



QEP Resources

Andrews Co., TX

UL 1125

W11 15SB

OH

Design: OH

TRRC

27 January, 2020



Company:	QEP Resources	Local Co-ordinate Reference:	Well W11 15SB
Project:	Andrews Co., TX	TVD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Site:	UL 1125	MD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Well:	W11 15SB	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Andrews Co., TX		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas North Central 4202		

Site	UL 1125		
Site Position:		Northing:	294,034.91 usft
From:	Map	Easting:	544,650.87 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32.385083
		Longitude:	-102.216004
		Grid Convergence:	-2.57 °

Well		W11 15SB				
Well Position	+N/-S	0.00 usft	Northing:	293,783.09 usft	Latitude:	32.384251
	+E/-W	0.00 usft	Easting:	543,513.42 usft	Longitude:	-102.219648
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	2,948.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/15/19	6.13	60.08	47,710.30000000

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	346.50

Survey Program	Date	01/27/20		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
147.00	19,678.00	MWD Survey (OH)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.00	0.10	88.32	147.00	0.00	0.13	0.07	-0.03	0.13	88.32
First MWD Survey									
242.00	0.22	149.12	242.00	-0.15	0.30	0.20	-0.22	0.34	116.26
335.00	0.14	174.44	335.00	-0.42	0.41	0.12	-0.50	0.58	135.65
428.00	0.19	152.08	428.00	-0.67	0.49	0.09	-0.76	0.83	143.63
520.00	0.29	138.10	520.00	-0.97	0.72	0.13	-1.11	1.21	143.63
612.00	0.70	232.03	612.00	-1.49	0.43	0.84	-1.55	1.55	163.94
704.00	1.48	188.33	703.98	-3.01	-0.19	1.18	-2.89	3.02	183.52
796.00	2.02	198.59	795.94	-5.73	-0.87	0.68	-5.36	5.79	188.68
888.00	3.19	200.29	887.84	-9.66	-2.28	1.27	-8.87	9.93	193.27
981.00	3.47	195.62	980.68	-14.80	-3.93	0.42	-13.48	15.32	194.88
1,073.00	3.27	201.77	1,072.52	-19.92	-5.66	0.45	-18.05	20.71	195.85
1,167.00	2.48	213.67	1,166.41	-24.10	-7.78	1.05	-21.62	25.33	197.89
1,262.00	2.71	212.03	1,261.31	-27.72	-10.11	0.25	-24.59	29.50	200.04
1,356.00	3.85	202.72	1,355.15	-32.51	-12.51	1.33	-28.69	34.84	201.04
1,450.00	3.95	197.20	1,448.94	-38.52	-14.68	0.41	-34.02	41.22	200.87
1,545.00	3.43	192.51	1,543.74	-44.42	-16.27	0.63	-39.39	47.30	200.11
1,639.00	3.03	196.10	1,637.59	-49.55	-17.56	0.48	-44.08	52.57	199.52
1,734.00	2.38	186.69	1,732.48	-53.92	-18.49	0.83	-48.11	57.00	198.93
1,790.00	2.36	184.21	1,788.44	-56.22	-18.71	0.19	-50.30	59.26	198.41
1,885.00	3.11	192.93	1,883.33	-60.69	-19.43	0.90	-54.47	63.72	197.75
1,930.00	3.06	190.11	1,928.26	-63.06	-19.91	0.36	-56.67	66.13	197.53
2,025.00	2.47	193.43	2,023.15	-67.55	-20.84	0.64	-60.82	70.69	197.14
2,119.00	2.16	195.49	2,117.07	-71.22	-21.78	0.34	-64.17	74.48	197.00
2,214.00	2.49	214.38	2,212.00	-74.65	-23.42	0.87	-67.12	78.24	197.42
2,308.00	2.84	218.71	2,305.90	-78.15	-26.03	0.43	-69.92	82.38	198.42

