



OXY, Texas, USA Inc

**Loving County, TX
University
University 19-8 A 1H**

Wellbore #1

Design: Surveys

Standard Survey Report

07 November, 2019





Date: 12/28/2019

Railroad Commission of Texas
Oil and Gas Division
1701 North Congress Avenue
Austin, Texas 78711

Attention: Pam Johns

Re: Oxy USA Inc.
University 19-8 A 1H
Loving County Texas
API No. 42-301-34384

Enclosed, please find the original and one copy of the survey performed on the referenced well by Scout Downhole Inc. (SDI). (P5#760217). 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>
Paul Niewiowski	Original Hole	199' -16940'	09/19/19 - 10/31/19	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.

Cary Rodriguez

Enclosures

Cc: Oxy USA Inc.

**1125 Beach Airport Rd, Conroe, Texas
77301
PH 936-756-3225 FAX 936-756-3248**



Survey Report



Company:	OXY, Texas, USA Inc	Local Co-ordinate Reference:	Well University 19-8 A 1H
Project:	Loving County, TX	TVD Reference:	GL 2748.06' + KB 26.5' @ 2774.56usft (H&P 460)
Site:	University	MD Reference:	GL 2748.06' + KB 26.5' @ 2774.56usft (H&P 460)
Well:	University 19-8 A 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single User Db

Project	Loving 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				
Site Position:		Northing:	755,185.32 usft	Latitude:	31° 42' 21.663 N
From:	Map	Easting:	1,034,250.70 usft	Longitude:	103° 26' 20.738 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.60 °

Well	University 19-8 A 1H					
Well Position	+N-S	0.00 usft	Northing:	755,185.32 usft	Latitude:	31° 42' 21.663 N
	+E-W	0.00 usft	Easting:	1,034,250.70 usft	Longitude:	103° 26' 20.738 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	2,748.06 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	9/17/2019	6.83	59.37	47,302.80000000

Design	Surveys				
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	153.87	

Survey Program	Date	11/7/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
26.50	8,323.00	Survey #1_MWD+IFR1 (Wellbore #1)	A005Mb_MWD+IFR1	OWSG MWD + IFR1	
8,323.00	11,930.00	Survey #2_MWD+IFR1+SAG+FDIR (Wellbore #1)	A010Mb_MWD+IFR1+SA	OWSG MWD + IFR1 + Sag + Multi-Station Corre	
11,930.00	12,253.00	Survey #3_MWD+IFR1 (Wellbore #1)	A005Mb_MWD+IFR1	OWSG MWD + IFR1	
12,253.00	16,980.00	Survey #4_MWD+IFR1+SAG+FDIR (Wellbore #1)	A010Mb_MWD+IFR1+SA	OWSG MWD + IFR1 + Sag + Multi-Station Corre	

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	0.00
26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ground level @ 26.50' MD										
199.00	0.27	77.10	199.00	0.09	0.40	0.09	0.16	0.16	0.00	
First Scout MWD Survey @ 199.00' MD										
387.00	0.49	162.76	387.00	-0.58	1.07	0.99	0.29	0.12	45.56	
482.00	0.49	162.92	481.99	-1.35	1.31	1.79	0.00	0.00	0.17	



