



June 9, 2016

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

Attention: Regulatory Dept.

Re: Shell Western Exploration and Production Co.
University 19B #2304H
Loving County, TX
API #42301328490000
Job No. 60041

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	
Shane Metcalf	2304H	183	18,184	04/28/16	06/06/16	MWD

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

Best Regards,

Claudia Carreon

Claudia Carreon
Operations Administrator

UNIVERSITY 19 B 2304H
WELL LOCATION
1282.30 ACRES (MEASURED)
SECTIONS 18 & 23, BLOCK 19, UNIVERSITY LAND
LOVING COUNTY, TEXAS

SHELL WESTERN
E&P

LEGEND

	UNIT BOUNDARY
	BLOCK/TOWNSHIP LINE
	SURVEY/SECTION LINE
	PROPOSED WELL PATH
	EXISTING/PERMITTED WELL PATH
	CONCRETE MONUMENT
	CALCULATED CORNER
	WELL POINT

OWNERSHIP TABLE

MINERAL TRACT	ACREAGE
UNIVERSITY LAND BLOCK 19 SECTION 23	640.99
UNIVERSITY LAND BLOCK 19 SECTION 18	641.31
TOTAL ACREAGE	1282.30

L.T.P./B.H.L.
NAD 27 TX-C ZONE
X = 1046194.20
Y = 744328.32
LAT.: N 31°40'37.54"
LONG.: W 103°23'59.07"

NAD 83 TX-C ZONE
X = 1342658.66
Y = 10586905.21
LAT.: N 31°40'38.01"
LONG.: W 103°24'00.70"

P.P./F.T.P.
NAD 27 TX-C ZONE
X = 1047819.94
Y = 738761.43
LAT.: N 31°39'42.90"
LONG.: W 103°23'38.49"

NAD 83 TX-C ZONE
X = 1344284.48
Y = 10581337.53
LAT.: N 31°39'43.37"
LONG.: W 103°23'40.12"

S.H.L.
ELEV = 2830.3
NAD 27 TX-C ZONE
X = 1047319.95
Y = 738119.09
LAT.: N 31°39'36.41"
LONG.: W 103°23'44.07"

NAD 83 TX-C ZONE
X = 1343784.48
Y = 10580695.28
LAT.: N 31°39'36.88"
LONG.: W 103°23'45.69"

X=1044088.19
Y=735612.42

TIES TABLE

POINT	UNIT	SURVEY/SECTION
S.H.L.	1478' FSEL	1478' FSEL & 1500' FSEL
P.P. / F.T.P.	818' FSEL	818' FSEL & 1976' FSEL
L.T.P. / B.H.L.	818' FSEL	818' FSEL & 2491' FSEL

NOTES:

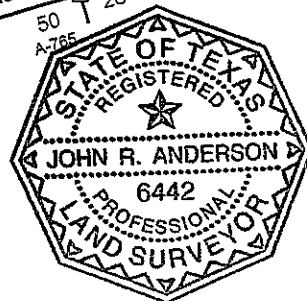
1. ORIGINAL DOCUMENT SIZE: 11" X 17"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, U.S. SURVEY FEET, NORTH AMERICAN DATUM 1927, UNLESS OTHERWISE NOTED.
3. THIS LOCATION AND/OR UNIT/LEASE BOUNDARY HAS BEEN 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 IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT IS NON-TRANSFERABLE. 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 LEASE AND WELL SHOWN HEREON ARE LOCATED APPROXIMATELY 12.4 MILES SOUTHEAST OF THE CITY/TOWNSHIP/MUNICIPALITY OF MENTONE WITHIN THE COUNTY OF LOVING IN THE STATE OF TEXAS.
7. THE PRELIMINARY LOCATION HAS BEEN CAREFULLY SURVEYED ON THE GROUND DURING THE DATE OF JANUARY 16, 2016. AT A GROUND LEVEL ELEVATION OF 2830.3 SURVEY FEET.
8. S.H.L. = SURFACE HOLE LOCATION
9. P.P. = POINT OF PENETRATION
10. F.T.P. = FIRST TAKE POINT
11. L.T.P. = LAST TAKE POINT
12. B.H.L. = BOTTOM HOLE LOCATION



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



John R. Anderson 2/2/16
John R. Anderson, R.P.L.S. No. 6442
FEBRUARY 2, 2016

UNIVERSITY 19 B 2304H

REVISION:

INT	DATE
O.M.	02/02/2016

DATE: 02/01/2016

FILE: UN_UNIVERSITY_19_B_2304H_REV1

DRAWN BY: O.M.

