

**NM OIL CONSERVATION
ARTESIA DISTRICT**

FEB 05 2019

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Devon Energy

Eddy County, NM (NAD-83)

Turquoise

Turquoise PWU 27 61H

30.015.44984

OH

Design: OH

Survey Report - Geographic

13 September, 2018

LEAM Drilling Services

Survey Report - Geographic

Company:	Devon Energy	Local Co-ordinate Reference:	Well Turquoise PWU 27 61H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3345.1' GE + 26' KB @ 3371.10usft
Site:	Turquoise	MD Reference:	3345.1' GE + 26' KB @ 3371.10usft
Well:	Turquoise PWU 27 61H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Project	Eddy County, NM (NAD-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Turquoise				
Site Position:		Northing:	593,931.03 usft	Latitude:	32° 37' 56.9788 N
From:	Lat/Long	Easting:	621,732.64 usft	Longitude:	104° 4' 19.8333 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.14 °

Well	Turquoise PWU 27 61H					
Well Position	+N-S	0.00 usft	Northing:	595,319.97 usft	Latitude:	32° 38' 10.7228 N
	+E-W	0.00 usft	Easting:	621,736.42 usft	Longitude:	104° 4' 19.7491 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,345.10 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/22/2018	7.37	60.45	48,074

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	89.48	

Survey Program	Date 8/13/2018				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
82.66	328.00	Survey #1 (OH)	VES GyroFlex V2		
428.00	14,042.00	Survey #2 (OH)	MWD+IFR1	OWSG MWD + IFR1	
14,115.00	14,115.00	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	595,319.97	621,736.42	32° 38' 10.7228 N	104° 4' 19.7491 W
SHL (Turquoise 61H) - SHL (Turquoise 61H) - 992' FNL, 273' FEL of Sec 28									
82.66	0.34	177.01	82.66	-0.24	0.01	595,319.73	621,736.44	32° 38' 10.7204 N	104° 4' 19.7490 W
144.66	0.94	172.68	144.66	-0.93	0.09	595,319.04	621,736.51	32° 38' 10.7136 N	104° 4' 19.7481 W
238.33	1.16	181.18	238.31	-2.56	0.48	595,317.42	621,736.91	32° 38' 10.6975 N	104° 4' 19.7435 W
328.00	1.42	187.60	327.96	-4.56	0.63	595,315.41	621,737.08	32° 38' 10.6777 N	104° 4' 19.7418 W
428.00	1.76	173.14	427.92	-7.31	0.65	595,312.66	621,737.08	32° 38' 10.6504 N	104° 4' 19.7417 W
520.00	1.32	156.09	519.89	-9.69	1.25	595,310.29	621,737.67	32° 38' 10.6269 N	104° 4' 19.7348 W
613.00	1.14	159.43	612.86	-11.53	2.01	595,308.44	621,738.43	32° 38' 10.6087 N	104° 4' 19.7280 W
705.00	0.97	134.11	704.85	-12.93	2.89	595,307.04	621,739.31	32° 38' 10.5948 N	104° 4' 19.7157 W