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Well:	University 19-8 A 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single 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)	
576.00	0.48	161.45	575.99	-2.11	1.55	2.58	0.02	-0.01	-1.56	
670.00	0.39	165.36	669.99	-2.79	1.76	3.28	0.10	-0.10	4.16	
765.00	0.61	182.37	764.98	-3.61	1.82	4.04	0.28	0.23	17.91	
859.00	0.41	180.29	858.98	-4.45	1.79	4.78	0.21	-0.21	-2.21	
1,048.00	0.99	188.96	1,047.96	-6.74	1.54	6.73	0.31	0.31	4.59	
1,143.00	0.88	196.70	1,142.95	-8.25	1.20	7.93	0.18	-0.12	8.15	
1,237.00	1.05	198.51	1,236.94	-9.76	0.72	9.07	0.18	0.18	1.93	
1,426.00	1.11	182.77	1,425.91	-13.23	0.08	11.91	0.16	0.03	-8.33	
1,528.00	1.18	171.18	1,527.89	-15.25	0.19	13.78	0.24	0.07	-11.36	
1,620.00	0.79	124.97	1,619.87	-16.55	0.86	15.24	0.93	-0.42	-50.23	
1,715.00	0.72	103.85	1,714.86	-17.07	1.97	16.19	0.30	-0.07	-22.23	
1,809.00	1.11	90.24	1,808.85	-17.21	3.46	16.98	0.47	0.41	-14.48	
1,904.00	1.51	83.88	1,903.83	-17.08	5.62	17.81	0.45	0.42	-6.69	
1,998.00	1.73	79.58	1,997.79	-16.70	8.25	18.62	0.27	0.23	-4.57	
2,092.00	2.23	72.82	2,091.73	-15.90	11.39	19.29	0.59	0.53	-7.19	
2,187.00	2.52	75.13	2,186.65	-14.82	15.18	19.99	0.32	0.31	2.43	
2,281.00	2.83	72.57	2,280.55	-13.59	19.39	20.74	0.35	0.33	-2.72	
2,376.00	3.09	71.26	2,375.42	-12.07	24.05	21.43	0.28	0.27	-1.38	
2,470.00	2.03	58.02	2,469.33	-10.37	27.86	21.58	1.28	-1.13	-14.09	
2,564.00	0.46	25.78	2,563.30	-9.15	29.44	21.18	1.77	-1.67	-34.30	
2,659.00	0.07	232.77	2,658.30	-8.84	29.56	20.95	0.55	-0.41	-161.06	
2,753.00	0.09	18.20	2,752.30	-8.81	29.54	20.91	0.16	0.02	154.71	
2,942.00	0.13	68.19	2,941.30	-8.58	29.78	20.82	0.05	0.02	26.45	
3,130.00	0.03	259.02	3,129.30	-8.51	29.93	20.83	0.08	-0.05	-89.98	
3,319.00	0.10	53.23	3,318.30	-8.43	30.01	20.78	0.07	0.04	81.59	
3,414.00	0.09	127.38	3,413.30	-8.42	30.14	20.83	0.12	-0.01	78.05	
3,508.00	0.05	41.08	3,507.30	-8.44	30.23	20.88	0.11	-0.04	-91.81	
3,602.00	0.07	192.39	3,601.30	-8.46	30.24	20.91	0.12	0.02	160.97	
3,697.00	0.15	27.37	3,696.30	-8.41	30.28	20.89	0.23	0.08	-173.71	
3,792.00	0.23	40.32	3,791.30	-8.15	30.47	20.73	0.10	0.08	13.63	
3,886.00	0.14	74.33	3,885.30	-7.98	30.70	20.68	0.15	-0.10	36.18	
4,075.00	0.32	3.89	4,074.30	-7.39	30.96	20.27	0.16	0.10	-37.27	
4,170.00	0.50	341.27	4,169.30	-6.73	30.84	19.62	0.25	0.19	-23.81	
4,264.00	0.89	348.10	4,263.29	-5.63	30.56	18.51	0.42	0.41	7.27	
4,359.00	0.44	0.75	4,358.28	-4.54	30.41	17.47	0.50	-0.47	13.32	
4,547.00	0.28	355.74	4,546.28	-3.36	30.39	16.40	0.09	-0.09	-2.66	
4,736.00	0.17	80.95	4,735.28	-2.86	30.63	16.05	0.17	-0.06	45.08	
4,830.00	0.03	347.78	4,829.28	-2.81	30.76	16.07	0.19	-0.15	-99.12	
4,925.00	0.05	134.74	4,924.28	-2.81	30.79	16.09	0.08	0.02	154.69	
5,019.00	0.33	88.06	5,018.28	-2.83	31.09	16.24	0.32	0.30	-49.66	
5,114.00	1.17	104.53	5,113.27	-3.07	32.30	16.98	0.90	0.88	17.34	
5,208.00	2.17	101.60	5,207.23	-3.67	34.97	18.69	1.07	1.06	-3.12	



