.5	6.60	8982.39	961.9 301.5	502.36 N 820.30 W
9362.00	91.08	353.31	509.3	9.48	8982.42	976.9 302.6	526.20 N 823.06 W
9432.00	90.24	353.03	578.6	1.26	8981.61	1022.8 305.6	595.70 N 831.38 W
9456.00	89.76	353.12	602.4	2.03	8981.61	1039.1 306.6	619.52 N 834.27 W
9551.00	89.79	352.91	696.4	0.22	8981.98	1106.8 310.2	713.82 N 845.83 W
9646.00	89.09	354.01	790.5	1.37	8982.91	1177.7 313.3	808.19 N 856.65 W
9741.00	89.15	356.32	885.0	2.43	8984.37	1250.1 316.2	902.84 N 864.65 W
9835.00	90.71	0.11	978.9	4.36	8984.48	1321.5 319.0	996.77 N 867.58 W
9930.00	91.22	1.15	1073.8	1.22	8982.88	1393.8 321.6	1091.75 N 866.53 W
10025.00	90.88	1.42	1168.8	0.46	8981.14	1468.2 323.9	1186.71 N 864.40 W
10120.00	92.14	1.46	1263.8	1.33	8978.64	1544.6 326.1	1281.64 N 862.02 W
10215.00	90.77	0.40	1358.7	1.82	8976.23	1623.4 328.0	1376.60 N 860.48 W
10310.00	90.49	359.62	1453.7	0.87	8975.18	1704.7 329.7	1471.59 N 860.46 W
10405.00	90.41	359.60	1548.7	0.09	8974.44	1787.7 331.2	1566.59 N 861.11 W
10499.00	90.24	359.46	1642.6	0.23	8973.90	1870.9 332.6	1660.58 N 861.88 W
10594.00	90.91	0.15	1737.6	1.01	8972.95	1955.9 333.8	1755.57 N 862.20 W
10689.00	91.02	0.08	1832.6	0.14	8971.35	2041.5 335.0	1850.56 N 862.01 W
10784.00	90.66	2.00	1927.6	2.06	8969.96	2127.2 336.1	1945.53 N 860.29 W
10878.00	89.82	1.25	2021.6	1.20	8969.56	2212.5 337.2	2039.49 N 857.62 W
10973.00	89.12	0.90	2116.6	0.82	8970.44	2299.7 338.2	2134.47 N 855.84 W



