



AMERICAN ENERGY PERMIAN BASIN (AEP)

Reagan County, TX

University 09 Pad University Lands BLK 09 Sec 08

University 09 #0804H - Slot 0804H

0804H

Design: Surveys

Standard Survey Report

02 December, 2014



Archer Survey Report

Company:	AMERICAN ENERGY PERMIAN BASIN (AEP)	Local Co-ordinate Reference:	Well University 09 #0804H - Slot 0804H
Project:	Reagan County, TX	TVD Reference:	2671' GL + 30' RKB @ 2701.00usft (Planning)
Site:	University 09 Pad University Lands BLK 09 Sec 08	MD Reference:	2671' GL + 30' RKB @ 2701.00usft (Planning)
Well:	University 09 #0804H	North Reference:	Grid
Wellbore:	0804H	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Single User Db

Project	Reagan County, TX		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas Central 4203		

Site	University 09 Pad University Lands BLK 09 Sec 08		
Site Position:		Northing:	590,061.98 usft
From:	Map	Easting:	1,606,070.46 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	31° 16' 58.709 N
		Longitude:	101° 35' 39.940 W
		Grid Convergence:	-0.65 °

Well	University 09 #0804H - Slot 0804H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	31° 16' 58.702 N
		Longitude:	101° 35' 40.748 W
		Ground Level:	2,671.00 usft

Wellbore	0804H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	2014/11/18	6.25	59.76	48,043

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	0.45	

Survey Program	Date	2014/12/02			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
130.00	7,002.00	Archer 0804H Gyro + MWD Surveys (0804	MWD+HDGM	OWSG MWD + HDGM	
7,074.00	15,054.00	Archer 0804H Lateral MWD Surveys (0804	MWD+HDGM	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	
0804H Surface										
130.00	0.11	183.72	130.00	-0.12	-0.01	-0.12	0.08	0.08	0.00	
First GYRO Survey										
230.00	0.24	248.11	230.00	-0.30	-0.21	-0.30	0.22	0.13	64.39	
330.00	0.10	232.00	330.00	-0.43	-0.47	-0.43	0.15	-0.14	-16.11	
430.00	0.08	104.34	430.00	-0.50	-0.47	-0.50	0.16	-0.02	-127.66	
530.00	0.34	45.11	530.00	-0.31	-0.20	-0.31	0.31	0.26	-59.23	
640.00	0.64	34.86	639.99	0.43	0.39	0.43	0.28	0.27	-9.32	