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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single 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)
5,303.00	3.03	106.57	5,302.13	-4.74	39.14	21.50	0.94	0.91	5.23
5,397.00	3.79	100.23	5,395.96	-6.01	44.58	25.02	0.90	0.81	-6.74
5,491.00	4.46	96.48	5,489.72	-6.97	51.27	28.84	0.77	0.71	-3.99
5,586.00	6.30	90.43	5,584.30	-7.43	60.15	33.16	2.02	1.94	-6.37
5,680.00	7.80	84.24	5,677.59	-6.82	71.65	37.68	1.79	1.60	-6.59
5,774.00	9.15	84.23	5,770.56	-5.43	85.44	42.50	1.44	1.44	-0.01
5,869.00	10.32	82.69	5,864.19	-3.59	101.39	47.88	1.26	1.23	-1.62
5,963.00	11.54	81.56	5,956.48	-1.14	119.05	53.45	1.32	1.30	-1.20
6,058.00	12.48	79.39	6,049.40	2.15	138.54	59.09	1.10	0.99	-2.28
6,152.00	13.94	78.39	6,140.91	6.30	159.61	64.64	1.57	1.55	-1.06
6,247.00	15.58	76.49	6,232.77	11.58	183.23	70.30	1.80	1.73	-2.00
6,341.00	16.89	75.23	6,323.02	18.01	208.70	75.75	1.44	1.39	-1.34
6,436.00	17.65	73.59	6,413.74	25.60	235.87	80.90	0.95	0.80	-1.73
6,530.00	18.26	72.44	6,503.16	34.07	263.58	85.50	0.75	0.65	-1.22
6,624.00	18.18	70.93	6,592.45	43.30	291.48	89.49	0.51	-0.09	-1.61
6,719.00	17.25	70.31	6,682.94	52.89	318.75	92.90	1.00	-0.98	-0.65
6,813.00	16.71	68.89	6,772.85	62.45	344.47	95.64	0.72	-0.57	-1.51
6,908.00	15.97	67.65	6,864.01	72.34	369.30	97.70	0.86	-0.78	-1.31
7,002.00	15.58	67.88	6,954.47	82.01	392.96	99.43	0.42	-0.41	0.24
7,096.00	15.18	67.59	7,045.10	91.46	416.03	101.11	0.43	-0.43	-0.31
7,191.00	13.84	66.43	7,137.07	100.74	437.94	102.43	1.44	-1.41	-1.22
7,286.00	13.16	66.58	7,229.44	109.58	458.28	103.45	0.72	-0.72	0.16
7,380.00	12.63	65.59	7,321.07	118.08	477.46	104.26	0.61	-0.56	-1.05
7,475.00	12.13	64.14	7,413.86	126.73	495.90	104.62	0.62	-0.53	-1.53
7,569.00	12.01	61.80	7,505.79	135.66	513.41	104.31	0.54	-0.13	-2.49
7,663.00	11.74	61.10	7,597.78	144.90	530.40	103.50	0.33	-0.29	-0.74
7,758.00	11.62	63.67	7,690.81	153.82	547.43	103.00	0.56	-0.13	2.71
7,852.00	10.42	70.96	7,783.08	160.79	563.95	104.01	1.95	-1.28	7.76
7,947.00	9.67	76.93	7,876.62	165.40	579.85	106.88	1.35	-0.79	6.28
8,041.00	9.65	85.73	7,969.30	167.77	595.40	111.60	1.57	-0.02	9.36
8,135.00	10.13	89.87	8,061.90	168.37	611.52	118.15	0.91	0.51	4.40
8,323.00	12.12	85.15	8,246.36	170.08	647.72	132.57	1.16	1.06	-2.51
8,417.00	12.44	80.70	8,338.21	172.55	667.55	139.08	1.06	0.34	-4.73
8,512.00	11.25	79.21	8,431.19	175.94	686.75	144.49	1.29	-1.25	-1.57
8,606.00	10.09	79.82	8,523.56	179.11	703.86	149.18	1.24	-1.23	0.65
8,700.00	8.68	81.38	8,616.30	181.63	718.98	153.58	1.52	-1.50	1.66
8,794.00	7.59	85.29	8,709.36	183.20	732.18	157.98	1.30	-1.16	4.16
8,889.00	7.38	90.71	8,803.55	183.64	744.53	163.03	0.78	-0.22	5.71
8,983.00	6.45	97.01	8,896.86	182.92	755.81	168.64	1.28	-0.99	6.70
9,078.00	5.34	97.50	8,991.36	181.69	765.49	174.00	1.17	-1.17	0.52
9,172.00	4.70	95.66	9,085.00	180.74	773.66	178.46	0.70	-0.68	-1.96
9,267.00	4.14	97.97	9,179.72	179.88	780.93	182.43	0.62	-0.59	2.43



