

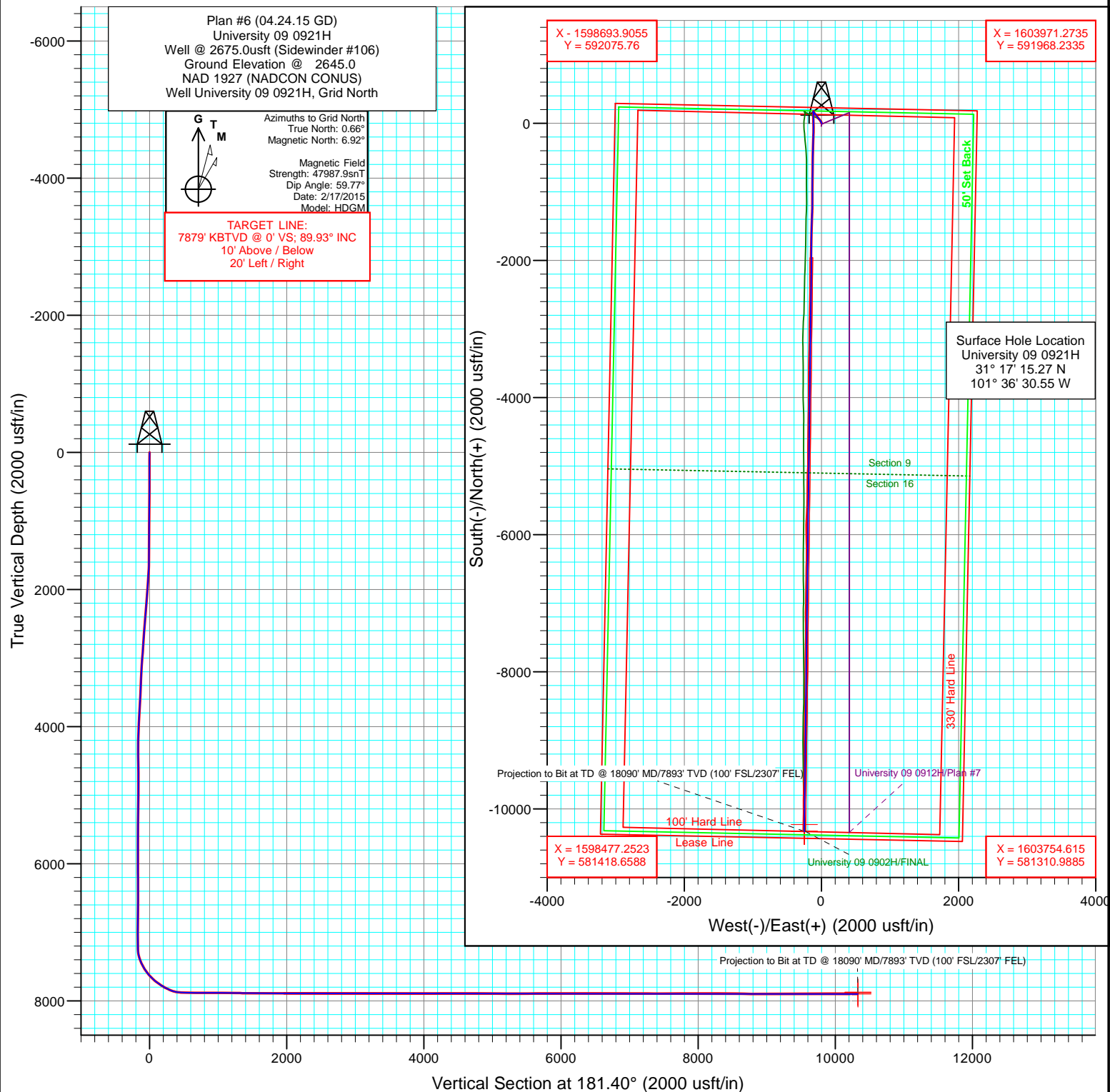


AMERICAN ENERGY
PARTNERS

Project: Reagan County, TX
Site: LIN (Wolfcamp) Field
Well: University 09 0921H
Wellbore: HZ
Design: Plan #6 (04.24.15 GD)