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Survey									
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Last GYRO Survey									
792.00	0.13	316.31	791.99	1.25	0.75	1.25	0.41	-0.34	-51.68
First Archer MWD Survey-Pilot									
886.00	0.24	348.74	885.99	1.52	0.64	1.52	0.16	0.12	34.50
981.00	0.99	5.42	980.98	2.53	0.68	2.53	0.80	0.79	17.56
1,075.00	1.01	14.70	1,074.97	4.14	0.97	4.15	0.17	0.02	9.87
1,169.00	0.43	17.68	1,168.96	5.28	1.28	5.29	0.62	-0.62	3.17
1,264.00	0.71	30.36	1,263.96	6.12	1.69	6.14	0.32	0.29	13.35
1,358.00	0.79	15.38	1,357.95	7.25	2.16	7.27	0.22	0.09	-15.94
1,452.00	0.54	354.46	1,451.94	8.32	2.29	8.33	0.37	-0.27	-22.26
1,484.00	0.63	143.81	1,483.94	8.32	2.37	8.34	3.53	0.28	466.72
1,515.00	1.27	151.90	1,514.94	7.88	2.64	7.90	2.10	2.06	26.10
1,547.00	1.90	145.87	1,546.93	7.13	3.10	7.16	2.03	1.97	-18.84
1,579.00	1.90	152.81	1,578.91	6.22	3.64	6.25	0.72	0.00	21.69
1,610.00	1.91	136.24	1,609.89	5.39	4.23	5.42	1.77	0.03	-53.45
1,641.00	2.10	145.90	1,640.87	4.55	4.91	4.59	1.25	0.61	31.16
1,673.00	2.95	145.67	1,672.84	3.38	5.70	3.43	2.66	2.66	-0.72
1,704.00	4.04	137.80	1,703.78	1.91	6.89	1.97	3.83	3.52	-25.39
1,735.00	4.35	133.01	1,734.70	0.30	8.48	0.37	1.51	1.00	-15.45
1,830.00	5.54	135.26	1,829.34	-5.41	14.34	-5.30	1.27	1.25	2.37
1,924.00	6.08	136.03	1,922.86	-12.22	20.99	-12.05	0.58	0.57	0.82
2,018.00	5.25	130.39	2,016.40	-18.59	27.72	-18.37	1.06	-0.88	-6.00
2,113.00	4.95	130.48	2,111.03	-24.06	34.15	-23.80	0.32	-0.32	0.09
2,207.00	5.23	133.08	2,204.66	-29.62	40.37	-29.31	0.39	0.30	2.77
2,302.00	3.44	133.24	2,299.38	-34.53	45.61	-34.17	1.88	-1.88	0.17
2,396.00	3.93	132.79	2,393.19	-38.65	50.02	-38.26	0.52	0.52	-0.48
2,490.00	3.50	139.88	2,486.99	-43.04	54.24	-42.61	0.67	-0.46	7.54
2,585.00	3.09	133.64	2,581.83	-47.02	57.96	-46.56	0.57	-0.43	-6.57
2,679.00	3.42	135.35	2,675.68	-50.76	61.76	-50.28	0.37	0.35	1.82
2,774.00	3.37	128.16	2,770.51	-54.50	65.95	-53.99	0.45	-0.05	-7.57
2,868.00	3.55	138.55	2,864.34	-58.39	70.05	-57.84	0.69	0.19	11.05
2,963.00	3.43	143.79	2,959.17	-62.89	73.67	-62.31	0.36	-0.13	5.52
3,057.00	2.66	142.58	3,053.03	-66.89	76.66	-66.29	0.82	-0.82	-1.29
3,151.00	3.98	145.91	3,146.87	-71.33	79.81	-70.70	1.42	1.40	3.54
3,245.00	4.40	138.88	3,240.62	-76.74	84.01	-76.08	0.71	0.45	-7.48
3,339.00	4.22	141.61	3,334.36	-82.17	88.53	-81.47	0.29	-0.19	2.90
3,433.00	3.76	142.94	3,428.13	-87.34	92.54	-86.61	0.50	-0.49	1.41
3,528.00	3.50	154.71	3,522.94	-92.45	95.65	-91.70	0.83	-0.27	12.39
3,622.00	3.18	148.86	3,616.78	-97.28	98.23	-96.50	0.50	-0.34	-6.22
3,716.00	3.62	146.48	3,710.61	-101.98	101.22	-101.18	0.49	0.47	-2.53
3,810.00	2.67	143.91	3,804.47	-106.22	104.14	-105.40	1.02	-1.01	-2.73
3,904.00	2.03	145.31	3,898.39	-109.36	106.38	-108.52	0.68	-0.68	1.49
3,997.00	2.46	143.37	3,991.32	-112.32	108.51	-111.46	0.47	0.46	-2.09