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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single 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)
9,361.00	3.50	94.26	9,273.51	179.20	787.15	185.78	0.73	-0.68	-3.95
9,456.00	3.35	93.26	9,368.34	178.83	792.81	188.61	0.17	-0.16	-1.05
9,551.00	2.91	92.75	9,463.19	178.55	797.99	191.14	0.46	-0.46	-0.54
9,645.00	2.80	74.37	9,557.08	179.06	802.59	192.71	0.98	-0.12	-19.55
9,739.00	3.60	45.14	9,650.94	181.76	806.89	192.18	1.90	0.85	-31.10
9,834.00	4.82	37.66	9,745.68	187.02	811.44	189.46	1.41	1.28	-7.87
9,928.00	5.18	34.39	9,839.32	193.65	816.25	185.63	0.49	0.38	-3.48
10,023.00	5.25	35.39	9,933.93	200.73	821.19	181.44	0.12	0.07	1.05
10,117.00	6.00	30.71	10,027.48	208.46	826.19	176.71	0.93	0.80	-4.98
10,211.00	6.25	30.95	10,120.94	217.07	831.33	171.24	0.27	0.27	0.26
10,306.00	5.35	32.06	10,215.45	225.26	836.34	166.09	0.95	-0.95	1.17
10,400.00	3.14	33.09	10,309.19	231.13	840.07	162.46	2.35	-2.35	1.10
10,495.00	1.31	48.00	10,404.12	234.04	842.30	160.84	2.00	-1.93	15.69
10,589.00	0.92	95.13	10,498.10	234.69	843.85	160.93	1.02	-0.41	50.14
10,684.00	1.60	127.04	10,593.08	233.83	845.67	162.51	1.00	0.72	33.59
10,778.00	2.92	133.96	10,687.00	231.37	848.44	165.94	1.43	1.40	7.36
10,873.00	4.02	137.82	10,781.83	227.23	852.42	171.41	1.18	1.16	4.06
10,968.00	4.76	137.52	10,876.55	221.85	857.32	178.39	0.78	0.78	-0.32
11,010.00	5.22	137.81	10,918.39	219.15	859.78	181.90	1.10	1.10	0.69
11,175.00	10.52	137.24	11,081.78	202.52	875.06	203.56	3.21	3.21	-0.35
11,269.00	25.99	143.19	11,170.78	179.59	893.34	232.20	16.56	16.46	6.33
11,363.00	39.52	153.54	11,249.71	136.09	919.14	282.62	15.53	14.39	11.01
11,458.00	51.44	156.38	11,316.21	74.77	947.60	350.20	12.72	12.55	2.99
11,553.00	62.07	155.71	11,368.21	2.28	979.84	429.49	11.20	11.19	-0.71
11,647.00	64.06	155.85	11,410.79	-74.15	1,014.21	513.24	2.12	2.12	0.15
11,742.00	70.82	158.02	11,447.22	-154.83	1,048.52	600.78	7.42	7.12	2.28
11,810.10	77.88	157.92	11,465.58	-215.58	1,073.10	666.15	10.36	10.36	-0.14
Crossed TTP @ 11810.10' MD - University A1H p1 TTP									
11,836.00	80.56	157.89	11,470.43	-239.15	1,082.67	691.53	10.36	10.36	-0.13
11,930.00	87.88	160.22	11,479.89	-326.43	1,116.07	784.59	8.17	7.79	2.48
12,064.00	88.44	160.21	11,484.19	-452.46	1,161.40	917.70	0.42	0.42	-0.01
12,159.00	88.52	159.82	11,486.71	-541.70	1,193.86	1,012.13	0.42	0.08	-0.41
12,253.00	89.56	160.82	11,488.29	-630.20	1,225.51	1,105.51	1.53	1.11	1.06
12,348.00	89.44	162.39	11,489.11	-720.34	1,255.48	1,199.64	1.66	-0.13	1.65
12,442.00	89.53	163.11	11,489.96	-810.10	1,283.36	1,292.51	0.77	0.10	0.77
12,536.00	90.37	164.95	11,490.04	-900.47	1,309.22	1,385.03	2.15	0.89	1.96
12,631.00	91.09	167.00	11,488.83	-992.63	1,332.24	1,477.91	2.29	0.76	2.16
12,725.00	90.56	165.74	11,487.48	-1,083.97	1,354.39	1,569.67	1.45	-0.56	-1.34
12,819.00	90.51	165.04	11,486.60	-1,174.92	1,378.10	1,661.77	0.75	-0.05	-0.74
12,913.00	89.97	164.32	11,486.21	-1,265.58	1,402.93	1,754.10	0.96	-0.57	-0.77
13,008.00	90.17	163.71	11,486.09	-1,356.91	1,429.09	1,847.61	0.68	0.21	-0.64
13,102.00	90.17	164.18	11,485.81	-1,447.24	1,455.09	1,940.16	0.50	0.00	0.50