LEAM Drilling Services

Survey Report - Geographic

Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Turquoise
 Well: Turquoise PWU 27 61H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well Turquoise PWU 27 61H
 TVD Reference: 3345.1' GE + 26' KB @ 3371.10usft
 MD Reference: 3345.1' GE + 26' KB @ 3371.10usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Multi 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
798.00	0.97	129.72	797.84	-13.98	4.06	595,305.99	621,740.48	32° 38' 10.5844 N	104° 4' 19.7020 W
890.00	0.97	140.97	889.82	-15.08	5.15	595,304.89	621,741.57	32° 38' 10.5734 N	104° 4' 19.6893 W
983.00	0.97	135.52	982.81	-16.26	6.20	595,303.72	621,742.62	32° 38' 10.5618 N	104° 4' 19.6771 W
1,075.00	1.23	120.58	1,074.79	-17.31	7.59	595,302.68	621,744.02	32° 38' 10.5513 N	104° 4' 19.6608 W
1,168.00	1.41	109.50	1,167.77	-18.20	9.53	595,301.77	621,745.85	32° 38' 10.5424 N	104° 4' 19.6382 W
1,260.00	1.32	112.67	1,259.74	-18.99	11.58	595,300.98	621,748.00	32° 38' 10.5348 N	104° 4' 19.6143 W
1,353.00	1.14	110.21	1,352.72	-19.72	13.43	595,300.25	621,749.88	32° 38' 10.5273 N	104° 4' 19.5928 W
1,445.00	0.97	96.50	1,444.71	-20.13	15.06	595,299.85	621,751.49	32° 38' 10.5233 N	104° 4' 19.5735 W
1,537.00	0.35	78.99	1,536.70	-20.15	16.11	595,299.82	621,752.54	32° 38' 10.5230 N	104° 4' 19.5613 W
1,630.00	0.26	58.70	1,629.70	-19.98	16.57	595,299.99	621,752.99	32° 38' 10.5247 N	104° 4' 19.5559 W
1,725.00	0.44	90.17	1,724.70	-19.87	17.12	595,300.11	621,753.54	32° 38' 10.5258 N	104° 4' 19.5485 W
1,820.00	0.35	75.58	1,819.69	-19.80	17.76	595,300.18	621,754.19	32° 38' 10.5285 N	104° 4' 19.5419 W
1,914.00	0.35	57.65	1,913.69	-19.57	18.28	595,300.40	621,754.71	32° 38' 10.5287 N	104° 4' 19.5358 W
2,008.00	0.44	171.20	2,007.69	-19.77	18.58	595,300.20	621,755.01	32° 38' 10.5287 N	104° 4' 19.5324 W
2,102.00	0.35	188.61	2,101.69	-20.41	18.59	595,299.56	621,755.02	32° 38' 10.5203 N	104° 4' 19.5322 W
2,188.00	0.35	208.47	2,185.69	-20.95	18.41	595,299.02	621,754.84	32° 38' 10.5150 N	104° 4' 19.5344 W
2,280.00	0.62	190.72	2,289.68	-21.70	18.18	595,298.27	621,754.61	32° 38' 10.5076 N	104° 4' 19.5371 W
2,385.00	0.53	210.40	2,384.68	-22.59	17.87	595,297.39	621,754.29	32° 38' 10.4989 N	104° 4' 19.5408 W
2,479.00	0.44	231.85	2,478.68	-23.19	17.36	595,296.79	621,753.79	32° 38' 10.4930 N	104° 4' 19.5467 W
2,573.00	0.35	180.87	2,572.67	-23.70	17.07	595,298.28	621,753.50	32° 38' 10.4879 N	104° 4' 19.5501 W
2,667.00	0.35	178.06	2,666.67	-24.27	17.08	595,295.70	621,753.50	32° 38' 10.4822 N	104° 4' 19.5501 W
2,762.00	0.44	256.63	2,761.67	-24.64	16.73	595,295.33	621,753.16	32° 38' 10.4785 N	104° 4' 19.5541 W
2,856.00	0.35	207.94	2,855.67	-24.88	16.25	595,294.99	621,752.67	32° 38' 10.4752 N	104° 4' 19.5598 W
2,951.00	0.70	226.05	2,950.68	-25.64	15.69	595,294.33	621,752.12	32° 38' 10.4687 N	104° 4' 19.5663 W
3,045.00	0.44	219.37	3,044.66	-26.32	15.05	595,293.66	621,751.48	32° 38' 10.4620 N	104° 4' 19.5738 W