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Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,091.00	3.86	148.65	4,085.18	-116.64	111.36	-115.76	1.52	1.49	5.62
4,185.00	3.79	150.99	4,178.97	-122.06	114.51	-121.16	0.18	-0.07	2.49
4,279.00	4.39	146.05	4,272.73	-127.76	118.03	-126.83	0.74	0.64	-5.26
4,374.00	4.25	146.81	4,367.46	-133.72	121.99	-132.76	0.16	-0.15	0.80
4,468.00	3.92	138.64	4,461.22	-139.05	126.02	-138.05	0.71	-0.35	-8.69
4,562.00	3.98	137.96	4,555.00	-143.88	130.32	-142.85	0.08	0.06	-0.72
4,656.00	3.63	135.75	4,648.79	-148.44	134.58	-147.38	0.40	-0.37	-2.35
4,750.00	3.10	145.17	4,742.63	-152.66	138.11	-151.57	0.81	-0.56	10.02
4,844.00	3.20	133.83	4,836.49	-156.56	141.46	-155.44	0.67	0.11	-12.06
4,938.00	2.67	145.28	4,930.36	-160.17	144.60	-159.03	0.84	-0.56	12.18
5,033.00	2.65	132.25	5,025.26	-163.47	147.48	-162.31	0.64	-0.02	-13.72
5,127.00	2.11	146.44	5,119.18	-166.37	150.05	-165.19	0.85	-0.57	15.10
5,222.00	2.01	130.06	5,214.12	-168.90	152.29	-167.70	0.63	-0.11	-17.24
5,316.00	1.86	141.65	5,308.07	-171.16	154.50	-169.94	0.44	-0.16	12.33
5,410.00	1.16	133.98	5,402.03	-173.02	156.13	-171.79	0.77	-0.74	-8.16
5,505.00	1.17	139.94	5,497.01	-174.43	157.45	-173.19	0.13	0.01	6.27
5,599.00	1.27	130.07	5,590.99	-175.83	158.86	-174.58	0.25	0.11	-10.50
5,694.00	0.55	145.23	5,685.98	-176.88	159.93	-175.62	0.79	-0.76	15.96
5,788.00	0.86	156.36	5,779.97	-177.90	160.47	-176.64	0.36	0.33	11.84
5,883.00	0.61	171.66	5,874.97	-179.06	160.83	-177.79	0.33	-0.26	16.11
5,977.00	0.38	85.32	5,968.96	-179.52	161.21	-178.25	0.74	-0.24	-91.85
6,071.00	0.39	152.62	6,062.96	-179.78	161.67	-178.51	0.45	0.01	71.60
6,165.00	0.38	133.32	6,156.96	-180.28	162.04	-179.00	0.14	-0.01	-20.53
6,260.00	0.22	167.06	6,251.96	-180.68	162.31	-179.39	0.24	-0.17	35.52
6,345.00	0.36	93.51	6,336.96	-180.85	162.61	-179.57	0.43	0.16	-86.53
6,436.00	0.40	25.70	6,427.96	-180.58	163.04	-179.30	0.47	0.04	-74.52
6,530.00	0.50	53.90	6,521.95	-180.04	163.51	-178.75	0.26	0.11	30.00
6,625.00	0.70	40.70	6,616.95	-179.36	164.22	-178.07	0.25	0.21	-13.89
6,719.00	0.50	54.80	6,710.94	-178.69	164.93	-177.39	0.26	-0.21	15.00
6,814.00	0.60	57.10	6,805.94	-178.18	165.69	-176.87	0.11	0.11	2.42
6,908.00	0.60	59.70	6,899.93	-177.66	166.53	-176.35	0.03	0.00	2.77
7,002.00	0.80	70.60	6,993.93	-177.20	167.57	-175.88	0.25	0.21	11.60
7,074.00	0.60	4.00	7,065.92	-176.65	168.07	-175.33	1.09	-0.28	-92.50
First Archer MWD Survey-Horizontal									
7,091.00	1.20	330.60	7,082.92	-176.41	167.99	-175.09	4.55	3.53	-196.47
7,111.00	2.90	317.20	7,102.91	-175.86	167.54	-174.54	8.77	8.50	-67.00
7,122.00	4.00	319.00	7,113.89	-175.36	167.10	-174.05	10.05	10.00	16.36
7,159.00	7.00	323.10	7,150.71	-172.59	164.90	-171.29	8.17	8.11	11.08
7,206.00	7.50	324.40	7,197.34	-167.80	161.40	-166.53	1.12	1.06	2.77
7,300.00	6.20	325.90	7,290.66	-158.61	154.98	-157.39	1.40	-1.38	1.60
7,395.00	4.70	330.10	7,385.23	-150.99	150.16	-149.80	1.63	-1.58	4.42
7,426.00	5.00	346.80	7,416.12	-148.57	149.22	-147.39	4.64	0.97	53.87
7,458.00	6.60	4.90	7,447.96	-145.38	149.06	-144.21	7.54	5.00	56.56



