PHOENIX
TECHNOLOGY SERVICES

August 7, 2017

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

Attention: Regulatory Department

Re: Shell Western Exploration and Production Co.
University 19 H 0908H
Loving County, TX
API #42-301-33234
Job No. 60955

Enclosed please find the Survey Data Certification, and the original Plat and one copy of the Survey Report performed on the above referenced Well by Phoenix Technology Services, Inc. (P-5 No. 664171). Other information required by your office is as follows:

Name & Title of Surveyor	Drain Hole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Peter Mavrelis	0908H	234	19,129	5/8/17	8/3/17	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.

Best Regards,

Brittany Carley

Brittany Carley
Operations Administrator

12329 Cutten Rd. Houston, TX 77066 • Phone (713) 337-0600 • Fax (713) 337-0599
www.phxtech.com

SWEPI

Loving County, Texas (NAD27)
University 19
H 0908H

OH / Job #60955

Survey: Phoenix MWD Surveys

Standard Survey Report

04 August, 2017

PHOENIX
TECHNOLOGY SERVICES

Phoenix Technology Services LP

Survey Report

Company:	SWEPI	**Local Co-ordinate Reference:**	Well H 0908H
Project:	Loving County, Texas (NAD27)	**TVD Reference:**	RKB @ 2792.80usft (Precision 559)
Site:	University 19	**MD Reference:**	RKB @ 2792.80usft (Precision 559)
Well:	H 0908H	**North Reference:**	Grid
Wellbore:	OH / Job #60955	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys (Precision 559)	**Database:**	Compass 5000 GCR

Project Loving County, Texas (NAD27), Loving, Texas

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 19

Site Position:		**Northing:**	738,105.10 usft	**Latitude:**	31° 39' 36.27010 N
From:	Map	**Easting:**	1,047,305.66 usft	**Longitude:**	103° 23' 44.23223 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-1.58 °

Well H 0908H

Well Position	**+N/-S**	0.00 usft	**Northing:**	752,523.28 usft	**Latitude:**	31° 41' 57.76529 N
	+E/-W	0.00 usft	**Easting:**	1,043,113.84 usft	**Longitude:**	103° 24' 37.32760 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	2,766.80 usft

Wellbore OH / Job #60955

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/28/2017	7.02	59.55	47,643

Design Surveys (Precision 559)

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	343.72

Survey Program **Date** 8/4/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
234.00	19,180.00	Phoenix MWD Surveys (OH / Job #60955)	MWD+HDGM+AX	OWSG Rev.2 MWD + HDGM + Axial Correction

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
234.00	1.18	333.99	233.98	2.17	-1.06	2.37	0.50	0.50	0.00
First Phoenix MWD Survey									
323.00	1.32	334.45	322.96	3.91	-1.90	4.29	0.16	0.16	0.52
523.00	3.72	104.62	522.84	4.35	3.39	3.23	2.34	1.20	65.09
686.00	8.45	110.82	684.87	-1.24	19.71	-6.71	2.93	2.90	3.80
886.00	9.30	110.60	882.48	-12.15	48.57	-25.28	0.43	0.43	-0.11
968.00	9.14	109.31	963.42	-16.63	60.92	-33.04	0.32	-0.20	-1.57
1,145.00	12.61	109.15	1,137.21	-27.62	92.45	-52.43	1.96	1.96	-0.09
1,234.00	12.73	108.06	1,224.05	-33.85	110.95	-63.60	0.30	0.13	-1.22
1,323.00	13.10	107.43	1,310.79	-39.91	129.89	-74.72	0.44	0.42	-0.71