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Site:	UL 1125	MD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Well:	W11 15SB	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	
2,403.00	3.15	221.52	2,400.77	-81.95	-29.23	0.36	-72.86	87.00	199.63	
2,497.00	3.85	217.55	2,494.59	-86.38	-32.87	0.79	-76.32	92.42	200.83	
2,592.00	4.23	216.72	2,589.35	-91.72	-36.91	0.40	-80.57	98.87	201.92	
2,687.00	4.16	216.14	2,684.10	-97.31	-41.03	0.09	-85.04	105.61	202.86	
2,781.00	4.19	205.57	2,777.85	-103.16	-44.53	0.82	-89.92	112.36	203.35	
2,876.00	4.01	202.58	2,872.61	-109.36	-47.30	0.29	-95.29	119.15	203.39	
2,971.00	3.14	199.83	2,967.42	-114.87	-49.46	0.93	-100.15	125.07	203.29	
3,065.00	3.31	199.63	3,061.27	-119.85	-51.24	0.18	-104.58	130.35	203.15	
3,160.00	3.40	196.29	3,156.11	-125.14	-52.96	0.23	-109.32	135.88	202.94	
3,255.00	2.50	190.09	3,250.98	-129.88	-54.11	1.00	-113.66	140.70	202.62	
3,349.00	2.47	186.99	3,344.90	-133.91	-54.71	0.15	-117.44	144.66	202.22	
3,444.00	2.59	183.26	3,439.80	-138.09	-55.09	0.21	-121.41	148.67	201.75	
3,539.00	2.80	183.78	3,534.70	-142.54	-55.36	0.22	-125.68	152.92	201.23	
3,633.00	2.55	193.13	3,628.60	-146.87	-55.99	0.53	-129.74	157.18	200.87	
3,728.00	2.68	196.39	3,723.50	-151.06	-57.09	0.21	-133.56	161.49	200.70	
3,822.00	2.43	181.34	3,817.40	-155.16	-57.76	0.76	-137.39	165.56	200.42	
3,917.00	2.01	179.10	3,912.33	-158.84	-57.78	0.45	-140.96	169.02	199.99	
4,012.00	2.48	181.18	4,007.26	-162.56	-57.80	0.50	-144.58	172.53	199.57	
4,106.00	2.68	184.03	4,101.16	-166.79	-57.99	0.25	-148.64	176.58	199.17	
4,201.00	2.63	187.09	4,196.06	-171.16	-58.42	0.16	-152.80	180.86	198.84	
4,296.00	2.57	184.98	4,290.97	-175.45	-58.87	0.12	-156.86	185.06	198.55	
4,391.00	2.94	194.58	4,385.86	-179.93	-59.67	0.62	-161.03	189.57	198.35	
4,486.00	2.78	196.37	4,480.74	-184.50	-60.93	0.19	-165.18	194.30	198.28	
4,580.00	3.02	207.18	4,574.62	-188.89	-62.71	0.63	-169.03	199.02	198.37	
4,675.00	3.06	209.59	4,669.48	-193.32	-65.10	0.14	-172.78	203.99	198.61	
4,770.00	2.76	213.45	4,764.36	-197.43	-67.62	0.38	-176.19	208.69	198.91	
4,864.00	2.57	216.56	4,858.26	-201.01	-70.12	0.25	-179.09	212.89	199.23	