3,139.00	0.79	229.74	3,138.65	-27.02	14.33	595,292.96	621,750.75	32° 38' 10.4551 N	104° 4' 19.5823 W
3,234.00	0.62	253.47	3,233.65	-27.58	13.34	595,292.39	621,749.76	32° 38' 10.4495 N	104° 4' 19.5940 W
3,328.00	0.53	245.91	3,327.64	-27.91	12.45	595,292.07	621,748.88	32° 38' 10.4484 N	104° 4' 19.6043 W
3,357.00	0.70	264.37	3,356.64	-27.98	12.15	595,291.99	621,748.58	32° 38' 10.4457 N	104° 4' 19.6078 W
3,425.00	0.70	267.52	3,424.64	-28.04	11.32	595,291.94	621,747.75	32° 38' 10.4451 N	104° 4' 19.6175 W
3,520.00	0.35	252.93	3,519.63	-28.15	10.47	595,291.83	621,746.89	32° 38' 10.4440 N	104° 4' 19.6275 W
3,614.00	1.06	153.79	3,613.63	-29.01	10.58	595,290.96	621,747.00	32° 38' 10.4355 N	104° 4' 19.6263 W
3,708.00	1.85	155.90	3,707.59	-31.18	11.58	595,288.80	621,748.00	32° 38' 10.4140 N	104° 4' 19.6146 W
3,803.00	2.02	158.71	3,802.54	-34.14	12.81	595,285.84	621,749.24	32° 38' 10.3847 N	104° 4' 19.6002 W
3,897.00	2.81	162.93	3,896.46	-37.88	14.09	595,282.09	621,750.52	32° 38' 10.3476 N	104° 4' 19.5854 W
3,991.00	3.43	156.96	3,990.32	-42.67	15.87	595,277.30	621,752.29	32° 38' 10.3002 N	104° 4' 19.5648 W
4,085.00	2.73	140.86	4,084.18	-47.00	18.38	595,272.97	621,754.80	32° 38' 10.2573 N	104° 4' 19.5355 W
4,180.00	3.17	132.17	4,179.06	-60.52	21.75	595,269.45	621,758.18	32° 38' 10.2224 N	104° 4' 19.4962 W
4,274.00	4.57	133.40	4,272.84	-54.84	26.40	595,265.13	621,762.82	32° 38' 10.1795 N	104° 4' 19.4420 W
4,369.00	4.48	130.94	4,367.54	-59.87	31.95	595,260.10	621,768.38	32° 38' 10.1296 N	104° 4' 19.3772 W
4,463.00	4.13	142.37	4,461.28	-64.86	36.79	595,255.02	621,773.22	32° 38' 10.0791 N	104° 4' 19.3207 W
4,557.00	4.13	138.50	4,555.04	-70.17	41.10	595,249.80	621,777.53	32° 38' 10.0274 N	104° 4' 19.2705 W
4,651.00	4.40	148.69	4,648.78	-75.79	45.22	595,244.18	621,781.64	32° 38' 9.9718 N	104° 4' 19.2225 W
4,745.00	4.48	149.05	4,742.50	-82.02	48.98	595,237.86	621,785.40	32° 38' 9.9100 N	104° 4' 19.1787 W
4,840.00	3.78	156.86	4,837.25	-88.08	52.11	595,231.89	621,788.54	32° 38' 9.8499 N	104° 4' 19.1422 W
4,934.00	3.43	158.54	4,931.06	-93.55	54.36	595,226.42	621,790.78	32° 38' 9.7958 N	104° 4' 19.1181 W
5,028.00	2.73	157.13	5,024.93	-98.23	56.25	595,221.74	621,792.68	32° 38' 9.7494 N	104° 4' 19.0941 W
5,123.00	2.55	157.48	5,119.83	-102.27	57.94	595,217.71	621,794.37	32° 38' 9.7094 N	104° 4' 19.0744 W
5,217.00	2.37	156.78	5,213.74	-105.98	59.51	595,213.99	621,795.93	32° 38' 9.6726 N	104° 4' 19.0562 W
5,312.00	2.99	158.71	5,308.63	-110.10	61.18	595,209.87	621,797.61	32° 38' 9.6319 N	104° 4' 19.0368 W
5,405.00	2.90	158.54	5,401.51	-114.55	62.93	595,205.43	621,799.35	32° 38' 9.5878 N	104° 4' 19.0165 W
5,500.00	2.84	159.24	5,496.40	-118.83	64.58	595,201.14	621,801.00	32° 38' 9.5454 N	104° 4' 18.9973 W
5,594.00	3.52	157.83	5,590.28	-123.53	66.44	595,196.45	621,802.86	32° 38' 9.4989 N	104° 4' 18.9757 W
5,689.00	3.25	153.82	5,685.10	-128.64	68.73	595,191.33	621,805.16	32° 38' 9.4482 N	104° 4' 18.9490 W
5,783.00	2.64	135.69	5,778.98	-132.58	71.43	595,187.40	621,807.85	32° 38' 9.4092 N	104° 4' 18.9176 W