Survey Report



Company:	OXY, Texas, USA Inc	Local Co-ordinate Reference:	Well University 19-8 A 1H
Project:	Loving County, TX	TVD Reference:	GL 2748.06' + KB 26.5' @ 2774.56usft (H&P 460)
Site:	University	MD Reference:	GL 2748.06' + KB 26.5' @ 2774.56usft (H&P 460)
Well:	University 19-8 A 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single 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)	
13,196.00	90.37	164.31	11,485.37	-1,537.71	1,480.61	2,032.63	0.25	0.21	0.14	
13,291.00	90.48	164.54	11,484.66	-1,629.22	1,506.12	2,126.02	0.27	0.12	0.24	
13,479.00	90.48	164.61	11,483.09	-1,810.44	1,556.12	2,310.74	0.04	0.00	0.04	
13,573.00	90.17	164.26	11,482.56	-1,900.99	1,581.34	2,403.14	0.50	-0.33	-0.37	
13,667.00	90.06	163.44	11,482.37	-1,991.28	1,607.49	2,495.72	0.88	-0.12	-0.87	
13,761.00	90.34	164.05	11,482.04	-2,081.52	1,633.80	2,588.33	0.71	0.30	0.65	
13,855.00	89.83	163.78	11,481.90	-2,171.84	1,659.85	2,680.88	0.61	-0.54	-0.29	
13,949.00	89.84	163.50	11,482.17	-2,262.03	1,686.32	2,773.52	0.30	0.01	-0.30	
14,044.00	89.96	162.67	11,482.34	-2,352.92	1,713.96	2,867.29	0.88	0.13	-0.87	
14,138.00	90.10	160.25	11,482.29	-2,442.04	1,743.85	2,960.46	2.58	0.15	-2.57	
14,232.00	90.31	160.85	11,481.95	-2,530.67	1,775.15	3,053.82	0.68	0.22	0.64	
14,327.00	90.62	160.91	11,481.18	-2,620.43	1,806.27	3,148.11	0.33	0.33	0.06	
14,421.00	91.21	162.76	11,479.68	-2,709.73	1,835.57	3,241.19	2.07	0.63	1.97	
14,515.00	89.82	158.27	11,478.83	-2,798.32	1,866.91	3,334.53	5.00	-1.48	-4.78	
14,609.00	90.01	162.30	11,478.97	-2,886.79	1,898.61	3,427.92	4.29	0.20	4.29	
14,704.00	89.90	162.91	11,479.05	-2,977.44	1,927.01	3,521.82	0.65	-0.12	0.64	
14,798.00	90.96	166.74	11,478.34	-3,068.15	1,951.62	3,614.08	4.23	1.13	4.07	
14,893.00	90.44	168.79	11,477.18	-3,160.98	1,971.75	3,706.29	2.23	-0.55	2.16	
14,987.00	89.27	165.89	11,477.42	-3,252.68	1,992.34	3,797.69	3.33	-1.24	-3.09	
15,081.00	89.85	166.93	11,478.14	-3,344.04	2,014.43	3,889.45	1.27	0.62	1.11	
15,176.00	90.15	166.09	11,478.14	-3,436.42	2,036.59	3,982.14	0.94	0.32	-0.88	
15,270.00	90.86	169.28	11,477.31	-3,528.24	2,056.64	4,073.41	3.48	0.76	3.39	
15,364.00	91.59	165.74	11,475.30	-3,619.98	2,076.96	4,164.72	3.84	0.78	-3.77	
15,458.00	91.21	165.22	11,473.00	-3,710.95	2,100.52	4,256.77	0.69	-0.40	-0.55	
15,552.00	91.22	165.16	11,471.01	-3,801.81	2,124.54	4,348.92	0.06	0.01	-0.06	