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Well:	W11 15SB	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	
4,958.00	2.66	214.63	4,952.16	-204.50	-72.61	0.13	-181.90	217.01	199.55	
5,053.00	2.63	213.32	5,047.06	-208.14	-75.06	0.07	-184.86	221.26	199.83	
5,147.00	3.00	210.08	5,140.95	-212.07	-77.48	0.43	-188.12	225.78	200.07	
5,241.00	2.92	208.22	5,234.82	-216.30	-79.85	0.13	-191.69	230.57	200.26	
5,336.00	2.27	198.37	5,329.72	-220.22	-81.58	0.83	-195.09	234.85	200.33	
5,430.00	1.15	164.51	5,423.68	-222.90	-81.92	1.56	-197.62	237.47	200.18	
5,525.00	0.55	141.08	5,518.67	-224.17	-81.38	0.72	-198.98	238.49	199.95	
5,619.00	0.76	142.14	5,612.67	-225.01	-80.71	0.22	-199.96	239.05	199.73	
5,714.00	0.53	150.70	5,707.66	-225.90	-80.11	0.26	-200.95	239.68	199.53	
5,806.00	0.76	158.84	5,799.65	-226.84	-79.68	0.27	-201.97	240.42	199.35	
5,897.00	0.79	148.79	5,890.65	-227.93	-79.14	0.15	-203.16	241.28	199.15	
5,939.00	0.91	152.02	5,932.64	-228.48	-78.83	0.31	-203.76	241.69	199.04	
6,034.00	0.72	146.00	6,027.63	-229.64	-78.14	0.22	-205.05	242.57	198.79	
6,128.00	0.55	151.18	6,121.63	-230.52	-77.60	0.19	-206.04	243.23	198.60	
6,222.00	0.73	321.08	6,215.62	-230.45	-77.75	1.36	-205.93	243.22	198.64	
6,317.00	0.80	326.72	6,310.62	-229.43	-78.50	0.11	-204.76	242.48	198.89	
6,412.00	0.84	318.94	6,405.61	-228.35	-79.32	0.12	-203.52	241.73	199.16	
6,506.00	0.80	317.85	6,499.60	-227.34	-80.21	0.05	-202.33	241.08	199.43	
6,601.00	0.77	326.44	6,594.59	-226.32	-81.01	0.13	-201.15	240.38	199.69	
6,695.00	0.69	323.43	6,688.58	-225.34	-81.70	0.09	-200.04	239.69	199.93	
6,790.00	0.73	329.78	6,783.57	-224.35	-82.34	0.09	-198.93	238.99	200.15	
6,885.00	0.66	322.26	6,878.57	-223.40	-82.98	0.12	-197.85	238.31	200.38	
6,979.00	0.59	312.73	6,972.56	-222.64	-83.67	0.13	-196.96	237.84	200.60	
7,074.00	0.58	308.00	7,067.55	-222.01	-84.41	0.05	-196.18	237.52	200.82	
7,168.00	0.64	316.99	7,161.55	-221.34	-85.14	0.12	-195.35	237.15	201.04	
7,263.00	0.49	309.74	7,256.54	-220.69	-85.81	0.17	-194.56	236.79	201.25	
7,357.00	0.46	303.73	7,350.54	-220.22	-86.44	0.06	-193.96	236.58	201.43	

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Design:	OH	Database:	EDM 5000.1 Single User Db