LEAM Drilling Services

Survey Report - Geographic

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Turquoise
Well: Turquoise PWU 27 61H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Turquoise PWU 27 61H
3345.1' GE + 26' KB @ 3371.10usft
3345.1' GE + 26' KB @ 3371.10usft
Grid
Minimum Curvature
EDM 5000.1 Multi 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
5,877.00	2.64	127.78	5,872.88	-135.45	74.65	595,184.52	621,811.08	32° 38' 9.3807 N	104° 4' 18.8800 W
5,971.00	2.90	130.41	5,966.77	-138.32	78.17	595,181.65	621,814.60	32° 38' 9.3522 N	104° 4' 18.8389 W
6,085.00	3.08	130.94	6,080.84	-141.52	81.89	595,178.46	621,818.32	32° 38' 9.3205 N	104° 4' 18.7955 W
6,159.00	2.73	164.16	6,154.52	-145.32	84.41	595,174.65	621,820.84	32° 38' 9.2827 N	104° 4' 18.7661 W
6,253.00	1.49	167.49	6,248.46	-148.67	85.29	595,171.30	621,821.71	32° 38' 9.2496 N	104° 4' 18.7580 W
6,346.00	1.93	173.47	6,341.42	-151.41	85.73	595,168.57	621,822.15	32° 38' 9.2225 N	104° 4' 18.7509 W
6,441.00	2.20	166.09	6,436.35	-154.77	86.35	595,165.21	621,822.77	32° 38' 9.1892 N	104° 4' 18.7438 W
6,535.00	3.69	166.97	6,530.23	-159.47	87.46	595,160.51	621,823.89	32° 38' 9.1427 N	104° 4' 18.7308 W
6,630.00	4.66	166.79	6,624.97	-166.20	89.03	595,153.77	621,825.46	32° 38' 9.0760 N	104° 4' 18.7127 W
6,724.00	4.48	165.38	6,718.68	-173.47	90.83	595,146.50	621,827.26	32° 38' 9.0041 N	104° 4' 18.6918 W
6,818.00	3.43	159.23	6,812.45	-179.65	92.76	595,140.32	621,829.18	32° 38' 8.9428 N	104° 4' 18.6695 W
6,912.00	3.69	155.54	6,906.27	-185.03	95.01	595,134.94	621,831.43	32° 38' 8.8895 N	104° 4' 18.6434 W
7,006.00	3.34	153.61	7,000.09	-190.24	97.48	595,129.73	621,833.90	32° 38' 8.8379 N	104° 4' 18.6146 W
7,101.00	3.78	159.05	7,094.91	-195.64	99.83	595,124.33	621,836.25	32° 38' 8.7844 N	104° 4' 18.5873 W
7,195.00	3.25	169.07	7,188.73	-201.15	101.44	595,118.82	621,837.88	32° 38' 8.7299 N	104° 4' 18.5686 W
7,288.00	4.13	175.23	7,281.54	-207.08	102.22	595,112.89	621,838.64	32° 38' 8.6712 N	104° 4' 18.5597 W
7,381.00	3.78	167.14	7,374.32	-213.41	103.18	595,106.57	621,839.60	32° 38' 8.6086 N	104° 4' 18.5488 W
7,475.00	3.52	169.78	7,468.13	-219.27	104.38	595,100.71	621,840.80	32° 38' 8.5508 N	104° 4' 18.5347 W
7,569.00	2.73	167.80	7,561.99	-224.30	105.37	595,095.68	621,841.79	32° 38' 8.5008 N	104° 4' 18.5234 W
7,663.00	3.43	164.86	7,655.85	-229.20	106.57	595,090.78	621,843.00	32° 38' 8.4522 N	104° 4' 18.5094 W
7,757.00	4.66	153.61	7,749.62	-235.33	109.00	595,084.64	621,845.43	32° 38' 8.3915 N	104° 4' 18.4811 W
7,851.00	4.48	155.36	7,843.32	-242.09	112.23	595,077.88	621,848.66	32° 38' 8.3245 N	104° 4' 18.4438 W
7,945.00	4.84	148.16	7,937.01	-248.80	115.86	595,071.18	621,852.28	32° 38' 8.2581 N	104° 4' 18.4014 W
8,039.00	5.98	145.17	8,030.59	-256.18	120.74	595,063.79	621,857.17	32° 38' 8.1848 N	104° 4' 18.3444 W
8,133.00	6.68	142.36	8,124.01	-264.53	126.88	595,055.44	621,863.30	32° 38' 8.1021 N	104° 4' 18.2729 W
8,228.00	6.95	137.26	8,218.34	-273.13	134.15	595,046.84	621,870.58	32° 38' 8.0168 N	104° 4' 18.1881 W