CATHEDRAL



Cathedral Energy Services

Survey Report

Company:	American Energy Partners - Permian Basin	Local Co-ordinate Reference:	Well University 09 0921H
Project:	Reagan County, TX	TVD Reference:	Well @ 2675.0usft (Sidewinder #106)
Site:	LIN (Wolfcamp) Field	MD Reference:	Well @ 2675.0usft (Sidewinder #106)
Well:	University 09 0921H	North Reference:	Grid
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users 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		LIN (Wolfcamp) Field			
Site Position:		Northing:	591,814.19 usft	Latitude:	31° 17' 15.56 N
From:	Lat/Long	Easting:	1,601,698.17 usft	Longitude:	101° 36' 30.56 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.66 °

Well	University 09 0921H					
Well Position	+N/-S	0.0 usft	Northing:	591,785.52 usft	Latitude:	31° 17' 15.27 N
	+E/-W	0.0 usft	Easting:	1,601,698.51 usft	Longitude:	101° 36' 30.55 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	2,645.0 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/17/2015	6.27	59.77	47,988

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	581.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	181.40	

Survey Program	Date	5/1/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
114.0	581.0	VES gyro surveys (VES gyro surveys)	NS-GYRO-MS	North sensing gyrocompassing m/s	
758.0	18,090.0	ISCWSA MWD (HZ)	ISCWSA MWD	MWD - ISCWSA	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
114.0	0.16	58.71	114.0	0.1	0.1	-0.1	0.14	0.14	
214.0	0.18	63.39	214.0	0.2	0.4	-0.2	0.02	0.02	
314.0	0.11	28.95	314.0	0.4	0.6	-0.4	0.11	-0.07	
414.0	0.17	26.54	414.0	0.6	0.7	-0.6	0.06	0.06	
514.0	0.35	48.16	514.0	0.9	1.0	-1.0	0.20	0.18	
581.0	0.72	25.35	581.0	1.5	1.3	-1.5	0.63	0.55	
758.0	0.30	356.00	758.0	2.9	1.8	-3.0	0.27	-0.24	
852.0	0.20	320.00	852.0	3.3	1.6	-3.3	0.19	-0.11	
946.0	0.30	7.00	946.0	3.7	1.6	-3.7	0.23	0.11	
1,041.0	0.40	2.20	1,041.0	4.2	1.6	-4.3	0.11	0.11	
1,135.0	0.30	356.30	1,135.0	4.8	1.6	-4.8	0.11	-0.11	