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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)
1,412.00	13.33	106.57	1,397.44	-45.86	149.35	-85.89	0.34	0.26	-0.97
1,590.00	13.58	104.96	1,570.55	-57.11	189.21	-107.86	0.25	0.14	-0.90
1,679.00	14.05	105.22	1,656.98	-62.64	209.72	-118.92	0.53	0.53	0.29
1,768.00	14.01	104.49	1,743.32	-68.17	230.58	-130.08	0.20	-0.04	-0.82
1,857.00	14.05	103.79	1,829.67	-73.44	251.50	-141.00	0.20	0.04	-0.79
1,946.00	14.27	103.57	1,915.96	-78.59	272.66	-151.87	0.25	0.25	-0.25
2,035.00	14.33	103.84	2,002.21	-83.80	294.01	-162.86	0.10	0.07	0.30
2,124.00	14.77	102.70	2,088.35	-88.93	315.77	-173.88	0.59	0.49	-1.28
2,213.00	14.71	102.30	2,174.42	-93.83	337.88	-184.79	0.13	-0.07	-0.45
2,302.00	14.78	102.10	2,260.49	-98.62	360.02	-195.59	0.10	0.08	-0.22
2,391.00	14.07	101.67	2,346.68	-103.18	381.72	-206.05	0.81	-0.80	-0.48
2,569.00	13.79	100.14	2,519.45	-111.29	423.79	-225.63	0.26	-0.16	-0.86
2,658.00	13.93	99.15	2,605.86	-114.87	444.81	-234.95	0.31	0.16	-1.11
2,747.00	13.84	99.10	2,692.26	-118.25	465.90	-244.12	0.10	-0.10	-0.06
2,925.00	11.04	105.97	2,866.07	-126.31	503.31	-262.34	1.78	-1.57	3.86
3,103.00	10.78	105.44	3,040.85	-135.43	535.74	-280.19	0.16	-0.15	-0.30
3,281.00	9.94	106.60	3,215.95	-144.25	566.51	-297.28	0.49	-0.47	0.65
3,369.00	9.86	104.75	3,302.64	-148.34	581.08	-305.29	0.37	-0.09	-2.10
3,547.00	11.15	98.10	3,477.66	-154.65	612.86	-320.25	0.99	0.72	-3.74
3,725.00	10.29	96.50	3,652.55	-158.87	645.69	-333.51	0.51	-0.48	-0.90
3,904.00	9.86	95.33	3,828.79	-162.11	676.84	-345.34	0.27	-0.24	-0.65
4,082.00	9.72	93.94	4,004.20	-164.55	707.00	-356.15	0.15	-0.08	-0.78
4,260.00	9.26	94.36	4,179.76	-166.67	736.27	-366.39	0.26	-0.26	0.24
4,438.00	8.21	94.45	4,355.70	-168.75	763.23	-375.94	0.59	-0.59	0.05
4,617.00	8.25	94.19	4,532.85	-170.68	788.78	-384.95	0.03	0.02	-0.15
4,795.00	7.56	95.08	4,709.16	-172.65	813.18	-393.69	0.39	-0.39	0.50
4,947.00	7.10	93.00	4,859.92	-174.03	832.52	-400.43	0.35	-0.30	-1.37
5,055.00	6.84	91.58	4,967.12	-174.55	845.61	-404.61	0.29	-0.24	-1.31
5,233.00	6.11	90.19	5,143.98	-174.88	865.68	-410.54	0.42	-0.41	-0.78
5,411.00	6.56	91.23	5,320.90	-175.13	885.32	-416.29	0.26	0.25	0.58
5,589.00	6.75	95.34	5,497.70	-176.32	905.90	-423.20	0.29	0.11	2.31
5,768.00	6.37	94.27	5,675.53	-178.04	926.28	-430.56	0.22	-0.21	-0.60
5,946.00	6.06	94.57	5,852.48	-179.52	945.49	-437.37	0.18	-0.17	0.17
6,124.00	5.41	94.55	6,029.59	-180.93	963.22	-443.70	0.37	-0.37	-0.01
6,303.00	5.18	92.44	6,207.82	-181.95	979.70	-449.29	0.17	-0.13	-1.18
6,481.00	5.18	90.15	6,385.10	-182.31	995.77	-454.15	0.12	0.00	-1.29
6,659.00	5.06	90.28	6,562.39	-182.37	1,011.65	-458.66	0.07	-0.07	0.07
6,837.00	4.18	81.39	6,739.81	-181.44	1,025.92	-461.76	0.64	-0.49	-4.99
7,015.00	2.87	73.36	6,917.47	-179.19	1,036.60	-462.60	0.78	-0.74	-4.51
7,193.00	1.65	54.52	7,095.33	-176.43	1,042.96	-461.73	0.79	-0.69	-10.58
7,372.00	1.41	44.83	7,274.27	-173.37	1,046.61	-459.82	0.20	-0.13	-5.41
7,550.00	0.85	13.60	7,452.23	-170.53	1,048.46	-457.61	0.46	-0.31	-17.54
7,728.00	1.69	283.82	7,630.20	-168.62	1,046.22	-455.15	1.06	0.47	-50.44