SHEET: 1 OF 1



SWEPI

Loving County, Texas (NAD27)

University 19

B 2304H / API 42301328490000

OH / Job 60041

Design: Surveys (Precision 565)

Standard Survey Report

07 June, 2016





Phoenix Technology Services

Survey Report



Company:	SWEPI	Local Co-ordinate Reference:	Well B 2304H / API 42301328490000
Project:	Loving County, Texas (NAD27)	TVD Reference:	RKB @ 2860.00usft (Precision 565)
Site:	University 19	MD Reference:	RKB @ 2860.00usft (Precision 565)
Well:	B 2304H / API 42301328490000	North Reference:	Grid
Wellbore:	OH / Job 60041	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Precision 565)	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
From:	Map	Easting:	1,047,305.66 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	31° 39' 36.27010 N
		Longitude:	103° 23' 44.23223 W
		Grid Convergence:	-1.58 °

Well	B 2304H / API 42301328490000, Sec 23 Block 19		
Well Position	+N/-S	0.00 usft	Northing: 738,119.09 usft
	+E/-W	0.00 usft	Easting: 1,047,319.95 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	31° 39' 36.41240 N
		Longitude:	103° 23' 44.07141 W
		Ground Level:	2,831.50 usft

Wellbore	OH / Job 60041				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/25/2016	7.17	59.52	47,734

Design	Surveys (Precision 565)				
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	6/7/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
183.00	18,241.00	Phoenix MWD Surveys (OH / Job 60041)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM	

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	
183.00	0.78	239.84	182.99	-0.63	-1.08	-0.30	0.43	0.43	0.00	
First Phoenix MWD Survey										
369.00	1.69	128.82	368.97	-2.98	-0.03	-2.85	1.13	0.49	-59.69	
554.00	4.74	107.14	553.66	-6.95	9.40	-9.30	1.75	1.65	-11.72	
622.00	5.70	102.20	621.38	-8.49	15.38	-12.46	1.56	1.41	-7.26	
712.00	6.85	97.66	710.84	-10.15	25.07	-16.77	1.39	1.28	-5.04	
806.00	8.35	92.26	804.01	-11.16	37.45	-21.21	1.77	1.60	-5.74	
900.00	8.29	92.39	897.02	-11.72	51.04	-25.55	0.07	-0.06	0.14	
995.00	8.28	92.12	991.03	-12.25	64.72	-29.90	0.04	-0.01	-0.28	
1,089.00	8.41	91.37	1,084.03	-12.67	78.35	-34.13	0.18	0.14	-0.80	