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7,452.00	0.18	297.83	7,445.54	-219.94	-86.89	0.30	-193.58	236.48	201.56	
7,547.00	0.11	283.78	7,540.54	-219.85	-87.11	0.08	-193.44	236.48	201.61	
7,641.00	0.20	261.30	7,634.54	-219.85	-87.36	0.11	-193.39	236.57	201.67	
7,736.00	0.24	209.56	7,729.54	-220.05	-87.62	0.21	-193.52	236.85	201.71	
7,831.00	0.75	203.81	7,824.53	-220.79	-87.97	0.54	-194.16	237.67	201.72	
7,925.00	1.52	196.41	7,918.52	-222.55	-88.57	0.83	-195.73	239.53	201.70	
8,020.00	0.98	57.12	8,013.51	-223.32	-88.24	2.48	-196.55	240.12	201.56	
8,115.00	1.15	56.71	8,108.49	-222.36	-86.76	0.18	-195.96	238.68	201.32	
8,209.00	0.88	59.80	8,202.47	-221.48	-85.35	0.29	-195.43	237.35	201.08	
8,304.00	1.03	63.00	8,297.46	-220.72	-83.96	0.17	-195.02	236.15	200.83	
8,399.00	1.42	68.89	8,392.44	-219.91	-82.10	0.43	-194.67	234.74	200.47	
8,493.00	1.63	358.96	8,486.41	-218.15	-81.04	1.87	-193.21	232.72	200.38	
8,588.00	1.59	341.72	8,581.38	-215.55	-81.48	0.51	-190.57	230.44	200.71	
8,683.00	1.66	329.26	8,676.34	-213.12	-82.59	0.38	-187.95	228.56	201.18	
8,778.00	1.52	324.09	8,771.30	-210.91	-84.03	0.21	-185.47	227.04	201.72	
8,873.00	4.92	330.21	8,866.14	-206.36	-86.80	3.59	-180.39	223.87	202.81	
8,904.00	8.19	335.89	8,896.93	-203.19	-88.36	10.74	-176.94	221.57	203.50	
8,936.00	11.52	339.34	8,928.45	-198.11	-90.42	10.56	-171.53	217.77	204.53	
8,968.00	14.26	341.67	8,959.65	-191.38	-92.79	8.71	-164.43	212.69	205.87	
8,999.00	17.10	343.92	8,989.49	-183.38	-95.25	9.37	-156.07	206.64	207.45	
9,031.00	20.15	344.75	9,019.81	-173.54	-98.01	9.57	-145.86	199.30	209.46	
9,062.00	22.95	344.73	9,048.64	-162.55	-101.00	9.03	-134.48	191.38	211.85	
9,094.00	26.01	343.73	9,077.76	-149.79	-104.61	9.65	-121.23	182.71	214.93	
9,125.00	28.50	342.99	9,105.32	-136.20	-108.68	8.11	-107.06	174.24	218.59	
9,157.00	31.20	343.57	9,133.07	-120.94	-113.26	8.49	-91.16	165.69	223.12	
9,189.00	34.65	345.11	9,159.93	-104.20	-117.94	11.09	-73.78	157.38	228.54	
9,220.00	37.47	346.22	9,184.98	-86.52	-122.45	9.34	-55.54	149.93	234.76	

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Project: Andrews Co., TX
Site: UL 1125
Well: W11 15SB
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well W11 15SB
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MD Reference: RKB=21' @ 2969.00usft (Unit 408)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)
9,251.00	39.73	347.32	9,209.21	-67.69	-126.87	7.62	-36.20	143.80	241.92
9,283.00	42.91	347.40	9,233.24	-47.08	-131.50	9.94	-15.08	139.67	250.30
9,314.00	45.32	345.82	9,255.49	-26.09	-136.50	8.55	6.50	138.97	259.18
9,346.00	48.06	344.78	9,277.44	-3.57	-142.41	8.88	29.77	142.46	268.56
9,377.00	51.15	344.77	9,297.53	19.21	-148.61	9.97	53.37	149.85	277.36
9,409.00	54.59	344.52	9,316.84	43.81	-155.37	10.77	78.87	161.43	285.75
9,440.00	58.24	343.76	9,333.99	68.64	-162.43	11.95	104.66	176.34	292.91
9,472.00	61.76	343.77	9,349.99	95.25	-170.17	11.00	132.34	195.02	299.24
9,504.00	65.17	344.55	9,364.28	122.78	-177.98	10.88	160.94	216.23	304.60
9,535.00	68.65	344.88	9,376.44	150.29	-185.50	11.27	189.44	238.74	309.01
9,567.00	72.57	344.84	9,387.06	179.42	-193.38	12.25	219.61	263.80	312.86
9,598.00	76.68	345.53	9,395.28	208.31	-201.02	13.43	249.48	289.49	316.02
9,630.00	79.65	345.72	9,401.84	238.65	-208.80	9.30	280.80	317.09	318.82
9,661.00	82.13	345.95	9,406.75	268.32	-216.29	8.03	311.40	344.64	321.13
9,692.00	84.32	345.81	9,410.40	298.17	-223.80	7.08	342.18	372.82	323.11
9,724.00	86.60	345.15	9,412.94	329.05	-231.79	7.42	374.07	402.50	324.84
9,819.00	91.15	343.99	9,414.80	420.59	-257.06	4.94	468.97	492.92	328.57
9,919.00	88.46	342.55	9,415.14	516.34	-285.84	3.05	568.80	590.18	331.03
10,014.00	88.51	342.13	9,417.65	606.83	-314.65	0.45	663.52	683.56	332.59
10,109.00	87.92	344.26	9,420.61	697.72	-342.10	2.33	758.31	777.08	333.88
10,203.00	87.53	346.85	9,424.34	788.67	-365.53	2.78	852.21	869.26	335.13
10,298.00	89.72	347.60	9,426.62	881.29	-386.53	2.44	947.17	962.33	336.32
10,392.00	91.80	347.58	9,425.38	973.08	-406.73	2.21	1,041.14	1,054.66	337.32
10,487.00	90.22	347.82	9,423.70	1,065.88	-426.96	1.68	1,136.10	1,148.22	338.17
10,581.00	90.62	347.30	9,423.01	1,157.67	-447.21	0.70	1,230.08	1,241.05	338.88
10,675.00	91.32	346.76	9,421.42	1,249.26	-468.30	0.94	1,324.07	1,334.15	339.45
10,770.00	90.42	348.51	9,419.98	1,342.04	-488.64	2.07	1,419.03	1,428.23	339.99

