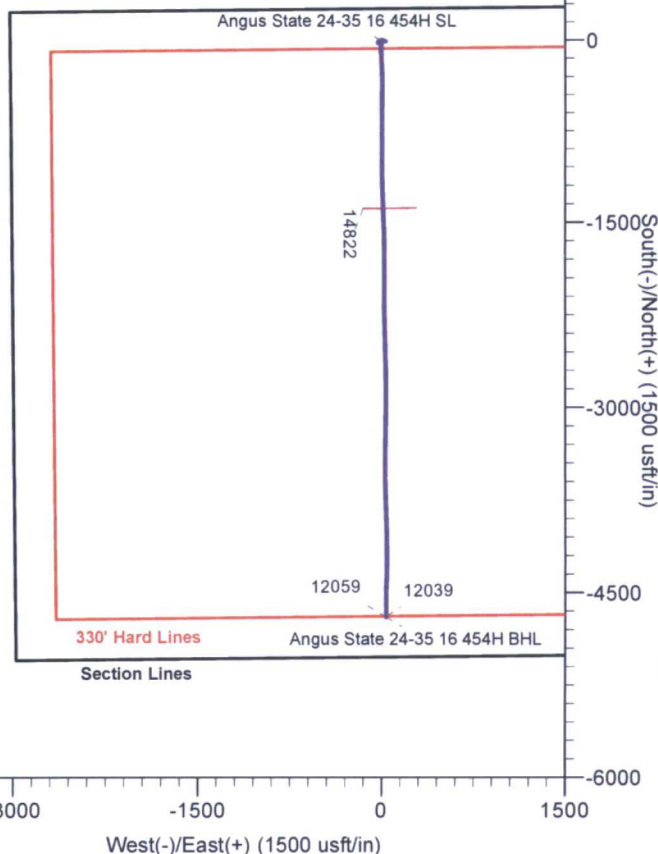
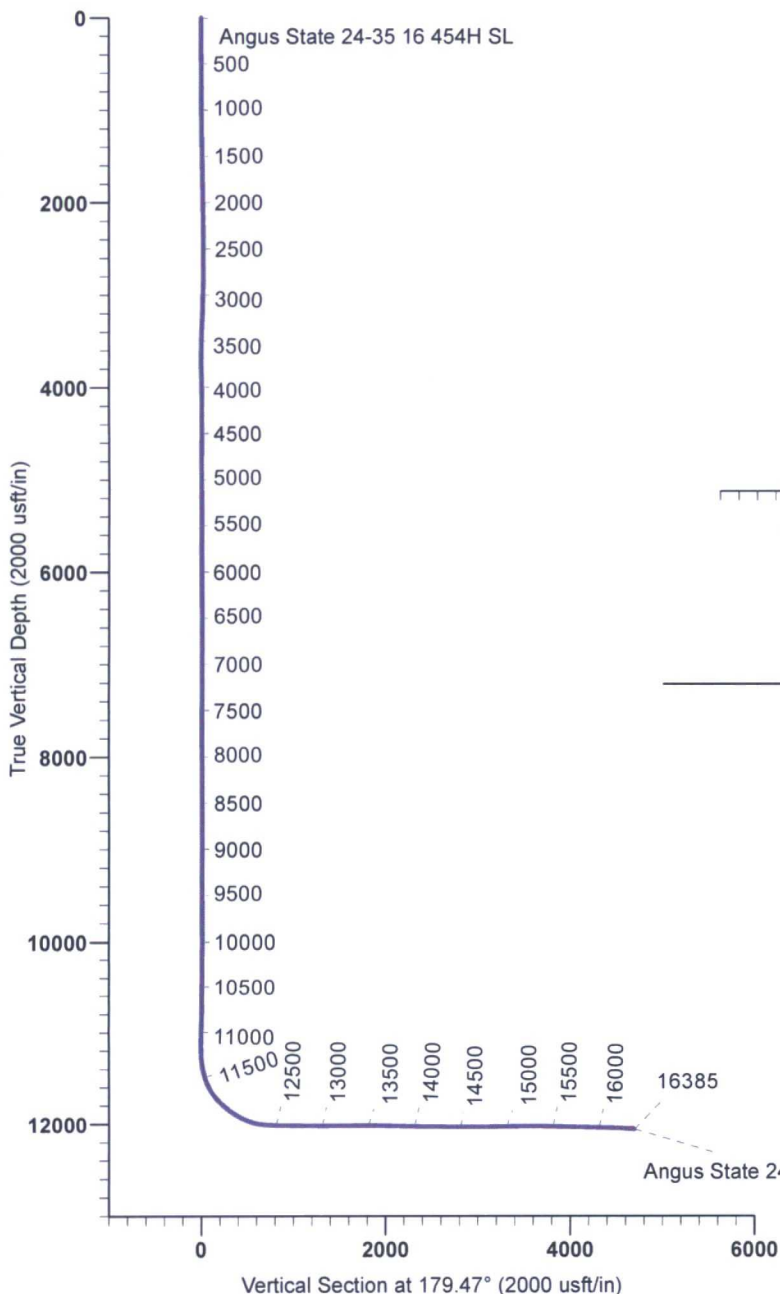