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Site:	University 19	MD Reference:	RKB @ 2860.00usft (Precision 565)
Well:	B 2304H / API 42301328490000	North Reference:	Grid
Wellbore:	OH / Job 60041	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Precision 565)	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)
1,178.00	9.14	91.35	1,171.99	-12.99	91.93	-38.24	0.82	0.82	-0.02
1,268.00	9.85	90.91	1,260.76	-13.28	106.77	-42.68	0.79	0.79	-0.49
1,358.00	10.43	89.96	1,349.35	-13.40	122.61	-47.23	0.67	0.64	-1.06
1,448.00	11.03	89.84	1,437.78	-13.37	139.37	-51.90	0.67	0.67	-0.13
1,538.00	10.33	89.92	1,526.22	-13.33	156.05	-56.54	0.78	-0.78	0.09
1,627.00	9.66	88.84	1,613.87	-13.17	171.49	-60.72	0.78	-0.75	-1.21
1,717.00	10.11	88.66	1,702.53	-12.83	186.94	-64.72	0.50	0.50	-0.20
1,807.00	9.74	86.79	1,791.18	-12.22	202.44	-68.48	0.55	-0.41	-2.08
1,897.00	9.08	85.79	1,879.97	-11.27	217.12	-71.69	0.76	-0.73	-1.11
1,987.00	9.58	84.90	1,968.78	-10.09	231.66	-74.63	0.58	0.56	-0.99
2,076.00	10.30	84.75	2,056.44	-8.70	246.97	-77.58	0.81	0.81	-0.17
2,166.00	10.31	84.46	2,144.99	-7.19	262.99	-80.62	0.06	0.01	-0.32
2,256.00	10.93	84.31	2,233.45	-5.56	279.50	-83.69	0.69	0.69	-0.17
2,346.00	11.53	83.77	2,321.73	-3.74	296.93	-86.83	0.68	0.67	-0.60
2,436.00	11.05	83.86	2,409.98	-1.84	314.45	-89.92	0.53	-0.53	0.10
2,525.00	9.61	80.88	2,497.54	0.25	330.27	-92.35	1.73	-1.62	-3.35
2,615.00	9.96	80.68	2,586.23	2.70	345.36	-94.23	0.39	0.39	-0.22
2,705.00	9.47	82.96	2,674.94	4.87	360.39	-96.36	0.69	-0.54	2.53
2,795.00	8.31	86.44	2,763.86	6.18	374.23	-98.98	1.42	-1.29	3.87
2,884.00	8.40	86.19	2,851.91	7.01	387.14	-101.80	0.11	0.10	-0.28
2,974.00	8.84	85.40	2,940.90	8.00	400.59	-104.62	0.51	0.49	-0.88
3,063.00	9.19	84.88	3,028.80	9.18	414.49	-107.38	0.40	0.39	-0.58
3,153.00	7.93	88.51	3,117.79	9.99	427.85	-110.35	1.52	-1.40	4.03
3,243.00	5.94	92.32	3,207.13	9.96	438.71	-113.43	2.27	-2.21	4.23
3,333.00	5.81	92.79	3,296.66	9.55	447.91	-116.40	0.15	-0.14	0.52
3,423.00	5.41	92.53	3,386.23	9.14	456.70	-119.26	0.45	-0.44	-0.29
3,512.00	5.56	90.12	3,474.82	8.95	465.21	-121.83	0.31	0.17	-2.71
3,602.00	5.29	89.29	3,564.42	8.99	473.71	-124.17	0.31	-0.30	-0.92
3,692.00	5.74	88.60	3,654.00	9.15	482.36	-126.44	0.51	0.50	-0.77
3,782.00	5.61	87.58	3,743.56	9.44	491.26	-128.65	0.18	-0.14	-1.13
3,872.00	5.50	86.00	3,833.14	9.93	499.95	-130.62	0.21	-0.12	-1.76
3,961.00	5.33	87.09	3,921.74	10.44	508.34	-132.48	0.22	-0.19	1.22
4,051.00	5.64	88.01	4,011.33	10.80	516.93	-134.54	0.36	0.34	1.02
4,141.00	6.35	86.69	4,100.83	11.25	526.32	-136.75	0.80	0.79	-1.47
4,231.00	6.71	85.33	4,190.25	11.96	536.53	-138.93	0.44	0.40	-1.51
4,321.00	6.66	84.55	4,279.64	12.88	546.97	-140.96	0.12	-0.06	-0.87
4,410.00	6.56	83.38	4,368.05	13.96	557.15	-142.79	0.19	-0.11	-1.31
4,500.00	6.61	82.74	4,457.45	15.21	567.40	-144.46	0.10	0.06	-0.71
4,590.00	6.46	83.00	4,546.87	16.48	577.56	-146.09	0.17	-0.17	0.29
4,680.00	6.20	83.07	4,636.32	17.68	587.41	-147.70	0.29	-0.29	0.08
4,769.00	6.44	82.78	4,724.78	18.89	597.13	-149.26	0.27	0.27	-0.33
4,859.00	6.23	82.10	4,814.23	20.20	606.98	-150.77	0.25	-0.23	-0.76
4,949.00	6.50	82.36	4,903.67	21.54	616.86	-152.25	0.30	0.30	0.29