# A Gyrodata Directional Survey

Pioneer Natural Resources

Lease: University 3-310 PU Well: #4H - ST1, 12.25" and 8.5" Hole

Location: H&P 643, Spraberry/Upton, Texas

Job Number: HD1116DPM206

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
11068.00	89.26	1.55	2211.5	0.70	8971.79	2387.3 339.0	2229.44 N 853.81 W
11163.00	89.17	1.34	2306.5	0.24	8973.09	2475.4 339.9	2324.40 N 851.41 W
11258.00	88.47	0.90	2401.5	0.87	8975.04	2564.2 340.7	2419.36 N 849.56 W
11353.00	89.57	1.89	2496.5	1.56	8976.67	2653.2 341.4	2514.31 N 847.24 W
11447.00	90.01	1.85	2590.5	0.47	8977.01	2741.5 342.1	2608.26 N 844.18 W
11542.00	89.26	1.08	2685.5	1.13	8977.62	2831.3 342.7	2703.23 N 841.75 W
11637.00	89.37	1.68	2780.5	0.64	8978.75	2921.4 343.3	2798.19 N 839.46 W
11732.00	90.27	2.58	2875.4	1.34	8979.05	3011.5 343.9	2893.13 N 835.93 W
11827.00	91.16	3.08	2970.4	1.07	8977.87	3101.5 344.5	2988.00 N 831.24 W
11922.00	92.31	3.55	3065.3	1.31	8974.99	3191.5 345.0	3082.80 N 825.75 W
12016.00	90.35	2.80	3159.2	2.23	8972.81	3280.9 345.5	3176.62 N 820.54 W
12111.00	89.71	2.22	3254.2	0.91	8972.76	3371.9 346.0	3271.53 N 816.38 W
12206.00	89.34	1.47	3349.2	0.88	8973.55	3463.3 346.4	3366.48 N 813.33 W
12301.00	90.43	1.39	3444.2	1.15	8973.74	3555.2 346.8	3461.45 N 810.95 W
12396.00	90.83	1.87	3539.2	0.66	8972.69	3647.1 347.2	3556.40 N 808.25 W
12490.00	90.49	0.99	3633.2	1.00	8971.61	3738.3 347.6	3650.36 N 805.91 W
12585.00	89.71	359.59	3728.1	1.69	8971.44	3831.0 347.9	3745.36 N 805.43 W
12680.00	89.76	359.55	3823.1	0.07	8971.88	3924.1 348.1	3840.36 N 806.14 W
12775.00	89.40	358.90	3918.0	0.78	8972.58	4017.3 348.4	3935.34 N 807.42 W
12870.00	89.90	358.65	4012.9	0.59	8973.16	4110.8 348.6	4030.32 N 809.45 W
12964.00	89.90	358.59	4106.9	0.06	8973.33	4203.4 348.9	4124.29 N 811.72 W
13059.00	90.88	0.80	4201.8	2.54	8972.68	4296.7 349.1	4219.28 N 812.22 W
13154.00	90.07	0.14	4296.8	1.10	8971.89	4389.9 349.3	4314.27 N 811.45 W
13249.00	91.69	1.68	4391.8	2.35	8970.43	4483.0 349.6	4409.25 N 809.94 W
13344.00	91.98	1.75	4486.7	0.31	8967.39	4575.9 349.8	4504.15 N 807.10 W
13438.00	88.39	358.76	4580.7	4.97	8967.09	4668.4 350.0	4598.13 N 806.68 W
13533.00	89.37	359.90	4675.6	1.58	8968.94	4762.1 350.2	4693.10 N 807.79 W
13628.00	89.90	0.49	4770.6	0.83	8969.55	4855.7 350.4	4788.10 N 807.46 W
13723.00	92.14	1.87	4865.6	2.77	8967.86	4949.0 350.6	4883.05 N 805.51 W
13818.00	94.50	2.82	4960.4	2.68	8962.36	5041.9 350.9	4977.81 N 801.63 W
13912.00	92.96	2.28	5054.2	1.74	8956.24	5133.8 351.1	5071.51 N 797.46 W
14007.00	90.41	1.75	5149.1	2.74	8953.45	5227.1 351.3	5166.40 N 794.12 W
14102.00	90.49	1.58	5244.1	0.20	8952.70	5320.5 351.4	5261.36 N 791.36 W
14197.00	91.41	2.02	5339.1	1.07	8951.13	5414.0 351.6	5356.30 N 788.37 W