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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)
7,906.00	1.70	280.65	7,808.12	-167.51	1,041.08	-452.64	0.05	0.01	-1.78
8,085.00	1.26	266.23	7,987.06	-167.15	1,036.51	-451.01	0.32	-0.25	-8.06
8,262.00	1.58	251.11	8,164.01	-168.06	1,032.26	-450.70	0.28	0.18	-8.54
8,440.00	1.98	240.05	8,341.92	-170.39	1,027.27	-451.54	0.30	0.22	-6.21
8,618.00	1.68	218.15	8,519.83	-173.98	1,022.99	-453.78	0.42	-0.17	-12.30
8,796.00	1.78	193.69	8,697.76	-178.72	1,020.73	-457.70	0.42	0.06	-13.74
8,885.00	1.96	189.25	8,786.71	-181.56	1,020.16	-460.27	0.26	0.20	-4.99
9,064.00	3.08	182.79	8,965.53	-189.39	1,019.43	-467.57	0.64	0.63	-3.61
9,242.00	2.64	166.95	9,143.31	-198.16	1,020.12	-476.19	0.51	-0.25	-8.90
9,420.00	2.63	182.77	9,321.13	-206.23	1,020.85	-484.14	0.41	-0.01	8.89
9,598.00	1.46	243.48	9,499.03	-211.32	1,018.62	-488.40	1.29	-0.66	34.11
9,777.00	4.71	228.96	9,677.75	-217.17	1,011.04	-491.89	1.85	1.82	-8.11
9,955.00	5.63	252.76	9,855.04	-224.56	997.19	-495.09	1.30	0.52	13.37
10,133.00	5.60	261.31	10,032.19	-228.46	980.26	-494.09	0.47	-0.02	4.80
10,311.00	4.90	259.91	10,209.44	-231.10	964.19	-492.13	0.40	-0.39	-0.79
10,489.00	3.56	285.10	10,386.97	-230.99	951.37	-488.43	1.27	-0.75	14.15
10,664.00	3.00	274.35	10,561.68	-229.23	941.56	-483.99	0.47	-0.32	-6.14
10,842.00	2.67	271.92	10,739.47	-228.74	932.77	-481.05	0.20	-0.19	-1.37
11,021.00	1.96	246.83	10,918.32	-229.80	925.79	-480.12	0.68	-0.40	-14.02
11,110.00	1.96	283.54	11,007.27	-230.04	922.91	-479.54	1.39	0.00	41.25
11,199.00	13.02	353.95	11,095.45	-219.68	920.36	-468.88	14.04	12.43	79.11
11,288.00	24.04	347.00	11,179.72	-191.96	915.21	-440.82	12.61	12.38	-7.81
11,377.00	32.25	345.15	11,258.13	-151.27	905.03	-398.91	9.28	9.22	-2.08
11,466.00	32.99	343.11	11,333.09	-105.13	891.90	-350.94	1.49	0.83	-2.29
11,555.00	41.44	342.63	11,403.91	-53.74	876.04	-297.17	9.50	9.49	-0.54
11,644.00	48.38	344.95	11,466.90	6.57	858.59	-234.38	8.01	7.80	2.61
11,733.00	49.29	344.74	11,525.49	71.24	841.07	-167.40	1.04	1.02	-0.24
11,822.00	59.18	350.09	11,577.46	141.64	825.57	-95.48	12.13	11.11	6.01
11,912.00	65.55	356.91	11,619.22	220.76	816.70	-17.03	9.75	7.08	7.58
12,001.00	73.50	355.46	11,650.33	303.89	811.13	64.32	9.06	8.93	-1.63
12,057.00	81.29	354.27	11,662.55	358.27	806.23	117.89	14.06	13.91	-2.13
12,149.00	87.64	354.59	11,671.41	449.36	797.35	207.82	6.91	6.90	0.35
12,195.00	86.96	354.16	11,673.58	495.09	792.84	252.98	1.75	-1.48	-0.93
12,285.00	89.61	350.97	11,676.28	584.28	781.20	341.85	4.61	2.94	-3.54
12,374.00	90.13	350.33	11,676.48	672.09	766.75	430.20	0.93	0.58	-0.72
12,464.00	88.36	348.89	11,677.66	760.60	750.52	519.71	2.54	-1.97	-1.60
12,554.00	92.39	351.79	11,677.07	849.30	735.42	609.08	5.52	4.48	3.22
12,644.00	89.99	348.68	11,675.20	937.96	720.16	698.46	4.36	-2.67	-3.46
12,734.00	90.21	349.23	11,675.05	1,026.29	702.92	788.09	0.66	0.24	0.61
12,823.00	90.81	350.62	11,674.26	1,113.91	687.35	876.56	1.70	0.67	1.56
12,913.00	89.39	350.66	11,674.10	1,202.71	672.71	965.90	1.58	-1.58	0.04
13,003.00	88.59	350.90	11,675.68	1,291.53	658.29	1,055.21	0.93	-0.89	0.27
13,093.00	89.62	347.56	11,677.09	1,379.92	641.48	1,144.76	3.88	1.14	-3.71