Company:	SWEPI	Local Co-ordinate Reference:	Well B 2304H / API 42301328490000
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Well:	B 2304H / API 42301328490000	North Reference:	Grid
Wellbore:	OH / Job 60041	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Precision 565)	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)	
4,987.00	6.50	82.36	4,941.43	22.12	621.13	-152.89	0.00	0.00	0.00	
5,116.00	6.02	83.22	5,069.66	23.89	635.08	-155.11	0.38	-0.37	0.67	
5,206.00	5.27	81.23	5,159.22	25.07	643.85	-156.43	0.86	-0.83	-2.21	
5,296.00	5.26	82.52	5,248.84	26.24	652.03	-157.60	0.13	-0.01	1.43	
5,386.00	5.29	84.87	5,338.46	27.15	660.25	-159.03	0.24	0.03	2.61	
5,475.00	4.58	92.81	5,427.13	27.34	667.89	-160.99	1.11	-0.80	8.92	
5,565.00	3.82	105.08	5,516.89	26.38	674.37	-163.72	1.30	-0.84	13.63	
5,655.00	3.79	105.62	5,606.69	24.80	680.13	-166.85	0.05	-0.03	0.60	
5,745.00	3.57	104.47	5,696.51	23.30	685.71	-169.86	0.26	-0.24	-1.28	
5,834.00	3.36	108.11	5,785.35	21.80	690.87	-172.75	0.34	-0.24	4.09	
5,924.00	3.57	108.78	5,875.18	20.08	696.03	-175.85	0.24	0.23	0.74	
6,014.00	3.50	109.97	5,965.01	18.24	701.26	-179.08	0.11	-0.08	1.32	
6,104.00	3.47	114.92	6,054.84	16.15	706.32	-182.50	0.34	-0.03	5.50	
6,194.00	2.88	117.39	6,144.71	13.96	710.79	-185.85	0.67	-0.66	2.74	
6,284.00	2.72	119.21	6,234.60	11.88	714.67	-188.94	0.20	-0.18	2.02	
6,373.00	2.86	120.40	6,323.49	9.73	718.42	-192.06	0.17	0.16	1.34	
6,463.00	3.03	120.49	6,413.37	7.38	722.41	-195.43	0.19	0.19	0.10	
6,553.00	3.07	123.17	6,503.25	4.86	726.48	-198.99	0.16	0.04	2.98	
6,732.00	2.94	125.07	6,682.00	-0.40	734.25	-206.22	0.09	-0.07	1.06	
6,822.00	2.98	124.12	6,771.88	-3.04	738.07	-209.82	0.07	0.04	-1.06	
6,912.00	2.75	130.35	6,861.77	-5.75	741.65	-213.43	0.43	-0.26	6.92	
7,002.00	2.28	138.95	6,951.68	-8.50	744.48	-216.86	0.67	-0.52	9.56	
7,092.00	2.25	147.37	7,041.61	-11.34	746.60	-220.18	0.37	-0.03	9.36	
7,181.00	2.23	152.09	7,130.54	-14.34	748.36	-223.55	0.21	-0.02	5.30	
7,271.00	2.01	156.37	7,220.48	-17.33	749.81	-226.83	0.30	-0.24	4.76	
7,361.00	1.62	159.93	7,310.44	-19.97	750.88	-229.67	0.45	-0.43	3.96	
7,451.00	1.09	162.20	7,400.41	-21.98	751.58	-231.79	0.59	-0.59	2.52	
7,541.00	0.92	182.31	7,490.40	-23.52	751.81	-233.33	0.43	-0.19	22.34	
7,630.00	0.52	182.15	7,579.39	-24.64	751.76	-234.39	0.45	-0.45	-0.18	
7,720.00	0.40	118.14	7,669.39	-25.19	752.03	-235.00	0.55	-0.13	-71.12	
7,810.00	0.50	109.53	7,759.38	-25.47	752.67	-235.45	0.13	0.11	-9.57	
7,900.00	0.26	131.43	7,849.38	-25.74	753.20	-235.85	0.31	-0.27	24.33	
7,989.00	0.18	209.47	7,938.38	-25.99	753.28	-236.12	0.32	-0.09	87.69	
8,079.00	0.54	253.82	8,028.38	-26.23	752.80	-236.22	0.48	0.40	49.28	
8,168.00	1.04	241.15	8,117.37	-26.74	751.69	-236.39	0.59	0.56	-14.24	
8,258.00	1.46	256.52	8,207.35	-27.40	749.86	-236.51	0.59	0.47	17.08	
8,348.00	1.48	252.72	8,297.32	-28.02	747.64	-236.48	0.11	0.02	-4.22	
8,438.00	1.31	249.83	8,387.29	-28.72	745.56	-236.57	0.20	-0.19	-3.21	
8,528.00	1.21	237.18	8,477.27	-29.59	743.80	-236.91	0.33	-0.11	-14.06	
8,617.00	1.20	224.74	8,566.25	-30.76	742.35	-237.63	0.29	-0.01	-13.98	
8,707.00	1.58	206.17	8,656.23	-32.54	741.14	-239.00	0.65	0.42	-20.63	
8,797.00	1.69	194.26	8,746.19	-34.94	740.27	-241.06	0.40	0.12	-13.23	
8,887.00	2.04	187.43	8,836.14	-37.81	739.73	-243.67	0.46	0.39	-7.59	