8,322.00	7.56	129.88	8,311.59	-281.27	142.76	595,038.70	621,879.18	32° 38' 7.9361 N	104° 4' 18.0877 W
8,397.00	7.47	132.51	8,385.85	-287.73	150.14	595,032.24	621,888.56	32° 38' 7.8720 N	104° 4' 18.0016 W
KOP (Turquoise 61H) - 127° FNL, 123° FEL - Sec 28 - FTP (Turquoise 61H) - 127° FNL, 123° FEL - Sec 28									
8,497.00	11.70	135.84	8,484.53	-299.40	162.00	595,020.57	621,898.42	32° 38' 7.7562 N	104° 4' 17.8632 W
8,545.00	17.59	131.10	8,530.95	-307.67	170.86	595,012.31	621,907.29	32° 38' 7.6742 N	104° 4' 17.7598 W
8,593.00	20.49	119.67	8,576.34	-316.60	183.64	595,003.37	621,920.06	32° 38' 7.5855 N	104° 4' 17.6107 W
8,641.00	22.77	104.03	8,620.99	-323.02	199.96	594,996.86	621,936.39	32° 38' 7.5216 N	104° 4' 17.4199 W
8,689.00	26.29	94.01	8,664.67	-328.01	219.59	594,993.98	621,956.02	32° 38' 7.4915 N	104° 4' 17.1904 W
8,736.00	30.95	92.25	8,705.92	-327.22	242.07	594,992.76	621,978.49	32° 38' 7.4790 N	104° 4' 16.9276 W
8,783.00	35.44	96.47	8,745.24	-329.23	267.70	594,990.75	622,004.12	32° 38' 7.4585 N	104° 4' 16.8279 W
8,830.00	40.89	96.82	8,782.18	-332.59	296.54	594,987.38	622,032.96	32° 38' 7.4245 N	104° 4' 16.2908 W
8,877.00	44.93	95.94	8,816.60	-336.14	328.33	594,983.83	622,064.78	32° 38' 7.3886 N	104° 4' 15.9191 W
8,924.00	50.91	94.53	8,848.09	-339.30	363.05	594,980.67	622,099.48	32° 38' 7.3565 N	104° 4' 15.5131 W
8,972.00	56.10	92.78	8,876.63	-341.74	401.55	594,978.23	622,137.97	32° 38' 7.3314 N	104° 4' 15.0630 W
9,019.00	59.44	90.67	8,901.69	-342.92	441.28	594,977.05	622,177.70	32° 38' 7.3187 N	104° 4' 14.5984 W
9,066.00	64.02	90.49	8,923.94	-343.34	482.66	594,976.63	622,219.08	32° 38' 7.3138 N	104° 4' 14.1145 W
9,113.00	67.36	91.90	8,943.29	-344.24	525.48	594,975.73	622,261.90	32° 38' 7.3036 N	104° 4' 13.6138 W
9,160.00	70.35	92.60	8,960.24	-345.96	569.27	594,974.01	622,305.70	32° 38' 7.2855 N	104° 4' 13.1017 W
9,207.00	73.86	92.25	8,974.68	-347.85	613.95	594,972.12	622,350.38	32° 38' 7.2657 N	104° 4' 12.5792 W
9,255.00	77.12	91.90	8,986.71	-349.54	660.38	594,970.44	622,398.81	32° 38' 7.2479 N	104° 4' 12.0362 W
9,302.00	80.46	91.02	8,995.84	-350.71	708.47	594,969.27	622,442.89	32° 38' 7.2352 N	104° 4' 11.4974 W
9,350.00	84.24	89.79	9,002.23	-351.04	754.03	594,968.93	622,490.45	32° 38' 7.2307 N	104° 4' 10.9412 W
9,392.00	87.32	88.03	9,005.32	-350.24	795.90	594,969.73	622,532.32	32° 38' 7.2378 N	104° 4' 10.4515 W
9,470.00	88.02	88.03	9,008.49	-347.56	873.79	594,972.41	622,610.21	32° 38' 7.2622 N	104° 4' 9.5405 W
9,564.00	87.05	88.91	9,012.54	-345.06	967.67	594,974.92	622,704.09	32° 38' 7.2847 N	104° 4' 8.4426 W
9,658.00	87.05	90.14	9,017.38	-344.28	1,061.54	594,975.69	622,797.96	32° 38' 7.2901 N	104° 4' 7.3448 W
9,753.00	88.37	91.02	9,021.17	-345.24	1,156.45	594,974.73	622,892.88	32° 38' 7.2782 N	104° 4' 6.2348 W
9,848.00	89.60	89.96	9,022.85	-346.05	1,251.43	594,973.92	622,987.85	32° 38' 7.2678 N	104° 4' 5.1241 W
10,036.00	90.48	89.61	9,022.72	-345.35	1,439.43	594,974.63	623,175.85	32° 38' 7.2702 N	104° 4' 2.9255 W