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7,489.00	9.00	7.70	7,478.67	-141.20	149.54	-140.02	7.84	7.74	9.03
7,521.00	12.00	4.70	7,510.13	-135.40	150.15	-134.22	9.53	9.38	-9.38
7,552.00	14.80	1.70	7,540.28	-128.23	150.53	-127.05	9.30	9.03	-9.68
7,583.00	17.70	0.00	7,570.04	-119.56	150.64	-118.37	9.48	9.35	-5.48
7,615.00	20.70	358.80	7,600.26	-109.04	150.53	-107.85	9.46	9.38	-3.75
7,647.00	23.90	357.10	7,629.86	-96.91	150.08	-95.73	10.20	10.00	-5.31
7,678.00	27.10	355.70	7,657.84	-83.59	149.23	-82.42	10.50	10.32	-4.52
7,709.00	30.10	354.20	7,685.05	-68.81	147.92	-67.65	9.95	9.68	-4.84
7,740.00	32.70	353.50	7,711.51	-52.76	146.18	-51.61	8.47	8.39	-2.26
7,772.00	35.40	350.70	7,738.02	-35.02	143.71	-33.89	9.75	8.44	-8.75
7,803.00	38.70	348.20	7,762.76	-16.67	140.27	-15.56	11.70	10.65	-8.06
7,835.00	42.20	348.20	7,787.11	3.65	136.03	4.72	10.94	10.94	0.00
7,866.00	45.50	349.00	7,809.46	24.70	131.79	25.74	10.79	10.65	2.58
7,897.00	48.40	348.70	7,830.62	46.93	127.41	47.93	9.38	9.35	-0.97
7,929.00	50.90	348.00	7,851.34	70.81	122.48	71.77	7.99	7.81	-2.19
7,960.00	53.80	347.00	7,870.28	94.77	117.16	95.69	9.70	9.35	-3.23
7,991.00	56.30	346.80	7,888.03	119.51	111.40	120.39	8.08	8.06	-0.65
8,023.00	58.90	348.60	7,905.18	145.91	105.66	146.73	9.41	8.13	5.63
8,054.00	62.40	350.30	7,920.37	172.47	100.72	173.26	12.26	11.29	5.48
8,086.00	66.90	351.40	7,934.07	201.01	96.12	201.76	14.40	14.06	3.44
8,117.00	71.10	351.80	7,945.18	229.64	91.90	230.35	13.60	13.55	1.29
8,148.00	72.70	351.70	7,954.81	258.80	87.67	259.48	5.17	5.16	-0.32
8,180.00	74.30	352.20	7,963.89	289.18	83.37	289.82	5.22	5.00	1.56
8,211.00	77.30	352.30	7,971.50	318.95	79.32	319.56	9.68	9.68	0.32
8,243.00	79.40	352.00	7,977.96	350.00	75.04	350.57	6.63	6.56	-0.94
8,273.00	81.10	351.80	7,983.04	379.27	70.88	379.81	5.70	5.67	-0.67
8,304.00	82.40	352.00	7,987.49	409.64	66.55	410.15	4.24	4.19	0.65
8,336.00	84.00	351.80	7,991.28	441.10	62.08	441.57	5.04	5.00	-0.63
8,382.00	89.10	352.20	7,994.04	486.55	55.69	486.97	11.12	11.09	0.87
8,430.00	91.60	353.10	7,993.75	534.15	49.55	534.52	5.54	5.21	1.88
8,524.00	91.10	350.60	7,991.54	627.17	36.23	627.43	2.71	-0.53	-2.66
8,618.00	89.30	350.60	7,991.21	719.90	20.87	720.04	1.91	-1.91	0.00
8,713.00	91.20	351.60	7,990.79	813.75	6.18	813.78	2.26	2.00	1.05
8,808.00	89.20	349.80	7,990.46	907.49	-9.17	907.39	2.83	-2.11	-1.89
8,902.00	90.90	350.60	7,990.38	1,000.12	-25.17	999.89	2.00	1.81	0.85
8,997.00	92.80	351.00	7,987.31	1,093.84	-40.35	1,093.49	2.04	2.00	0.42
9,091.00	90.30	354.10	7,984.77	1,187.00	-52.53	1,186.55	4.24	-2.66	3.30
9,186.00	90.50	355.60	7,984.11	1,281.61	-61.06	1,281.09	1.59	0.21	1.58
9,280.00	88.70	355.60	7,984.76	1,375.32	-68.27	1,374.75	1.91	-1.91	0.00
9,375.00	90.00	358.70	7,985.84	1,470.19	-72.99	1,469.57	3.54	1.37	3.26
9,470.00	90.20	359.30	7,985.68	1,565.17	-74.65	1,564.54	0.67	0.21	0.63
9,568.00	88.40	2.90	7,986.87	1,663.13	-72.77	1,662.50	4.11	-1.84	3.67