Company:	QEP Resources	Local Co-ordinate Reference:	Well W11 15SB
Project:	Andrews Co., TX	TVD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Site:	UL 1125	MD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Well:	W11 15SB	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)
10,865.00	90.84	348.46	9,418.93	1,435.12	-507.61	0.45	1,513.97	1,522.25	340.52
10,959.00	91.68	348.16	9,416.87	1,527.15	-526.65	0.95	1,607.90	1,615.41	340.97
11,054.00	89.30	348.11	9,416.05	1,620.11	-546.18	2.51	1,702.85	1,709.70	341.37
11,148.00	89.69	348.98	9,416.88	1,712.23	-564.85	1.01	1,796.78	1,803.00	341.74
11,243.00	89.58	348.42	9,417.49	1,805.39	-583.46	0.60	1,891.71	1,897.33	342.09
11,338.00	90.11	348.32	9,417.75	1,898.44	-602.61	0.57	1,986.66	1,991.78	342.39
11,432.00	87.14	345.23	9,420.00	1,989.90	-624.10	4.56	2,080.61	2,085.47	342.59
11,526.00	87.33	347.50	9,424.54	2,081.14	-646.23	2.42	2,174.49	2,179.16	342.75
11,619.00	88.04	348.89	9,428.29	2,172.09	-665.24	1.68	2,267.38	2,271.68	342.97
11,713.00	89.13	348.44	9,430.61	2,264.23	-683.71	1.25	2,361.28	2,365.21	343.20
11,807.00	90.59	348.08	9,430.84	2,356.26	-702.84	1.60	2,455.23	2,458.85	343.39
11,901.00	88.71	347.59	9,431.42	2,448.14	-722.65	2.07	2,549.20	2,552.57	343.55
11,995.00	90.50	348.59	9,432.07	2,540.11	-742.04	2.18	2,643.16	2,646.28	343.72
12,088.00	91.99	348.76	9,430.05	2,631.28	-760.30	1.61	2,736.06	2,738.92	343.88
12,182.00	92.05	347.28	9,426.73	2,723.17	-779.80	1.57	2,829.97	2,832.62	344.02
12,276.00	90.20	346.51	9,424.89	2,814.70	-801.11	2.13	2,923.94	2,926.48	344.11
12,370.00	89.13	345.70	9,425.44	2,905.95	-823.68	1.43	3,017.94	3,020.43	344.17
12,464.00	89.19	345.43	9,426.81	2,996.97	-847.11	0.29	3,111.92	3,114.39	344.22
12,559.00	89.58	345.70	9,427.83	3,088.96	-870.79	0.50	3,206.90	3,209.36	344.26
12,654.00	91.91	347.78	9,426.60	3,181.41	-892.58	3.29	3,301.88	3,304.25	344.33
12,749.00	91.01	347.69	9,424.18	3,274.21	-912.75	0.95	3,396.82	3,399.06	344.42
12,844.00	89.52	347.06	9,423.74	3,366.91	-933.52	1.70	3,491.81	3,493.93	344.50
12,939.00	90.59	348.76	9,423.65	3,459.80	-953.41	2.11	3,586.77	3,588.76	344.59
13,033.00	89.58	349.06	9,423.51	3,552.04	-971.49	1.12	3,680.69	3,682.50	344.70
13,128.00	87.70	347.27	9,425.76	3,644.99	-990.97	2.73	3,775.61	3,777.30	344.79
13,223.00	87.25	347.25	9,429.95	3,737.56	-1,011.90	0.47	3,870.51	3,872.12	344.85
13,317.00	88.01	348.70	9,433.84	3,829.42	-1,031.46	1.74	3,964.40	3,965.90	344.92