LEAM Drilling Services

Survey Report - Geographic

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Turquoise
Well: Turquoise PWU 27 61H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Turquoise PWU 27 61H
TVD Reference: 3345.1' GE + 26' KB @ 3371.10usft
MD Reference: 3345.1' GE + 26' KB @ 3371.10usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi 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
10,130.00	90.75	89.61	9,021.71	-344.71	1,533.42	594,975.27	623,269.84	32° 38' 7.2742 N	104° 4' 1.8263 W
10,224.00	91.10	90.84	9,020.20	-345.08	1,827.40	594,974.80	623,363.83	32° 38' 7.2682 N	104° 4' 0.7272 W
10,319.00	89.78	89.61	9,019.47	-345.45	1,722.40	594,974.52	623,458.82	32° 38' 7.2621 N	104° 3' 59.6183 W
10,413.00	88.20	89.44	9,021.12	-344.67	1,816.38	594,975.30	623,552.80	32° 38' 7.2675 N	104° 3' 58.5173 W
10,508.00	88.29	89.08	9,024.03	-343.44	1,911.32	594,976.53	623,647.75	32° 38' 7.2773 N	104° 3' 57.4088 W
10,603.00	88.46	89.08	9,026.73	-341.92	2,006.27	594,978.05	623,742.70	32° 38' 7.2900 N	104° 3' 56.2964 W
10,698.00	87.67	90.49	9,029.94	-341.56	2,101.22	594,978.41	623,837.64	32° 38' 7.2812 N	104° 3' 55.1861 W
10,792.00	88.44	91.02	9,034.76	-342.80	2,195.08	594,977.17	623,931.50	32° 38' 7.2768 N	104° 3' 54.0884 W
10,887.00	88.44	91.02	9,040.66	-344.49	2,289.88	594,975.49	624,026.31	32° 38' 7.2575 N	104° 3' 52.9798 W
10,981.00	88.29	91.54	9,044.98	-348.58	2,383.76	594,973.38	624,120.18	32° 38' 7.2344 N	104° 3' 51.8820 W
11,075.00	88.20	91.19	9,047.86	-348.82	2,477.68	594,971.15	624,214.11	32° 38' 7.2099 N	104° 3' 48.7837 W
11,169.00	89.78	92.07	9,049.52	-351.50	2,571.63	594,968.48	624,308.05	32° 38' 7.1811 N	104° 3' 49.6851 W
11,264.00	90.92	91.54	9,048.94	-354.49	2,666.58	594,965.49	624,403.00	32° 38' 7.1491 N	104° 3' 48.5748 W
11,358.00	91.10	90.67	9,047.28	-356.30	2,760.54	594,963.67	624,496.97	32° 38' 7.1288 N	104° 3' 47.4760 W
11,452.00	91.28	90.87	9,045.33	-357.40	2,854.52	594,962.57	624,590.94	32° 38' 7.1156 N	104° 3' 46.3770 W
11,546.00	91.54	90.67	9,043.02	-358.50	2,948.48	594,961.47	624,684.91	32° 38' 7.1023 N	104° 3' 45.2782 W
11,640.00	90.40	89.79	9,041.43	-358.88	3,042.47	594,961.10	624,778.89	32° 38' 7.0982 N	104° 3' 44.1791 W
11,734.00	90.31	89.98	9,040.84	-358.87	3,136.46	594,961.30	624,872.89	32° 38' 7.0959 N	104° 3' 43.0798 W
11,828.00	89.60	90.31	9,040.92	-358.89	3,230.46	594,961.08	624,966.89	32° 38' 7.0913 N	104° 3' 41.9805 W
11,922.00	89.60	90.49	9,041.57	-359.55	3,324.46	594,960.43	625,060.88	32° 38' 7.0824 N	104° 3' 40.8813 W
12,017.00	88.37	90.31	9,043.26	-360.21	3,418.44	594,959.76	625,155.86	32° 38' 7.0735 N	104° 3' 39.7708 W