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13,183.00	89.07	346.27	11,678.12	1,467.58	621.11	1,234.62	1.56	-0.61	-1.43
13,272.00	91.25	349.51	11,677.87	1,554.58	602.44	1,323.36	4.39	2.45	3.64
13,362.00	88.18	346.49	11,678.32	1,642.59	583.73	1,413.09	4.78	-3.41	-3.36
13,452.00	88.45	344.27	11,680.97	1,729.63	561.03	1,503.01	2.48	0.30	-2.47
13,542.00	87.27	344.10	11,684.33	1,816.17	536.52	1,592.94	1.32	-1.31	-0.19
13,631.00	90.12	343.63	11,686.35	1,901.63	511.79	1,681.91	3.25	3.20	-0.53
13,721.00	90.52	344.57	11,685.85	1,988.18	487.14	1,771.90	1.14	0.44	1.04
13,811.00	90.38	344.75	11,685.14	2,074.97	463.33	1,861.89	0.25	-0.16	0.20
13,901.00	90.90	346.45	11,684.14	2,162.14	440.95	1,951.83	1.98	0.58	1.89
13,991.00	90.27	344.24	11,683.22	2,249.20	418.18	2,041.78	2.55	-0.70	-2.46
14,080.00	88.88	343.09	11,683.88	2,334.60	393.15	2,130.78	2.03	-1.56	-1.29
14,170.00	89.27	344.29	11,685.33	2,420.96	367.88	2,220.76	1.40	0.43	1.33
14,260.00	91.58	345.39	11,684.66	2,507.82	344.35	2,310.74	2.84	2.57	1.22
14,349.00	91.64	345.77	11,682.16	2,593.99	322.19	2,399.65	0.43	0.07	0.43
14,439.00	92.29	344.13	11,679.08	2,680.84	298.84	2,489.58	1.96	0.72	-1.82
14,529.00	91.04	345.14	11,676.46	2,767.59	275.00	2,579.52	1.79	-1.39	1.12
14,619.00	89.64	345.07	11,675.93	2,854.56	251.87	2,669.49	1.56	-1.56	-0.08
14,708.00	90.79	345.76	11,675.60	2,940.69	229.46	2,758.45	1.51	1.29	0.78
14,798.00	89.90	349.23	11,675.05	3,028.54	209.97	2,848.24	3.98	-0.99	3.86
14,888.00	89.95	349.51	11,675.17	3,116.99	193.37	2,937.80	0.32	0.06	0.31
14,977.00	89.01	351.55	11,675.98	3,204.77	178.73	3,026.17	2.52	-1.06	2.29
15,067.00	89.53	345.61	11,677.13	3,292.94	160.92	3,115.80	6.62	0.58	-6.60