Cathedral Energy Services

Survey Report

Company:	American Energy Partners - Permian Basin	Local Co-ordinate Reference:	Well University 09 0921H
Project:	Reagan County, TX	TVD Reference:	Well @ 2675.0usft (Sidewinder #106)
Site:	LIN (Wolfcamp) Field	MD Reference:	Well @ 2675.0usft (Sidewinder #106)
Well:	University 09 0921H	North Reference:	Grid
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,229.0	0.40	344.30	1,229.0	5.4	1.5	-5.4	0.13	0.11	
1,324.0	0.50	337.50	1,324.0	6.1	1.3	-6.1	0.12	0.11	
1,418.0	0.50	345.80	1,418.0	6.9	1.0	-6.9	0.08	0.00	
1,512.0	0.50	345.00	1,512.0	7.6	0.8	-7.7	0.01	0.00	
1,606.0	0.70	356.20	1,606.0	8.6	0.6	-8.6	0.25	0.21	
1,701.0	2.20	341.80	1,700.9	10.9	0.0	-10.9	1.61	1.58	
1,795.0	3.80	339.80	1,794.8	15.6	-1.6	-15.5	1.71	1.70	
1,889.0	4.30	334.80	1,888.6	21.7	-4.2	-21.6	0.65	0.53	
1,984.0	5.10	325.90	1,983.2	28.4	-8.1	-28.2	1.14	0.84	
2,078.0	5.70	325.30	2,076.8	35.7	-13.1	-35.4	0.64	0.64	
2,172.0	6.20	326.70	2,170.3	43.8	-18.5	-43.3	0.55	0.53	
2,266.0	6.30	322.00	2,263.8	52.1	-24.5	-51.5	0.55	0.11	
2,361.0	5.80	313.90	2,358.2	59.5	-31.1	-58.7	1.04	-0.53	
2,455.0	5.50	317.40	2,451.8	66.1	-37.6	-65.2	0.49	-0.32	
2,549.0	5.50	324.00	2,545.3	73.1	-43.3	-72.0	0.67	0.00	
2,644.0	5.10	325.30	2,639.9	80.2	-48.4	-79.0	0.44	-0.42	
2,738.0	4.90	321.40	2,733.6	86.8	-53.3	-85.5	0.42	-0.21	
2,833.0	5.30	324.60	2,828.2	93.6	-58.3	-92.1	0.52	0.42	
2,927.0	5.80	327.80	2,921.8	101.1	-63.4	-99.5	0.63	0.53	
3,021.0	5.00	329.20	3,015.4	108.7	-68.0	-107.0	0.86	-0.85	
3,116.0	5.00	322.50	3,110.0	115.5	-72.7	-113.7	0.61	0.00	
3,210.0	4.10	314.30	3,203.7	121.1	-77.6	-119.2	1.18	-0.96	
3,305.0	3.40	312.00	3,298.5	125.3	-82.1	-123.3	0.75	-0.74	
3,399.0	3.20	315.00	3,392.3	129.1	-86.0	-126.9	0.28	-0.21	
3,493.0	3.40	319.80	3,486.2	133.1	-89.7	-130.8	0.36	0.21	
3,587.0	4.00	321.50	3,580.0	137.7	-93.5	-135.4	0.65	0.64	
3,682.0	4.00	324.20	3,674.8	143.0	-97.5	-140.6	0.20	0.00	
3,776.0	4.50	328.70	3,768.5	148.8	-101.3	-146.3	0.64	0.53	
3,871.0	2.90	326.50	3,863.3	154.0	-104.6	-151.4	1.69	-1.68	
3,965.0	2.80	321.10	3,957.2	157.8	-107.3	-155.1	0.30	-0.11	
4,059.0	3.00	323.00	4,051.1	161.5	-110.3	-158.8	0.24	0.21	
4,154.0	2.20	324.40	4,146.0	165.0	-112.8	-162.2	0.84	-0.84	
4,248.0	1.30	316.70	4,239.9	167.3	-114.6	-164.4	0.99	-0.96	
4,343.0	0.40	222.00	4,334.9	167.8	-115.6	-164.9	1.46	-0.95	
4,437.0	0.40	205.30	4,428.9	167.3	-115.9	-164.4	0.12	0.00	
4,532.0	0.40	221.00	4,523.9	166.7	-116.3	-163.8	0.12	0.00	
4,626.0	0.50	202.50	4,617.9	166.1	-116.7	-163.2	0.19	0.11	
4,721.0	0.60	212.90	4,712.9	165.3	-117.1	-162.4	0.15	0.11	
4,815.0	0.60	206.20	4,806.9	164.4	-117.6	-161.5	0.07	0.00	
4,909.0	0.20	12.60	4,900.9	164.1	-117.8	-161.2	0.85	-0.43	
5,004.0	0.60	5.60	4,995.9	164.8	-117.7	-161.9	0.42	0.42	
5,098.0	0.80	10.10	5,089.9	165.9	-117.5	-163.0	0.22	0.21	
5,193.0	0.90	14.00	5,184.9	167.3	-117.2	-164.4	0.12	0.11	
5,287.0	1.00	17.50	5,278.9	168.8	-116.8	-165.9	0.12	0.11	
5,381.0	0.70	23.10	5,372.8	170.1	-116.3	-167.2	0.33	-0.32	
5,476.0	0.10	323.00	5,467.8	170.7	-116.1	-167.8	0.69	-0.63	
5,570.0	0.40	324.30	5,561.8	171.1	-116.4	-168.2	0.32	0.32	
5,664.0	1.00	311.50	5,655.8	171.9	-117.2	-168.9	0.66	0.64	
5,759.0	0.60	312.90	5,750.8	172.8	-118.2	-169.8	0.42	-0.42	
5,853.0	0.30	136.70	5,844.8	172.9	-118.4	-170.0	0.96	-0.32	
5,947.0	0.50	131.40	5,938.8	172.5	-117.9	-169.5	0.22	0.21	
6,042.0	0.60	123.60	6,033.8	171.9	-117.2	-169.0	0.13	0.11	
6,136.0	0.60	122.00	6,127.8	171.4	-116.3	-168.5	0.02	0.00	