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Wellbore:	OH / Job 60041	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Precision 565)	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)
8,977.00	1.98	176.22	8,926.09	-40.95	739.63	-246.65	0.44	-0.07	-12.46
9,066.00	2.56	166.31	9,015.02	-44.42	740.20	-250.14	0.78	0.65	-11.13
9,156.00	2.72	172.58	9,104.92	-48.49	740.95	-254.26	0.37	0.18	6.97
9,246.00	2.75	161.93	9,194.82	-52.66	741.90	-258.53	0.56	0.03	-11.83
9,336.00	2.52	168.87	9,284.73	-56.65	742.95	-262.65	0.44	-0.26	7.71
9,425.00	1.74	165.60	9,373.66	-59.88	743.66	-265.95	0.89	-0.88	-3.67
9,515.00	1.68	145.16	9,463.62	-62.29	744.76	-268.57	0.68	-0.07	-22.71
9,605.00	1.03	130.81	9,553.60	-63.90	746.12	-270.50	0.81	-0.72	-15.94
9,695.00	0.79	12.87	9,643.59	-63.82	746.87	-270.64	1.74	-0.27	-131.04
9,784.00	1.58	336.09	9,732.57	-62.10	746.51	-268.88	1.19	0.89	-41.33
9,874.00	1.32	2.91	9,822.55	-59.93	746.06	-266.68	0.80	-0.29	29.80
9,964.00	1.02	38.66	9,912.53	-58.27	746.61	-265.24	0.86	-0.33	39.72
10,053.00	0.73	54.31	10,001.52	-57.32	747.57	-264.59	0.42	-0.33	17.58
10,144.00	0.55	189.74	10,092.52	-57.42	747.97	-264.79	1.30	-0.20	148.82
10,234.00	0.95	192.58	10,182.51	-58.57	747.73	-265.83	0.45	0.44	3.16
10,324.00	1.34	137.85	10,272.49	-60.08	748.28	-267.43	1.23	0.43	-60.81
10,413.00	1.23	124.63	10,361.47	-61.39	749.76	-269.11	0.35	-0.12	-14.85
10,503.00	0.81	141.48	10,451.46	-62.44	750.95	-270.45	0.57	-0.47	18.72
10,593.00	0.73	143.85	10,541.45	-63.40	751.68	-271.58	0.10	-0.09	2.63
10,683.00	0.29	77.42	10,631.44	-63.81	752.25	-272.13	0.74	-0.49	-73.81
10,772.00	0.67	112.18	10,720.44	-63.96	752.95	-272.47	0.52	0.43	39.06
10,862.00	0.06	287.95	10,810.44	-64.15	753.39	-272.77	0.81	-0.68	195.30
10,952.00	1.42	292.77	10,900.43	-63.70	752.32	-272.04	1.51	1.51	5.36
11,041.00	0.91	2.08	10,989.41	-62.57	751.33	-270.68	1.56	-0.57	77.88
11,131.00	1.49	24.16	11,079.39	-60.78	751.83	-269.11	0.81	0.64	24.53
11,221.00	1.25	32.06	11,169.37	-58.88	752.83	-267.57	0.34	-0.27	8.78
11,294.00	1.30	31.53	11,242.35	-57.50	753.69	-266.48	0.07	0.07	-0.73
11,322.00	1.22	35.98	11,270.34	-56.99	754.03	-266.08	0.45	-0.29	15.89
11,412.00	3.26	359.81	11,360.27	-53.66	754.58	-263.04	2.65	2.27	-40.19
11,502.00	15.03	357.29	11,448.97	-39.39	754.02	-249.19	13.08	13.08	-2.80
11,591.00	25.38	359.41	11,532.39	-8.71	753.28	-219.53	11.66	11.63	2.38
11,681.00	35.15	353.48	11,610.04	36.44	750.13	-175.31	11.34	10.86	-6.59
11,771.00	43.26	344.91	11,679.77	92.09	739.13	-118.81	10.82	9.01	-9.52
11,800.00	47.40	344.76	11,700.16	111.99	733.73	-98.19	14.28	14.28	-0.52
11,914.00	52.08	344.69	11,773.81	195.89	710.82	-11.23	4.11	4.11	-0.06
12,003.00	58.77	343.11	11,824.29	266.24	690.47	62.00	7.66	7.52	-1.78
12,093.00	72.09	342.56	11,861.63	344.26	666.35	143.66	14.81	14.80	-0.61
12,183.00	79.47	340.61	11,883.72	426.97	638.79	230.78	8.46	8.20	-2.17
12,273.00	81.49	340.88	11,898.61	510.76	609.52	319.41	2.26	2.24	0.30
12,362.00	81.08	341.16	11,912.09	593.95	580.91	407.29	0.56	-0.46	0.31
12,452.00	88.18	340.92	11,920.51	678.64	551.81	496.74	7.89	7.89	-0.27
12,541.00	88.12	340.56	11,923.38	762.61	522.47	585.57	0.41	-0.07	-0.40
12,631.00	91.37	340.11	11,923.78	847.35	492.19	675.40	3.65	3.61	-0.50
12,720.00	90.36	339.52	11,922.44	930.87	461.48	764.18	1.31	-1.13	-0.66