Company:	QEP Resources	Local Co-ordinate Reference:	Well W11 15SB
Project:	Andrews Co., TX	TVD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Site:	UL 1125	MD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Well:	W11 15SB	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)
13,412.00	88.07	349.19	9,437.08	3,922.60	-1,049.67	0.52	4,059.26	4,060.61	345.02
13,506.00	90.62	350.68	9,438.16	4,015.13	-1,066.09	3.14	4,153.07	4,154.26	345.13
13,601.00	90.84	349.06	9,436.95	4,108.64	-1,082.80	1.72	4,247.90	4,248.93	345.24
13,695.00	88.79	347.18	9,437.25	4,200.62	-1,102.15	2.96	4,341.85	4,342.80	345.30
13,790.00	89.36	347.62	9,438.79	4,293.32	-1,122.87	0.76	4,436.82	4,437.73	345.34
13,884.00	88.60	347.85	9,440.46	4,385.16	-1,142.84	0.84	4,530.79	4,531.63	345.39
13,978.00	89.16	346.50	9,442.30	4,476.79	-1,163.70	1.55	4,624.76	4,625.57	345.43
14,073.00	90.53	347.03	9,442.55	4,569.27	-1,185.45	1.55	4,719.76	4,720.54	345.46
14,167.00	91.51	347.65	9,440.88	4,660.97	-1,206.05	1.23	4,813.73	4,814.47	345.49
14,261.00	88.09	345.98	9,441.21	4,752.47	-1,227.48	4.05	4,907.71	4,908.43	345.52
14,356.00	89.58	347.46	9,443.14	4,844.91	-1,249.30	2.21	5,002.68	5,003.38	345.54
14,450.00	91.09	347.95	9,442.59	4,936.75	-1,269.31	1.69	5,096.66	5,097.31	345.58
14,545.00	88.88	347.18	9,442.62	5,029.51	-1,289.77	2.46	5,191.64	5,192.25	345.62
14,639.00	88.49	347.26	9,444.77	5,121.16	-1,310.56	0.42	5,285.60	5,286.19	345.65
14,734.00	88.23	347.20	9,447.49	5,213.77	-1,331.55	0.28	5,380.56	5,381.12	345.67
14,829.00	90.73	347.82	9,448.35	5,306.51	-1,352.09	2.71	5,475.53	5,476.06	345.71
14,924.00	91.37	348.07	9,446.61	5,399.40	-1,371.93	0.72	5,570.48	5,570.97	345.74
15,019.00	90.22	348.04	9,445.29	5,492.33	-1,391.59	1.21	5,665.44	5,665.88	345.78
15,114.00	89.61	347.55	9,445.44	5,585.18	-1,411.67	0.82	5,760.41	5,760.82	345.82
15,209.00	90.14	348.22	9,445.64	5,678.07	-1,431.61	0.90	5,855.38	5,855.76	345.85
15,303.00	89.33	348.50	9,446.08	5,770.13	-1,450.57	0.91	5,949.33	5,949.67	345.89
15,398.00	89.08	346.86	9,447.40	5,862.93	-1,470.84	1.75	6,044.30	6,044.61	345.92
15,492.00	88.85	347.08	9,449.09	5,954.50	-1,492.03	0.34	6,138.28	6,138.58	345.93
15,587.00	90.59	347.20	9,449.56	6,047.11	-1,513.18	1.84	6,233.27	6,233.56	345.95
15,681.00	89.38	347.00	9,449.58	6,138.73	-1,534.16	1.30	6,327.26	6,327.54	345.97
15,776.00	93.03	348.17	9,447.59	6,231.47	-1,554.58	4.03	6,422.21	6,422.46	345.99
15,870.00	90.84	346.06	9,444.41	6,323.04	-1,575.52	3.23	6,516.14	6,516.38	346.01