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Pioneer Natural Resources

Lease: University 3-310 PU Well: #4H - ST1, 12.25" and 8.5" Hole

Location: H&P 643, Spraberry/Upton, Texas

Job Number: HD1116DPM206

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
14292.00	89.90	0.77	5434.1	2.06	8950.04	5507.6 351.8	5451.26 N 786.06 W
14386.00	89.62	1.02	5528.1	0.40	8950.43	5600.5 351.9	5545.25 N 784.59 W
14481.00	90.91	3.06	5623.1	2.54	8949.99	5694.0 352.1	5640.18 N 781.21 W
14576.00	90.43	1.85	5718.0	1.37	8948.88	5787.5 352.3	5735.08 N 777.14 W
14671.00	88.84	1.18	5813.0	1.82	8949.49	5881.3 352.4	5830.04 N 774.63 W
14766.00	90.21	1.98	5908.0	1.67	8950.28	5975.1 352.6	5925.00 N 772.01 W
14861.00	90.46	2.02	6003.0	0.27	8949.72	6068.8 352.7	6019.94 N 768.70 W
14956.00	90.10	1.57	6098.0	0.61	8949.26	6162.7 352.9	6114.89 N 765.72 W
15050.00	89.31	1.81	6192.0	0.88	8949.74	6255.6 353.0	6208.85 N 762.95 W
15145.00	87.97	0.47	6286.9	1.99	8952.00	6349.6 353.1	6303.80 N 761.06 W
15240.00	90.21	1.37	6381.9	2.54	8953.50	6443.7 353.2	6398.77 N 759.53 W
15335.00	90.94	1.12	6476.9	0.81	8952.55	6537.8 353.3	6493.74 N 757.47 W
15430.00	91.36	0.94	6571.9	0.48	8950.64	6631.9 353.5	6588.71 N 755.76 W
15525.00	88.84	0.46	6666.9	2.70	8950.48	6726.2 353.6	6683.69 N 754.60 W
15619.00	92.34	2.39	6760.9	4.25	8949.51	6819.3 353.7	6777.64 N 752.27 W
15714.00	89.76	2.41	6855.8	2.72	8947.77	6913.1 353.8	6872.53 N 748.29 W
15809.00	91.22	2.82	6950.8	1.60	8946.96	7007.0 353.9	6967.43 N 743.96 W
15904.00	89.09	2.09	7045.8	2.37	8946.70	7101.0 354.0	7062.33 N 739.89 W
15999.00	90.60	2.45	7140.7	1.63	8946.96	7195.0 354.1	7157.26 N 736.12 W
16094.00	89.45	1.91	7235.7	1.34	8946.92	7289.1 354.2	7252.18 N 732.51 W
16188.00	92.28	2.56	7329.7	3.09	8945.50	7382.2 354.3	7346.09 N 728.84 W
16283.00	90.49	1.66	7424.6	2.11	8943.20	7476.3 354.4	7441.00 N 725.35 W
16378.00	89.34	1.23	7519.6	1.29	8943.34	7570.6 354.5	7535.96 N 722.95 W
16472.00	89.59	2.28	7613.6	1.15	8944.22	7663.8 354.6	7629.91 N 720.07 W
16567.00	89.48	2.21	7708.6	0.14	8944.99	7758.0 354.7	7724.84 N 716.35 W
16662.00	89.62	2.11	7803.6	0.18	8945.74	7852.2 354.8	7819.77 N 712.77 W
16756.00	88.87	359.88	7897.6	2.50	8946.98	7945.6 354.9	7913.74 N 711.14 W
16851.00	89.34	0.53	7992.5	0.84	8948.46	8040.2 354.9	8008.73 N 710.80 W
16946.00	88.95	359.94	8087.5	0.74	8949.88	8134.8 355.0	8103.71 N 710.41 W
17041.00	87.66	359.59	8182.4	1.41	8952.69	8229.4 355.0	8198.67 N 710.80 W
17135.00	89.09	358.90	8276.4	1.69	8955.35	8323.1 355.1	8292.62 N 712.04 W
17230.00	90.66	358.39	8371.3	1.74	8955.56	8417.9 355.1	8387.59 N 714.29 W
17325.00	91.36	359.55	8466.2	1.43	8953.89	8512.7 355.2	8482.56 N 715.99 W
17420.00	91.11	359.25	8561.1	0.41	8951.84	8607.4 355.2	8577.53 N 716.99 W



# A Gyrodata Directional Survey

Pioneer Natural Resources

Lease: University 3-310 PU Well: #4H - ST1, 12.25" and 8.5" Hole

Location: H&P 643, Spraberry/Upton, Texas

Job Number: HD1116DPM206

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
17514.00	92.03	0.55	8655.0	1.69	8949.26	8701.1 355.3	8671.49 N 717.15 W
17609.00	91.47	0.33	8750.0	0.63	8946.36	8795.7 355.3	8766.44 N 716.42 W
17704.00	92.06	1.86	8844.9	1.73	8943.43	8890.1 355.4	8861.38 N 714.61 W
17798.00	93.15	2.91	8938.8	1.61	8939.16	8983.4 355.5	8955.20 N 710.70 W
17893.00	91.52	0.89	9033.7	2.73	8935.29	9077.7 355.5	9050.06 N 707.55 W
17987.00	91.30	0.41	9127.7	0.56	8932.98	9171.3 355.6	9144.02 N 706.49 W
18081.00	89.59	359.53	9221.7	2.05	8932.25	9265.0 355.6	9238.02 N 706.54 W
18176.00	90.29	2.29	9316.6	3.00	8932.35	9359.6 355.7	9332.99 N 705.03 W
18271.00	90.41	2.09	9411.6	0.25	8931.77	9454.0 355.7	9427.92 N 701.40 W
18365.00	90.38	2.02	9505.6	0.08	8931.12	9547.4 355.8	9521.86 N 698.03 W
18460.00	90.35	2.11	9600.6	0.10	8930.51	9641.8 355.9	9616.80 N 694.61 W
18555.00	90.77	1.68	9695.6	0.63	8929.59	9736.3 355.9	9711.74 N 691.46 W
18650.00	92.03	2.45	9790.5	1.55	8927.27	9830.8 356.0	9806.65 N 688.04 W
18745.00	91.92	1.74	9885.5	0.76	8923.99	9925.2 356.0	9901.53 N 684.57 W
18839.00	90.77	1.78	9979.5	1.22	8921.78	10018.7 356.1	9995.45 N 681.69 W
18934.00	88.73	1.98	10074.4	2.16	8922.20	10113.2 356.2	10090.40 N 678.57 W
19029.00	87.44	0.58	10169.4	2.00	8925.37	10207.8 356.2	10185.32 N 676.45 W
19123.00	88.70	1.04	10263.3	1.43	8928.54	10301.4 356.2	10279.25 N 675.12 W
19218.00	87.86	0.12	10358.3	1.31	8931.39	10396.1 356.3	10374.20 N 674.16 W
19265.00	87.49	359.44	10405.2	1.65	8933.30	10443.0 356.3	10421.16 N 674.34 W