15,157.00	89.45	339.41	11,677.93	3,378.74	133.88	3,205.73	6.89	-0.09	-6.89
15,246.00	89.68	344.48	11,678.60	3,463.32	106.31	3,294.65	5.70	0.26	5.70
15,336.00	87.61	343.07	11,680.73	3,549.71	81.17	3,384.62	2.78	-2.30	-1.57
15,426.00	87.56	338.09	11,684.53	3,634.49	51.28	3,474.38	5.53	-0.06	-5.53
15,515.00	89.47	337.93	11,686.83	3,716.98	17.97	3,562.90	2.15	2.15	-0.18
15,605.00	91.32	338.01	11,686.21	3,800.40	-15.78	3,652.44	2.06	2.06	0.09
15,695.00	90.79	336.30	11,684.56	3,883.33	-50.72	3,741.83	1.99	-0.59	-1.90
15,785.00	90.35	336.02	11,683.66	3,965.64	-87.09	3,831.05	0.58	-0.49	-0.31
15,875.00	89.44	336.73	11,683.83	4,048.10	-123.16	3,920.31	1.28	-1.01	0.79
15,964.00	89.99	336.88	11,684.27	4,129.90	-158.21	4,008.66	0.64	0.62	0.17
16,054.00	89.56	339.23	11,684.62	4,213.37	-191.85	4,098.21	2.65	-0.48	2.61
16,144.00	88.90	346.87	11,685.83	4,299.39	-218.06	4,188.13	8.52	-0.73	8.49
16,234.00	89.19	355.68	11,687.34	4,388.25	-231.70	4,277.25	9.79	0.32	9.79
16,323.00	89.25	354.04	11,688.55	4,476.88	-239.67	4,364.56	1.84	0.07	-1.84
16,413.00	89.70	342.70	11,689.38	4,564.89	-257.78	4,454.11	12.61	0.50	-12.60
16,503.00	88.55	345.63	11,690.75	4,651.45	-282.34	4,544.09	3.50	-1.28	3.26
16,593.00	87.31	340.33	11,694.00	4,737.42	-308.65	4,633.99	6.04	-1.38	-5.89
16,683.00	88.73	340.19	11,697.11	4,822.08	-339.03	4,723.77	1.59	1.58	-0.16
16,773.00	87.85	339.69	11,699.80	4,906.58	-369.89	4,813.53	1.12	-0.98	-0.56
16,862.00	90.90	340.75	11,700.77	4,990.31	-400.00	4,902.35	3.63	3.43	1.19
16,952.00	89.59	338.54	11,700.38	5,074.69	-431.30	4,992.11	2.85	-1.46	-2.46
17,042.00	88.48	337.68	11,701.90	5,158.18	-464.85	5,081.67	1.56	-1.23	-0.96

