

American Energy Partners

Project: Reagan County, TX (NAD-27)

Site: University 09

Well: 0817H

Wellbore: ST1

Design: Plan #3



Azimuths to Grid North
True North: 0.65°
Magnetic North: 6.91°

Magnetic Field
Strength: 47876.3snT
Dip Angle: 59.53°
Date: 11/11/2014
Model: BGGM2014



AMERICAN ENERGY
PARTNERS

PROJECT DETAILS: Reagan County, TX (NAD-27)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Texas Central 4203

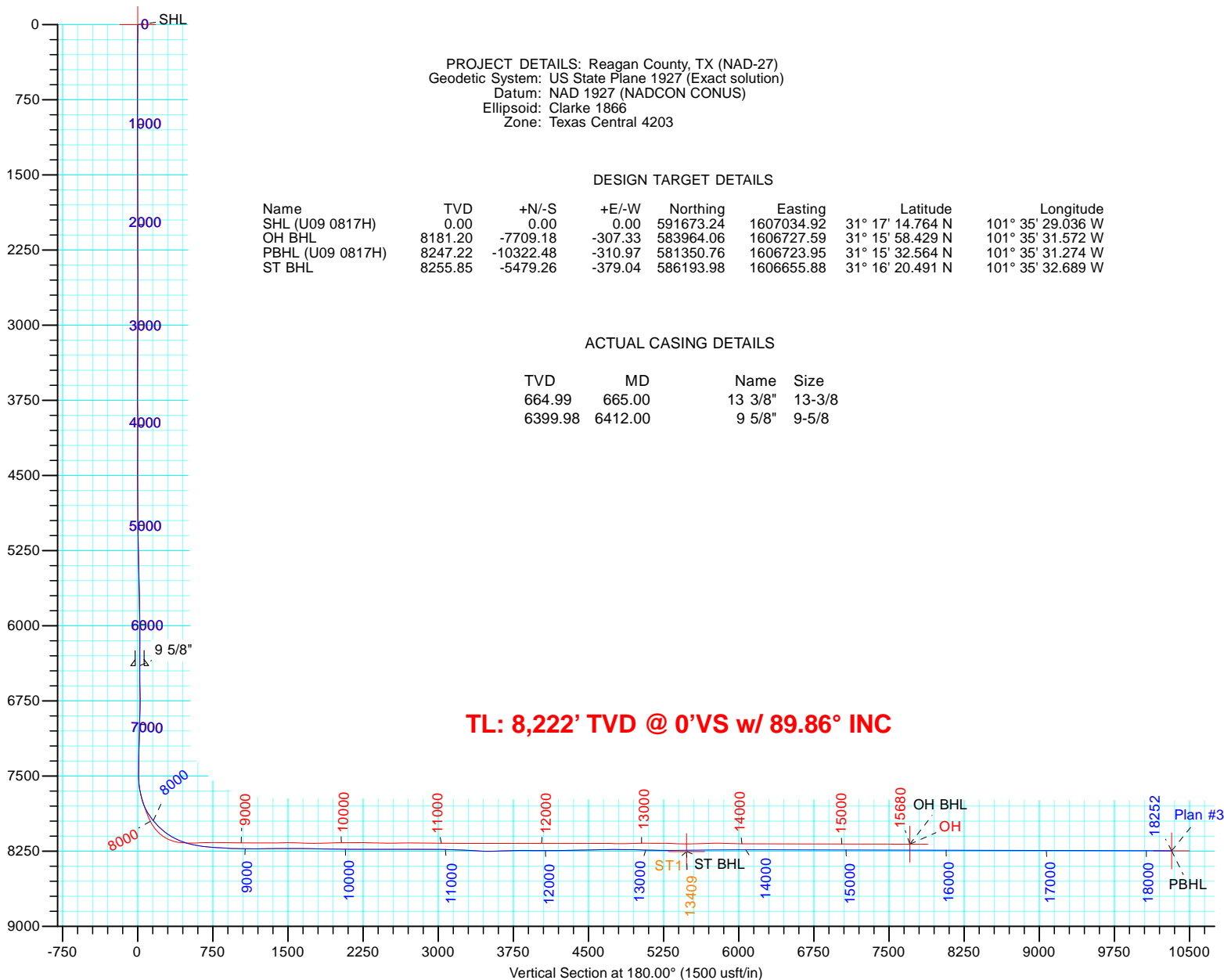
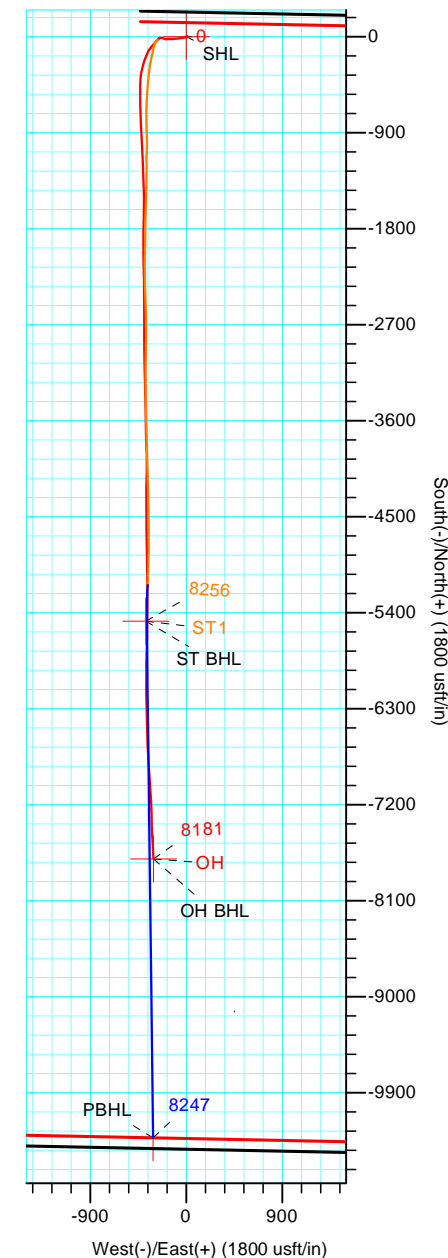
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL (U09 0817H)	0.00	0.00	0.00	591673.24	1607034.92	31° 17' 14.764 N	101° 35' 29.036 W
OH BHL	8181.20	-7709.18	-307.33	583964.06	1606727.59	31° 15' 58.429 N	101° 35' 31.572 W
PBHL (U09 0817H)	8247.22	-10322.48	-310.97	581350.76	1606723.95	31° 15' 32.564 N	101° 35' 31.274 W
ST BHL	8255.85	-5479.26	-379.04	586193.98	1606655.88	31° 16' 20.491 N	101° 35' 32.689 W

ACTUAL CASING DETAILS

TVD	MD	Name	Size
664.99	665.00	13 3/8"	13-3/8
6399.98	6412.00	9 5/8"	9-5/8

TL: 8,222' TVD @ 0°VS w/ 89.86° INC



LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7577, Fax 936/756-7595

Plan: Plan #3 (0817H/ST1)
University 09

Created By: Brady Deaver

Date:

Approved: _____

Date: 9:18, December 04 2014

Date: _____



American Energy Partners

Reagan County, TX (NAD-27)

University 09

0817H

OH

Design: OH

Standard Survey Report

04 December, 2014



Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Reagan County, TX (NAD-27)		
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 09				
Site Position:		Northing:	591,743.30 usft	Latitude:	31° 17' 15.458 N
From:	Map	Easting:	1,607,034.86 usft	Longitude:	101° 35' 29.046 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.65 °

Well	0817H, Wolfcamp					
Well Position	+N/-S	0.00 usft	Northing:	591,673.24 usft	Latitude:	31° 17' 14.764 N
	+E/-W	0.00 usft	Easting:	1,607,034.92 usft	Longitude:	101° 35' 29.036 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	2,694.54 usft	Ground Level:	2,664.54 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	10/20/2014	6.27	59.54	47,884

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	180.00	

Survey Program	Date	12/4/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	500.00	Survey #1 (OH)	VES GyroFlex V2		
687.00	15,632.00	Survey #2 (OH)	LEAM_MWD+HDGM	LEAM MWD + HDGM	
15,680.00	15,680.00	Survey #3 (OH)	Project	Projection	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SHL (U09 0817H)										
100.00	0.75	67.70	100.00	0.25	0.61	-0.25	0.75	0.75	0.00	
200.00	0.35	65.01	199.99	0.63	1.49	-0.63	0.40	-0.40	-2.69	
300.00	0.34	23.91	299.99	1.03	1.89	-1.03	0.24	-0.01	-41.10	
400.00	0.24	154.54	399.99	1.11	2.10	-1.11	0.53	-0.10	130.63	
500.00	0.15	19.54	499.99	1.04	2.23	-1.04	0.36	-0.09	-135.00	

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Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 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)
665.00	0.31	289.51	664.99	1.39	1.88	-1.39	0.21	0.10	-54.57
13 3/8"									
687.00	0.35	286.23	686.99	1.43	1.76	-1.43	0.21	0.19	-14.89
777.00	0.26	305.74	776.99	1.63	1.33	-1.63	0.15	-0.10	21.68
871.00	0.18	133.82	870.99	1.65	1.27	-1.65	0.47	-0.09	-182.89
966.00	0.09	214.86	965.99	1.49	1.33	-1.49	0.20	-0.09	85.31
1,060.00	0.26	104.82	1,059.99	1.37	1.50	-1.37	0.32	0.18	-117.06
1,155.00	0.35	89.70	1,154.99	1.32	1.99	-1.32	0.13	0.09	-15.92
1,249.00	0.44	133.82	1,248.98	1.07	2.54	-1.07	0.33	0.10	46.94
1,344.00	0.18	122.57	1,343.98	0.74	2.93	-0.74	0.28	-0.27	-11.84
1,437.00	0.18	117.48	1,436.98	0.59	3.18	-0.59	0.02	0.00	-5.47
1,531.00	0.18	103.59	1,530.98	0.49	3.46	-0.49	0.05	0.00	-14.78
1,625.00	0.18	89.00	1,624.98	0.46	3.75	-0.46	0.05	0.00	-15.52
1,719.00	0.18	114.84	1,718.98	0.40	4.03	-0.40	0.09	0.00	27.49
1,814.00	0.26	127.67	1,813.98	0.20	4.34	-0.20	0.10	0.08	13.51
1,909.00	0.35	120.99	1,908.98	-0.08	4.76	0.08	0.10	0.09	-7.03
2,003.00	0.26	115.54	2,002.98	-0.32	5.19	0.32	0.10	-0.10	-5.80
2,098.00	0.26	65.09	2,097.98	-0.32	5.58	0.32	0.23	0.00	-53.11
2,192.00	0.18	106.05	2,191.97	-0.27	5.92	0.27	0.18	-0.09	43.57
2,287.00	0.70	138.22	2,286.97	-0.75	6.45	0.75	0.59	0.55	33.86
2,381.00	0.70	133.65	2,380.96	-1.57	7.25	1.57	0.06	0.00	-4.86
2,475.00	0.62	121.17	2,474.96	-2.23	8.10	2.23	0.17	-0.09	-13.28
2,570.00	0.35	129.96	2,569.96	-2.68	8.76	2.68	0.29	-0.28	9.25
2,665.00	0.53	96.38	2,664.95	-2.92	9.42	2.92	0.32	0.19	-35.35
2,760.00	0.35	74.41	2,759.95	-2.89	10.14	2.89	0.26	-0.19	-23.13
2,854.00	0.26	53.84	2,853.95	-2.69	10.58	2.69	0.15	-0.10	-21.88
2,948.00	0.44	57.01	2,947.95	-2.36	11.06	2.36	0.19	0.19	3.37
3,043.00	0.62	53.14	3,042.94	-1.86	11.78	1.86	0.19	0.19	-4.07
3,137.00	0.44	37.14	3,136.94	-1.26	12.40	1.26	0.25	-0.19	-17.02
3,232.00	0.53	24.84	3,231.94	-0.57	12.81	0.57	0.14	0.09	-12.95
3,326.00	0.35	24.14	3,325.93	0.08	13.11	-0.08	0.19	-0.19	-0.74
3,420.00	0.35	16.58	3,419.93	0.62	13.31	-0.62	0.05	0.00	-8.04
3,514.00	0.26	54.02	3,513.93	1.02	13.56	-1.02	0.23	-0.10	39.83
3,608.00	0.18	245.97	3,607.93	1.09	13.60	-1.09	0.47	-0.09	-178.78
3,703.00	0.26	258.98	3,702.93	0.98	13.25	-0.98	0.10	0.08	13.69
3,797.00	0.44	238.06	3,796.93	0.75	12.73	-0.75	0.23	0.19	-22.26
3,891.00	0.26	215.91	3,890.92	0.39	12.30	-0.39	0.24	-0.19	-23.56
3,985.00	0.18	181.46	3,984.92	0.07	12.17	-0.07	0.16	-0.09	-36.65
4,080.00	0.18	116.07	4,079.92	-0.15	12.30	0.15	0.20	0.00	-68.83
4,174.00	0.09	50.33	4,173.92	-0.17	12.49	0.17	0.18	-0.10	-69.94
4,268.00	0.35	43.82	4,267.92	0.09	12.75	-0.09	0.28	0.28	-6.93
4,363.00	0.26	26.60	4,362.92	0.49	13.05	-0.49	0.13	-0.09	-18.13