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Company:	AMERICAN ENERGY PERMIAN BASIN (AEP)	Local Co-ordinate Reference:	Well University 09 #0804H - Slot 0804H
Project:	Reagan County, TX	TVD Reference:	2671' GL + 30' RKB @ 2701.00usft (Planning)
Site:	University 09 Pad University Lands BLK 09 Sec 08	MD Reference:	2671' GL + 30' RKB @ 2701.00usft (Planning)
Well:	University 09 #0804H	North Reference:	Grid
Wellbore:	0804H	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	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)
9,662.00	88.70	2.80	7,989.25	1,756.98	-68.10	1,756.39	0.34	0.32	-0.11
9,756.00	91.60	5.00	7,989.01	1,850.75	-61.71	1,850.20	3.87	3.09	2.34
9,851.00	91.80	4.40	7,986.19	1,945.39	-53.92	1,944.90	0.67	0.21	-0.63
9,945.00	89.60	0.40	7,985.04	2,039.27	-49.99	2,038.82	4.86	-2.34	-4.26
10,038.00	90.30	0.70	7,985.12	2,132.27	-49.10	2,131.81	0.82	0.75	0.32
10,133.00	90.90	0.00	7,984.12	2,227.26	-48.52	2,226.81	0.97	0.63	-0.74
10,227.00	87.10	357.80	7,985.77	2,321.20	-50.32	2,320.74	4.67	-4.04	-2.34
10,321.00	87.30	358.00	7,990.36	2,415.03	-53.76	2,414.53	0.30	0.21	0.21
10,416.00	87.40	0.00	7,994.75	2,509.91	-55.42	2,509.39	2.11	0.11	2.11
10,510.00	89.20	1.50	7,997.54	2,603.85	-54.19	2,603.34	2.49	1.91	1.60
10,604.00	91.70	3.30	7,996.80	2,697.75	-50.25	2,697.28	3.28	2.66	1.91
10,698.00	92.70	3.60	7,993.19	2,791.51	-44.60	2,791.08	1.11	1.06	0.32
10,792.00	93.60	3.50	7,988.03	2,885.19	-38.79	2,884.80	0.96	0.96	-0.11
10,886.00	93.30	2.90	7,982.37	2,978.87	-33.55	2,978.52	0.71	-0.32	-0.64
10,981.00	92.50	2.40	7,977.56	3,073.65	-29.16	3,073.33	0.99	-0.84	-0.53
11,075.00	89.40	0.20	7,976.00	3,167.59	-27.03	3,167.28	4.04	-3.30	-2.34
11,169.00	90.60	0.70	7,976.00	3,261.59	-26.29	3,261.28	1.38	1.28	0.53
11,263.00	88.30	0.70	7,976.91	3,355.57	-25.15	3,355.27	2.45	-2.45	0.00
11,358.00	89.10	1.30	7,979.06	3,450.53	-23.49	3,450.24	1.05	0.84	0.63
11,452.00	89.50	1.50	7,980.21	3,544.50	-21.19	3,544.22	0.48	0.43	0.21
11,546.00	89.60	1.50	7,980.95	3,638.46	-18.73	3,638.20	0.11	0.11	0.00
11,640.00	91.80	2.90	7,979.80	3,732.38	-15.12	3,732.14	2.77	2.34	1.49
11,734.00	90.10	1.20	7,978.24	3,826.30	-11.76	3,826.09	2.56	-1.81	-1.81
11,829.00	90.90	2.20	7,977.41	3,921.25	-8.94	3,921.06	1.35	0.84	1.05
11,923.00	90.10	2.50	7,976.59	4,015.17	-5.09	4,015.00	0.91	-0.85	0.32
12,017.00	90.50	4.40	7,976.10	4,108.99	0.57	4,108.87	2.07	0.43	2.02
12,112.00	91.20	6.70	7,974.69	4,203.53	9.75	4,203.47	2.53	0.74	2.42
12,206.00	90.90	4.50	7,972.97	4,297.06	18.92	4,297.07	2.36	-0.32	-2.34
12,300.00	90.20	1.20	7,972.07	4,390.92	23.60	4,390.97	3.59	-0.74	-3.51
12,394.00	89.00	1.40	7,972.72	4,484.89	25.73	4,484.96	1.29	-1.28	0.21
12,488.00	88.40	0.40	7,974.85	4,578.86	27.21	4,578.93	1.24	-0.64	-1.06
12,582.00	90.60	359.20	7,975.67	4,672.85	26.88	4,672.91	2.67	2.34	-1.28
12,676.00	91.00	358.80	7,974.36	4,766.82	25.24	4,766.87	0.60	0.43	-0.43
12,770.00	89.90	359.20	7,973.62	4,860.80	23.60	4,860.84	1.25	-1.17	0.43
12,865.00	90.80	358.80	7,973.04	4,955.79	21.94	4,955.81	1.04	0.95	-0.42
12,959.00	90.40	359.00	7,972.06	5,049.76	20.13	5,049.77	0.48	-0.43	0.21
13,053.00	90.50	359.30	7,971.32	5,143.75	18.74	5,143.74	0.34	0.11	0.32
13,147.00	90.90	359.70	7,970.17	5,237.74	17.92	5,237.72	0.60	0.43	0.43
13,241.00	92.20	0.20	7,967.63	5,331.70	17.84	5,331.68	1.48	1.38	0.53
13,335.00	92.40	359.60	7,963.86	5,425.63	17.67	5,425.60	0.67	0.21	-0.64
13,430.00	89.90	0.00	7,961.95	5,520.60	17.34	5,520.56	2.67	-2.63	0.42
13,524.00	90.70	0.70	7,961.46	5,614.59	17.92	5,614.56	1.13	0.85	0.74
13,618.00	89.90	0.70	7,960.97	5,708.58	19.06	5,708.56	0.85	-0.85	0.00