15,647.00	91.20	165.03	11,469.01	-3,893.59	2,148.97	4,442.08	0.14	-0.02	-0.14	
15,741.00	91.57	163.66	11,466.73	-3,984.07	2,174.33	4,534.48	1.51	0.39	-1.46	
15,835.00	90.72	161.45	11,464.85	-4,073.73	2,202.50	4,627.38	2.52	-0.90	-2.35	
15,929.00	90.42	161.97	11,463.92	-4,162.97	2,232.00	4,720.50	0.64	-0.32	0.55	
16,024.00	90.50	162.58	11,463.16	-4,253.46	2,260.92	4,814.47	0.65	0.08	0.64	
16,118.00	91.56	162.58	11,461.47	-4,343.13	2,289.06	4,907.37	1.13	1.13	0.00	
16,212.00	90.91	162.42	11,459.44	-4,432.76	2,317.32	5,000.29	0.71	-0.69	-0.17	
16,306.00	90.54	162.21	11,458.25	-4,522.31	2,345.87	5,093.26	0.45	-0.39	-0.22	
16,400.00	89.92	162.03	11,457.87	-4,611.77	2,374.73	5,186.29	0.69	-0.66	-0.19	
16,495.00	90.35	162.36	11,457.65	-4,702.22	2,403.78	5,280.29	0.57	0.45	0.35	
16,589.00	90.33	162.42	11,457.09	-4,791.81	2,432.22	5,373.25	0.07	-0.02	0.06	
16,684.00	90.05	162.67	11,456.78	-4,882.44	2,460.71	5,467.16	0.40	-0.29	0.26	
16,778.00	89.98	162.82	11,456.75	-4,972.21	2,488.59	5,560.03	0.18	-0.07	0.16	
16,873.00	90.15	162.42	11,456.65	-5,062.87	2,516.97	5,653.93	0.46	0.18	-0.42	
16,892.40	90.23	162.30	11,456.58	-5,081.36	2,522.85	5,673.11	0.77	0.42	-0.64	
Crossed BTP @ 16892.40' MD - University A1H p1 BTP										
16,940.00	90.43	161.99	11,456.31	-5,126.66	2,537.45	5,720.22	0.77	0.42	-0.64	



Survey Report



Company:	OXY, Texas, USA Inc	Local Co-ordinate Reference:	Well University 19-8 A 1H
Project:	Loving County, TX	TVD Reference:	GL 2748.06' + KB 26.5' @ 2774.56usft (H&P 460)
Site:	University	MD Reference:	GL 2748.06' + KB 26.5' @ 2774.56usft (H&P 460)
Well:	University 19-8 A 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.14 Single 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)	
Latest Scout MWD Survey@ 16940.00' MD										
16,980.00	90.43	161.99	11,456.01	-5,164.70	2,549.81	5,759.82	0.00	0.00	0.00	
Projection to TD @ 16980.00' MD - University A1H p1 BHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
26.50	26.50	0.00	0.00	Ground level @ 26.50' MD	
199.00	199.00	0.09	0.40	First Scout MWD Survey @ 199.00' MD	
11,810.10	11,465.58	-215.58	1,073.10	Crossed TTP @ 11810.10' MD	
16,892.40	11,456.58	-5,081.36	2,522.85	Crossed BTP @ 16892.40' MD	
16,940.00	11,456.31	-5,126.66	2,537.45	Latest Scout MWD Survey@ 16940.00' MD	
16,980.00	11,456.01	-5,164.70	2,549.81	Projection to TD @ 16980.00' MD	