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Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 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)
4,457.00	0.18	19.39	4,456.92	0.82	13.19	-0.82	0.09	-0.09	-7.67
4,552.00	0.18	239.12	4,551.92	0.89	13.11	-0.89	0.36	0.00	-147.65
4,646.00	0.70	228.39	4,645.92	0.43	12.56	-0.43	0.56	0.55	-11.41
4,741.00	1.06	251.25	4,740.91	-0.24	11.29	0.24	0.52	0.38	24.06
4,835.00	1.14	255.29	4,834.89	-0.76	9.56	0.76	0.12	0.09	4.30
4,930.00	1.58	238.41	4,929.86	-1.68	7.53	1.68	0.62	0.46	-17.77
5,022.00	2.37	252.12	5,021.81	-2.93	4.64	2.93	0.99	0.86	14.90
5,116.00	4.04	252.65	5,115.66	-4.52	-0.37	4.52	1.78	1.78	0.56
5,211.00	6.33	260.21	5,210.26	-6.40	-8.72	6.40	2.51	2.41	7.96
5,305.00	6.86	262.14	5,303.64	-8.05	-19.39	8.05	0.61	0.56	2.05
5,400.00	7.65	262.32	5,397.88	-9.67	-31.28	9.67	0.83	0.83	0.19
5,494.00	8.44	260.91	5,490.95	-11.60	-44.29	11.60	0.87	0.84	-1.50
5,589.00	9.32	261.97	5,584.81	-13.78	-58.79	13.78	0.94	0.93	1.12
5,684.00	9.76	261.44	5,678.50	-16.05	-74.37	16.05	0.47	0.46	-0.56
5,778.00	9.50	261.79	5,771.18	-18.34	-89.93	18.34	0.28	-0.28	0.37
5,872.00	9.58	265.31	5,863.88	-20.09	-105.40	20.09	0.63	0.09	3.74
5,967.00	8.53	265.13	5,957.69	-21.33	-120.30	21.33	1.11	-1.11	-0.19
6,061.00	6.68	266.01	6,050.86	-22.31	-132.70	22.31	1.97	-1.97	0.94
6,156.00	5.63	274.10	6,145.31	-22.36	-142.86	22.36	1.43	-1.11	8.52
6,250.00	5.72	274.80	6,238.85	-21.64	-152.13	21.64	0.12	0.10	0.74
6,345.00	6.16	273.57	6,333.34	-20.92	-161.94	20.92	0.48	0.46	-1.29
6,360.00	5.98	270.23	6,348.26	-20.87	-163.52	20.87	2.64	-1.20	-22.27
6,412.00	5.85	269.88	6,399.98	-20.86	-168.88	20.86	0.27	-0.26	-0.68
9 5/8"									
6,461.00	5.72	269.53	6,448.73	-20.89	-173.81	20.89	0.27	-0.26	-0.71
6,556.00	3.43	258.10	6,543.43	-21.51	-181.33	21.51	2.58	-2.41	-12.03
6,650.00	2.64	245.27	6,637.29	-23.00	-186.05	23.00	1.10	-0.84	-13.65
6,745.00	2.11	263.90	6,732.21	-24.10	-189.77	24.10	0.98	-0.56	19.61
6,839.00	2.55	296.60	6,826.14	-23.35	-193.37	23.35	1.47	0.47	34.79
6,934.00	3.43	290.45	6,921.01	-21.41	-197.92	21.41	0.98	0.93	-6.47
7,028.00	6.24	289.74	7,014.67	-18.70	-205.36	18.70	2.99	2.99	-0.76
7,123.00	5.28	285.00	7,109.19	-15.83	-214.44	15.83	1.13	-1.01	-4.99
7,218.00	4.22	279.55	7,203.86	-14.11	-222.11	14.11	1.21	-1.12	-5.74
7,311.00	4.48	286.75	7,296.59	-12.50	-228.97	12.50	0.65	0.28	7.74
7,406.00	4.92	277.96	7,391.27	-10.87	-236.55	10.87	0.89	0.46	-9.25
7,500.00	4.04	274.98	7,484.98	-10.02	-243.84	10.02	0.97	-0.94	-3.17
7,531.00	3.87	264.61	7,515.91	-10.02	-245.97	10.02	2.37	-0.55	-33.45
7,562.00	5.80	238.06	7,546.80	-10.95	-248.35	10.95	9.38	6.23	-85.65
7,594.00	9.23	232.44	7,578.52	-13.37	-251.75	13.37	10.95	10.72	-17.56
7,625.00	12.40	230.68	7,608.97	-17.00	-256.30	17.00	10.28	10.23	-5.68
7,657.00	15.04	230.15	7,640.05	-21.84	-262.15	21.84	8.26	8.25	-1.66
7,689.00	17.23	224.35	7,670.79	-27.89	-268.65	27.89	8.49	6.84	-18.13

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Survey										
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7,720.00	19.08	222.59	7,700.25	-34.90	-275.29	34.90	6.22	5.97	-5.68	
7,752.00	20.84	221.54	7,730.33	-43.01	-282.60	43.01	5.61	5.50	-3.28	
7,783.00	23.39	220.31	7,759.04	-51.83	-290.24	51.83	8.36	8.23	-3.97	
7,815.00	25.59	219.61	7,788.16	-62.00	-298.76	62.00	6.93	6.88	-2.19	
7,847.00	25.59	222.24	7,817.02	-72.44	-307.81	72.44	3.55	0.00	8.22	
7,878.00	23.30	221.89	7,845.24	-81.97	-316.40	81.97	7.40	-7.39	-1.13	
7,909.00	25.41	217.85	7,873.48	-91.78	-324.58	91.78	8.67	6.81	-13.03	
7,941.00	28.14	216.62	7,902.05	-103.26	-333.30	103.26	8.70	8.53	-3.84	
7,970.00	28.84	216.27	7,927.54	-114.39	-341.51	114.39	2.48	2.41	-1.21	
8,002.00	31.48	211.52	7,955.21	-127.74	-350.45	127.74	11.12	8.25	-14.84	
8,033.00	34.47	206.42	7,981.22	-142.50	-358.59	142.50	13.15	9.65	-16.45	
8,065.00	36.93	203.61	8,007.20	-159.42	-366.47	159.42	9.24	7.69	-8.78	
8,096.00	40.98	202.20	8,031.31	-177.38	-374.04	177.38	13.37	13.06	-4.55	
8,127.00	45.55	200.80	8,053.87	-197.14	-381.82	197.14	15.06	14.74	-4.52	
8,159.00	49.77	200.27	8,075.42	-219.29	-390.11	219.29	13.24	13.19	-1.66	
8,191.00	54.43	197.11	8,095.08	-243.20	-398.18	243.20	16.51	14.56	-9.88	
8,222.00	58.92	195.00	8,112.11	-268.09	-405.33	268.09	15.56	14.48	-6.81	
8,253.00	63.84	193.41	8,126.95	-294.46	-411.99	294.46	16.50	15.87	-5.13	
8,285.00	68.94	191.48	8,139.76	-323.09	-418.30	323.09	16.87	15.94	-6.03	
8,316.00	72.81	189.02	8,149.92	-351.90	-423.50	351.90	14.56	12.48	-7.94	
8,348.00	77.03	186.03	8,158.24	-382.52	-427.54	382.52	15.98	13.19	-9.34	
8,362.00	79.76	184.98	8,161.06	-396.17	-428.85	396.17	20.84	19.50	-7.50	
8,380.00	82.66	183.75	8,163.81	-413.91	-430.21	413.91	17.47	16.11	-6.83	
8,411.00	86.26	180.76	8,166.80	-444.73	-431.42	444.73	15.07	11.61	-9.65	
8,443.00	86.79	180.41	8,168.74	-476.67	-431.74	476.67	1.98	1.66	-1.09	
8,538.00	92.24	179.00	8,169.55	-571.63	-431.26	571.63	5.93	5.74	-1.48	
8,629.00	90.92	178.82	8,167.04	-662.57	-429.52	662.57	1.46	-1.45	-0.20	
8,720.00	90.84	178.82	8,165.64	-753.54	-427.65	753.54	0.09	-0.09	0.00	
8,812.00	89.16	178.12	8,165.64	-845.51	-425.19	845.51	1.98	-1.83	-0.76	
8,904.00	89.25	174.78	8,166.92	-937.31	-419.50	937.31	3.63	0.10	-3.63	
8,995.00	89.43	177.95	8,167.97	-1,028.11	-413.73	1,028.11	3.49	0.20	3.48	
9,087.00	89.78	177.77	8,168.60	-1,120.04	-410.30	1,120.04	0.43	0.38	-0.20	
9,179.00	90.13	177.95	8,168.67	-1,211.98	-406.86	1,211.98	0.43	0.38	0.20	
9,270.00	90.40	177.07	8,168.25	-1,302.89	-402.91	1,302.89	1.01	0.30	-0.97	
9,362.00	90.48	178.30	8,167.55	-1,394.81	-399.19	1,394.81	1.34	0.09	1.34	
9,453.00	90.57	179.00	8,166.71	-1,485.78	-397.05	1,485.78	0.78	0.10	0.77	
9,548.00	87.49	180.58	8,168.32	-1,580.75	-396.70	1,580.75	3.64	-3.24	1.66	
9,642.00	88.29	180.76	8,171.78	-1,674.68	-397.80	1,674.68	0.87	0.85	0.19	
9,734.00	90.75	182.34	8,172.55	-1,766.63	-400.29	1,766.63	3.18	2.67	1.72	
9,829.00	91.71	179.35	8,170.51	-1,861.59	-401.69	1,861.59	3.30	1.01	-3.15	
9,924.00	90.22	179.70	8,168.91	-1,956.57	-400.90	1,956.57	1.61	-1.57	0.37	
10,018.00	92.42	179.53	8,166.75	-2,050.54	-400.27	2,050.54	2.35	2.34	-0.18	

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 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)	
10,113.00	88.90	179.00	8,165.65	-2,145.51	-399.05	2,145.51	3.75	-3.71	-0.56	
10,207.00	88.99	178.82	8,167.38	-2,239.47	-397.26	2,239.47	0.21	0.10	-0.19	
10,301.00	90.40	179.70	8,167.88	-2,333.46	-396.05	2,333.46	1.77	1.50	0.94	
10,396.00	87.76	179.18	8,169.41	-2,428.44	-395.12	2,428.44	2.83	-2.78	-0.55	
10,490.00	89.69	179.00	8,171.50	-2,522.40	-393.63	2,522.40	2.06	2.05	-0.19	
10,584.00	92.07	180.93	8,170.06	-2,616.38	-393.57	2,616.38	3.26	2.53	2.05	
10,679.00	89.43	179.70	8,168.81	-2,711.36	-394.09	2,711.36	3.07	-2.78	-1.29	
10,773.00	90.66	179.88	8,168.74	-2,805.35	-393.75	2,805.35	1.32	1.31	0.19	
10,868.00	87.32	179.35	8,170.41	-2,900.32	-393.11	2,900.32	3.56	-3.52	-0.56	
10,962.00	89.34	179.35	8,173.15	-2,994.27	-392.04	2,994.27	2.15	2.15	0.00	
11,057.00	92.07	179.88	8,171.98	-3,089.25	-391.40	3,089.25	2.93	2.87	0.56	
11,151.00	88.29	177.59	8,171.69	-3,183.21	-389.33	3,183.21	4.70	-4.02	-2.44	
11,244.00	88.55	177.24	8,174.25	-3,276.08	-385.14	3,276.08	0.47	0.28	-0.38	
11,339.00	90.57	179.70	8,174.98	-3,371.03	-382.60	3,371.03	3.35	2.13	2.59	
11,430.00	91.10	179.53	8,173.66	-3,462.01	-381.99	3,462.01	0.61	0.58	-0.19	
11,522.00	88.64	178.82	8,173.87	-3,554.00	-380.66	3,554.00	2.78	-2.67	-0.77	
11,615.00	89.25	179.70	8,175.58	-3,646.97	-379.46	3,646.97	1.15	0.66	0.95	
11,707.00	89.87	178.12	8,176.28	-3,738.95	-377.71	3,738.95	1.84	0.67	-1.72	
11,799.00	91.10	177.77	8,175.51	-3,830.89	-374.41	3,830.89	1.39	1.34	-0.38	
11,892.00	91.45	178.47	8,173.44	-3,923.81	-371.36	3,923.81	0.84	0.38	0.75	
11,985.00	90.31	180.05	8,172.01	-4,016.79	-370.16	4,016.79	2.09	-1.23	1.70	
12,077.00	87.76	181.29	8,173.56	-4,108.76	-371.24	4,108.76	3.08	-2.77	1.35	
12,170.00	89.69	180.29	8,175.63	-4,201.72	-372.52	4,201.72	2.34	2.08	-1.08	
12,262.00	90.31	180.58	8,175.63	-4,293.72	-373.22	4,293.72	0.74	0.67	0.32	
12,357.00	91.63	180.76	8,174.02	-4,388.70	-374.33	4,388.70	1.40	1.39	0.19	
12,452.00	90.13	179.53	8,172.56	-4,483.68	-374.57	4,483.68	2.04	-1.58	-1.29	
12,546.00	88.46	178.65	8,173.72	-4,577.66	-373.08	4,577.66	2.01	-1.78	-0.94	
12,640.00	90.13	179.35	8,174.87	-4,671.63	-371.44	4,671.63	1.93	1.78	0.74	
12,734.00	89.08	178.65	8,175.52	-4,765.61	-369.80	4,765.61	1.34	-1.12	-0.74	
12,828.00	90.75	178.82	8,175.66	-4,859.59	-367.72	4,859.59	1.79	1.78	0.18	
12,923.00	91.71	180.41	8,173.62	-4,954.56	-367.08	4,954.56	1.95	1.01	1.67	
13,017.00	90.31	179.35	8,171.96	-5,048.54	-366.89	5,048.54	1.87	-1.49	-1.13	
13,112.00	88.64	178.30	8,172.83	-5,143.51	-364.94	5,143.51	2.08	-1.76	-1.11	
13,207.00	90.84	180.23	8,173.26	-5,238.49	-363.72	5,238.49	3.08	2.32	2.03	
13,298.00	87.49	180.05	8,174.59	-5,329.47	-363.94	5,329.47	3.69	-3.68	-0.20	
13,389.00	88.37	180.05	8,177.88	-5,420.41	-364.02	5,420.41	0.97	0.97	0.00	
13,481.00	90.31	180.23	8,178.94	-5,512.40	-364.25	5,512.40	2.12	2.11	0.20	
13,572.00	92.07	181.81	8,177.05	-5,603.36	-365.87	5,603.36	2.60	1.93	1.74	
13,664.00	92.42	182.34	8,173.44	-5,695.23	-369.19	5,695.23	0.69	0.38	0.58	
13,756.00	89.43	181.64	8,171.96	-5,787.15	-372.39	5,787.15	3.34	-3.25	-0.76	
13,848.00	88.46	181.46	8,173.65	-5,879.10	-374.88	5,879.10	1.07	-1.05	-0.20	
13,940.00	88.46	179.18	8,176.13	-5,971.06	-375.39	5,971.06	2.48	0.00	-2.48	