Company:	QEP Resources	Local Co-ordinate Reference:	Well W11 15SB
Project:	Andrews Co., TX	TVD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Site:	UL 1125	MD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Well:	W11 15SB	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)
15,964.00	91.23	346.23	9,442.71	6,414.29	-1,598.03	0.45	6,610.12	6,610.36	346.01
16,059.00	86.38	346.19	9,444.69	6,506.51	-1,620.66	5.11	6,705.07	6,705.31	346.01
16,153.00	88.68	347.18	9,448.74	6,597.89	-1,642.29	2.66	6,798.97	6,799.21	346.02
16,248.00	91.32	348.31	9,448.74	6,690.71	-1,662.45	3.02	6,893.94	6,894.16	346.05
16,342.00	90.48	346.98	9,447.27	6,782.52	-1,682.56	1.67	6,987.91	6,988.11	346.07
16,436.00	90.22	348.76	9,446.69	6,874.42	-1,702.31	1.91	7,081.88	7,082.06	346.09
16,531.00	90.73	348.62	9,445.91	6,967.57	-1,720.94	0.56	7,176.80	7,176.96	346.13
16,625.00	90.76	348.23	9,444.68	7,059.65	-1,739.80	0.42	7,270.74	7,270.87	346.16
16,720.00	89.58	346.53	9,444.40	7,152.35	-1,760.56	2.18	7,365.73	7,365.85	346.17
16,814.00	89.30	346.02	9,445.32	7,243.66	-1,782.86	0.62	7,459.72	7,459.84	346.17
16,908.00	90.84	347.01	9,445.21	7,335.07	-1,804.78	1.95	7,553.72	7,553.84	346.18
17,003.00	89.33	347.43	9,445.07	7,427.71	-1,825.79	1.65	7,648.70	7,648.82	346.19
17,097.00	88.93	347.43	9,446.49	7,519.45	-1,846.25	0.43	7,742.68	7,742.78	346.21
17,192.00	88.82	347.52	9,448.36	7,612.17	-1,866.85	0.15	7,837.65	7,837.74	346.22
17,286.00	90.34	347.79	9,449.05	7,703.99	-1,886.94	1.64	7,931.62	7,931.71	346.24
17,381.00	90.34	348.33	9,448.48	7,796.93	-1,906.60	0.57	8,026.59	8,026.66	346.26
17,476.00	88.54	348.18	9,449.41	7,889.93	-1,925.93	1.90	8,121.53	8,121.59	346.28
17,570.00	88.15	348.41	9,452.13	7,981.94	-1,944.99	0.48	8,215.45	8,215.50	346.31
17,664.00	92.07	348.58	9,451.95	8,074.03	-1,963.74	4.17	8,309.37	8,309.41	346.33
17,759.00	91.23	348.12	9,449.21	8,167.04	-1,982.91	1.01	8,404.28	8,404.31	346.35
17,853.00	91.60	347.94	9,446.89	8,258.96	-2,002.40	0.44	8,498.22	8,498.24	346.37
17,948.00	89.72	347.39	9,445.79	8,351.76	-2,022.70	2.06	8,593.19	8,593.21	346.39
18,043.00	88.26	346.83	9,447.47	8,444.35	-2,043.89	1.65	8,688.17	8,688.18	346.39
18,137.00	87.62	347.26	9,450.85	8,535.90	-2,064.95	0.82	8,782.10	8,782.11	346.40
18,232.00	87.20	347.11	9,455.14	8,628.44	-2,085.99	0.47	8,877.00	8,877.01	346.41
18,327.00	88.43	346.51	9,458.76	8,720.86	-2,107.66	1.44	8,971.92	8,971.94	346.41
18,422.00	88.54	345.58	9,461.27	8,813.02	-2,130.56	0.99	9,066.89	9,066.90	346.41