Archer Survey Report

Company:	AMERICAN ENERGY PERMIAN BASIN (AEP)	Local Co-ordinate Reference:	Well University 09 #0804H - Slot 0804H
Project:	Reagan County, TX	TVD Reference:	2671' GL + 30' RKB @ 2701.00usft (Planning)
Site:	University 09 Pad University Lands BLK 09 Sec 08	MD Reference:	2671' GL + 30' RKB @ 2701.00usft (Planning)
Well:	University 09 #0804H	North Reference:	Grid
Wellbore:	0804H	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	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)
13,713.00	91.10	2.10	7,960.14	5,803.55	21.38	5,803.54	1.94	1.26	1.47
13,808.00	90.10	1.60	7,959.14	5,898.49	24.45	5,898.50	1.18	-1.05	-0.53
13,902.00	90.40	2.50	7,958.73	5,992.43	27.81	5,992.46	1.01	0.32	0.96
13,996.00	90.40	2.90	7,958.08	6,086.32	32.24	6,086.39	0.43	0.00	0.43
14,089.00	89.80	2.70	7,957.91	6,179.21	36.78	6,179.31	0.68	-0.65	-0.22
14,183.00	90.70	3.90	7,957.50	6,273.05	42.20	6,273.19	1.60	0.96	1.28
14,277.00	89.70	3.30	7,957.18	6,366.86	48.10	6,367.05	1.24	-1.06	-0.64
14,372.00	90.80	5.10	7,956.76	6,461.60	55.05	6,461.84	2.22	1.16	1.89
14,466.00	90.00	1.80	7,956.11	6,555.42	60.71	6,555.69	3.61	-0.85	-3.51
14,560.00	90.70	0.40	7,955.53	6,649.39	62.52	6,649.68	1.67	0.74	-1.49
14,655.00	89.50	358.60	7,955.37	6,744.39	61.69	6,744.66	2.28	-1.26	-1.89
14,749.00	91.10	359.10	7,954.87	6,838.36	59.80	6,838.62	1.78	1.70	0.53
14,844.00	89.40	357.30	7,954.46	6,933.31	56.82	6,933.54	2.61	-1.79	-1.89
14,938.00	89.90	358.50	7,955.03	7,027.24	53.37	7,027.44	1.38	0.53	1.28
15,007.00	90.80	358.60	7,954.61	7,096.22	51.63	7,096.40	1.31	1.30	0.14
Last Archer MWD Survey-Horizontal									
15,054.00	90.80	358.60	7,953.95	7,143.20	50.48	7,143.37	0.00	0.00	0.00
Projection to TD - 0804H PBHL									