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 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)	
14,031.00	90.92	179.88	8,176.62	-6,062.05	-374.64	6,062.05	2.81	2.70	0.77	
14,123.00	89.34	179.53	8,176.41	-6,154.04	-374.17	6,154.04	1.76	-1.72	-0.38	
14,218.00	88.72	178.12	8,178.02	-6,249.00	-372.22	6,249.00	1.62	-0.65	-1.48	
14,313.00	90.84	179.00	8,178.38	-6,343.97	-369.83	6,343.97	2.42	2.23	0.93	
14,407.00	88.81	178.65	8,178.67	-6,437.94	-367.91	6,437.94	2.19	-2.16	-0.37	
14,502.00	90.92	178.30	8,178.89	-6,532.90	-365.38	6,532.90	2.25	2.22	-0.37	
14,597.00	89.43	177.07	8,178.60	-6,627.82	-361.54	6,627.82	2.03	-1.57	-1.29	
14,691.00	91.45	179.00	8,177.88	-6,721.75	-358.32	6,721.75	2.97	2.15	2.05	
14,785.00	88.72	176.36	8,177.74	-6,815.66	-354.51	6,815.66	4.04	-2.90	-2.81	
14,880.00	89.08	175.66	8,179.57	-6,910.41	-347.91	6,910.41	0.83	0.38	-0.74	
14,973.00	90.66	174.78	8,179.78	-7,003.08	-340.16	7,003.08	1.94	1.70	-0.95	
15,067.00	89.16	176.89	8,179.92	-7,096.83	-333.33	7,096.83	2.75	-1.60	2.24	
15,162.00	90.22	177.59	8,180.44	-7,191.71	-328.75	7,191.71	1.34	1.12	0.74	
15,256.00	89.25	179.18	8,180.87	-7,285.67	-326.11	7,285.67	1.98	-1.03	1.69	
15,351.00	90.92	178.30	8,180.73	-7,380.64	-324.02	7,380.64	1.99	1.76	-0.93	
15,444.00	89.69	176.71	8,180.24	-7,473.55	-319.97	7,473.55	2.16	-1.32	-1.71	
15,538.00	88.72	176.19	8,181.54	-7,567.36	-314.15	7,567.36	1.17	-1.03	-0.55	
15,632.00	90.84	177.77	8,181.90	-7,661.22	-309.20	7,661.22	2.81	2.26	1.68	
15,680.00	90.84	177.77	8,181.20	-7,709.18	-307.33	7,709.18	0.00	0.00	0.00	
OH BHL - PBHL (U09 0817H)										

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
OH BHL	0.00	360.00	8,181.20	-7,709.18	-307.33	583,964.07	1,606,727.59	31° 15' 58.429 N	101° 35' 31.572 W
- hit/miss target									
- Shape									
- actual wellpath hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
665.00	664.99	13 3/8"	13-3/8	17-1/2	
6,412.00	6,399.98	9 5/8"	9-5/8	12-1/4	

Checked By: _____ Approved By: _____ Date: _____



American Energy Partners

Reagan County, TX (NAD-27)

University 09

0817H

OH

Design: OH

Survey Report - Geographic

04 December, 2014



Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Reagan County, TX (NAD-27)		
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 09			
Site Position:		Northing:	591,743.30 usft	Latitude:	31° 17' 15.458 N
From:	Map	Easting:	1,607,034.86 usft	Longitude:	101° 35' 29.046 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.65 °

Well	0817H, Wolfcamp					
Well Position	+N/-S	0.00 usft	Northing:	591,673.24 usft	Latitude:	31° 17' 14.764 N
	+E/-W	0.00 usft	Easting:	1,607,034.92 usft	Longitude:	101° 35' 29.036 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	2,694.54 usft	Ground Level:	2,664.54 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	10/20/2014	6.27	59.54	47,884

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	180.00	

Survey Program	Date	12/4/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	500.00	Survey #1 (OH)	VES GyroFlex V2		
687.00	15,632.00	Survey #2 (OH)	LEAM_MWD+HDGM	LEAM MWD + HDGM	
15,680.00	15,680.00	Survey #3 (OH)	Project	Projection	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	591,673.24	1,607,034.92	31° 17' 14.764 N	101° 35' 29.036 W
SHL (U09 0817H)									
100.00	0.75	67.70	100.00	0.25	0.61	591,673.49	1,607,035.52	31° 17' 14.767 N	101° 35' 29.029 W
200.00	0.35	65.01	199.99	0.63	1.49	591,673.87	1,607,036.40	31° 17' 14.771 N	101° 35' 29.019 W
300.00	0.34	23.91	299.99	1.03	1.89	591,674.27	1,607,036.80	31° 17' 14.775 N	101° 35' 29.014 W
400.00	0.24	154.54	399.99	1.11	2.10	591,674.35	1,607,037.01	31° 17' 14.776 N	101° 35' 29.012 W
500.00	0.15	19.54	499.99	1.04	2.23	591,674.29	1,607,037.15	31° 17' 14.775 N	101° 35' 29.010 W

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
665.00	0.31	289.51	664.99	1.39	1.88	591,674.64	1,607,036.80	31° 17' 14.778 N	101° 35' 29.014 W	
13 3/8"										
687.00	0.35	286.23	686.99	1.43	1.76	591,674.68	1,607,036.68	31° 17' 14.779 N	101° 35' 29.016 W	
777.00	0.26	305.74	776.99	1.63	1.33	591,674.87	1,607,036.25	31° 17' 14.781 N	101° 35' 29.021 W	
871.00	0.18	133.82	870.99	1.65	1.27	591,674.89	1,607,036.18	31° 17' 14.781 N	101° 35' 29.022 W	
966.00	0.09	214.86	965.99	1.49	1.33	591,674.73	1,607,036.25	31° 17' 14.779 N	101° 35' 29.021 W	
1,060.00	0.26	104.82	1,059.99	1.37	1.50	591,674.61	1,607,036.41	31° 17' 14.778 N	101° 35' 29.019 W	
1,155.00	0.35	89.70	1,154.99	1.32	1.99	591,674.56	1,607,036.91	31° 17' 14.778 N	101° 35' 29.013 W	
1,249.00	0.44	133.82	1,248.98	1.07	2.54	591,674.31	1,607,037.46	31° 17' 14.775 N	101° 35' 29.007 W	
1,344.00	0.18	122.57	1,343.98	0.74	2.93	591,673.98	1,607,037.85	31° 17' 14.772 N	101° 35' 29.002 W	
1,437.00	0.18	117.48	1,436.98	0.59	3.18	591,673.83	1,607,038.10	31° 17' 14.771 N	101° 35' 28.999 W	
1,531.00	0.18	103.59	1,530.98	0.49	3.46	591,673.73	1,607,038.37	31° 17' 14.770 N	101° 35' 28.996 W	
1,625.00	0.18	89.00	1,624.98	0.46	3.75	591,673.70	1,607,038.66	31° 17' 14.769 N	101° 35' 28.993 W	
1,719.00	0.18	114.84	1,718.98	0.40	4.03	591,673.64	1,607,038.95	31° 17' 14.769 N	101° 35' 28.990 W	
1,814.00	0.26	127.67	1,813.98	0.20	4.34	591,673.44	1,607,039.25	31° 17' 14.767 N	101° 35' 28.986 W	
1,909.00	0.35	120.99	1,908.98	-0.08	4.76	591,673.16	1,607,039.67	31° 17' 14.764 N	101° 35' 28.981 W	
2,003.00	0.26	115.54	2,002.98	-0.32	5.19	591,672.92	1,607,040.11	31° 17' 14.762 N	101° 35' 28.976 W	
2,098.00	0.26	65.09	2,097.98	-0.32	5.58	591,672.92	1,607,040.50	31° 17' 14.762 N	101° 35' 28.972 W	
2,192.00	0.18	106.05	2,191.97	-0.27	5.92	591,672.97	1,607,040.84	31° 17' 14.762 N	101° 35' 28.968 W	
2,287.00	0.70	138.22	2,286.97	-0.75	6.45	591,672.50	1,607,041.37	31° 17' 14.758 N	101° 35' 28.962 W	
2,381.00	0.70	133.65	2,380.96	-1.57	7.25	591,671.67	1,607,042.16	31° 17' 14.750 N	101° 35' 28.952 W	
2,475.00	0.62	121.17	2,474.96	-2.23	8.10	591,671.01	1,607,043.01	31° 17' 14.743 N	101° 35' 28.942 W	
2,570.00	0.35	129.96	2,569.96	-2.68	8.76	591,670.56	1,607,043.68	31° 17' 14.739 N	101° 35' 28.935 W	
2,665.00	0.53	96.38	2,664.95	-2.92	9.42	591,670.33	1,607,044.34	31° 17' 14.736 N	101° 35' 28.927 W	
2,760.00	0.35	74.41	2,759.95	-2.89	10.14	591,670.35	1,607,045.05	31° 17' 14.737 N	101° 35' 28.919 W	
2,854.00	0.26	53.84	2,853.95	-2.69	10.58	591,670.56	1,607,045.50	31° 17' 14.739 N	101° 35' 28.914 W	
2,948.00	0.44	57.01	2,947.95	-2.36	11.06	591,670.88	1,607,045.98	31° 17' 14.742 N	101° 35' 28.908 W	
3,043.00	0.62	53.14	3,042.94	-1.86	11.78	591,671.39	1,607,046.69	31° 17' 14.747 N	101° 35' 28.900 W	
3,137.00	0.44	37.14	3,136.94	-1.26	12.40	591,671.98	1,607,047.32	31° 17' 14.753 N	101° 35' 28.893 W	
3,232.00	0.53	24.84	3,231.94	-0.57	12.81	591,672.67	1,607,047.72	31° 17' 14.760 N	101° 35' 28.888 W	
3,326.00	0.35	24.14	3,325.93	0.08	13.11	591,673.33	1,607,048.02	31° 17' 14.767 N	101° 35' 28.885 W	
3,420.00	0.35	16.58	3,419.93	0.62	13.31	591,673.86	1,607,048.22	31° 17' 14.772 N	101° 35' 28.883 W	
3,514.00	0.26	54.02	3,513.93	1.02	13.56	591,674.26	1,607,048.48	31° 17' 14.776 N	101° 35' 28.880 W	
3,608.00	0.18	245.97	3,607.93	1.09	13.60	591,674.33	1,607,048.51	31° 17' 14.777 N	101° 35' 28.879 W	
3,703.00	0.26	258.98	3,702.93	0.98	13.25	591,674.23	1,607,048.17	31° 17' 14.776 N	101° 35' 28.883 W	
3,797.00	0.44	238.06	3,796.93	0.75	12.73	591,673.99	1,607,047.65	31° 17' 14.773 N	101° 35' 28.889 W	
3,891.00	0.26	215.91	3,890.92	0.39	12.30	591,673.63	1,607,047.22	31° 17' 14.770 N	101° 35' 28.894 W	
3,985.00	0.18	181.46	3,984.92	0.07	12.17	591,673.31	1,607,047.09	31° 17' 14.766 N	101° 35' 28.896 W	
4,080.00	0.18	116.07	4,079.92	-0.15	12.30	591,673.10	1,607,047.22	31° 17' 14.764 N	101° 35' 28.894 W	
4,174.00	0.09	50.33	4,173.92	-0.17	12.49	591,673.08	1,607,047.41	31° 17' 14.764 N	101° 35' 28.892 W	
4,268.00	0.35	43.82	4,267.92	0.09	12.75	591,673.33	1,607,047.67	31° 17' 14.767 N	101° 35' 28.889 W	
4,363.00	0.26	26.60	4,362.92	0.49	13.05	591,673.73	1,607,047.96	31° 17' 14.771 N	101° 35' 28.886 W	
4,457.00	0.18	19.39	4,456.92	0.82	13.19	591,674.06	1,607,048.11	31° 17' 14.774 N	101° 35' 28.884 W	
4,552.00	0.18	239.12	4,551.92	0.89	13.11	591,674.13	1,607,048.03	31° 17' 14.775 N	101° 35' 28.885 W	
4,646.00	0.70	228.39	4,645.92	0.43	12.56	591,673.67	1,607,047.47	31° 17' 14.770 N	101° 35' 28.891 W	
4,741.00	1.06	251.25	4,740.91	-0.24	11.29	591,673.00	1,607,046.21	31° 17' 14.763 N	101° 35' 28.906 W	
4,835.00	1.14	255.29	4,834.89	-0.76	9.56	591,672.49	1,607,044.48	31° 17' 14.758 N	101° 35' 28.926 W	
4,930.00	1.58	238.41	4,929.86	-1.68	7.53	591,671.56	1,607,042.45	31° 17' 14.749 N	101° 35' 28.949 W	
5,022.00	2.37	252.12	5,021.81	-2.93	4.64	591,670.31	1,607,039.56	31° 17' 14.736 N	101° 35' 28.982 W	
5,116.00	4.04	252.65	5,115.66	-4.52	-0.37	591,668.73	1,607,034.55	31° 17' 14.720 N	101° 35' 29.040 W	
5,211.00	6.33	260.21	5,210.26	-6.40	-8.72	591,666.84	1,607,026.19	31° 17' 14.700 N	101° 35' 29.136 W	
5,305.00	6.86	262.14	5,303.64	-8.05	-19.39	591,665.19	1,607,015.52	31° 17' 14.682 N	101° 35' 29.258 W	
5,400.00	7.65	262.32	5,397.88	-9.67	-31.28	591,663.57	1,607,003.64	31° 17' 14.665 N	101° 35' 29.395 W	