70-025-43722

FINAL SURVEY

ENERGEN RESOURCES CORPORATION

Project: Lea County, NM
 Site: Angus State 24-35 16 454H
 Well: 454H
 Wellbore: Lateral
 Design: Lateral



330' Hardline Crossing

~11579' MD @ Heel

~16377' MD @ Toe

LEGEND

- 454H, Lateral, Plan #4 V0
- Aztec State 1 (VERTICAL), OH, OH V0
- Lateral

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Angus State 24-35 16 454H SL	0.00	0.00	0.00	446524.26	797673.36	Point
Angus State 24-35 16 454H BHL	12059.24	-4699.46	40.89	441824.79	797714.26	Point

Design: Lateral (454H/Lateral)

Created By: Guthrey Johnson
 Date: 9/19, July 12 2017

PREMIER DIRECTIONAL DRILLING
 363 N Sam Houston Pkwy E, Ste 300 Houston, TX 77060
 Phone: 281-673-4000



Survey Report

Company:	ENERGEN RESOURCES CORPORATION	Local Co-ordinate Reference:	Well 454H - Slot 454H
Project:	Lea County, NM	TVD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Site:	Angus State 24-35 16 454H	MD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Well:	454H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.1.13 MultiUser

Project	Lea County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site		Angus State 24-35 16 454H			
Site Position:		Northing:	446,524.26 usft	Latitude:	32° 13' 26.21 N
From:	Map	Easting:	797,673.36 usft	Longitude:	103° 22' 14.71 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.51 °

Well	454H - Slot 454H					
Well Position	+N/-S	0.00 usft	Northing:	446,524.26 usft	Latitude:	32° 13' 26.21 N
	+E/-W	0.00 usft	Easting:	797,673.36 usft	Longitude:	103° 22' 14.71 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,387.00 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/10/2017	6.87	59.95	48,091

Design	Lateral				
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	179.47	

Survey Program	Date	7/12/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
165.00	16,320.00	Survey #1 (Lateral)	MWD+HRGM	OWSG MWD + HRGM	
16,385.00	16,385.00	Survey #2 (Lateral)	MWD+HRGM	OWSG MWD + HRGM	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
165.00	0.32	228.90	165.00	-0.30	-0.35	0.30	0.19	0.19	0.00	
347.00	0.69	245.54	346.99	-1.09	-1.73	1.07	0.22	0.20	9.14	
530.00	1.07	238.44	529.97	-2.44	-4.19	2.40	0.22	0.21	-3.88	
713.00	0.90	240.84	712.94	-4.04	-6.90	3.97	0.10	-0.09	1.31	
749.00	0.77	236.21	748.94	-4.31	-7.35	4.24	0.41	-0.36	-12.86	
900.00	0.42	254.52	899.93	-5.02	-8.72	4.94	0.26	-0.23	12.13	
1,083.00	1.07	252.86	1,082.91	-5.70	-11.00	5.60	0.36	0.36	-0.91	
1,272.00	1.34	216.81	1,271.88	-7.99	-14.01	7.86	0.42	0.14	-19.07	
1,461.00	1.24	218.36	1,460.83	-11.37	-16.61	11.21	0.06	-0.05	0.82	