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
0804H Surface - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	590,062.08	1,606,000.39	31° 16' 58.702 N	101° 35' 40.748 W
0804H PBHL - actual wellpath misses target center by 9.47usft at 15054.00usft MD (7953.95 TVD, 7143.20 N, 50.48 E) - Point	-0.49	1.19	7,946.37	7,144.88	55.89	597,206.96	1,606,056.28	31° 18' 9.424 N	101° 35' 41.037 W

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft) +E/-W (usft)	Comment
130.00	130.00	-0.12 -0.01	First GYRO Survey
640.00	639.99	0.43 0.39	Last GYRO Survey
792.00	791.99	1.25 0.75	First Archer MWD Survey-Pilot
7,074.00	7,065.92	-176.65 168.07	First Archer MWD Survey-Horizontal
15,007.00	7,954.61	7,096.22 51.63	Last Archer MWD Survey-Horizontal
15,054.00	7,953.95	7,143.20 50.48	Projection to TD

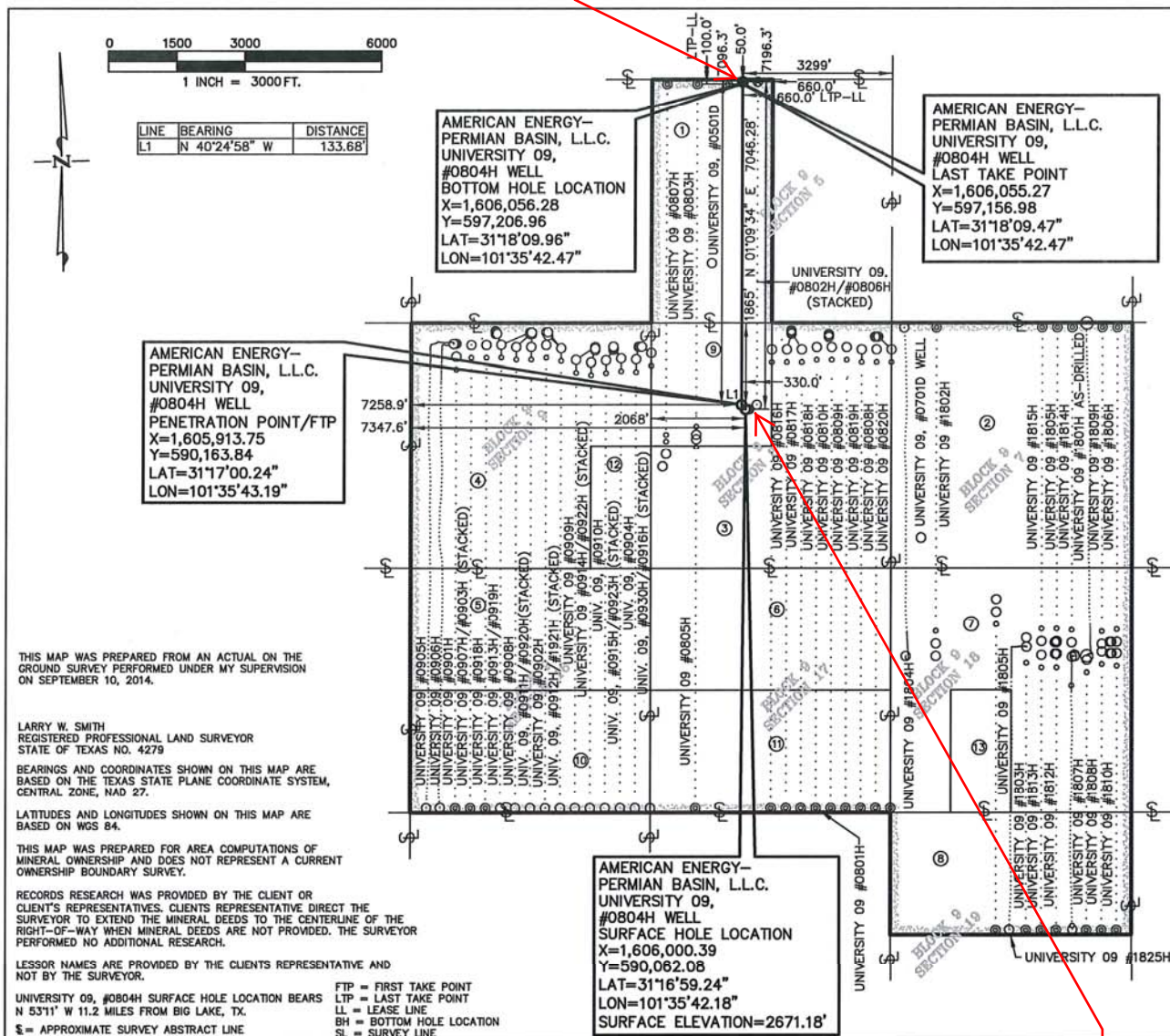
Checked By: _____

Approved By: _____

Date: _____

12/11/14

Horizontal Hole Projection to TD
15,054' MD & 7,953.95' TVD
7,143.2' N & 50.48' E
54' FNL & 665' FEL



TRACT	LEASE #	CALLED ACREAGE	MEASURED ACREAGE	MEASURED PCT.
1	UNIVERSITY LANDS 113331	322.90 ACRES	322.994 ACRES	7.142