Phoenix Technology Services

Survey Report



Company:	SWEPI	Local Co-ordinate Reference:	Well B 2304H / API 42301328490000
Project:	Loving County, Texas (NAD27)	TVD Reference:	RKB @ 2860.00usft (Precision 565)
Site:	University 19	MD Reference:	RKB @ 2860.00usft (Precision 565)
Well:	B 2304H / API 42301328490000	North Reference:	Grid
Wellbore:	OH / Job 60041	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Precision 565)	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)
12,810.00	91.12	339.12	11,921.28	1,015.07	429.70	853.91	0.95	0.84	-0.44
12,989.00	94.63	340.62	11,912.30	1,182.89	368.18	1,032.24	2.13	1.96	0.84
13,079.00	91.76	342.03	11,907.29	1,268.01	339.42	1,122.01	3.55	-3.19	1.57
13,169.00	91.74	343.98	11,904.54	1,354.03	313.12	1,211.96	2.17	-0.02	2.17
13,259.00	91.90	344.24	11,901.68	1,440.55	288.49	1,301.91	0.34	0.18	0.29
13,438.00	91.01	343.38	11,897.13	1,612.39	238.60	1,480.85	0.69	-0.50	-0.48
13,528.00	90.06	342.80	11,896.29	1,698.50	212.43	1,570.84	1.24	-1.06	-0.64
13,618.00	88.80	341.45	11,897.19	1,784.14	184.80	1,660.80	2.05	-1.40	-1.50
13,798.00	89.72	341.70	11,899.51	1,954.90	127.92	1,840.66	0.53	0.51	0.14
13,887.00	84.90	338.74	11,903.69	2,038.52	97.85	1,929.36	6.35	-5.42	-3.33
13,977.00	87.84	339.94	11,909.39	2,122.56	66.16	2,018.90	3.53	3.27	1.33
14,067.00	87.54	340.00	11,913.02	2,207.04	35.36	2,108.64	0.34	-0.33	0.07
14,156.00	86.44	339.56	11,917.69	2,290.44	4.65	2,197.30	1.33	-1.24	-0.49
14,246.00	87.79	340.32	11,922.22	2,374.87	-26.18	2,286.99	1.72	1.50	0.84
14,336.00	89.52	340.31	11,924.33	2,459.59	-56.49	2,376.80	1.92	1.92	-0.01
14,426.00	87.93	340.48	11,926.33	2,544.35	-86.68	2,466.62	1.78	-1.77	0.19
14,516.00	86.64	339.33	11,930.60	2,628.77	-117.57	2,556.32	1.92	-1.43	-1.28
14,695.00	87.84	340.65	11,939.22	2,796.76	-178.74	2,734.73	1.00	0.67	0.74