12,111.00	88.29	90.31	9,046.00	-360.72	3,513.40	594,959.25	625,249.82	32° 38' 7.0680 N	104° 3' 38.6718 W
12,205.00	88.46	90.49	9,048.68	-361.38	3,607.36	594,958.60	625,343.78	32° 38' 7.0572 N	104° 3' 37.5730 W
12,300.00	88.90	90.49	9,050.85	-362.19	3,702.33	594,957.79	625,438.75	32° 38' 7.0467 N	104° 3' 36.4624 W
12,394.00	88.37	89.96	9,053.09	-362.56	3,796.30	594,957.42	625,532.72	32° 38' 7.0407 N	104° 3' 35.3634 W
12,488.00	88.46	89.79	9,055.69	-362.35	3,890.26	594,957.62	625,628.69	32° 38' 7.0403 N	104° 3' 34.2645 W
12,582.00	88.97	89.61	9,059.44	-361.88	3,984.19	594,958.11	625,720.61	32° 38' 7.0428 N	104° 3' 33.1662 W
12,677.00	88.26	89.96	9,065.05	-361.50	4,079.02	594,958.47	625,815.44	32° 38' 7.0439 N	104° 3' 32.0571 W
12,771.00	87.14	88.91	9,070.46	-360.58	4,172.86	594,959.39	625,909.28	32° 38' 7.0508 N	104° 3' 30.9597 W
12,865.00	88.81	88.91	9,073.78	-358.79	4,266.78	594,961.18	626,003.20	32° 38' 7.0659 N	104° 3' 29.8613 W
12,959.00	88.90	88.73	9,075.66	-356.86	4,360.74	594,963.12	626,097.16	32° 38' 7.0827 N	104° 3' 28.7624 W
13,054.00	89.08	88.56	9,077.33	-354.61	4,455.70	594,965.36	626,192.12	32° 38' 7.1024 N	104° 3' 27.6518 W
13,148.00	89.08	87.68	9,078.84	-351.53	4,549.63	594,968.45	626,286.06	32° 38' 7.1305 N	104° 3' 26.5532 W
13,242.00	89.08	87.68	9,080.35	-347.72	4,643.54	594,972.25	626,379.97	32° 38' 7.1658 N	104° 3' 25.4548 W
13,336.00	88.99	87.33	9,081.93	-343.63	4,737.44	594,976.34	626,473.86	32° 38' 7.2038 N	104° 3' 24.3566 W
13,431.00	88.81	87.50	9,083.76	-339.35	4,832.33	594,980.63	626,568.75	32° 38' 7.2438 N	104° 3' 23.2468 W
13,525.00	88.90	88.56	9,085.64	-336.12	4,926.25	594,983.86	626,662.68	32° 38' 7.2733 N	104° 3' 22.1483 W
13,619.00	88.90	88.56	9,087.44	-333.75	5,020.20	594,986.22	626,756.63	32° 38' 7.2943 N	104° 3' 21.0495 W
13,713.00	89.78	88.91	9,088.52	-331.68	5,114.17	594,988.29	626,850.60	32° 38' 7.3124 N	104° 3' 19.9505 W
13,807.00	90.31	89.08	9,088.45	-330.03	5,208.16	594,989.94	626,944.58	32° 38' 7.3263 N	104° 3' 18.8513 W
13,902.00	89.60	89.96	9,088.52	-329.23	5,303.15	594,990.74	627,039.58	32° 38' 7.3317 N	104° 3' 17.7404 W
13,996.00	89.69	90.31	9,089.11	-329.46	5,397.15	594,990.52	627,133.58	32° 38' 7.3270 N	104° 3' 16.6411 W
14,042.00	89.78	90.31	9,089.32	-329.71	5,443.15	594,990.27	627,179.57	32° 38' 7.3234 N	104° 3' 15.5423 W
LTP (Turquoise 61H) - 1300' FNL, 100' FEL - Sec 27									
14,115.00	89.78	90.31	9,089.60	-330.10	5,516.15	594,989.87	627,252.57	32° 38' 7.3176 N	104° 3' 15.2495 W
PBHL (Turquoise 61H) - BHL (Turquoise 61H) - 1301' FNL, 32' FEL of Sec 27									