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,494.00	8.44	260.91	5,490.95	-11.60	-44.29	591,661.64	1,606,990.62	31° 17' 14.645 N	101° 35' 29.545 W
5,589.00	9.32	261.97	5,584.81	-13.78	-58.79	591,659.47	1,606,976.12	31° 17' 14.621 N	101° 35' 29.712 W
5,684.00	9.76	261.44	5,678.50	-16.05	-74.37	591,657.19	1,606,960.54	31° 17' 14.597 N	101° 35' 29.891 W
5,778.00	9.50	261.79	5,771.18	-18.34	-89.93	591,654.90	1,606,944.99	31° 17' 14.573 N	101° 35' 30.070 W
5,872.00	9.58	265.31	5,863.88	-20.09	-105.40	591,653.15	1,606,929.51	31° 17' 14.554 N	101° 35' 30.248 W
5,967.00	8.53	265.13	5,957.69	-21.33	-120.30	591,651.91	1,606,914.61	31° 17' 14.540 N	101° 35' 30.420 W
6,061.00	6.68	266.01	6,050.86	-22.31	-132.70	591,650.94	1,606,902.21	31° 17' 14.529 N	101° 35' 30.562 W
6,156.00	5.63	274.10	6,145.31	-22.36	-142.86	591,650.89	1,606,892.05	31° 17' 14.527 N	101° 35' 30.679 W
6,250.00	5.72	274.80	6,238.85	-21.64	-152.13	591,651.61	1,606,882.78	31° 17' 14.533 N	101° 35' 30.786 W
6,345.00	6.16	273.57	6,333.34	-20.92	-161.94	591,652.32	1,606,872.98	31° 17' 14.539 N	101° 35' 30.899 W
6,360.00	5.98	270.23	6,348.26	-20.87	-163.52	591,652.37	1,606,871.40	31° 17' 14.539 N	101° 35' 30.918 W
6,412.00	5.85	269.88	6,399.98	-20.86	-168.88	591,652.38	1,606,866.04	31° 17' 14.539 N	101° 35' 30.979 W
9 5/8"									
6,461.00	5.72	269.53	6,448.73	-20.89	-173.81	591,652.35	1,606,861.10	31° 17' 14.538 N	101° 35' 31.036 W
6,556.00	3.43	258.10	6,543.43	-21.51	-181.33	591,651.73	1,606,853.59	31° 17' 14.531 N	101° 35' 31.123 W
6,650.00	2.64	245.27	6,637.29	-23.00	-186.05	591,650.24	1,606,848.87	31° 17' 14.516 N	101° 35' 31.177 W
6,745.00	2.11	263.90	6,732.21	-24.10	-189.77	591,649.14	1,606,845.14	31° 17' 14.505 N	101° 35' 31.220 W
6,839.00	2.55	296.60	6,826.14	-23.35	-193.37	591,649.89	1,606,841.55	31° 17' 14.512 N	101° 35' 31.261 W
6,934.00	3.43	290.45	6,921.01	-21.41	-197.92	591,651.83	1,606,837.00	31° 17' 14.530 N	101° 35' 31.314 W
7,028.00	6.24	289.74	7,014.67	-18.70	-205.36	591,654.54	1,606,829.55	31° 17' 14.556 N	101° 35' 31.400 W
7,123.00	5.28	285.00	7,109.19	-15.83	-214.44	591,657.42	1,606,820.47	31° 17' 14.584 N	101° 35' 31.505 W
7,218.00	4.22	279.55	7,203.86	-14.11	-222.11	591,659.13	1,606,812.80	31° 17' 14.600 N	101° 35' 31.594 W
7,311.00	4.48	286.75	7,296.59	-12.50	-228.97	591,660.74	1,606,805.95	31° 17' 14.615 N	101° 35' 31.673 W
7,406.00	4.92	277.96	7,391.27	-10.87	-236.55	591,662.38	1,606,798.36	31° 17' 14.630 N	101° 35' 31.761 W
7,500.00	4.04	274.98	7,484.98	-10.02	-243.84	591,663.22	1,606,791.07	31° 17' 14.638 N	101° 35' 31.845 W
7,531.00	3.87	264.61	7,515.91	-10.02	-245.97	591,663.22	1,606,788.94	31° 17' 14.638 N	101° 35' 31.869 W
7,562.00	5.80	238.06	7,546.80	-10.95	-248.35	591,662.29	1,606,786.57	31° 17' 14.628 N	101° 35' 31.897 W
7,594.00	9.23	232.44	7,578.52	-13.37	-251.75	591,659.87	1,606,783.16	31° 17' 14.604 N	101° 35' 31.935 W
7,625.00	12.40	230.68	7,608.97	-17.00	-256.30	591,656.25	1,606,778.62	31° 17' 14.567 N	101° 35' 31.987 W
7,657.00	15.04	230.15	7,640.05	-21.84	-262.15	591,651.41	1,606,772.77	31° 17' 14.519 N	101° 35' 32.054 W
7,689.00	17.23	224.35	7,670.79	-27.89	-268.65	591,645.36	1,606,766.27	31° 17' 14.458 N	101° 35' 32.128 W
7,720.00	19.08	222.59	7,700.25	-34.90	-275.29	591,638.34	1,606,759.63	31° 17' 14.388 N	101° 35' 32.204 W
7,752.00	20.84	221.54	7,730.33	-43.01	-282.60	591,630.23	1,606,752.31	31° 17' 14.307 N	101° 35' 32.287 W
7,783.00	23.39	220.31	7,759.04	-51.83	-290.24	591,621.41	1,606,744.68	31° 17' 14.219 N	101° 35' 32.374 W
7,815.00	25.59	219.61	7,788.16	-62.00	-298.76	591,611.24	1,606,736.16	31° 17' 14.117 N	101° 35' 32.471 W
7,847.00	25.59	222.24	7,817.02	-72.44	-307.81	591,600.80	1,606,727.11	31° 17' 14.013 N	101° 35' 32.574 W
7,878.00	23.30	221.89	7,845.24	-81.97	-316.40	591,591.28	1,606,718.51	31° 17' 13.918 N	101° 35' 32.672 W
7,909.00	25.41	217.85	7,873.48	-91.78	-324.58	591,581.46	1,606,710.34	31° 17' 13.820 N	101° 35' 32.765 W
7,941.00	28.14	216.62	7,902.05	-103.26	-333.30	591,569.98	1,606,701.62	31° 17' 13.705 N	101° 35' 32.863 W
7,970.00	28.84	216.27	7,927.54	-114.39	-341.51	591,558.85	1,606,693.40	31° 17' 13.594 N	101° 35' 32.957 W
8,002.00	31.48	211.52	7,955.21	-127.74	-350.45	591,545.50	1,606,684.47	31° 17' 13.461 N	101° 35' 33.058 W
8,033.00	34.47	206.42	7,981.22	-142.50	-358.59	591,530.74	1,606,676.33	31° 17' 13.314 N	101° 35' 33.150 W
8,065.00	36.93	203.61	8,007.20	-159.42	-366.47	591,513.82	1,606,668.45	31° 17' 13.145 N	101° 35' 33.238 W
8,096.00	40.98	202.20	8,031.31	-177.38	-374.04	591,495.87	1,606,660.87	31° 17' 12.967 N	101° 35' 33.323 W
8,127.00	45.55	200.80	8,053.87	-197.14	-381.82	591,476.10	1,606,653.10	31° 17' 12.770 N	101° 35' 33.410 W
8,159.00	49.77	200.27	8,075.42	-219.29	-390.11	591,453.95	1,606,644.81	31° 17' 12.550 N	101° 35' 33.503 W
8,191.00	54.43	197.11	8,095.08	-243.20	-398.18	591,430.04	1,606,636.74	31° 17' 12.313 N	101° 35' 33.593 W
8,222.00	58.92	195.00	8,112.11	-268.09	-405.33	591,405.15	1,606,629.59	31° 17' 12.066 N	101° 35' 33.672 W
8,253.00	63.84	193.41	8,126.95	-294.46	-411.99	591,378.78	1,606,622.92	31° 17' 11.804 N	101° 35' 33.745 W
8,285.00	68.94	191.48	8,139.76	-323.09	-418.30	591,350.16	1,606,616.62	31° 17' 11.520 N	101° 35' 33.814 W
8,316.00	72.81	189.02	8,149.92	-351.90	-423.50	591,321.34	1,606,611.41	31° 17' 11.234 N	101° 35' 33.871 W
8,348.00	77.03	186.03	8,158.24	-382.52	-427.54	591,290.72	1,606,607.38	31° 17' 10.930 N	101° 35' 33.913 W
8,362.00	79.76	184.98	8,161.06	-396.17	-428.85	591,277.07	1,606,606.06	31° 17' 10.795 N	101° 35' 33.927 W