Survey Report

Company:	ENERGEN RESOURCES CORPORATION	Local Co-ordinate Reference:	Well 454H - Slot 454H
Project:	Lea County, NM	TVD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Site:	Angus State 24-35 16 454H	MD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Well:	454H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.1.13 MultiUser

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,651.00	0.96	205.96	1,650.79	-14.41	-18.58	14.24	0.19	-0.15	-6.53
1,841.00	1.03	215.92	1,840.76	-17.22	-20.28	17.03	0.10	0.04	5.24
2,030.00	0.83	211.68	2,029.74	-19.76	-21.99	19.56	0.11	-0.11	-2.24
2,221.00	0.56	186.43	2,220.72	-21.87	-22.82	21.66	0.21	-0.14	-13.22
2,410.00	0.67	186.32	2,409.71	-23.88	-23.05	23.67	0.06	0.06	-0.06
2,599.00	0.27	175.97	2,598.71	-25.43	-23.14	25.21	0.22	-0.21	-5.48
2,788.00	0.76	56.09	2,787.70	-25.17	-22.07	24.97	0.49	0.26	-63.43
2,978.00	2.02	34.85	2,977.64	-21.72	-19.11	21.54	0.71	0.66	-11.18
3,168.00	2.52	51.05	3,167.50	-16.35	-13.95	16.22	0.43	0.26	8.53
3,357.00	3.51	46.35	3,356.23	-9.74	-6.53	9.68	0.54	0.52	-2.49
3,546.00	3.58	63.99	3,544.88	-3.16	2.96	3.19	0.58	0.04	9.33
3,737.00	4.31	97.32	3,735.45	-1.46	15.44	1.60	1.24	0.38	17.45
3,926.00	3.83	135.88	3,924.00	-6.90	26.88	7.14	1.44	-0.25	20.40
4,116.00	3.17	272.82	4,113.85	-11.20	26.05	11.44	3.43	-0.35	72.07
4,307.00	1.89	269.21	4,304.66	-10.98	17.63	11.14	0.67	-0.67	-1.89
4,497.00	0.16	77.54	4,494.63	-10.97	14.75	11.10	1.08	-0.91	88.59
4,686.00	2.65	64.22	4,683.56	-9.01	18.95	9.18	1.32	1.32	-7.05
4,875.00	1.59	81.70	4,872.43	-6.73	25.48	6.97	0.65	-0.56	9.25
5,065.00	1.22	115.34	5,062.37	-7.22	29.91	7.49	0.47	-0.19	17.71
5,151.00	1.35	110.50	5,148.35	-7.96	31.69	8.26	0.20	0.15	-5.63
5,321.00	1.34	104.77	5,318.30	-9.17	35.49	9.50	0.08	-0.01	-3.37
5,510.00	0.32	19.58	5,507.29	-9.24	37.80	9.59	0.71	-0.54	-45.07
5,699.00	1.87	267.85	5,696.25	-8.85	34.90	9.18	1.06	0.82	-59.12
5,888.00	1.75	269.55	5,885.16	-8.99	28.93	9.26	0.07	-0.06	0.90
6,078.00	1.77	267.04	6,075.07	-9.17	23.10	9.38	0.04	0.01	-1.32
6,267.00	1.62	264.35	6,263.99	-9.58	17.52	9.74	0.09	-0.08	-1.42
6,455.00	1.73	265.99	6,451.91	-10.04	12.05	10.15	0.06	0.06	0.87
6,644.00	1.55	260.28	6,640.83	-10.67	6.68	10.73	0.13	-0.10	-3.02
6,833.00	1.59	255.57	6,829.76	-11.76	1.62	11.77	0.07	0.02	-2.49
7,022.00	1.58	255.79	7,018.69	-13.05	-3.44	13.02	0.01	-0.01	0.12
7,212.00	1.54	328.44	7,208.63	-11.52	-7.32	11.45	0.97	-0.02	38.24
7,402.00	0.85	91.00	7,398.61	-9.37	-7.25	9.30	1.12	-0.36	64.51
7,593.00	0.95	88.82	7,589.59	-9.36	-4.25	9.32	0.06	0.05	-1.14
7,782.00	0.72	102.02	7,778.57	-9.57	-1.52	9.56	0.16	-0.12	6.98
7,971.00	0.83	102.82	7,967.55	-10.12	0.98	10.13	0.06	0.06	0.42
8,161.00	0.97	110.65	8,157.52	-11.00	3.83	11.03	0.10	0.07	4.12
8,350.00	1.08	91.24	8,346.50	-11.60	7.10	11.67	0.19	0.06	-10.27
8,540.00	1.33	85.03	8,536.45	-11.45	11.09	11.55	0.15	0.13	-3.27
8,730.00	0.18	72.05	8,726.43	-11.16	13.57	11.29	0.61	-0.61	-6.83
8,921.00	0.26	68.72	8,917.43	-10.92	14.26	11.05	0.04	0.04	-1.74
9,111.00	0.73	86.20	9,107.42	-10.68	15.87	10.82	0.26	0.25	9.20
9,301.00	0.89	91.43	9,297.41	-10.63	18.55	10.81	0.09	0.08	2.75
9,491.00	1.32	100.85	9,487.37	-11.08	22.18	11.29	0.24	0.23	4.96