LEAM Drilling Services **Survey Report - Geographic**

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Turquoise
Well: Turquoise PWU 27 61H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Turquoise PWU 27 61H
TVD Reference: 3345.1' GE + 26' KB @ 3371.10usft
MD Reference: 3345.1' GE + 26' KB @ 3371.10usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

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
SHL (Turquoise 61H) - 9 - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	595,319.97	621,738.42	32° 38' 10.7228 N	104° 4' 19.7491 W
KOP (Turquoise 61H) - 1 - actual wellpath hits target center - Point	0.00	0.00	8,385.95	-287.73	150.14	595,032.24	621,886.56	32° 38' 7.8720 N	104° 4' 18.0016 W
FTP (Turquoise 61H) - 1 - actual wellpath hits target center - Point	0.00	0.00	8,385.95	-287.73	150.14	595,032.24	621,886.56	32° 38' 7.8720 N	104° 4' 18.0016 W
LTP (Turquoise 61H) - 1: - actual wellpath misses target center by 6.17usft at 14042.00usft MD (9089.32 TVD, -329.71 N, 5443.15 E) - Point	0.00	0.00	9,089.34	-329.74	5,449.32	594,990.23	627,185.74	32° 38' 7.3229 N	104° 3' 16.0311 W
BHL (Turquoise 61H) - 1 - actual wellpath hits target center - Point	0.00	0.00	9,089.60	-330.10	5,516.15	594,989.87	627,252.57	32° 38' 7.3178 N	104° 3' 15.2495 W

Checked By: _____ Approved By: _____ Date: _____

Devon Energy

Project: Eddy County, NM (NAD-83)
Site: Turquoise
Well: Turquoise PWU 27 61H
Wellbore: OH
Design: OH

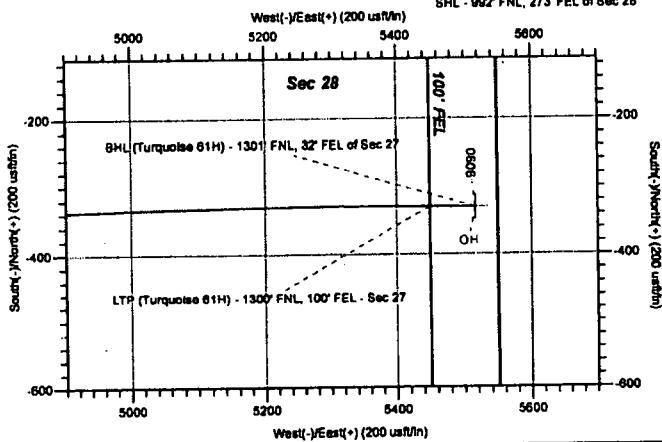


Aslmuhs to Grid North
True North: -0.14°
Magnetic North: 7.23°
Magnetic Field
Strength: 48074.2nT
Dip Angle: 60.43°
Date: 6/22/2018
Model: HDGM

PROJECT DETAILS: Eddy County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

Name
BHL - 1301' FNL, 32' FEL of Sec 27
FTP - 1279' FNL, 123' FEL - Sec 28
KOP - 1279' FNL, 123' FEL - Sec 28
LTP - 1300' FNL, 100' FEL - Sec 27
SHL - 992' FNL, 273' FEL of Sec 28

TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
9089.60	-330.10	5518.15	594889.67	627252.57	32° 38' 7.3178 N	104° 3' 15.2495 W
8385.95	-287.73	150.14	595032.24	621888.56	32° 38' 7.8720 N	104° 4' 18.0016 W
8385.95	-287.73	150.14	595032.24	621888.56	32° 38' 7.8720 N	104° 4' 18.0016 W
9089.34	-329.74	5449.32	594990.23	627185.74	32° 38' 7.3229 N	104° 3' 16.0311 W
0.00	0.00	0.00	595319.97	621738.42	32° 38' 10.7228 N	104° 4' 19.7491 W



ACTUAL LINE CALLS
SHL: 992' FNL, 273' FEL of Sec 28
BHL: 1301' FNL, 32' FEL of Sec 27



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

Design: OH (Turquoise PWU 27 61H/OH)
Created By: Dustin Ault
Date: 14.12, September 13 2018
Approved: _____ Date: _____