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,380.00	82.66	183.75	8,163.81	-413.91	-430.21	591,259.34	1,606,604.71	31° 17' 10.620 N	101° 35' 33.940 W
8,411.00	86.26	180.76	8,166.80	-444.73	-431.42	591,228.51	1,606,603.50	31° 17' 10.314 N	101° 35' 33.950 W
8,443.00	86.79	180.41	8,168.74	-476.67	-431.74	591,196.57	1,606,603.17	31° 17' 9.998 N	101° 35' 33.949 W
8,538.00	92.24	179.00	8,169.55	-571.63	-431.26	591,101.62	1,606,603.66	31° 17' 9.058 N	101° 35' 33.931 W
8,629.00	90.92	178.82	8,167.04	-662.57	-429.52	591,010.67	1,606,605.39	31° 17' 8.158 N	101° 35' 33.899 W
8,720.00	90.84	178.82	8,165.64	-753.54	-427.65	590,919.70	1,606,607.26	31° 17' 7.258 N	101° 35' 33.866 W
8,812.00	89.16	178.12	8,165.64	-845.51	-425.19	590,827.74	1,606,609.72	31° 17' 6.348 N	101° 35' 33.826 W
8,904.00	89.25	174.78	8,166.92	-937.31	-419.50	590,735.93	1,606,615.42	31° 17' 5.440 N	101° 35' 33.748 W
8,995.00	89.43	177.95	8,167.97	-1,028.11	-413.73	590,645.13	1,606,621.18	31° 17' 4.542 N	101° 35' 33.670 W
9,087.00	89.78	177.77	8,168.60	-1,120.04	-410.30	590,553.20	1,606,624.62	31° 17' 3.633 N	101° 35' 33.618 W
9,179.00	90.13	177.95	8,168.67	-1,211.98	-406.86	590,461.27	1,606,628.06	31° 17' 2.723 N	101° 35' 33.567 W
9,270.00	90.40	177.07	8,168.25	-1,302.89	-402.91	590,370.35	1,606,632.01	31° 17' 1.824 N	101° 35' 33.509 W
9,362.00	90.48	178.30	8,167.55	-1,394.81	-399.19	590,278.43	1,606,635.72	31° 17' 0.915 N	101° 35' 33.454 W
9,453.00	90.57	179.00	8,166.71	-1,485.78	-397.05	590,187.46	1,606,637.87	31° 17' 0.015 N	101° 35' 33.418 W
9,548.00	87.49	180.58	8,168.32	-1,580.75	-396.70	590,092.49	1,606,638.22	31° 16' 59.075 N	101° 35' 33.401 W
9,642.00	88.29	180.76	8,171.78	-1,674.68	-397.80	589,998.56	1,606,637.12	31° 16' 58.145 N	101° 35' 33.402 W
9,734.00	90.75	182.34	8,172.55	-1,766.63	-400.29	589,906.61	1,606,634.63	31° 16' 57.234 N	101° 35' 33.418 W
9,829.00	91.71	179.35	8,170.51	-1,861.59	-401.69	589,811.65	1,606,633.23	31° 16' 56.294 N	101° 35' 33.422 W
9,924.00	90.22	179.70	8,168.91	-1,956.57	-400.90	589,716.67	1,606,634.02	31° 16' 55.355 N	101° 35' 33.401 W
10,018.00	92.42	179.53	8,166.75	-2,050.54	-400.27	589,622.71	1,606,634.65	31° 16' 54.425 N	101° 35' 33.381 W
10,113.00	88.90	179.00	8,165.65	-2,145.51	-399.05	589,527.74	1,606,635.87	31° 16' 53.485 N	101° 35' 33.355 W
10,207.00	88.99	178.82	8,167.38	-2,239.47	-397.26	589,433.77	1,606,637.65	31° 16' 52.555 N	101° 35' 33.322 W
10,301.00	90.40	179.70	8,167.88	-2,333.46	-396.05	589,339.78	1,606,638.87	31° 16' 51.625 N	101° 35' 33.296 W
10,396.00	87.76	179.18	8,169.41	-2,428.44	-395.12	589,244.81	1,606,639.80	31° 16' 50.685 N	101° 35' 33.273 W
10,490.00	89.69	179.00	8,171.50	-2,522.40	-393.63	589,150.85	1,606,641.29	31° 16' 49.755 N	101° 35' 33.243 W
10,584.00	92.07	180.93	8,170.06	-2,616.38	-393.57	589,056.87	1,606,641.35	31° 16' 48.825 N	101° 35' 33.230 W
10,679.00	89.43	179.70	8,168.81	-2,711.36	-394.09	588,961.89	1,606,640.83	31° 16' 47.885 N	101° 35' 33.224 W
10,773.00	90.66	179.88	8,168.74	-2,805.35	-393.75	588,867.89	1,606,641.17	31° 16' 46.955 N	101° 35' 33.208 W
10,868.00	87.32	179.35	8,170.41	-2,900.32	-393.11	588,772.92	1,606,641.81	31° 16' 46.015 N	101° 35' 33.188 W
10,962.00	89.34	179.35	8,173.15	-2,994.27	-392.04	588,678.97	1,606,642.87	31° 16' 45.085 N	101° 35' 33.163 W
11,057.00	92.07	179.88	8,171.98	-3,089.25	-391.40	588,583.99	1,606,643.51	31° 16' 44.145 N	101° 35' 33.144 W
11,151.00	88.29	177.59	8,171.69	-3,183.21	-389.33	588,490.04	1,606,645.59	31° 16' 43.215 N	101° 35' 33.107 W
11,244.00	88.55	177.24	8,174.25	-3,276.08	-385.14	588,397.17	1,606,649.78	31° 16' 42.297 N	101° 35' 33.047 W
11,339.00	90.57	179.70	8,174.98	-3,371.03	-382.60	588,302.22	1,606,652.32	31° 16' 41.357 N	101° 35' 33.005 W
11,430.00	91.10	179.53	8,173.66	-3,462.01	-381.99	588,211.23	1,606,652.93	31° 16' 40.457 N	101° 35' 32.986 W
11,522.00	88.64	178.82	8,173.87	-3,554.00	-380.66	588,119.25	1,606,654.25	31° 16' 39.546 N	101° 35' 32.959 W
11,615.00	89.25	179.70	8,175.58	-3,646.97	-379.46	588,026.27	1,606,655.45	31° 16' 38.626 N	101° 35' 32.933 W
11,707.00	89.87	178.12	8,176.28	-3,738.95	-377.71	587,934.29	1,606,657.20	31° 16' 37.716 N	101° 35' 32.901 W
11,799.00	91.10	177.77	8,175.51	-3,830.89	-374.41	587,842.36	1,606,660.50	31° 16' 36.807 N	101° 35' 32.851 W
11,892.00	91.45	178.47	8,173.44	-3,923.81	-371.36	587,749.43	1,606,663.55	31° 16' 35.887 N	101° 35' 32.804 W
11,985.00	90.31	180.05	8,172.01	-4,016.79	-370.16	587,656.45	1,606,664.75	31° 16' 34.967 N	101° 35' 32.778 W
12,077.00	87.76	181.29	8,173.56	-4,108.76	-371.24	587,564.48	1,606,663.68	31° 16' 34.057 N	101° 35' 32.778 W
12,170.00	89.69	180.29	8,175.63	-4,201.72	-372.52	587,471.52	1,606,662.40	31° 16' 33.137 N	101° 35' 32.781 W
12,262.00	90.31	180.58	8,175.63	-4,293.72	-373.22	587,379.52	1,606,661.70	31° 16' 32.226 N	101° 35' 32.777 W
12,357.00	91.63	180.76	8,174.02	-4,388.70	-374.33	587,284.55	1,606,660.59	31° 16' 31.286 N	101° 35' 32.777 W
12,452.00	90.13	179.53	8,172.56	-4,483.68	-374.57	587,189.56	1,606,660.35	31° 16' 30.346 N	101° 35' 32.768 W
12,546.00	88.46	178.65	8,173.72	-4,577.66	-373.08	587,095.59	1,606,661.84	31° 16' 29.416 N	101° 35' 32.738 W
12,640.00	90.13	179.35	8,174.87	-4,671.63	-371.44	587,001.61	1,606,663.48	31° 16' 28.486 N	101° 35' 32.707 W
12,734.00	89.08	178.65	8,175.52	-4,765.61	-369.80	586,907.63	1,606,665.12	31° 16' 27.556 N	101° 35' 32.676 W
12,828.00	90.75	178.82	8,175.66	-4,859.59	-367.72	586,813.66	1,606,667.19	31° 16' 26.626 N	101° 35' 32.640 W
12,923.00	91.71	180.41	8,173.62	-4,954.56	-367.08	586,718.68	1,606,667.83	31° 16' 25.686 N	101° 35' 32.620 W
13,017.00	90.31	179.35	8,171.96	-5,048.54	-366.89	586,624.70	1,606,668.03	31° 16' 24.756 N	101° 35' 32.606 W
13,112.00	88.64	178.30	8,172.83	-5,143.51	-364.94	586,529.73	1,606,669.98	31° 16' 23.816 N	101° 35' 32.571 W

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
13,207.00	90.84	180.23	8,173.26	-5,238.49	-363.72	586,434.75	1,606,671.20	31° 16' 22.876 N	101° 35' 32.544 W	
13,298.00	87.49	180.05	8,174.59	-5,329.47	-363.94	586,343.77	1,606,670.97	31° 16' 21.976 N	101° 35' 32.535 W	
13,389.00	88.37	180.05	8,177.88	-5,420.41	-364.02	586,252.83	1,606,670.89	31° 16' 21.076 N	101° 35' 32.524 W	
13,481.00	90.31	180.23	8,178.94	-5,512.40	-364.25	586,160.84	1,606,670.67	31° 16' 20.165 N	101° 35' 32.515 W	
13,572.00	92.07	181.81	8,177.05	-5,603.36	-365.87	586,069.88	1,606,669.05	31° 16' 19.265 N	101° 35' 32.521 W	
13,664.00	92.42	182.34	8,173.44	-5,695.23	-369.19	585,978.02	1,606,665.72	31° 16' 18.355 N	101° 35' 32.548 W	
13,756.00	89.43	181.64	8,171.96	-5,787.15	-372.39	585,886.09	1,606,662.53	31° 16' 17.445 N	101° 35' 32.573 W	
13,848.00	88.46	181.46	8,173.65	-5,879.10	-374.88	585,794.15	1,606,660.04	31° 16' 16.535 N	101° 35' 32.589 W	
13,940.00	88.46	179.18	8,176.13	-5,971.06	-375.39	585,702.19	1,606,659.53	31° 16' 15.624 N	101° 35' 32.583 W	
14,031.00	90.92	179.88	8,176.62	-6,062.05	-374.64	585,611.20	1,606,660.27	31° 16' 14.724 N	101° 35' 32.563 W	
14,123.00	89.34	179.53	8,176.41	-6,154.04	-374.17	585,519.20	1,606,660.75	31° 16' 13.813 N	101° 35' 32.545 W	
14,218.00	88.72	178.12	8,178.02	-6,249.00	-372.22	585,424.24	1,606,662.69	31° 16' 12.874 N	101° 35' 32.510 W	
14,313.00	90.84	179.00	8,178.38	-6,343.97	-369.83	585,329.28	1,606,665.08	31° 16' 11.934 N	101° 35' 32.471 W	
14,407.00	88.81	178.65	8,178.67	-6,437.94	-367.91	585,235.30	1,606,667.01	31° 16' 11.004 N	101° 35' 32.436 W	
14,502.00	90.92	178.30	8,178.89	-6,532.90	-365.38	585,140.34	1,606,669.54	31° 16' 10.065 N	101° 35' 32.395 W	
14,597.00	89.43	177.07	8,178.60	-6,627.82	-361.54	585,045.42	1,606,673.37	31° 16' 9.126 N	101° 35' 32.338 W	
14,691.00	91.45	179.00	8,177.88	-6,721.75	-358.32	584,951.49	1,606,676.60	31° 16' 8.196 N	101° 35' 32.289 W	
14,785.00	88.72	176.36	8,177.74	-6,815.66	-354.51	584,857.58	1,606,680.40	31° 16' 7.267 N	101° 35' 32.233 W	
14,880.00	89.08	175.66	8,179.57	-6,910.41	-347.91	584,762.83	1,606,687.01	31° 16' 6.330 N	101° 35' 32.144 W	
14,973.00	90.66	174.78	8,179.78	-7,003.08	-340.16	584,670.16	1,606,694.76	31° 16' 5.414 N	101° 35' 32.043 W	
15,067.00	89.16	176.89	8,179.92	-7,096.83	-333.33	584,576.42	1,606,701.59	31° 16' 4.487 N	101° 35' 31.952 W	
15,162.00	90.22	177.59	8,180.44	-7,191.71	-328.75	584,481.53	1,606,706.16	31° 16' 3.548 N	101° 35' 31.887 W	
15,256.00	89.25	179.18	8,180.87	-7,285.67	-326.11	584,387.57	1,606,708.81	31° 16' 2.619 N	101° 35' 31.844 W	
15,351.00	90.92	178.30	8,180.73	-7,380.64	-324.02	584,292.60	1,606,710.90	31° 16' 1.679 N	101° 35' 31.807 W	
15,444.00	89.69	176.71	8,180.24	-7,473.55	-319.97	584,199.69	1,606,714.95	31° 16' 0.760 N	101° 35' 31.749 W	
15,538.00	88.72	176.19	8,181.54	-7,567.36	-314.15	584,105.89	1,606,720.77	31° 15' 59.832 N	101° 35' 31.669 W	
15,632.00	90.84	177.77	8,181.90	-7,661.22	-309.20	584,012.02	1,606,725.72	31° 15' 58.904 N	101° 35' 31.600 W	
15,680.00	90.84	177.77	8,181.20	-7,709.18	-307.33	583,964.07	1,606,727.59	31° 15' 58.429 N	101° 35' 31.572 W	
OH BHL - PBHL (U09 0817H)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
OH BHL - hit/miss target - Shape - actual wellpath hits target center - Point	0.00	360.00	8,181.20	-7,709.18	-307.33	583,964.07	1,606,727.59	31° 15' 58.429 N	101° 35' 31.572 W	

Casing Points							Casing Diameter (")	Hole Diameter (")
Measured Depth (usft)	Vertical Depth (usft)	Name						
665.00	664.99	13 3/8"					13-3/8	17-1/2
6,412.00	6,399.98	9 5/8"					9-5/8	12-1/4

Checked By: _____	Approved By: _____	Date: _____
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American Energy Partners

Reagan County, TX (NAD-27)

University 09

0817H

ST1

Design: ST1

Standard Survey Report

04 December, 2014



Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 Single User Db

Project	Reagan County, TX (NAD-27)		
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 09					
Site Position:		Northing:	591,743.30	usft	Latitude:	31° 17' 15.458 N
From:	Map	Easting:	1,607,034.86	usft	Longitude:	101° 35' 29.046 W
Position Uncertainty:	0.00	usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.65 °

Well	0817H, Wolfcamp					
Well Position	+N/-S	0.00 usft	Northing:	591,673.24 usft	Latitude:	31° 17' 14.764 N
	+E/-W	0.00 usft	Easting:	1,607,034.92 usft	Longitude:	101° 35' 29.036 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	2,694.54 usft	Ground Level:	2,664.54 usft

Wellbore	ST1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/11/2014	6.26	59.53	47,876

Design	ST1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	7,689.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	180.00	

Survey Program	Date	12/4/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	500.00	Survey #1 (OH)	VES GyroFlex V2		
687.00	7,689.00	Survey #2 (OH)	LEAM_MWD+HDGM	LEAM MWD + HDGM	
7,782.00	13,356.00	Survey #1 (ST1)	LEAM_MWD+HDGM	LEAM MWD + HDGM	
13,408.00	13,409.00	Survey #2 (ST1)	Project	Projection	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (U09 0817H)									
100.00	0.75	67.70	100.00	0.25	0.61	-0.25	0.75	0.75	0.00
200.00	0.35	65.01	199.99	0.63	1.49	-0.63	0.40	-0.40	-2.69
300.00	0.34	23.91	299.99	1.03	1.89	-1.03	0.24	-0.01	-41.10
400.00	0.24	154.54	399.99	1.11	2.10	-1.11	0.53	-0.10	130.63