Survey Report

Company:	ENERGEN RESOURCES CORPORATION	Local Co-ordinate Reference:	Well 454H - Slot 454H
Project:	Lea County, NM	TVD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Site:	Angus State 24-35 16 454H	MD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Well:	454H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.1.13 MultiUser

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,680.00	0.62	241.19	9,676.36	-11.99	23.42	12.20	0.97	-0.37	74.25
9,870.00	1.24	278.04	9,866.33	-12.19	20.48	12.38	0.44	0.33	19.39
10,059.00	0.69	88.19	10,055.32	-11.87	19.59	12.05	1.02	-0.29	90.03
10,212.00	1.14	79.66	10,208.30	-11.57	22.01	11.77	0.31	0.29	-5.58
10,401.00	1.74	64.66	10,397.24	-10.00	26.46	10.25	0.37	0.32	-7.94
10,590.00	1.95	269.01	10,586.20	-8.83	25.83	9.07	1.91	0.11	-82.35
10,780.00	2.06	275.33	10,776.09	-8.57	19.20	8.75	0.13	0.06	3.33
10,969.00	3.28	295.23	10,964.88	-5.95	10.93	6.05	0.80	0.65	10.53
11,158.00	2.06	271.67	11,153.68	-3.55	2.64	3.57	0.86	-0.65	-12.47
11,253.00	0.83	109.21	11,248.66	-3.72	1.58	3.74	3.01	-1.29	-171.01
11,317.00	3.81	169.91	11,312.61	-5.97	2.39	5.99	5.44	4.66	94.84
11,350.00	6.71	179.52	11,345.47	-8.98	2.60	9.00	9.15	8.79	29.12
11,380.00	9.22	182.39	11,375.18	-13.13	2.52	13.15	8.47	8.37	9.57
11,412.00	11.66	183.10	11,406.64	-18.92	2.23	18.94	7.64	7.62	2.22
11,444.00	13.94	179.84	11,437.85	-26.01	2.07	26.03	7.47	7.12	-10.19
11,475.00	16.64	178.76	11,467.75	-34.18	2.18	34.20	8.76	8.71	-3.48
11,506.00	19.03	176.97	11,497.26	-43.67	2.54	43.69	7.91	7.71	-5.77
11,538.00	20.57	177.76	11,527.36	-54.49	3.04	54.52	4.88	4.81	2.47
11,570.00	22.95	179.96	11,557.08	-66.35	3.26	66.38	7.86	7.44	6.87
11,601.00	26.11	181.72	11,585.28	-79.22	3.06	79.24	10.46	10.19	5.68
11,632.00	29.31	182.41	11,612.72	-93.62	2.54	93.64	10.37	10.32	2.23
11,663.00	32.34	180.75	11,639.34	-109.50	2.11	109.51	10.15	9.77	-5.35
11,695.00	34.63	179.60	11,666.03	-127.15	2.06	127.16	7.43	7.16	-3.59
11,726.00	36.96	178.02	11,691.17	-145.28	2.44	145.29	8.09	7.52	-5.10
11,758.00	39.63	178.65	11,716.28	-165.10	3.02	165.12	8.43	8.34	1.97
11,789.00	41.98	177.79	11,739.75	-185.34	3.65	185.37	7.79	7.58	-2.77
11,820.00	44.19	177.07	11,762.39	-206.49	4.60	206.53	7.30	7.13	-2.32
11,852.00	46.58	177.05	11,784.86	-229.24	5.77	229.29	7.47	7.47	-0.06
11,884.00	49.02	176.72	11,806.35	-252.91	7.06	252.96	7.66	7.62	-1.03
11,915.00	50.54	178.61	11,826.37	-276.56	8.02	276.62	6.76	4.90	6.10
11,946.00	52.51	178.29	11,845.66	-300.82	8.68	300.89	6.41	6.35	-1.03
11,978.00	54.45	179.23	11,864.70	-326.53	9.23	326.60	6.51	6.06	2.94
12,009.00	56.58	179.60	11,882.25	-352.08	9.49	352.15	6.94	6.87	1.19
12,041.00	58.41	180.43	11,899.45	-379.06	9.48	379.13	6.12	5.72	2.59
12,073.00	60.79	182.18	11,915.64	-406.65	8.85	406.72	8.81	7.44	5.47
12,104.00	62.49	181.60	11,930.36	-433.92	7.95	433.97	5.73	5.48	-1.87
12,136.00	63.67	180.59	11,944.85	-462.44	7.40	462.49	4.64	3.69	-3.16
12,167.00	66.92	181.09	11,957.81	-490.60	6.99	490.64	10.59	10.48	1.61
12,225.00	72.49	181.13	11,977.92	-544.96	5.94	545.00	9.60	9.60	0.07
12,288.00	77.31	179.96	11,994.32	-605.77	5.36	605.79	7.86	7.65	-1.86
12,320.00	80.78	180.32	12,000.40	-637.18	5.29	637.20	10.90	10.84	1.12
12,383.00	85.60	178.79	12,007.87	-699.71	5.78	699.74	8.02	7.65	-2.43
12,477.00	88.62	180.64	12,012.61	-793.58	6.24	793.60	3.77	3.21	1.97