Cathedral Energy Services

Survey Report

Company:	American Energy Partners - Permian Basin	Local Co-ordinate Reference:	Well University 09 0921H
Project:	Reagan County, TX	TVD Reference:	Well @ 2675.0usft (Sidewinder #106)
Site:	LIN (Wolfcamp) Field	MD Reference:	Well @ 2675.0usft (Sidewinder #106)
Well:	University 09 0921H	North Reference:	Grid
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
6,230.0	0.80	130.00	6,221.8	170.7	-115.4	-167.8	0.24	0.21	
6,342.0	0.90	117.70	6,333.8	169.8	-114.0	-166.9	0.19	0.09	
6,437.0	0.60	80.80	6,428.8	169.5	-112.9	-166.7	0.58	-0.32	
6,531.0	0.60	52.80	6,522.8	169.9	-112.0	-167.1	0.31	0.00	
6,626.0	0.70	62.20	6,617.8	170.5	-111.1	-167.7	0.15	0.11	
6,720.0	0.70	2.90	6,711.8	171.3	-110.6	-168.5	0.74	0.00	
6,814.0	0.80	360.00	6,805.8	172.5	-110.5	-169.8	0.11	0.11	
6,909.0	1.90	293.40	6,900.7	173.8	-112.0	-171.0	1.84	1.16	
7,003.0	0.80	242.30	6,994.7	174.1	-114.0	-171.3	1.63	-1.17	
7,097.0	0.80	245.40	7,088.7	173.6	-115.2	-170.7	0.05	0.00	
7,192.0	0.70	247.90	7,183.7	173.1	-116.3	-170.2	0.11	-0.11	
7,223.0	0.60	237.00	7,214.7	172.9	-116.6	-170.0	0.51	-0.32	
7,255.0	2.70	197.00	7,246.7	172.1	-117.0	-169.2	7.10	6.56	
7,286.0	6.10	188.00	7,277.6	169.8	-117.4	-166.8	11.16	10.97	
7,318.0	9.50	183.30	7,309.3	165.4	-117.8	-162.5	10.80	10.62	
7,349.0	12.70	180.70	7,339.7	159.5	-118.0	-156.5	10.45	10.32	
7,380.0	16.30	180.20	7,369.7	151.7	-118.1	-148.8	11.62	11.61	
7,412.0	19.60	181.80	7,400.1	141.9	-118.2	-138.9	10.43	10.31	
7,443.0	22.30	180.90	7,429.1	130.8	-118.5	-127.8	8.77	8.71	
7,475.0	25.00	180.70	7,458.4	117.9	-118.7	-115.0	8.44	8.44	
7,506.0	27.80	179.60	7,486.2	104.2	-118.7	-101.2	9.17	9.03	
7,538.0	30.70	178.90	7,514.1	88.5	-118.5	-85.6	9.13	9.06	
7,569.0	33.20	179.20	7,540.4	72.1	-118.2	-69.2	8.08	8.06	
7,601.0	35.00	177.70	7,566.9	54.2	-117.7	-51.3	6.21	5.62	
7,632.0	37.20	176.40	7,591.9	36.0	-116.8	-33.1	7.51	7.10	
7,663.0	40.70	177.70	7,616.0	16.5	-115.8	-13.7	11.59	11.29	
7,695.0	43.90	177.90	7,639.7	-5.0	-115.0	7.8	10.01	10.00	
7,726.0	45.50	178.40	7,661.7	-26.8	-114.3	29.6	5.28	5.16	
7,758.0	45.80	178.80	7,684.1	-49.7	-113.7	52.5	1.30	0.94	
7,789.0	49.10	180.30	7,705.1	-72.5	-113.5	75.3	11.23	10.65	
7,821.0	52.70	181.10	7,725.2	-97.3	-113.8	100.1	11.42	11.25	
7,852.0	55.20	181.70	7,743.5	-122.4	-114.5	125.2	8.21	8.06	
7,884.0	56.70	182.20	7,761.4	-148.9	-115.4	151.7	4.86	4.69	
7,915.0	56.50	182.10	7,778.5	-174.8	-116.3	177.6	0.70	-0.65	
7,947.0	58.40	182.00	7,795.7	-201.7	-117.3	204.5	5.94	5.94	
7,978.0	62.40	181.80	7,811.0	-228.6	-118.2	231.5	12.92	12.90	
8,010.0	64.60	182.00	7,825.3	-257.3	-119.1	260.1	6.90	6.87	
8,041.0	66.00	182.00	7,838.2	-285.4	-120.1	288.3	4.52	4.52	
8,072.0	69.10	182.20	7,850.1	-314.0	-121.2	316.9	10.02	10.00	
8,104.0	73.30	182.10	7,860.4	-344.3	-122.3	347.2	13.13	13.12	
8,135.0	77.30	181.70	7,868.2	-374.3	-123.3	377.2	12.96	12.90	
8,167.0	81.70	181.20	7,874.1	-405.7	-124.1	408.6	13.84	13.75	
8,198.0	85.90	180.40	7,877.4	-436.5	-124.5	439.4	13.79	13.55	
8,230.0	87.50	180.50	7,879.2	-468.5	-124.8	471.4	5.01	5.00	
8,324.0	88.90	179.90	7,882.2	-562.4	-125.1	565.3	1.62	1.49	
8,419.0	89.90	181.20	7,883.2	-657.4	-126.0	660.3	1.73	1.05	
8,513.0	90.00	181.50	7,883.3	-751.4	-128.2	754.3	0.34	0.11	
8,607.0	89.40	180.70	7,883.8	-845.4	-130.0	848.3	1.06	-0.64	
8,702.0	89.60	180.20	7,884.6	-940.4	-130.8	943.3	0.57	0.21	
8,796.0	90.00	179.80	7,884.9	-1,034.4	-130.8	1,037.2	0.60	0.43	
8,891.0	89.20	180.10	7,885.6	-1,129.4	-130.7	1,132.2	0.90	-0.84	
8,985.0	89.90	180.50	7,886.3	-1,223.3	-131.2	1,226.2	0.86	0.74	
9,080.0	88.50	183.40	7,887.7	-1,318.3	-134.4	1,321.2	3.39	-1.47	