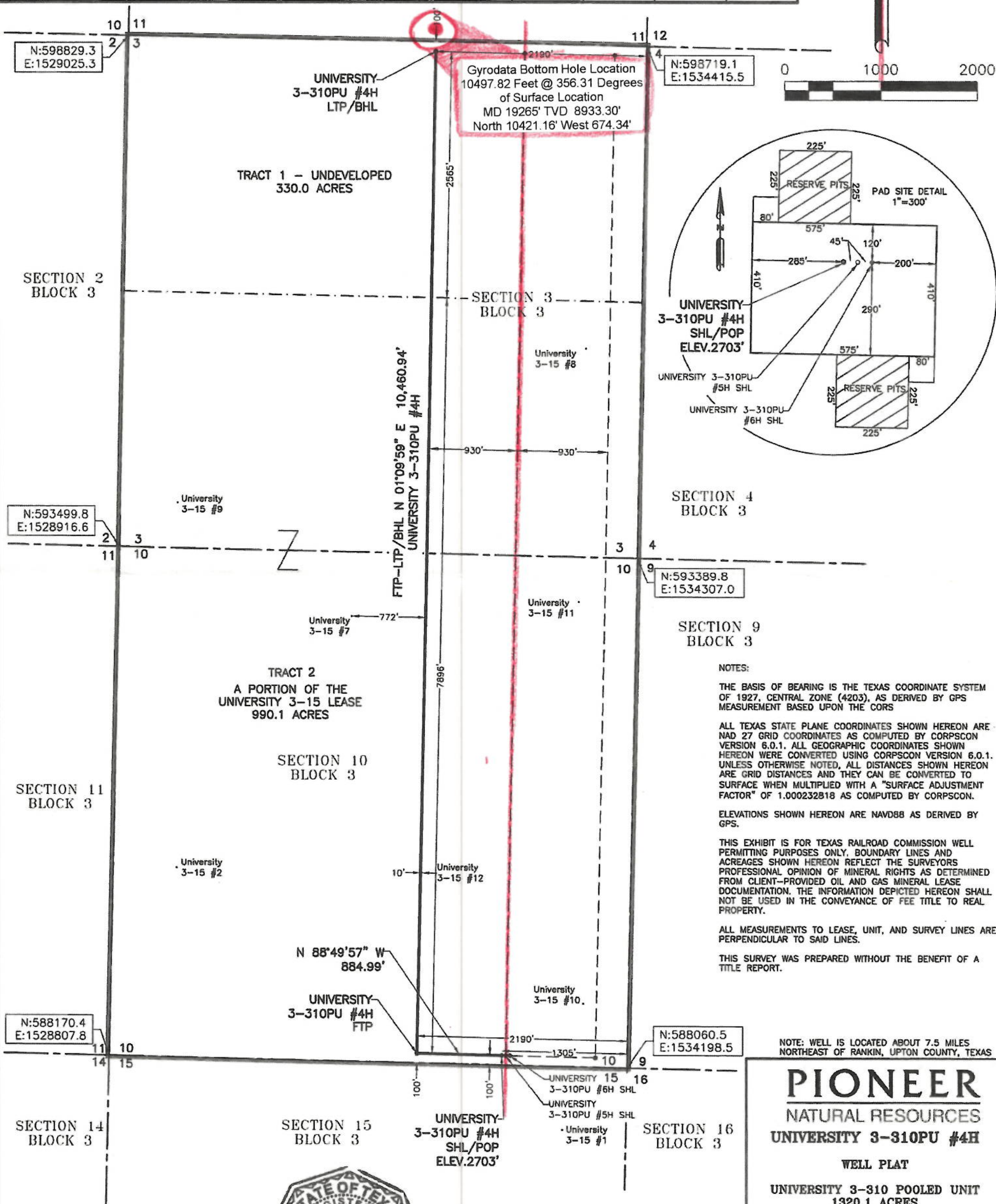
## PROJECTION TO BIT

19320.00	87.49	359.44	10460.1	0.00	8935.71	10497.8 356.3	10476.11 N 674.88 W
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Final Station Closure: Distance: 10497.82 ft. Az.: 356.31 deg.



UNIVERSITY 3-310PU #4H	NORTHING (NAD27)	EASTING (NAD27)	LATITUDE (NAD 27)	LONGITUDE (NAD 27)	SECTION LINE		LEASE LINE	
SURFACE HOLE LOCATION/ POINT OF PENETRATION (SHL/POP)	588187.1	1532895.8	31.275328	101.828577	100' S	1305' E	100' S	1305' E
FIRST TAKE POINT (FTP)	588205.1	1532011.0	31.275345	101.831409	100' S	2190' E	100' S	2190' E
LAST TAKE POINT/ BOTTOM HOLE LOCATION (LTP/BHL)	598663.9	1532224.0	31.304106	101.831178	100' N	2190' E	100' N	2190' E



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 6.0.1. 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 1.000232818 AS COMPUTED BY CORPSCON.

ELEVATIONS SHOWN HEREON ARE NAVD88 AS DERIVED BY GPS.

THIS EXHIBIT IS FOR TEXAS RAILROAD COMMISSION WELL PERMITTING PURPOSES ONLY. BOUNDARY LINES AND ACRES 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.

NOTE: WELL IS LOCATED ABOUT 7.5 MILES  
NORTHEAST OF RANKIN, UPTON COUNTY, TEXAS

**PIONEER**  
NATURAL RESOURCES

UNIVERSITY 3-310PU #4H

WELL PLAT

UNIVERSITY 3-310 POOLED UNIT

1020.1 ACRES  