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 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)
500.00	0.15	19.54	499.99	1.04	2.23	-1.04	0.36	-0.09	-135.00
687.00	0.35	286.23	686.99	1.43	1.76	-1.43	0.21	0.11	-49.90
777.00	0.26	305.74	776.99	1.63	1.33	-1.63	0.15	-0.10	21.68
871.00	0.18	133.82	870.99	1.65	1.27	-1.65	0.47	-0.09	-182.89
966.00	0.09	214.86	965.99	1.49	1.33	-1.49	0.20	-0.09	85.31
1,060.00	0.26	104.82	1,059.99	1.37	1.50	-1.37	0.32	0.18	-117.06
1,155.00	0.35	89.70	1,154.99	1.32	1.99	-1.32	0.13	0.09	-15.92
1,249.00	0.44	133.82	1,248.98	1.07	2.54	-1.07	0.33	0.10	46.94
1,344.00	0.18	122.57	1,343.98	0.74	2.93	-0.74	0.28	-0.27	-11.84
1,437.00	0.18	117.48	1,436.98	0.59	3.18	-0.59	0.02	0.00	-5.47
1,531.00	0.18	103.59	1,530.98	0.49	3.46	-0.49	0.05	0.00	-14.78
1,625.00	0.18	89.00	1,624.98	0.46	3.75	-0.46	0.05	0.00	-15.52
1,719.00	0.18	114.84	1,718.98	0.40	4.03	-0.40	0.09	0.00	27.49
1,814.00	0.26	127.67	1,813.98	0.20	4.34	-0.20	0.10	0.08	13.51
1,909.00	0.35	120.99	1,908.98	-0.08	4.76	0.08	0.10	0.09	-7.03
2,003.00	0.26	115.54	2,002.98	-0.32	5.19	0.32	0.10	-0.10	-5.80
2,098.00	0.26	65.09	2,097.98	-0.32	5.58	0.32	0.23	0.00	-53.11
2,192.00	0.18	106.05	2,191.97	-0.27	5.92	0.27	0.18	-0.09	43.57
2,287.00	0.70	138.22	2,286.97	-0.75	6.45	0.75	0.59	0.55	33.86
2,381.00	0.70	133.65	2,380.96	-1.57	7.25	1.57	0.06	0.00	-4.86
2,475.00	0.62	121.17	2,474.96	-2.23	8.10	2.23	0.17	-0.09	-13.28
2,570.00	0.35	129.96	2,569.96	-2.68	8.76	2.68	0.29	-0.28	9.25
2,665.00	0.53	96.38	2,664.95	-2.92	9.42	2.92	0.32	0.19	-35.35
2,760.00	0.35	74.41	2,759.95	-2.89	10.14	2.89	0.26	-0.19	-23.13
2,854.00	0.26	53.84	2,853.95	-2.69	10.58	2.69	0.15	-0.10	-21.88
2,948.00	0.44	57.01	2,947.95	-2.36	11.06	2.36	0.19	0.19	3.37
3,043.00	0.62	53.14	3,042.94	-1.86	11.78	1.86	0.19	0.19	-4.07
3,137.00	0.44	37.14	3,136.94	-1.26	12.40	1.26	0.25	-0.19	-17.02
3,232.00	0.53	24.84	3,231.94	-0.57	12.81	0.57	0.14	0.09	-12.95
3,326.00	0.35	24.14	3,325.93	0.08	13.11	-0.08	0.19	-0.19	-0.74
3,420.00	0.35	16.58	3,419.93	0.62	13.31	-0.62	0.05	0.00	-8.04
3,514.00	0.26	54.02	3,513.93	1.02	13.56	-1.02	0.23	-0.10	39.83
3,608.00	0.18	245.97	3,607.93	1.09	13.60	-1.09	0.47	-0.09	-178.78
3,703.00	0.26	258.98	3,702.93	0.98	13.25	-0.98	0.10	0.08	13.69
3,797.00	0.44	238.06	3,796.93	0.75	12.73	-0.75	0.23	0.19	-22.26
3,891.00	0.26	215.91	3,890.92	0.39	12.30	-0.39	0.24	-0.19	-23.56
3,985.00	0.18	181.46	3,984.92	0.07	12.17	-0.07	0.16	-0.09	-36.65
4,080.00	0.18	116.07	4,079.92	-0.15	12.30	0.15	0.20	0.00	-68.83
4,174.00	0.09	50.33	4,173.92	-0.17	12.49	0.17	0.18	-0.10	-69.94
4,268.00	0.35	43.82	4,267.92	0.09	12.75	-0.09	0.28	0.28	-6.93
4,363.00	0.26	26.60	4,362.92	0.49	13.05	-0.49	0.13	-0.09	-18.13
4,457.00	0.18	19.39	4,456.92	0.82	13.19	-0.82	0.09	-0.09	-7.67

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 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)
4,552.00	0.18	239.12	4,551.92	0.89	13.11	-0.89	0.36	0.00	-147.65
4,646.00	0.70	228.39	4,645.92	0.43	12.56	-0.43	0.56	0.55	-11.41
4,741.00	1.06	251.25	4,740.91	-0.24	11.29	0.24	0.52	0.38	24.06
4,835.00	1.14	255.29	4,834.89	-0.76	9.56	0.76	0.12	0.09	4.30
4,930.00	1.58	238.41	4,929.86	-1.68	7.53	1.68	0.62	0.46	-17.77
5,022.00	2.37	252.12	5,021.81	-2.93	4.64	2.93	0.99	0.86	14.90
5,116.00	4.04	252.65	5,115.66	-4.52	-0.37	4.52	1.78	1.78	0.56
5,211.00	6.33	260.21	5,210.26	-6.40	-8.72	6.40	2.51	2.41	7.96
5,305.00	6.86	262.14	5,303.64	-8.05	-19.39	8.05	0.61	0.56	2.05
5,400.00	7.65	262.32	5,397.88	-9.67	-31.28	9.67	0.83	0.83	0.19
5,494.00	8.44	260.91	5,490.95	-11.60	-44.29	11.60	0.87	0.84	-1.50
5,589.00	9.32	261.97	5,584.81	-13.78	-58.79	13.78	0.94	0.93	1.12
5,684.00	9.76	261.44	5,678.50	-16.05	-74.37	16.05	0.47	0.46	-0.56
5,778.00	9.50	261.79	5,771.18	-18.34	-89.93	18.34	0.28	-0.28	0.37
5,872.00	9.58	265.31	5,863.88	-20.09	-105.40	20.09	0.63	0.09	3.74
5,967.00	8.53	265.13	5,957.69	-21.33	-120.30	21.33	1.11	-1.11	-0.19
6,061.00	6.68	266.01	6,050.86	-22.31	-132.70	22.31	1.97	-1.97	0.94
6,156.00	5.63	274.10	6,145.31	-22.36	-142.86	22.36	1.43	-1.11	8.52
6,250.00	5.72	274.80	6,238.85	-21.64	-152.13	21.64	0.12	0.10	0.74
6,345.00	6.16	273.57	6,333.34	-20.92	-161.94	20.92	0.48	0.46	-1.29
6,360.00	5.98	270.23	6,348.26	-20.87	-163.52	20.87	2.64	-1.20	-22.27
6,412.00	5.85	269.88	6,399.98	-20.86	-168.88	20.86	0.27	-0.26	-0.68
9 5/8"									
6,461.00	5.72	269.53	6,448.73	-20.89	-173.81	20.89	0.27	-0.26	-0.71
6,556.00	3.43	258.10	6,543.43	-21.51	-181.33	21.51	2.58	-2.41	-12.03
6,650.00	2.64	245.27	6,637.29	-23.00	-186.05	23.00	1.10	-0.84	-13.65
6,745.00	2.11	263.90	6,732.21	-24.10	-189.77	24.10	0.98	-0.56	19.61
6,839.00	2.55	296.60	6,826.14	-23.35	-193.37	23.35	1.47	0.47	34.79
6,934.00	3.43	290.45	6,921.01	-21.41	-197.92	21.41	0.98	0.93	-6.47
7,028.00	6.24	289.74	7,014.67	-18.70	-205.36	18.70	2.99	2.99	-0.76
7,123.00	5.28	285.00	7,109.19	-15.83	-214.44	15.83	1.13	-1.01	-4.99
7,218.00	4.22	279.55	7,203.86	-14.11	-222.11	14.11	1.21	-1.12	-5.74
7,311.00	4.48	286.75	7,296.59	-12.50	-228.97	12.50	0.65	0.28	7.74
7,406.00	4.92	277.96	7,391.27	-10.87	-236.55	10.87	0.89	0.46	-9.25
7,500.00	4.04	274.98	7,484.98	-10.02	-243.84	10.02	0.97	-0.94	-3.17
7,531.00	3.87	264.61	7,515.91	-10.02	-245.97	10.02	2.37	-0.55	-33.45
7,562.00	5.80	238.06	7,546.80	-10.95	-248.35	10.95	9.38	6.23	-85.65
7,594.00	9.23	232.44	7,578.52	-13.37	-251.75	13.37	10.95	10.72	-17.56
7,625.00	12.40	230.68	7,608.97	-17.00	-256.30	17.00	10.28	10.23	-5.68
7,657.00	15.04	230.15	7,640.05	-21.84	-262.15	21.84	8.26	8.25	-1.66
7,689.00	17.23	224.35	7,670.79	-27.89	-268.65	27.89	8.49	6.84	-18.13
7,782.00	20.14	214.86	7,758.90	-50.88	-287.44	50.88	4.52	3.13	-10.20

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 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)	
7,814.00	22.34	205.54	7,788.74	-60.90	-293.21	60.90	12.57	6.88	-29.13	
7,845.00	26.12	197.63	7,817.01	-72.72	-297.82	72.72	16.05	12.19	-25.52	
7,877.00	29.63	194.82	7,845.29	-87.09	-301.98	87.09	11.71	10.97	-8.78	
7,906.00	32.71	192.89	7,870.10	-101.66	-305.56	101.66	11.16	10.62	-6.66	
7,937.00	34.91	192.01	7,895.86	-118.50	-309.27	118.50	7.27	7.10	-2.84	
7,969.00	37.11	190.78	7,921.74	-136.95	-312.99	136.95	7.24	6.88	-3.84	
8,000.00	39.04	191.83	7,946.14	-155.69	-316.74	155.69	6.57	6.23	3.39	
8,032.00	42.12	193.59	7,970.45	-175.99	-321.33	175.99	10.27	9.63	5.50	
8,063.00	45.11	192.89	7,992.89	-196.80	-326.22	196.80	9.77	9.65	-2.26	
8,094.00	47.48	192.36	8,014.31	-218.67	-331.12	218.67	7.74	7.65	-1.71	
8,126.00	49.07	191.30	8,035.60	-242.05	-336.01	242.05	5.55	4.97	-3.31	
8,157.00	51.18	188.67	8,055.48	-265.47	-340.12	265.47	9.42	6.81	-8.48	
8,189.00	54.43	187.44	8,074.82	-290.71	-343.69	290.71	10.61	10.16	-3.84	
8,220.00	58.21	186.21	8,092.01	-316.32	-346.75	316.32	12.63	12.19	-3.97	
8,252.00	60.41	185.86	8,108.34	-343.68	-349.64	343.68	6.94	6.88	-1.09	
8,283.00	63.05	185.50	8,123.02	-370.85	-352.34	370.85	8.58	8.52	-1.16	
8,315.00	65.60	185.86	8,136.89	-399.54	-355.20	399.54	8.03	7.97	1.13	
8,346.00	68.06	185.68	8,149.08	-427.90	-358.06	427.90	7.95	7.94	-0.58	
8,377.00	70.52	184.45	8,160.04	-456.78	-360.62	456.78	8.76	7.94	-3.97	
8,409.00	73.34	183.92	8,169.97	-487.12	-362.84	487.12	8.95	8.81	-1.66	
8,440.00	75.80	183.39	8,178.22	-516.94	-364.74	516.94	8.10	7.94	-1.71	
8,471.00	76.94	183.75	8,185.52	-547.00	-366.62	547.00	3.85	3.68	1.16	
8,502.00	78.96	183.39	8,191.99	-577.26	-368.50	577.26	6.61	6.52	-1.16	
8,534.00	81.07	183.04	8,197.54	-608.72	-370.27	608.72	6.68	6.59	-1.09	
8,565.00	82.66	182.87	8,201.93	-639.37	-371.85	639.37	5.16	5.13	-0.55	
8,597.00	83.10	181.64	8,205.89	-671.10	-373.10	671.10	4.05	1.38	-3.84	
8,628.00	84.15	181.11	8,209.34	-701.90	-373.84	701.90	3.79	3.39	-1.71	
8,660.00	85.21	180.05	8,212.30	-733.76	-374.16	733.76	4.67	3.31	-3.31	
8,691.00	86.88	179.18	8,214.44	-764.68	-373.96	764.68	6.07	5.39	-2.81	
8,722.00	87.05	179.00	8,216.08	-795.63	-373.46	795.63	0.80	0.55	-0.58	
8,754.00	86.88	178.47	8,217.78	-827.58	-372.76	827.58	1.74	-0.53	-1.66	
8,817.00	86.35	178.65	8,221.50	-890.45	-371.18	890.45	0.89	-0.84	0.29	
8,911.00	88.72	179.18	8,225.54	-984.34	-369.40	984.34	2.58	2.52	0.56	
9,006.00	89.52	182.34	8,227.00	-1,079.31	-370.66	1,079.31	3.43	0.84	3.33	
9,101.00	89.87	179.88	8,227.50	-1,174.28	-372.50	1,174.28	2.62	0.37	-2.59	
9,195.00	90.75	180.93	8,227.00	-1,268.27	-373.17	1,268.27	1.46	0.94	1.12	
9,290.00	90.66	180.41	8,225.83	-1,363.26	-374.28	1,363.26	0.56	-0.09	-0.55	
9,384.00	89.78	180.05	8,225.47	-1,457.26	-374.65	1,457.26	1.01	-0.94	-0.38	
9,479.00	90.13	181.81	8,225.54	-1,552.24	-376.20	1,552.24	1.89	0.37	1.85	
9,573.00	89.43	182.52	8,225.90	-1,646.17	-379.75	1,646.17	1.06	-0.74	0.76	
9,667.00	89.34	182.52	8,226.91	-1,740.08	-383.88	1,740.08	0.10	-0.10	0.00	
9,762.00	89.16	179.70	8,228.15	-1,835.04	-385.72	1,835.04	2.97	-0.19	-2.97	