Company:	QEP Resources	Local Co-ordinate Reference:	Well W11 15SB
Project:	Andrews Co., TX	TVD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Site:	UL 1125	MD Reference:	RKB=21' @ 2969.00usft (Unit 408)
Well:	W11 15SB	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	
18,517.00	90.03	345.69	9,462.46	8,905.04	-2,154.12	1.57	9,161.87	9,161.88	346.40	
18,612.00	90.08	344.79	9,462.37	8,996.91	-2,178.33	0.95	9,256.84	9,256.86	346.39	
18,706.00	90.06	343.87	9,462.25	9,087.41	-2,203.72	0.98	9,350.77	9,350.80	346.37	
18,801.00	90.25	346.13	9,462.00	9,179.17	-2,228.30	2.39	9,445.74	9,445.77	346.36	
18,896.00	91.21	346.56	9,460.79	9,271.48	-2,250.73	1.11	9,540.73	9,540.76	346.35	
18,991.00	90.22	345.56	9,459.60	9,363.67	-2,273.61	1.48	9,635.71	9,635.75	346.35	
19,085.00	91.40	346.01	9,458.27	9,454.78	-2,296.69	1.34	9,729.69	9,729.73	346.35	
19,180.00	90.48	344.32	9,456.71	9,546.60	-2,321.01	2.03	9,824.65	9,824.69	346.34	
19,274.00	89.41	346.04	9,456.80	9,637.46	-2,345.05	2.15	9,918.62	9,918.67	346.32	
19,369.00	89.52	346.45	9,457.69	9,729.74	-2,367.64	0.45	10,013.62	10,013.66	346.32	
19,463.00	88.91	345.19	9,458.98	9,820.86	-2,390.66	1.49	10,107.60	10,107.65	346.32	
19,558.00	88.51	344.79	9,461.12	9,912.60	-2,415.26	0.60	10,202.54	10,202.60	346.31	
19,622.00	88.54	344.96	9,462.77	9,974.36	-2,431.96	0.27	10,266.49	10,266.56	346.30	
Last MWD Survey @ 19622'										
19,678.00	88.54	344.96	9,464.19	10,028.42	-2,446.48	0.00	10,322.46	10,322.53	346.29	
PTB @ 19678'										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
147.00	147.00	0.00	0.13	First MWD Survey	
19,622.00	9,462.77	9,974.36	-2,431.96	Last MWD Survey @ 19622'	
19,678.00	9,464.19	10,028.42	-2,446.48	PTB @ 19678'	

Checked By: _____ Approved By: _____ Date: _____



ALTITUDE ENERGY PARTNERS LLC. SURVEY DATA CERTIFICATION

ALTITUDE JOB NUMBER				OPERATOR		
WELL NAME				COUNTY & STATE		
API WELL NUMBER					PROPOSED DIRECTION	
Latitude			Longitude			

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH		SURVEY INSTRUMENT TYPE MWD	
				MAGNETIC DECLINATION OR TOTAL GRID		
LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH	TOTAL CORRECTION USED		
				DECLINATION OR GRID		
PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH			

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Altitude Energy Partners LLC. I am authorized and qualified to review the data, calculations and this report, and that the report represents a true and correct Directional Survey of this well based on the original data corrected to True North and obtained at the well site. Wellbore coordinates are calculated using Minimum curvature or other method.

PRINT MWD NAME ABOVE

SIGN MWD NAME ABOVE

TODAY'S DATE