Checked By: _____ Approved By: _____ Date: _____

UNIVERSITY LAND SURVEY
BLOCK 19
SECTION 5

UNIVERSITY LAND SURVEY
BLOCK 19, SECTION 4
BOOK "U T"
VOL. 2, PAGE 131

UNIVERSITY LAND SURVEY
BLOCK 19
SECTION 3

UNIVERSITY 19-8 A 1H
CALLED 160.125 ACRES

UNIVERSITY LAND SURVEY
BLOCK 19, SECTION 8
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UNIVERSITY 19-8 A 1H
SURFACE LOCATION
TX-CENTRAL ZONE 4203
NAD 27 X=1,034,250.70'
NAD 27 Y=755,185.32'
NAD 27 LAT.=31°42'21.664"
NAD 27 LONG.=-103°26'20.738"
NAD 27 LAT.=31.7060176°
NAD 27 LONG.=-103.4390940°
NAD 83(2011) X=1,330,714.91'
NAD 83(2011) Y=10,597,761.83'
NAD 83 LAT.=31°42'22.129"
NAD 83 LONG.=-103°26'22.370"
NAD 83 LAT.=31.7061469°
NAD 83 LONG.=-103.4395471°
SL-400' FSEL, 1325' FSWL-SECTION 4
ELEV.=2748.06

BORE PATH SUMMARY
UNIVERSITY 19-8 A 1H
SL TO PP=N73°42'39"E-985.04'
SL TO TTP=S79°23'48"E-1105.42'
SL TO BTP=S26°17'18"E-5671.64'
SL TO BHL=S26°07'58"E-5760.29'
PP TO TTP=S16°23'05"E-500.00'
PP TO BTP=S16°17'12"E-5585.48'
PP TO BHL=S16°17'11"E-5675.48'
TTP TO BTP=S16°16'37"E-5085.48'
TTP TO BHL=S16°16'37"E-5175.48'
BTP TO BHL=S16°16'37"E-90.00'

UNIVERSITY 19-8 A 1H BHL:
16,980' MD, 90.43° INC, 161.99° AZM
-5,164.70' N/S, 2,549.81' E/W

UNIVERSITY LAND SURVEY
BLOCK 19
SECTION 15

UNIVERSITY LAND SURVEY
BLOCK 19
SECTION 14

UNIVERSITY 19-8 A 1H
POINT OF PENETRATION
TX-CENTRAL ZONE 4203
NAD 27 X=1,035,196.19'
NAD 27 Y=755,461.61'
NAD 27 LAT.=31°42'24.658"
NAD 27 LONG.=-103°26'09.887"
NAD 27 LAT.=31.7068494°
NAD 27 LONG.=-103.4360797°
NAD 83(2011) X=1,331,660.41'
NAD 83(2011) Y=10,598,038.11'
NAD 83 LAT.=31°42'25.123"
NAD 83 LONG.=-103°26'11.518"
NAD 83 LAT.=31.7069787°
NAD 83 LONG.=-103.4365328°
PP-400' FSEL, 2310' FSWL-SECTION 4

UNIVERSITY 19-8 A 1H
TOP TAKE POINT
TX-CENTRAL ZONE 4203
NAD 27 X=1,035,337.23'
NAD 27 Y=754,981.92'
NAD 27 LAT.=31°42'19.951"
NAD 27 LONG.=-103°26'08.100"
NAD 27 LAT.=31.7055420°
NAD 27 LONG.=-103.4355834°
NAD 83(2011) X=1,331,801.45'
NAD 83(2011) Y=10,597,558.42'
NAD 83 LAT.=31°42'20.417"
NAD 83 LONG.=-103°26'09.731"
NAD 83 LAT.=31.7056713°
NAD 83 LONG.=-103.4360364°
TTP-100' FNWL, 330' FNEL-UNIVERSITY 19-8 A