Cathedral Energy Services

Survey Report

Company:	American Energy Partners - Permian Basin	Local Co-ordinate Reference:	Well University 09 0921H
Project:	Reagan County, TX	TVD Reference:	Well @ 2675.0usft (Sidewinder #106)
Site:	LIN (Wolfcamp) Field	MD Reference:	Well @ 2675.0usft (Sidewinder #106)
Well:	University 09 0921H	North Reference:	Grid
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
9,174.0	90.50	182.90	7,888.5	-1,412.1	-139.6	1,415.1	2.19	2.13	
9,268.0	90.00	181.50	7,888.1	-1,506.0	-143.2	1,509.1	1.58	-0.53	
9,363.0	89.70	181.30	7,888.3	-1,601.0	-145.5	1,604.1	0.38	-0.32	
9,457.0	89.40	181.10	7,889.1	-1,695.0	-147.5	1,698.1	0.38	-0.32	
9,551.0	89.90	180.80	7,889.6	-1,789.0	-149.0	1,792.1	0.62	0.53	
9,646.0	89.40	180.30	7,890.2	-1,884.0	-150.0	1,887.1	0.74	-0.53	
9,740.0	89.70	180.80	7,890.9	-1,978.0	-150.9	1,981.1	0.62	0.32	
9,835.0	90.00	179.30	7,891.2	-2,073.0	-150.9	2,076.0	1.61	0.32	
9,929.0	89.10	180.00	7,891.9	-2,167.0	-150.4	2,170.0	1.21	-0.96	
10,023.0	89.90	181.70	7,892.8	-2,260.9	-151.8	2,264.0	2.00	0.85	
10,118.0	90.20	181.10	7,892.7	-2,355.9	-154.1	2,359.0	0.71	0.32	
10,212.0	89.80	181.10	7,892.7	-2,449.9	-155.9	2,453.0	0.43	-0.43	
10,307.0	90.00	180.60	7,892.8	-2,544.9	-157.3	2,548.0	0.57	0.21	
10,401.0	89.90	180.70	7,892.9	-2,638.9	-158.4	2,642.0	0.15	-0.11	
10,495.0	89.80	180.00	7,893.2	-2,732.9	-158.9	2,735.9	0.75	-0.11	
10,589.0	89.90	181.10	7,893.4	-2,826.9	-159.8	2,829.9	1.18	0.11	
10,684.0	90.20	181.50	7,893.3	-2,921.8	-162.0	2,924.9	0.53	0.32	
10,778.0	90.30	181.60	7,892.9	-3,015.8	-164.5	3,018.9	0.15	0.11	
10,872.0	89.60	181.60	7,893.0	-3,109.8	-167.2	3,112.9	0.74	-0.74	
10,967.0	90.10	181.50	7,893.2	-3,204.7	-169.7	3,207.9	0.54	0.53	
11,061.0	90.30	181.40	7,892.9	-3,298.7	-172.1	3,301.9	0.24	0.21	
11,156.0	89.90	178.80	7,892.8	-3,393.7	-172.3	3,396.9	2.77	-0.42	
11,250.0	89.70	181.10	7,893.1	-3,487.7	-172.2	3,490.9	2.46	-0.21	
11,345.0	90.30	181.50	7,893.1	-3,582.7	-174.3	3,585.8	0.76	0.63	