2	UNIVERSITY LANDS 113333	645.80 ACRES	645.988 ACRES	14.285
3	UNIVERSITY LANDS 113334	484.35 ACRES	484.491 ACRES	10.713
4	UNIVERSITY LANDS 113335	565.075 ACRES	565.399 ACRES	12.503
5	UNIVERSITY LANDS 113337	322.90 ACRES	323.079 ACRES	7.144
6	UNIVERSITY LANDS 113338	322.90 ACRES	322.985 ACRES	7.142
7	UNIVERSITY LANDS 113339	565.075 ACRES	565.270 ACRES	12.500
8	UNIVERSITY LANDS 113340	322.90 ACRES	323.031 ACRES	7.143
9	UNIVERSITY LANDS 78414	161.45 ACRES	161.497 ACRES	3.571
10	UNIVERSITY LANDS 111020	322.90 ACRES	323.071 ACRES	7.144
11	UNIVERSITY LANDS 111021	322.90 ACRES	322.998 ACRES	7.142
12	UNIVERSITY LANDS 107981	80.725 ACRES	80.774 ACRES	1.786
13	UNIVERSITY LANDS 108484	80.725 ACRES	80.708 ACRES	1.785
TOTAL			4522.285 ACRES	100.000



FINAL
AMERICAN ENERGY-PERMIAN BASIN, L.L.C.
UNIVERSITY 09,
#0804H WELL
4522.285 ACRES
REAGAN COUNTY, TEXAS
PERCHERON
SURVEY, L.L.C.
15411 Vantage Pkwy West
Suite 205
Houston, Texas 77032
(281) 447-6230
Texas Surveying Firm License
No. 10020700
SEPTEMBER 24, 2014
PROJECT 140.0016.006

SHEET 1 OF 1

Pilot Hole Last Survey
12,056' MD & 12,047.05' TVD
185.49' S & 209.49' E
1,679.51' FNL & 2,277.49' FWL