Survey Report

Company:	ENERGEN RESOURCES CORPORATION	Local Co-ordinate Reference:	Well 454H - Slot 454H
Project:	Lea County, NM	TVD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Site:	Angus State 24-35 16 454H	MD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Well:	454H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.1.13 MultiUser

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,572.00	88.92	180.48	12,014.65	-888.55	5.31	888.56	0.36	0.32	-0.17
12,666.00	88.43	179.86	12,016.82	-982.52	5.04	982.53	0.84	-0.52	-0.66
12,761.00	89.86	179.29	12,018.24	-1,077.51	5.74	1,077.52	1.62	1.51	-0.60
12,855.00	89.27	178.98	12,018.95	-1,171.49	7.16	1,171.51	0.71	-0.63	-0.33
12,950.00	88.73	177.67	12,020.61	-1,266.44	9.94	1,266.47	1.49	-0.57	-1.38
13,044.00	90.60	178.14	12,021.16	-1,360.37	13.37	1,360.43	2.05	1.99	0.50
13,139.00	89.86	177.76	12,020.78	-1,455.31	16.77	1,455.40	0.88	-0.78	-0.40
13,233.00	90.55	178.39	12,020.44	-1,549.25	19.93	1,549.37	0.99	0.73	0.67
13,328.00	90.95	177.80	12,019.20	-1,644.19	23.08	1,644.33	0.75	0.42	-0.62
13,422.00	90.87	179.72	12,017.71	-1,738.15	25.12	1,738.31	2.04	-0.09	2.04
13,517.00	90.22	180.26	12,016.80	-1,833.15	25.14	1,833.30	0.89	-0.68	0.57
13,611.00	88.72	180.73	12,017.67	-1,927.14	24.32	1,927.28	1.67	-1.60	0.50
13,705.00	88.10	180.68	12,020.28	-2,021.09	23.17	2,021.22	0.66	-0.66	-0.05
13,800.00	89.43	179.68	12,022.33	-2,116.07	22.87	2,116.19	1.75	1.40	-1.05
13,894.00	88.76	179.65	12,023.81	-2,210.05	23.42	2,210.17	0.71	-0.71	-0.03
13,989.00	87.15	178.06	12,027.20	-2,304.97	25.31	2,305.10	2.38	-1.69	-1.67
14,083.00	90.12	177.72	12,029.44	-2,398.87	28.77	2,399.03	3.18	3.16	-0.36
14,178.00	90.50	179.26	12,028.93	-2,493.83	31.28	2,494.01	1.67	0.40	1.62
14,272.00	88.57	178.81	12,029.69	-2,587.81	32.86	2,588.00	2.11	-2.05	-0.48
14,367.00	88.16	179.06	12,032.40	-2,682.75	34.63	2,682.96	0.51	-0.43	0.26
14,461.00	89.23	177.99	12,034.54	-2,776.69	37.04	2,776.92	1.61	1.14	-1.14
14,556.00	91.11	180.72	12,034.26	-2,871.67	38.11	2,871.90	3.49	1.98	2.87
14,650.00	90.74	180.91	12,032.74	-2,965.65	36.78	2,965.87	0.44	-0.39	0.20
14,745.00	90.17	179.48	12,031.99	-3,060.65	36.45	3,060.85	1.62	-0.60	-1.51