14,785.00	87.62	339.95	11,942.78	2,881.43	-209.06	2,824.50	0.81	-0.24	-0.78
14,875.00	93.00	346.00	11,942.29	2,967.41	-235.39	2,914.41	8.99	5.98	6.72
14,964.00	91.57	345.31	11,938.75	3,053.56	-257.42	3,003.29	1.78	-1.61	-0.78
15,054.00	91.15	344.94	11,936.61	3,140.52	-280.52	3,093.24	0.62	-0.47	-0.41
15,233.00	88.74	343.09	11,936.78	3,312.58	-329.81	3,272.21	1.70	-1.35	-1.03
15,323.00	89.86	343.70	11,937.88	3,398.82	-355.52	3,362.20	1.42	1.24	0.68
15,413.00	89.86	342.44	11,938.10	3,484.92	-381.73	3,452.19	1.40	0.00	-1.40
15,592.00	89.27	342.90	11,939.46	3,655.79	-435.05	3,631.16	0.42	-0.33	0.26
15,682.00	89.30	343.10	11,940.58	3,741.85	-461.36	3,721.14	0.22	0.03	0.22
15,772.00	88.46	341.44	11,942.34	3,827.55	-488.76	3,811.09	2.07	-0.93	-1.84
15,862.00	90.03	343.04	11,943.53	3,913.25	-516.21	3,901.05	2.49	1.74	1.78
15,952.00	90.81	343.95	11,942.87	3,999.54	-541.78	3,991.05	1.33	0.87	1.01
16,042.00	90.59	343.39	11,941.77	4,085.90	-567.08	4,081.04	0.67	-0.24	-0.62
16,132.00	89.47	343.91	11,941.72	4,172.26	-592.42	4,171.04	1.37	-1.24	0.58
16,222.00	86.22	341.39	11,945.11	4,258.08	-619.23	4,260.94	4.57	-3.61	-2.80
16,311.00	90.14	346.84	11,947.93	4,343.59	-643.56	4,349.84	7.54	4.40	6.12
16,401.00	88.85	345.33	11,948.73	4,430.95	-665.20	4,439.76	2.21	-1.43	-1.68
16,490.00	88.68	346.66	11,950.65	4,517.28	-686.73	4,528.66	1.51	-0.19	1.49
16,580.00	87.90	346.75	11,953.33	4,604.83	-707.42	4,618.50	0.87	-0.87	0.10
16,670.00	88.16	345.93	11,956.42	4,692.23	-728.66	4,708.35	0.96	0.29	-0.91
16,760.00	92.88	349.92	11,955.61	4,780.19	-747.48	4,798.06	6.87	5.24	4.43
16,850.00	91.65	348.44	11,952.05	4,868.52	-764.36	4,887.58	2.14	-1.37	-1.64
16,939.00	91.96	348.29	11,949.25	4,955.64	-782.30	4,976.24	0.39	0.35	-0.17
17,119.00	88.91	347.84	11,947.88	5,131.73	-819.52	5,155.70	1.71	-1.69	-0.25
17,209.00	86.53	346.87	11,951.46	5,219.47	-839.20	5,245.44	2.86	-2.64	-1.08