11,439.0	90.00	180.60	7,892.8	-3,676.6	-176.1	3,679.8	1.01	-0.32	
11,533.0	89.50	180.30	7,893.2	-3,770.6	-176.8	3,773.8	0.62	-0.53	
11,628.0	89.90	180.70	7,893.7	-3,865.6	-177.6	3,868.8	0.60	0.42	
11,722.0	90.00	180.00	7,893.8	-3,959.6	-178.2	3,962.8	0.75	0.11	
11,817.0	89.70	180.00	7,894.1	-4,054.6	-178.2	4,057.8	0.32	-0.32	
11,911.0	90.20	179.90	7,894.2	-4,148.6	-178.1	4,151.7	0.54	0.53	
12,005.0	90.10	180.70	7,893.9	-4,242.6	-178.6	4,245.7	0.86	-0.11	
12,100.0	90.00	180.30	7,893.8	-4,337.6	-179.5	4,340.7	0.43	-0.11	
12,194.0	90.10	179.20	7,893.7	-4,431.6	-179.0	4,434.7	1.18	0.11	
12,288.0	90.00	179.80	7,893.7	-4,525.6	-178.2	4,528.6	0.65	-0.11	
12,383.0	89.60	181.50	7,894.0	-4,620.6	-179.3	4,623.6	1.84	-0.42	
12,477.0	90.40	182.50	7,894.0	-4,714.5	-182.6	4,717.6	1.36	0.85	
12,572.0	90.20	181.50	7,893.5	-4,809.5	-185.9	4,812.6	1.07	-0.21	
12,666.0	89.30	180.70	7,893.9	-4,903.5	-187.7	4,906.6	1.28	-0.96	
12,760.0	89.40	181.80	7,895.0	-4,997.4	-189.7	5,000.6	1.17	0.11	
12,855.0	88.80	181.50	7,896.5	-5,092.4	-192.5	5,095.6	0.71	-0.63	
12,949.0	88.60	181.50	7,898.6	-5,186.3	-194.9	5,189.5	0.21	-0.21	
13,043.0	91.30	180.80	7,898.7	-5,280.3	-196.8	5,283.5	2.97	2.87	
13,138.0	91.30	181.00	7,896.5	-5,375.3	-198.3	5,378.5	0.21	0.00	
13,232.0	90.80	180.60	7,894.8	-5,469.2	-199.6	5,472.5	0.68	-0.53	
13,327.0	90.60	181.70	7,893.6	-5,564.2	-201.5	5,567.5	1.18	-0.21	
13,421.0	89.80	183.80	7,893.3	-5,658.1	-206.1	5,661.4	2.39	-0.85	
13,515.0	90.10	181.80	7,893.4	-5,752.0	-210.6	5,755.4	2.15	0.32	
13,610.0	90.60	182.40	7,892.8	-5,846.9	-214.1	5,850.4	0.82	0.53	
13,704.0	89.80	177.80	7,892.5	-5,940.9	-214.3	5,944.3	4.97	-0.85	
13,799.0	90.50	179.60	7,892.2	-6,035.9	-212.1	6,039.2	2.03	0.74	
13,893.0	90.90	178.60	7,891.1	-6,129.8	-210.7	6,133.2	1.15	0.43	
13,988.0	89.70	178.80	7,890.6	-6,224.8	-208.5	6,228.0	1.28	-1.26	
14,082.0	89.60	181.10	7,891.2	-6,318.8	-208.4	6,322.0	2.45	-0.11	