14,839.00	90.19	180.92	12,031.69	-3,154.64	36.13	3,154.84	1.53	0.02	1.53
14,934.00	89.52	181.47	12,031.94	-3,249.62	34.14	3,249.80	0.91	-0.71	0.58
15,028.00	92.33	180.44	12,030.42	-3,343.58	32.58	3,343.74	3.18	2.99	-1.10
15,123.00	91.37	180.38	12,027.35	-3,438.53	31.90	3,438.68	1.01	-1.01	-0.06
15,217.00	90.45	179.43	12,025.86	-3,532.52	32.05	3,532.66	1.41	-0.98	-1.01
15,311.00	89.89	178.91	12,025.58	-3,626.51	33.42	3,626.66	0.81	-0.60	-0.55
15,405.00	89.32	178.72	12,026.23	-3,720.48	35.36	3,720.65	0.64	-0.61	-0.20
15,500.00	89.15	178.25	12,027.50	-3,815.44	37.87	3,815.63	0.53	-0.18	-0.49
15,594.00	87.90	177.50	12,029.92	-3,909.34	41.36	3,909.56	1.55	-1.33	-0.80
15,688.00	88.70	177.96	12,032.70	-4,003.23	45.08	4,003.47	0.98	0.85	0.49
15,783.00	88.03	180.68	12,035.41	-4,098.17	46.20	4,098.42	2.95	-0.71	2.86
15,877.00	87.47	178.84	12,039.11	-4,192.09	46.60	4,192.35	2.04	-0.60	-1.96
15,972.00	89.02	181.17	12,042.02	-4,287.04	46.59	4,287.29	2.94	1.63	2.45
16,066.00	89.22	181.39	12,043.46	-4,381.01	44.49	4,381.23	0.32	0.21	0.23
16,160.00	88.57	181.80	12,045.27	-4,474.95	41.87	4,475.15	0.82	-0.69	0.44
16,255.00	86.16	180.35	12,049.64	-4,569.82	40.09	4,570.00	2.96	-2.54	-1.53
16,320.00	85.63	179.41	12,054.29	-4,634.66	40.23	4,634.83	1.66	-0.82	-1.45
16,385.00	85.63	179.41	12,059.25	-4,699.46	40.89	4,699.64	0.00	0.00	0.00

Survey Report

Company:	ENERGEN RESOURCES CORPORATION	Local Co-ordinate Reference:	Well 454H - Slot 454H
Project:	Lea County, NM	TVD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Site:	Angus State 24-35 16 454H	MD Reference:	3387+22 @ 3409.00usft (Orion Perseus)
Well:	454H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 5000.1.13 MultiUser

Design Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Angus State 24-35 16 454H	0.00	0.00	0.00	0.00	0.00	446,524.26	797,673.36	32° 13' 26.21 N	103° 22' 14.71 W
- actual wellpath hits target center									
- Point									
Angus State 24-35 16 454H	0.00	0.00	12,059.25	-4,699.46	40.89	441,824.79	797,714.26	32° 12' 39.70 N	103° 22' 14.72 W
- actual wellpath hits target center									
- Point									