CONSISTING OF

TRACT 1 - UNDEVELOPED

**330.0 ACRES**

AND A 990.1 ACRE PORTION OF THE  
UNIVERSITY 3-15 LEASE

LOCATED IN  
SECTION 10 AND SECTION 3, BLOCK 3  
UNIVERSITY LANDS SURVEY,  
UPTON COUNTY, TEXAS



**HALFF**

DATED: 09/27/2016  
BY: JUAN GONZALEZ  
TBPLS FIRM NO. 10183998  
HALFF ASSOCIATES INC., ENGINEERS - SURVEYORS  
3300 N. A STREET, BLDG. 1 STE. 114,  
MIDLAND TX 79705  
(432) 253-3250  
SCALE: 1" = 1000' AVO 29678-W0158



### LEGEND

LEASE LINE  
WELL LATERAL  
PROPOSED WELL BORE  
PERMITTED WELL BORE  
AS-DRILLED WELL BORE  
SECTION LINE  
TRACT LINE  
3-310 POOLED UNIT  
NOT TO SCALE



State of Texas  
County of Harris

I, Michael Hurte, certify that; I am employed by Gyrodata Inc.; that I am authorized and qualified to review the Magnetic While Drilling survey from a depth of 121 feet to a depth of 19265 feet conducted on the day(s) of 11/27/16 through 12/19/16; that this survey was conducted at the request of Pioneer Natural Resources USA Inc. for the University 3-310 PU #4H Well API No. 42-461-40446 in Upton County, Texas; that the data is true, correct, complete, and within the limitations of the tool as set forth by Gyrodata Inc.; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Gyrodata Inc.



Michael Hurte  
Operations Coordinator