Phoenix Technology Services

Survey Report



Company:	SWEPI	Local Co-ordinate Reference:	Well B 2304H / API 42301328490000
Project:	Loving County, Texas (NAD27)	TVD Reference:	RKB @ 2860.00usft (Precision 565)
Site:	University 19	MD Reference:	RKB @ 2860.00usft (Precision 565)
Well:	B 2304H / API 42301328490000	North Reference:	Grid
Wellbore:	OH / Job 60041	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Precision 565)	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)	
17,299.00	88.60	348.68	11,955.29	5,307.34	-858.24	5,335.12	3.05	2.30	2.01	
17,389.00	88.91	348.95	11,957.24	5,395.61	-875.69	5,424.75	0.46	0.34	0.30	
17,477.00	88.88	348.89	11,958.94	5,481.95	-892.60	5,512.37	0.08	-0.03	-0.07	
17,656.00	89.55	346.21	11,961.39	5,656.71	-931.19	5,690.93	1.54	0.37	-1.50	
17,746.00	93.13	350.77	11,959.29	5,744.84	-949.14	5,780.56	6.44	3.98	5.07	
17,836.00	92.97	350.70	11,954.50	5,833.54	-963.60	5,869.76	0.19	-0.18	-0.08	
17,926.00	91.31	349.80	11,951.14	5,922.17	-978.84	5,959.11	2.10	-1.84	-1.00	
18,015.00	91.26	349.45	11,949.14	6,009.69	-994.86	6,047.62	0.40	-0.06	-0.39	
18,105.00	90.67	350.36	11,947.62	6,098.29	-1,010.63	6,137.08	1.20	-0.66	1.01	
18,184.00	89.30	349.25	11,947.64	6,176.04	-1,024.61	6,215.63	2.23	-1.73	-1.41	
Final Phoenix MWD Survey										
18,241.00	89.30	349.25	11,948.34	6,232.03	-1,035.25	6,272.36	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
183.00	182.99	-0.63	-1.08	First Phoenix MWD Survey	
18,184.00	11,947.64	6,176.04	-1,024.61	Final Phoenix MWD Survey	
18,241.00	11,948.34	6,232.03	-1,035.25	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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Phoenix Technology Services
SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

60041

ENERGY COMPANY

SWEPI

WELL NAME

University 19 B 2304H

COUNTY & STATE

LOVING COUNTY, TEXAS

API WELL NUMBER

42301328490000

PROPOSED DIRECTION

343.72

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
0	0.00 ft	0.00°	0.00°	0.00	0.00	Surface

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
28-Apr-16	183	0.78°	239.84°

SURVEY INSTRUMENT
TYPE

Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
6-Jun-16	18,184 ft	89.3	349.25

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
6-Jun-16	18,241 ft	89.3	349.25

Shane Metcalf

PRINT YOUR NAME ABOVE

Shane Metcalf

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	8.75
DECLINATION OR GRID	GRID

6/6/2016

TODAY'S DATE

MWD SUPERVISOR 1

Shane Metcalf

DIRECTIONAL DRILLER 1

Travis Marbrough

MWD SUPERVISOR 2

0

DIRECTIONAL DRILLER 2

Dustin St.Clair

12329 Cutten Rd

Houston, Texas 77060

(713)3370609 (Voice), (713)337-0599 (Fax)