Cathedral Energy Services

Survey Report

Company:	American Energy Partners - Permian Basin	Local Co-ordinate Reference:	Well University 09 0921H
Project:	Reagan County, TX	TVD Reference:	Well @ 2675.0usft (Sidewinder #106)
Site:	LIN (Wolfcamp) Field	MD Reference:	Well @ 2675.0usft (Sidewinder #106)
Well:	University 09 0921H	North Reference:	Grid
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
14,176.0	89.80	181.50	7,891.7	-6,412.8	-210.6	6,416.0	0.48	0.21	
14,271.0	89.40	181.10	7,892.3	-6,507.7	-212.7	6,511.0	0.60	-0.42	
14,365.0	89.20	180.70	7,893.5	-6,601.7	-214.2	6,605.0	0.48	-0.21	
14,460.0	91.00	181.50	7,893.3	-6,696.7	-216.0	6,700.0	2.07	1.89	
14,554.0	89.20	178.70	7,893.1	-6,790.7	-216.2	6,793.9	3.54	-1.91	
14,648.0	90.00	180.70	7,893.8	-6,884.7	-215.7	6,887.9	2.29	0.85	
14,743.0	90.00	181.80	7,893.8	-6,979.7	-217.8	6,982.9	1.16	0.00	
14,837.0	90.10	182.50	7,893.7	-7,073.6	-221.3	7,076.9	0.75	0.11	
14,932.0	89.90	180.00	7,893.7	-7,168.6	-223.3	7,171.9	2.64	-0.21	
15,026.0	89.90	177.90	7,893.9	-7,262.5	-221.6	7,265.8	2.23	0.00	
15,120.0	89.30	177.70	7,894.5	-7,356.5	-218.0	7,359.6	0.67	-0.64	
15,215.0	90.80	179.00	7,894.5	-7,451.4	-215.3	7,454.5	2.09	1.58	
15,309.0	90.90	178.30	7,893.1	-7,545.4	-213.1	7,548.3	0.75	0.11	
15,403.0	89.50	177.40	7,892.7	-7,639.3	-209.5	7,642.2	1.77	-1.49	
15,498.0	89.70	179.30	7,893.4	-7,734.3	-206.8	7,737.0	2.01	0.21	
15,592.0	89.80	179.90	7,893.8	-7,828.3	-206.2	7,831.0	0.65	0.11	
15,687.0	90.70	182.30	7,893.4	-7,923.2	-208.0	7,926.0	2.70	0.95	
15,781.0	90.30	180.90	7,892.6	-8,017.2	-210.6	8,020.0	1.55	-0.43	
15,875.0	90.20	180.50	7,892.2	-8,111.2	-211.7	8,113.9	0.44	-0.11	
15,970.0	90.40	180.80	7,891.7	-8,206.2	-212.8	8,208.9	0.38	0.21	
16,064.0	89.10	180.20	7,892.1	-8,300.2	-213.6	8,302.9	1.52	-1.38	
16,158.0	88.80	182.10	7,893.8	-8,394.1	-215.5	8,396.9	2.05	-0.32	
16,246.0	89.50	182.50	7,895.1	-8,482.1	-219.1	8,484.9	0.92	0.80	
16,341.0	89.70	181.40	7,895.8	-8,577.0	-222.3	8,579.9	1.18	0.21	
16,435.0	89.00	180.70	7,896.8	-8,671.0	-224.0	8,673.9	1.05	-0.74	
16,530.0	88.70	180.00	7,898.7	-8,766.0	-224.6	8,768.8	0.80	-0.32	
16,624.0	90.50	181.60	7,899.4	-8,859.9	-225.9	8,862.8	2.56	1.91	
16,719.0	91.00	182.00	7,898.1	-8,954.9	-228.9	8,957.8	0.67	0.53	
16,813.0	89.10	180.00	7,898.1	-9,048.9	-230.5	9,051.8	2.93	-2.02	
16,907.0	90.80	181.90	7,898.1	-9,142.8	-232.1	9,145.8	2.71	1.81	
17,002.0	90.60	181.80	7,897.0	-9,237.8	-235.2	9,240.8	0.24	-0.21	
17,096.0	89.60	181.20	7,896.8	-9,331.7	-237.6	9,334.8	1.24	-1.06	
17,191.0	89.40	181.50	7,897.7	-9,426.7	-239.9	9,429.8	0.38	-0.21	
17,285.0	91.10	183.60	7,897.2	-9,520.6	-244.0	9,523.7	2.87	1.81	
17,379.0	89.90	181.90	7,896.4	-9,614.5	-248.5	9,617.7	2.21	-1.28	
17,474.0	89.50	180.30	7,896.9	-9,709.5	-250.4	9,712.7	1.74	-0.42	
17,568.0	90.90	181.40	7,896.6	-9,803.5	-251.8	9,806.7	1.89	1.49	
17,663.0	90.80	180.70	7,895.2	-9,898.4	-253.5	9,901.7	0.74	-0.11	
17,757.0	89.70	178.30	7,894.8	-9,992.4	-252.7	9,995.6	2.81	-1.17	
17,851.0	89.70	178.50	7,895.3	-10,086.4	-250.1	10,089.5	0.21	0.00	
17,946.0	91.30	180.80	7,894.4	-10,181.4	-249.5	10,184.4	2.95	1.68	
18,019.0	90.20	180.30	7,893.5	-10,254.4	-250.2	10,257.4	1.66	-1.51	
18,090.0	90.20	180.30	7,893.2	-10,325.4	-250.6	10,328.4	0.00	0.00	Projection to Bit at TD @ 18090' MD/7893' TVD (