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 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)	
9,856.00	88.55	179.88	8,230.03	-1,929.02	-385.37	1,929.02	0.68	-0.65	0.19	
9,950.00	89.08	182.16	8,231.98	-2,022.98	-387.05	2,022.98	2.49	0.56	2.43	
10,044.00	90.48	179.70	8,232.34	-2,116.96	-388.57	2,116.96	3.01	1.49	-2.62	
10,139.00	89.34	179.70	8,232.49	-2,211.95	-388.08	2,211.95	1.20	-1.20	0.00	
10,233.00	90.22	181.64	8,232.85	-2,305.94	-389.18	2,305.94	2.27	0.94	2.06	
10,328.00	88.99	175.66	8,233.50	-2,400.87	-386.94	2,400.87	6.43	-1.29	-6.29	
10,423.00	90.22	177.24	8,234.16	-2,495.68	-381.06	2,495.68	2.11	1.29	1.66	
10,517.00	90.13	177.59	8,233.87	-2,589.58	-376.82	2,589.58	0.38	-0.10	0.37	
10,612.00	91.10	180.41	8,232.85	-2,684.55	-375.16	2,684.55	3.14	1.02	2.97	
10,707.00	90.48	180.93	8,231.54	-2,779.53	-376.27	2,779.53	0.85	-0.65	0.55	
10,801.00	89.69	180.23	8,231.40	-2,873.53	-377.22	2,873.53	1.12	-0.84	-0.74	
10,895.00	89.34	181.64	8,232.20	-2,967.51	-378.76	2,967.51	1.55	-0.37	1.50	
10,989.00	88.55	180.05	8,233.93	-3,061.48	-380.14	3,061.48	1.89	-0.84	-1.69	
11,083.00	87.76	180.05	8,236.96	-3,155.43	-380.22	3,155.43	0.84	-0.84	0.00	
11,177.00	87.23	180.58	8,241.06	-3,249.34	-380.74	3,249.34	0.80	-0.56	0.56	
11,274.00	87.14	179.00	8,245.83	-3,346.22	-380.38	3,346.22	1.63	-0.09	-1.63	
11,367.00	86.97	178.12	8,250.61	-3,439.06	-378.05	3,439.06	0.96	-0.18	-0.95	
11,462.00	90.57	178.30	8,252.65	-3,533.98	-375.08	3,533.98	3.79	3.79	0.19	
11,556.00	92.77	179.18	8,249.91	-3,627.91	-373.02	3,627.91	2.52	2.34	0.94	
11,651.00	92.07	179.18	8,245.89	-3,722.82	-371.66	3,722.82	0.74	-0.74	0.00	
11,746.00	90.92	179.00	8,243.42	-3,817.77	-370.15	3,817.77	1.23	-1.21	-0.19	
11,840.00	88.37	178.30	8,244.00	-3,911.73	-367.94	3,911.73	2.81	-2.71	-0.74	
11,935.00	91.28	178.82	8,244.29	-4,006.69	-365.55	4,006.69	3.11	3.06	0.55	
12,030.00	87.93	177.59	8,244.94	-4,101.63	-362.58	4,101.63	3.76	-3.53	-1.29	
12,124.00	89.96	179.00	8,246.67	-4,195.56	-359.78	4,195.56	2.63	2.16	1.50	
12,218.00	92.68	178.82	8,244.51	-4,289.51	-357.99	4,289.51	2.90	2.89	-0.19	
12,314.00	91.71	178.82	8,240.83	-4,385.42	-356.02	4,385.42	1.01	-1.01	0.00	
12,408.00	91.45	178.82	8,238.24	-4,479.37	-354.08	4,479.37	0.28	-0.28	0.00	
12,503.00	90.48	178.47	8,236.64	-4,574.32	-351.84	4,574.32	1.09	-1.02	-0.37	
12,597.00	90.48	179.53	8,235.85	-4,668.31	-350.19	4,668.31	1.13	0.00	1.13	
12,692.00	90.66	181.46	8,234.91	-4,763.29	-351.02	4,763.29	2.04	0.19	2.03	
12,787.00	89.16	180.41	8,235.06	-4,858.28	-352.57	4,858.28	1.93	-1.58	-1.11	
12,881.00	89.43	182.16	8,236.21	-4,952.24	-354.67	4,952.24	1.88	0.29	1.86	
12,976.00	88.37	181.81	8,238.04	-5,047.17	-357.96	5,047.17	1.18	-1.12	-0.37	
13,071.00	88.29	183.22	8,240.81	-5,142.03	-362.13	5,142.03	1.49	-0.08	1.48	
13,165.00	87.49	182.16	8,244.27	-5,235.86	-366.54	5,235.86	1.41	-0.85	-1.13	
13,261.00	87.32	183.04	8,248.61	-5,331.66	-370.89	5,331.66	0.93	-0.18	0.92	
13,356.00	87.14	183.22	8,253.20	-5,426.41	-376.07	5,426.41	0.27	-0.19	0.19	
13,409.00	87.14	183.22	8,255.85	-5,479.26	-379.04	5,479.26	0.00	0.00	0.00	
OH BHL - PBHL (U09 0817H) - ST BHL										

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 Single User Db

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
ST BHL	0.00	0.00	8,255.85	-5,479.26	-379.04	586,193.98	1,606,655.87	31° 16' 20.491 N	101° 35' 32.689 W
- actual wellpath hits target center									
- Point									

Casing Points					
	Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
	6,412.00	6,399.98	9 5/8"	9-5/8	12-1/4

Checked By: _____	Approved By: _____	Date: _____
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American Energy Partners

Reagan County, TX (NAD-27)

University 09

0817H

ST1

Design: ST1

Standard Survey Report

04 December, 2014



Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 Single User Db

Project	Reagan County, TX (NAD-27)		
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 09				
Site Position:		Northing:	591,743.30 usft	Latitude:	31° 17' 15.458 N
From:	Map	Easting:	1,607,034.86 usft	Longitude:	101° 35' 29.046 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.65 °

Well	0817H, Wolfcamp					
Well Position	+N/-S	0.00 usft	Northing:	591,673.24 usft	Latitude:	31° 17' 14.764 N
	+E/-W	0.00 usft	Easting:	1,607,034.92 usft	Longitude:	101° 35' 29.036 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	2,694.54 usft	Ground Level:	2,664.54 usft

Wellbore	ST1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/11/2014	6.26	59.53	47,876

Design	ST1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	7,689.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	180.00	

Survey Program	Date	12/4/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	500.00	Survey #1 (OH)	VES GyroFlex V2		
687.00	7,689.00	Survey #2 (OH)	LEAM_MWD+HDGM	LEAM MWD + HDGM	
7,782.00	13,356.00	Survey #1 (ST1)	LEAM_MWD+HDGM	LEAM MWD + HDGM	
13,408.00	13,409.00	Survey #2 (ST1)	Project	Projection	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (U09 0817H)									
100.00	0.75	67.70	100.00	0.25	0.61	-0.25	0.75	0.75	0.00
200.00	0.35	65.01	199.99	0.63	1.49	-0.63	0.40	-0.40	-2.69
300.00	0.34	23.91	299.99	1.03	1.89	-1.03	0.24	-0.01	-41.10
400.00	0.24	154.54	399.99	1.11	2.10	-1.11	0.53	-0.10	130.63

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 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)
500.00	0.15	19.54	499.99	1.04	2.23	-1.04	0.36	-0.09	-135.00
687.00	0.35	286.23	686.99	1.43	1.76	-1.43	0.21	0.11	-49.90
777.00	0.26	305.74	776.99	1.63	1.33	-1.63	0.15	-0.10	21.68
871.00	0.18	133.82	870.99	1.65	1.27	-1.65	0.47	-0.09	-182.89
966.00	0.09	214.86	965.99	1.49	1.33	-1.49	0.20	-0.09	85.31
1,060.00	0.26	104.82	1,059.99	1.37	1.50	-1.37	0.32	0.18	-117.06
1,155.00	0.35	89.70	1,154.99	1.32	1.99	-1.32	0.13	0.09	-15.92
1,249.00	0.44	133.82	1,248.98	1.07	2.54	-1.07	0.33	0.10	46.94
1,344.00	0.18	122.57	1,343.98	0.74	2.93	-0.74	0.28	-0.27	-11.84
1,437.00	0.18	117.48	1,436.98	0.59	3.18	-0.59	0.02	0.00	-5.47
1,531.00	0.18	103.59	1,530.98	0.49	3.46	-0.49	0.05	0.00	-14.78
1,625.00	0.18	89.00	1,624.98	0.46	3.75	-0.46	0.05	0.00	-15.52
1,719.00	0.18	114.84	1,718.98	0.40	4.03	-0.40	0.09	0.00	27.49
1,814.00	0.26	127.67	1,813.98	0.20	4.34	-0.20	0.10	0.08	13.51
1,909.00	0.35	120.99	1,908.98	-0.08	4.76	0.08	0.10	0.09	-7.03
2,003.00	0.26	115.54	2,002.98	-0.32	5.19	0.32	0.10	-0.10	-5.80
2,098.00	0.26	65.09	2,097.98	-0.32	5.58	0.32	0.23	0.00	-53.11
2,192.00	0.18	106.05	2,191.97	-0.27	5.92	0.27	0.18	-0.09	43.57
2,287.00	0.70	138.22	2,286.97	-0.75	6.45	0.75	0.59	0.55	33.86
2,381.00	0.70	133.65	2,380.96	-1.57	7.25	1.57	0.06	0.00	-4.86
2,475.00	0.62	121.17	2,474.96	-2.23	8.10	2.23	0.17	-0.09	-13.28
2,570.00	0.35	129.96	2,569.96	-2.68	8.76	2.68	0.29	-0.28	9.25
2,665.00	0.53	96.38	2,664.95	-2.92	9.42	2.92	0.32	0.19	-35.35
2,760.00	0.35	74.41	2,759.95	-2.89	10.14	2.89	0.26	-0.19	-23.13
2,854.00	0.26	53.84	2,853.95	-2.69	10.58	2.69	0.15	-0.10	-21.88
2,948.00	0.44	57.01	2,947.95	-2.36	11.06	2.36	0.19	0.19	3.37
3,043.00	0.62	53.14	3,042.94	-1.86	11.78	1.86	0.19	0.19	-4.07
3,137.00	0.44	37.14	3,136.94	-1.26	12.40	1.26	0.25	-0.19	-17.02
3,232.00	0.53	24.84	3,231.94	-0.57	12.81	0.57	0.14	0.09	-12.95
3,326.00	0.35	24.14	3,325.93	0.08	13.11	-0.08	0.19	-0.19	-0.74
3,420.00	0.35	16.58	3,419.93	0.62	13.31	-0.62	0.05	0.00	-8.04
3,514.00	0.26	54.02	3,513.93	1.02	13.56	-1.02	0.23	-0.10	39.83
3,608.00	0.18	245.97	3,607.93	1.09	13.60	-1.09	0.47	-0.09	-178.78
3,703.00	0.26	258.98	3,702.93	0.98	13.25	-0.98	0.10	0.08	13.69
3,797.00	0.44	238.06	3,796.93	0.75	12.73	-0.75	0.23	0.19	-22.26
3,891.00	0.26	215.91	3,890.92	0.39	12.30	-0.39	0.24	-0.19	-23.56
3,985.00	0.18	181.46	3,984.92	0.07	12.17	-0.07	0.16	-0.09	-36.65
4,080.00	0.18	116.07	4,079.92	-0.15	12.30	0.15	0.20	0.00	-68.83
4,174.00	0.09	50.33	4,173.92	-0.17	12.49	0.17	0.18	-0.10	-69.94
4,268.00	0.35	43.82	4,267.92	0.09	12.75	-0.09	0.28	0.28	-6.93
4,363.00	0.26	26.60	4,362.92	0.49	13.05	-0.49	0.13	-0.09	-18.13
4,457.00	0.18	19.39	4,456.92	0.82	13.19	-0.82	0.09	-0.09	-7.67