UNIVERSITY 19-8 A 1H
BOTTOM TAKE POINT
TX-CENTRAL ZONE 4203
NAD 27 X=1,036,762.53'
NAD 27 Y=750,100.35'
NAD 27 LAT.=31°41'32.051"
NAD 27 LONG.=-103°25'50.035"
NAD 27 LAT.=31.6922365°
NAD 27 LONG.=-103.4305652°
NAD 83(2011) X=1,333,226.81'
NAD 83(2011) Y=10,592,676.77'
NAD 83 LAT.=31°41'32.518"
NAD 83 LONG.=-103°25'51.664"
NAD 83 LAT.=31.6923660°
NAD 83 LONG.=-103.4310178°
BTP-100' FSEL, 330' FNEL-UNIVERSITY 19-8 A

UNIVERSITY 19-8 A 1H
BOTTOM HOLE LOCATION
TX-CENTRAL ZONE 4203
NAD 27 X=1,036,787.75'
NAD 27 Y=750,013.96'
NAD 27 LAT.=31°41'31.204"
NAD 27 LONG.=-103°25'49.715"
NAD 27 LAT.=31.6920010°
NAD 27 LONG.=-103.4304764°
NAD 83(2011) X=1,333,252.03'
NAD 83(2011) Y=10,592,590.38'
NAD 83 LAT.=31°41'31.670"
NAD 83 LONG.=-103°25'51.344"
NAD 83 LAT.=31.6921306°
NAD 83 LONG.=-103.4309290°
BHL-10' FSEL, 330' FNEL-UNIVERSITY 19-8 A
BHL-10' FSEL, 2311' FSWL-SECTION 8

UNIVERSITY 19-8 A

TRACT	ACREAGE	MINERAL OWNERSHIP
1	CALLED 80.082	University Lands
2	CALLED 40.043	University Lands
3	CALLED 40.000	University Lands
TOTAL	160.125	

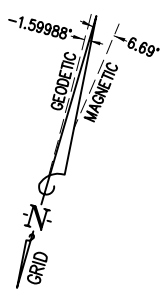
PROPOSED STAKING AS-DRILLED
AFE#2149017.PDE, ID 14077
Surface location is approximately 9.4 miles
ESE of Mentone, Tx. "SODA LAKE NW" Quadrangle
* Acreage provided by Anadarko.
DATE SURVEYED: 12/14/2018



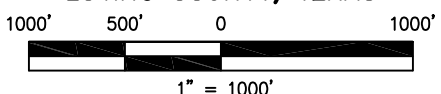
FOR THE EXCLUSIVE USE OF
ANADARKO E&P ONSHORE LLC
STATE OF TEXAS - - - COUNTY OF SMITH
I, Connor G. Brown, Registered Professional Land
Surveyor, do hereby certify the above plat to be
true and correct to the best of my knowledge.
Date: December 21, 2018 Tyler, Texas

E.L.S. SURVEYING & MAPPING, INC.
HARRY L. JOHNSON & ASSOCIATES

Registered Professional Land Surveyor No. 6366
Location is staked from tract lines as evidenced by occupation,
information obtained from the General Land Office and provided
deed records. Distances shown are not intended to be definitive
in establishing actual title boundaries. The deed data, tract acreages
and unit data shown hereon was furnished by others. This is not
a title survey. Vesting documents may not have been provided.
Bearings and distances are based on the Texas State Plane Coordinate
System, N.A.D. 83 (2011) (Central Zone) Derived from GPS Observations.



WELL LOCATION PLAT
ANADARKO E&P ONSHORE LLC
UNIVERSITY 19-8 A 1H WELL
UNIVERSITY OF TEXAS LANDS
LOVING COUNTY, TEXAS



From the Office of E.L.S. Surveying & Mapping, Inc.
Harry L. Johnson & Associates - Tyler, Texas
2004 W. Grande Blvd. / 903-581-7759