Cathedral Energy Services

Survey Report

Company:	American Energy Partners - Permian Basin	Local Co-ordinate Reference:	Well University 09 0921H
Project:	Reagan County, TX	TVD Reference:	Well @ 2675.0usft (Sidewinder #106)
Site:	LIN (Wolfcamp) Field	MD Reference:	Well @ 2675.0usft (Sidewinder #106)
Well:	University 09 0921H	North Reference:	Grid
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
TD - University 09 0921H	90.07	180.72	7,901.6	-10,327.5	-249.8	581,458.02	1,601,448.67	31° 15' 33.03 N	101° 36' 32.06 W
- actual wellpath misses target center by 8.7usft at 18090.0usft MD (7893.2 TVD, -10325.4 N, -250.6 E)									
- Rectangle (sides W20.0 H40.0 D8,368.0)									
LTP - University 09 0921	0.00	360.00	7,874.5	-10,227.5	-249.8	581,558.06	1,601,448.67	31° 15' 34.02 N	101° 36' 32.08 W
- actual wellpath misses target center by 19.2usft at 17992.4usft MD (7893.7 TVD, -10227.7 N, -250.0 E)									
- Rectangle (sides W0.0 H0.0 D0.0)									
TD - University 09 0921H	0.00	360.00	7,874.6	-10,327.5	-249.8	581,458.02	1,601,448.67	31° 15' 33.03 N	101° 36' 32.06 W
- actual wellpath misses target center by 18.7usft at 18090.0usft MD (7893.2 TVD, -10325.4 N, -250.6 E)									
- Rectangle (sides W0.0 H0.0 D0.0)									
TD - University 09 0921H	0.00	360.00	7,891.6	-10,327.5	-249.8	581,458.02	1,601,448.67	31° 15' 33.03 N	101° 36' 32.06 W
- actual wellpath misses target center by 2.8usft at 18090.0usft MD (7893.2 TVD, -10325.4 N, -250.6 E)									
- Rectangle (sides W0.0 H0.0 D0.0)									
TD - University 09 0921H	0.00	360.00	7,874.6	-10,327.5	-249.8	581,458.02	1,601,448.67	31° 15' 33.03 N	101° 36' 32.06 W
- actual wellpath misses target center by 18.7usft at 18090.0usft MD (7893.2 TVD, -10325.4 N, -250.6 E)									
- Rectangle (sides W0.0 H0.0 D0.0)									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
18,090.0	7,893.2	-10,325.4	-250.6	Projection to Bit at TD @ 18090' MD/7893' TVD (100' FSL/2307' FEL)

Checked By: _____ Approved By: _____ Date: _____