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 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)
4,552.00	0.18	239.12	4,551.92	0.89	13.11	-0.89	0.36	0.00	-147.65
4,646.00	0.70	228.39	4,645.92	0.43	12.56	-0.43	0.56	0.55	-11.41
4,741.00	1.06	251.25	4,740.91	-0.24	11.29	0.24	0.52	0.38	24.06
4,835.00	1.14	255.29	4,834.89	-0.76	9.56	0.76	0.12	0.09	4.30
4,930.00	1.58	238.41	4,929.86	-1.68	7.53	1.68	0.62	0.46	-17.77
5,022.00	2.37	252.12	5,021.81	-2.93	4.64	2.93	0.99	0.86	14.90
5,116.00	4.04	252.65	5,115.66	-4.52	-0.37	4.52	1.78	1.78	0.56
5,211.00	6.33	260.21	5,210.26	-6.40	-8.72	6.40	2.51	2.41	7.96
5,305.00	6.86	262.14	5,303.64	-8.05	-19.39	8.05	0.61	0.56	2.05
5,400.00	7.65	262.32	5,397.88	-9.67	-31.28	9.67	0.83	0.83	0.19
5,494.00	8.44	260.91	5,490.95	-11.60	-44.29	11.60	0.87	0.84	-1.50
5,589.00	9.32	261.97	5,584.81	-13.78	-58.79	13.78	0.94	0.93	1.12
5,684.00	9.76	261.44	5,678.50	-16.05	-74.37	16.05	0.47	0.46	-0.56
5,778.00	9.50	261.79	5,771.18	-18.34	-89.93	18.34	0.28	-0.28	0.37
5,872.00	9.58	265.31	5,863.88	-20.09	-105.40	20.09	0.63	0.09	3.74
5,967.00	8.53	265.13	5,957.69	-21.33	-120.30	21.33	1.11	-1.11	-0.19
6,061.00	6.68	266.01	6,050.86	-22.31	-132.70	22.31	1.97	-1.97	0.94
6,156.00	5.63	274.10	6,145.31	-22.36	-142.86	22.36	1.43	-1.11	8.52
6,250.00	5.72	274.80	6,238.85	-21.64	-152.13	21.64	0.12	0.10	0.74
6,345.00	6.16	273.57	6,333.34	-20.92	-161.94	20.92	0.48	0.46	-1.29
6,360.00	5.98	270.23	6,348.26	-20.87	-163.52	20.87	2.64	-1.20	-22.27
6,412.00	5.85	269.88	6,399.98	-20.86	-168.88	20.86	0.27	-0.26	-0.68
9 5/8"									
6,461.00	5.72	269.53	6,448.73	-20.89	-173.81	20.89	0.27	-0.26	-0.71
6,556.00	3.43	258.10	6,543.43	-21.51	-181.33	21.51	2.58	-2.41	-12.03
6,650.00	2.64	245.27	6,637.29	-23.00	-186.05	23.00	1.10	-0.84	-13.65
6,745.00	2.11	263.90	6,732.21	-24.10	-189.77	24.10	0.98	-0.56	19.61
6,839.00	2.55	296.60	6,826.14	-23.35	-193.37	23.35	1.47	0.47	34.79
6,934.00	3.43	290.45	6,921.01	-21.41	-197.92	21.41	0.98	0.93	-6.47
7,028.00	6.24	289.74	7,014.67	-18.70	-205.36	18.70	2.99	2.99	-0.76
7,123.00	5.28	285.00	7,109.19	-15.83	-214.44	15.83	1.13	-1.01	-4.99
7,218.00	4.22	279.55	7,203.86	-14.11	-222.11	14.11	1.21	-1.12	-5.74
7,311.00	4.48	286.75	7,296.59	-12.50	-228.97	12.50	0.65	0.28	7.74
7,406.00	4.92	277.96	7,391.27	-10.87	-236.55	10.87	0.89	0.46	-9.25
7,500.00	4.04	274.98	7,484.98	-10.02	-243.84	10.02	0.97	-0.94	-3.17
7,531.00	3.87	264.61	7,515.91	-10.02	-245.97	10.02	2.37	-0.55	-33.45
7,562.00	5.80	238.06	7,546.80	-10.95	-248.35	10.95	9.38	6.23	-85.65
7,594.00	9.23	232.44	7,578.52	-13.37	-251.75	13.37	10.95	10.72	-17.56
7,625.00	12.40	230.68	7,608.97	-17.00	-256.30	17.00	10.28	10.23	-5.68
7,657.00	15.04	230.15	7,640.05	-21.84	-262.15	21.84	8.26	8.25	-1.66
7,689.00	17.23	224.35	7,670.79	-27.89	-268.65	27.89	8.49	6.84	-18.13
7,782.00	20.14	214.86	7,758.90	-50.88	-287.44	50.88	4.52	3.13	-10.20

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 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)	
7,814.00	22.34	205.54	7,788.74	-60.90	-293.21	60.90	12.57	6.88	-29.13	
7,845.00	26.12	197.63	7,817.01	-72.72	-297.82	72.72	16.05	12.19	-25.52	
7,877.00	29.63	194.82	7,845.29	-87.09	-301.98	87.09	11.71	10.97	-8.78	
7,906.00	32.71	192.89	7,870.10	-101.66	-305.56	101.66	11.16	10.62	-6.66	
7,937.00	34.91	192.01	7,895.86	-118.50	-309.27	118.50	7.27	7.10	-2.84	
7,969.00	37.11	190.78	7,921.74	-136.95	-312.99	136.95	7.24	6.88	-3.84	
8,000.00	39.04	191.83	7,946.14	-155.69	-316.74	155.69	6.57	6.23	3.39	
8,032.00	42.12	193.59	7,970.45	-175.99	-321.33	175.99	10.27	9.63	5.50	
8,063.00	45.11	192.89	7,992.89	-196.80	-326.22	196.80	9.77	9.65	-2.26	
8,094.00	47.48	192.36	8,014.31	-218.67	-331.12	218.67	7.74	7.65	-1.71	
8,126.00	49.07	191.30	8,035.60	-242.05	-336.01	242.05	5.55	4.97	-3.31	
8,157.00	51.18	188.67	8,055.48	-265.47	-340.12	265.47	9.42	6.81	-8.48	
8,189.00	54.43	187.44	8,074.82	-290.71	-343.69	290.71	10.61	10.16	-3.84	
8,220.00	58.21	186.21	8,092.01	-316.32	-346.75	316.32	12.63	12.19	-3.97	
8,252.00	60.41	185.86	8,108.34	-343.68	-349.64	343.68	6.94	6.88	-1.09	
8,283.00	63.05	185.50	8,123.02	-370.85	-352.34	370.85	8.58	8.52	-1.16	
8,315.00	65.60	185.86	8,136.89	-399.54	-355.20	399.54	8.03	7.97	1.13	
8,346.00	68.06	185.68	8,149.08	-427.90	-358.06	427.90	7.95	7.94	-0.58	
8,377.00	70.52	184.45	8,160.04	-456.78	-360.62	456.78	8.76	7.94	-3.97	
8,409.00	73.34	183.92	8,169.97	-487.12	-362.84	487.12	8.95	8.81	-1.66	
8,440.00	75.80	183.39	8,178.22	-516.94	-364.74	516.94	8.10	7.94	-1.71	
8,471.00	76.94	183.75	8,185.52	-547.00	-366.62	547.00	3.85	3.68	1.16	
8,502.00	78.96	183.39	8,191.99	-577.26	-368.50	577.26	6.61	6.52	-1.16	
8,534.00	81.07	183.04	8,197.54	-608.72	-370.27	608.72	6.68	6.59	-1.09	
8,565.00	82.66	182.87	8,201.93	-639.37	-371.85	639.37	5.16	5.13	-0.55	
8,597.00	83.10	181.64	8,205.89	-671.10	-373.10	671.10	4.05	1.38	-3.84	
8,628.00	84.15	181.11	8,209.34	-701.90	-373.84	701.90	3.79	3.39	-1.71	
8,660.00	85.21	180.05	8,212.30	-733.76	-374.16	733.76	4.67	3.31	-3.31	
8,691.00	86.88	179.18	8,214.44	-764.68	-373.96	764.68	6.07	5.39	-2.81	
8,722.00	87.05	179.00	8,216.08	-795.63	-373.46	795.63	0.80	0.55	-0.58	
8,754.00	86.88	178.47	8,217.78	-827.58	-372.76	827.58	1.74	-0.53	-1.66	
8,817.00	86.35	178.65	8,221.50	-890.45	-371.18	890.45	0.89	-0.84	0.29	
8,911.00	88.72	179.18	8,225.54	-984.34	-369.40	984.34	2.58	2.52	0.56	
9,006.00	89.52	182.34	8,227.00	-1,079.31	-370.66	1,079.31	3.43	0.84	3.33	
9,101.00	89.87	179.88	8,227.50	-1,174.28	-372.50	1,174.28	2.62	0.37	-2.59	
9,195.00	90.75	180.93	8,227.00	-1,268.27	-373.17	1,268.27	1.46	0.94	1.12	
9,290.00	90.66	180.41	8,225.83	-1,363.26	-374.28	1,363.26	0.56	-0.09	-0.55	
9,384.00	89.78	180.05	8,225.47	-1,457.26	-374.65	1,457.26	1.01	-0.94	-0.38	
9,479.00	90.13	181.81	8,225.54	-1,552.24	-376.20	1,552.24	1.89	0.37	1.85	
9,573.00	89.43	182.52	8,225.90	-1,646.17	-379.75	1,646.17	1.06	-0.74	0.76	
9,667.00	89.34	182.52	8,226.91	-1,740.08	-383.88	1,740.08	0.10	-0.10	0.00	
9,762.00	89.16	179.70	8,228.15	-1,835.04	-385.72	1,835.04	2.97	-0.19	-2.97	

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 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)	
9,856.00	88.55	179.88	8,230.03	-1,929.02	-385.37	1,929.02	0.68	-0.65	0.19	
9,950.00	89.08	182.16	8,231.98	-2,022.98	-387.05	2,022.98	2.49	0.56	2.43	
10,044.00	90.48	179.70	8,232.34	-2,116.96	-388.57	2,116.96	3.01	1.49	-2.62	
10,139.00	89.34	179.70	8,232.49	-2,211.95	-388.08	2,211.95	1.20	-1.20	0.00	
10,233.00	90.22	181.64	8,232.85	-2,305.94	-389.18	2,305.94	2.27	0.94	2.06	
10,328.00	88.99	175.66	8,233.50	-2,400.87	-386.94	2,400.87	6.43	-1.29	-6.29	
10,423.00	90.22	177.24	8,234.16	-2,495.68	-381.06	2,495.68	2.11	1.29	1.66	
10,517.00	90.13	177.59	8,233.87	-2,589.58	-376.82	2,589.58	0.38	-0.10	0.37	
10,612.00	91.10	180.41	8,232.85	-2,684.55	-375.16	2,684.55	3.14	1.02	2.97	
10,707.00	90.48	180.93	8,231.54	-2,779.53	-376.27	2,779.53	0.85	-0.65	0.55	
10,801.00	89.69	180.23	8,231.40	-2,873.53	-377.22	2,873.53	1.12	-0.84	-0.74	
10,895.00	89.34	181.64	8,232.20	-2,967.51	-378.76	2,967.51	1.55	-0.37	1.50	
10,989.00	88.55	180.05	8,233.93	-3,061.48	-380.14	3,061.48	1.89	-0.84	-1.69	
11,083.00	87.76	180.05	8,236.96	-3,155.43	-380.22	3,155.43	0.84	-0.84	0.00	
11,177.00	87.23	180.58	8,241.06	-3,249.34	-380.74	3,249.34	0.80	-0.56	0.56	
11,274.00	87.14	179.00	8,245.83	-3,346.22	-380.38	3,346.22	1.63	-0.09	-1.63	
11,367.00	86.97	178.12	8,250.61	-3,439.06	-378.05	3,439.06	0.96	-0.18	-0.95	
11,462.00	90.57	178.30	8,252.65	-3,533.98	-375.08	3,533.98	3.79	3.79	0.19	
11,556.00	92.77	179.18	8,249.91	-3,627.91	-373.02	3,627.91	2.52	2.34	0.94	
11,651.00	92.07	179.18	8,245.89	-3,722.82	-371.66	3,722.82	0.74	-0.74	0.00	
11,746.00	90.92	179.00	8,243.42	-3,817.77	-370.15	3,817.77	1.23	-1.21	-0.19	
11,840.00	88.37	178.30	8,244.00	-3,911.73	-367.94	3,911.73	2.81	-2.71	-0.74	
11,935.00	91.28	178.82	8,244.29	-4,006.69	-365.55	4,006.69	3.11	3.06	0.55	
12,030.00	87.93	177.59	8,244.94	-4,101.63	-362.58	4,101.63	3.76	-3.53	-1.29	
12,124.00	89.96	179.00	8,246.67	-4,195.56	-359.78	4,195.56	2.63	2.16	1.50	
12,218.00	92.68	178.82	8,244.51	-4,289.51	-357.99	4,289.51	2.90	2.89	-0.19	
12,314.00	91.71	178.82	8,240.83	-4,385.42	-356.02	4,385.42	1.01	-1.01	0.00	
12,408.00	91.45	178.82	8,238.24	-4,479.37	-354.08	4,479.37	0.28	-0.28	0.00	
12,503.00	90.48	178.47	8,236.64	-4,574.32	-351.84	4,574.32	1.09	-1.02	-0.37	
12,597.00	90.48	179.53	8,235.85	-4,668.31	-350.19	4,668.31	1.13	0.00	1.13	
12,692.00	90.66	181.46	8,234.91	-4,763.29	-351.02	4,763.29	2.04	0.19	2.03	
12,787.00	89.16	180.41	8,235.06	-4,858.28	-352.57	4,858.28	1.93	-1.58	-1.11	
12,881.00	89.43	182.16	8,236.21	-4,952.24	-354.67	4,952.24	1.88	0.29	1.86	
12,976.00	88.37	181.81	8,238.04	-5,047.17	-357.96	5,047.17	1.18	-1.12	-0.37	
13,071.00	88.29	183.22	8,240.81	-5,142.03	-362.13	5,142.03	1.49	-0.08	1.48	
13,165.00	87.49	182.16	8,244.27	-5,235.86	-366.54	5,235.86	1.41	-0.85	-1.13	
13,261.00	87.32	183.04	8,248.61	-5,331.66	-370.89	5,331.66	0.93	-0.18	0.92	
13,356.00	87.14	183.22	8,253.20	-5,426.41	-376.07	5,426.41	0.27	-0.19	0.19	
13,409.00	87.14	183.22	8,255.85	-5,479.26	-379.04	5,479.26	0.00	0.00	0.00	
OH BHL - PBHL (U09 0817H) - ST BHL										

Company:	American Energy Partners	Local Co-ordinate Reference:	Well 0817H
Project:	Reagan County, TX (NAD-27)	TVD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Site:	University 09	MD Reference:	Ensign 735: 2664.54' GL + 30' RKB @ 2694.54usft
Well:	0817H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	EDM 5000.1 Single User Db

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
ST BHL	0.00	0.00	8,255.85	-5,479.26	-379.04	586,193.98	1,606,655.87	31° 16' 20.491 N	101° 35' 32.689 W
- actual wellpath hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,412.00	6,399.98	9 5/8"	9-5/8	12-1/4	

Checked By: _____	Approved By: _____	Date: _____
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