Company:	SWEPI	**Local Co-ordinate Reference:**	Well H 0908H
Project:	Loving County, Texas (NAD27)	**TVD Reference:**	RKB @ 2792.80usft (Precision 559)
Site:	University 19	**MD Reference:**	RKB @ 2792.80usft (Precision 559)
Well:	H 0908H	**North Reference:**	Grid
Wellbore:	OH / Job #60955	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys (Precision 559)	**Database:**	Compass 5000 GCR

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)
17,132.00	88.36	338.52	11,704.38	5,241.65	-498.41	5,171.20	0.94	-0.13	0.93
17,221.00	95.51	344.55	11,701.38	5,325.93	-526.56	5,259.99	10.50	8.03	6.78
17,311.00	95.12	344.41	11,693.04	5,412.27	-550.53	5,349.59	0.46	-0.43	-0.16
17,401.00	95.04	344.05	11,685.07	5,498.55	-574.90	5,439.23	0.41	-0.09	-0.40
17,491.00	91.29	341.97	11,680.10	5,584.47	-601.15	5,529.07	4.76	-4.17	-2.31
17,580.00	92.49	341.93	11,677.17	5,669.04	-628.71	5,617.98	1.35	1.35	-0.04
17,670.00	91.39	342.52	11,674.12	5,754.69	-656.17	5,707.89	1.39	-1.22	0.66
17,760.00	92.68	343.57	11,670.92	5,840.72	-682.40	5,797.83	1.85	1.43	1.17
17,850.00	91.81	342.88	11,667.40	5,926.82	-708.36	5,887.75	1.23	-0.97	-0.77
17,940.00	89.27	343.07	11,666.55	6,012.87	-734.70	5,977.73	2.83	-2.82	0.21
18,029.00	87.87	341.87	11,668.77	6,097.71	-761.50	6,066.68	2.07	-1.57	-1.35
18,119.00	87.76	341.89	11,672.20	6,183.18	-789.47	6,156.57	0.12	-0.12	0.02
18,209.00	87.31	341.58	11,676.07	6,268.57	-817.65	6,246.43	0.61	-0.50	-0.34
18,299.00	86.99	345.87	11,680.55	6,354.83	-842.84	6,336.30	4.77	-0.36	4.77
18,388.00	89.78	347.01	11,683.06	6,441.31	-863.69	6,425.15	3.39	3.13	1.28
18,478.00	88.95	346.50	11,684.05	6,528.91	-884.31	6,515.02	1.08	-0.92	-0.57
18,568.00	88.78	347.46	11,685.84	6,616.57	-904.59	6,604.86	1.08	-0.19	1.07
18,658.00	91.19	351.47	11,685.86	6,705.03	-921.04	6,694.38	5.20	2.68	4.46
18,748.00	88.67	349.84	11,685.97	6,793.83	-935.65	6,783.71	3.33	-2.80	-1.81
18,837.00	90.84	352.47	11,686.35	6,881.76	-949.33	6,871.95	3.83	2.44	2.96
18,927.00	88.82	349.22	11,686.62	6,970.59	-963.65	6,961.24	4.25	-2.24	-3.61
19,017.00	91.38	353.13	11,686.46	7,059.50	-977.45	7,050.45	5.19	2.84	4.34
19,129.00	88.82	349.23	11,686.27	7,170.15	-994.62	7,161.47	4.17	-2.29	-3.48
Final Phoenix MWD Survey									
19,180.00	88.82	349.23	11,687.32	7,220.24	-1,004.15	7,212.22	0.00	0.00	0.00
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
234.00	233.98	2.17	-1.06	First Phoenix MWD Survey
19,129.00	11,686.27	7,170.15	-994.62	Final Phoenix MWD Survey
19,180.00	11,687.32	7,220.24	-1,004.15	Projection to TD

Phoenix Technology Services
SURVEY DATA CERTIFICATION

PHOENIX TECHNOLOGY SERVICES

PHOENIX JOB NUMBER	60955	ENERGY COMPANY	Shell Exploration and Production Company
WELL NAME	University 19 H 0908H	COUNTY & STATE	Loving, TX

API WELL NUMBER	42-301-33234	PROPOSED DIRECTION	343.72

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
. ft	.00 ft	0.00	0.00	.00 ft	.00 ft	Surface

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
8-May-17	234.00 ft	1.18	333.99

SURVEY INSTRUMENT TYPE
Phoenix MWD Velocity

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
3-Aug-17	19,129.00 ft	88.82	349.23

TO THE BEST OF MY KNOWLEDGE I CERTIFY THIS SURVEY DATA TO BE TRUE AND CORRECT.

PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH
3-Aug-17	19,180.00 ft	88.82	349.23

Peter Mavrelis

PRINT YOUR NAME ABOVE

Peter Mavrelis

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	8.66
DECLINATION OR GRID	GRID

8/4/2017

TODAY'S DATE

MWD SUPERVISOR 1	Peter Mavrelis	DIRECTIONAL DRILLER 1	John Hill
MWD SUPERVISOR 2	Gatlin Finley	DIRECTIONAL DRILLER 2	Dustin St.Clair

12329 Cutten Rd., Houston, Texas 777066 (713)337-0600 (Voice), (713)337-0599 (Fax)

SHELL WESTERN E&P

WELL LOCATION

LEASE NAME & WELL NO.:

UNIVERSITY 19 H 0908H

UNIT/LEASE ACREAGE:

PW UNIT: 8588.11 ACRES, ALLOCATION UNIT: 320.48 ACRES (MEASURED)

TOTAL ACREAGE:

8908.59 ACRES (MEASURED)

NEAREST TOWN IN COUNTY:

±11.1 MILES SOUTHEAST OF MENTONE, TEXAS

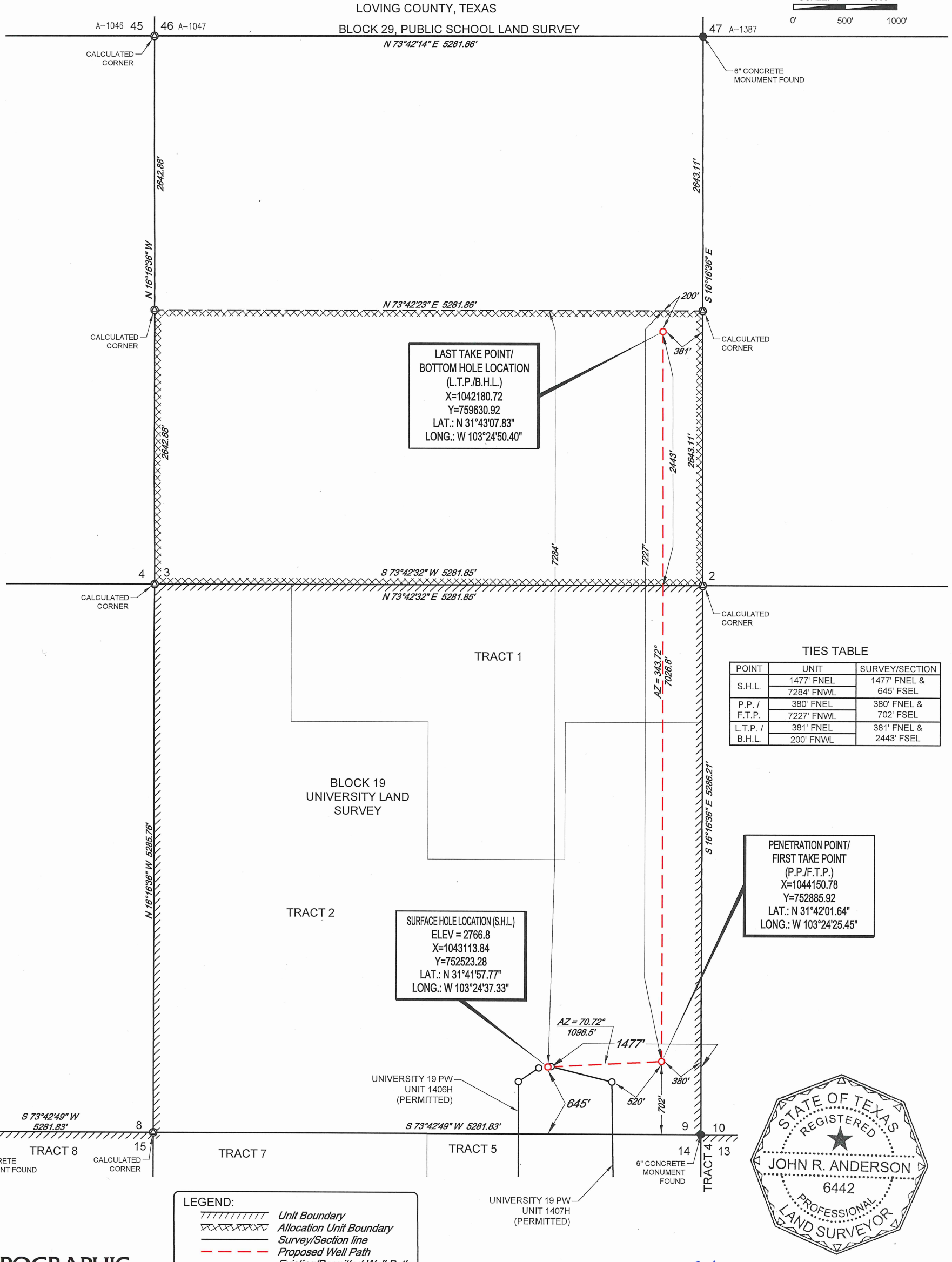
DESCRIPTION:

S/2 OF SECTION 3 & SECTION 9, BLOCK 19, UNIVERSITY LAND SURVEY
LOVING COUNTY, TEXAS

NAD 27
GRID BEARINGS

SCALE: 1" = 1000'

0' 500' 1000'



TIES TABLE

POINT	UNIT	SURVEY/SECTION
S.H.L.	1477' FNEL	1477' FNEL & 645' FSEL
	7284' FNWL	
P.P. / F.T.P.	380' FNEL	380' FNEL & 702' FSEL
	7227' FNWL	
L.T.P. / B.H.L.	381' FNEL	381' FNEL & 2443' FSEL
	200' FNWL	

LEGEND:

- Unit Boundary
- Allocation Unit Boundary
- Survey/Section line
- Proposed Well Path
- Existing/Permitted Well Path
- Mineral Tract Boundary
- Monument Found
- Calculated Corner
- Well Point

STATE OF TEXAS
REGISTERED
JOHN R. ANDERSON
6442
PROFESSIONAL
LAND SURVEYOR

John R. Anderson 2/22/17

John R. Anderson, R.P.L.S. No. 6442

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 197 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7548
TEXAS FIRM REGISTRATION NO. 10042504
WWW.TOPOGRAPHIC.COM

UNIVERSITY 19 H 0908H	REVISION:	
	INT	DATE
	O.M.	02/22/2017
DATE: 02/07/2017		
FILE: LO_UNIVERSITY_19_H_0908H_REV1		
DRAWN BY: O.M.		
SHEET : 1 OF 1		

NOTES:

1. ORIGINAL DOCUMENT SIZE: 11" X 17"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, U.S. SURVEY FEET, NORTH AMERICAN DATUM 1927, UNLESS OTHERWISE NOTED.
3. THIS LOCATION AND/OR UNIT/LEASE BOUNDARY HAS BEEN CAREFULLY SURVEYED ON THE GROUND UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE ACCORDING TO THE EVIDENCE, OFFICIAL SURVEY RECORDS, MAPS, AND OTHER DATA PROVIDED BY SHELL WESTERN E&P. THIS PLAT WAS CREATED FOR THE SOLE PURPOSE OF FILING A PERMIT WITH THE RAILROAD COMMISSION OF TEXAS AND SHOULD NOT BE CONSTRUED AS A "BOUNDARY SURVEY" IN COMPLIANCE WITH T.B.P.L.S. MINIMUM STANDARDS OF PROCEDURES FOR BOUNDARY SURVEYS. THIS CERTIFICATION IF MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT IS NON-TRANSFERRABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.
4. ALL ELEVATION VALUES CONTAINED HEREON ARE ORTHOMETRIC ONLY, BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), U.S. SURVEY FEET.
5. ALL MINERAL OWNERSHIP DATA SHOWN HEREIN IS BASED ON INFORMATION PROVIDED BY SHELL WESTERN E&P OR ITS SUBSIDIARIES & AFFILIATES.

NOTES CONT'D:

6. THE PRELIMINARY LOCATION HAS BEEN CAREFULLY SURVEYED ON THE GROUND DURING THE DATE OF NOVEMBER 4, 2016. AT A GROUND LEVEL ELEVATION OF 2766.8 SURVEY FEET.
7. S.H.L. = SURFACE HOLE LOCATION
8. P.P. = POINT OF PENETRATION
9. F.T.P. = FIRST TAKE POINT
10. L.T.P. = LAST TAKE POINT
11. B.H.L. = BOTTOM HOLE LOCATION