

Devon

Thistle Unit 156H

Cactus 167

This survey is correct to the best of my knowledge and is supported by actual field data.

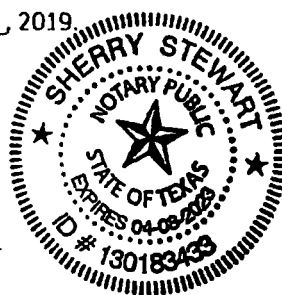
Notarized this data 26th of September, 2019

Sherry Stewart

Notary Signature

County of Midland

State of Texas



Scientific Drilling

The

In Wellbore Placement

HOBBS OCD

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Devon Energy

Lea County, NM (NAD83 NME)

Thistle Unit

156H

OH

Survey: SDI Surveys #1

Standard Survey Report

21 May, 2019



www.scientificdrilling.com

Scientific Drilling, Intl **Survey Report**

Company:	Devon Energy	Local Co-ordinate Reference:	Well 156H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB = 24' @ 3675.00usft (Cactus 167)
Site:	Thistle Unit	MD Reference:	KB = 24' @ 3675.00usft (Cactus 167)
Well:	156H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Project	Lea County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone	Using geodetic scale factor	

Site	Thistle Unit				
Site Position:		Northing:	457,063.23 usft	Latitude:	32° 15' 15.284 N
From:	Map	Easting:	776,815.89 usft	Longitude:	103° 34' 17.748 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 °

Well	156H					
Well Position	+N/-S	0.00 usft	Northing:	457,062.97 usft	Latitude:	32° 15' 15.285 N
	+E/-W	0.00 usft	Easting:	776,765.86 usft	Longitude:	103° 34' 18.330 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,651.00 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	4/23/2019	6.68	59.93	47,946

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(bearing)	
	0.00	0.00	0.00	358.15	

Survey Program	Date 5/21/2019			
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
170.00	25,101.00	SDI Surveys #1 (OH)	MWD+HDGM	OWSG MWD + HDGM

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(bearing)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.22	0.99	100.00	0.19	0.00	0.19	0.22	0.22	0.00	
200.00	0.42	9.56	200.00	0.75	0.03	0.75	0.21	0.20	8.57	
300.00	0.57	11.65	299.99	1.61	0.29	1.60	0.15	0.15	2.09	
400.00	0.70	358.69	399.99	2.71	0.30	2.70	0.19	0.13	-12.96	
500.00	0.71	8.16	499.98	4.01	0.36	4.00	0.12	0.01	9.47	
600.00	0.68	12.50	599.97	5.13	0.62	5.11	0.06	-0.03	4.33	
700.00	0.68	14.96	699.97	6.33	0.87	6.30	0.03	0.01	2.46	
800.00	0.60	29.23	799.96	7.38	1.27	7.33	0.18	-0.08	14.28	
900.00	0.56	29.71	899.95	8.22	1.81	8.18	0.05	-0.05	0.48	

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Well:	156H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.00	0.50	18.86	999.95	9.07	2.20	8.99	0.12	-0.06	-11.05
1,100.00	0.40	357.84	1,099.95	9.83	2.33	9.75	0.19	-0.09	-20.82
1,200.00	0.57	357.08	1,199.94	10.84	2.27	10.56	0.17	0.17	-0.76
1,300.00	0.57	10.24	1,299.94	11.65	2.32	11.57	0.13	0.00	13.16
1,400.00	0.29	356.64	1,399.94	12.31	2.37	12.22	0.30	-0.29	-13.60
1,500.00	0.30	344.02	1,499.93	12.83	2.31	12.74	0.06	0.01	-12.61
1,600.00	0.31	336.05	1,599.93	13.29	2.08	13.21	0.04	0.01	-7.97
1,700.00	0.29	336.64	1,699.93	13.81	1.92	13.74	0.02	-0.02	0.59
1,800.00	0.25	319.80	1,799.93	14.18	1.65	14.12	0.09	-0.04	-16.83
1,900.00	0.21	325.51	1,899.93	14.50	1.40	14.44	0.04	-0.03	5.71
2,000.00	0.24	359.88	1,999.93	14.84	1.27	14.79	0.14	0.03	34.48
2,100.00	0.14	347.50	2,099.93	15.22	1.30	15.17	0.11	-0.10	-12.48
2,200.00	0.21	307.33	2,199.93	15.41	1.13	15.36	0.14	0.07	-40.17
2,300.00	0.24	319.56	2,299.93	15.68	0.82	15.64	0.06	0.03	12.23
2,400.00	0.47	209.52	2,399.93	15.57	0.51	15.55	0.59	0.23	-110.04
2,500.00	0.76	204.86	2,499.92	14.58	0.03	14.57	0.29	0.29	-4.66
2,600.00	0.92	205.82	2,599.91	13.25	-0.60	13.26	0.17	0.16	0.96
2,700.00	1.23	201.59	2,699.89	11.51	-1.35	11.55	0.32	0.31	-4.23
2,800.00	1.09	197.48	2,799.87	9.59	-2.04	9.65	0.16	-0.14	-4.13
2,900.00	0.93	195.62	2,899.86	7.95	-2.44	8.03	0.17	-0.16	-1.84
3,000.00	1.61	221.32	2,999.83	6.17	-3.52	6.28	0.87	0.68	25.70
3,100.00	2.87	234.78	3,099.75	3.56	-6.45	3.77	1.35	1.26	13.45
3,200.00	4.07	247.46	3,199.57	0.74	-11.78	1.12	1.42	1.21	12.69
3,300.00	5.44	255.52	3,298.23	-1.83	-19.58	-1.19	1.52	1.37	8.05
3,400.00	6.93	260.53	3,398.64	-3.98	-30.21	-3.00	1.59	1.49	5.01
3,500.00	7.86	262.89	3,497.78	-5.84	-43.12	-4.44	0.97	0.93	2.16
3,600.00	7.78	283.93	3,596.82	-7.44	-56.88	-5.60	0.19	-0.08	1.24
3,700.00	7.39	284.95	3,695.95	-8.71	-69.93	-6.45	0.41	-0.39	1.02
3,800.00	6.59	286.32	3,795.18	-9.68	-82.27	-7.02	0.82	-0.80	1.37
3,900.00	6.55	264.83	3,894.56	-10.42	-93.35	-7.40	0.18	-0.05	-1.48
4,000.00	7.98	261.00	3,993.78	-11.96	-105.68	-8.54	1.51	1.43	-3.83
4,100.00	8.88	258.47	4,092.68	-14.63	-120.27	-10.74	0.98	0.91	-2.53
4,200.00	8.43	261.68	4,191.51	-17.40	-135.23	-13.02	0.66	-0.46	3.20
4,300.00	7.88	261.20	4,290.50	-19.42	-149.26	-14.59	0.55	-0.55	-0.48
4,400.00	6.74	261.16	4,389.68	-21.39	-161.87	-16.15	1.14	-1.14	-0.04
4,500.00	6.39	258.38	4,489.03	-23.40	-173.08	-17.80	0.48	-0.35	-2.78
4,600.00	7.82	257.75	4,588.26	-26.01	-185.21	-20.02	1.43	1.43	-0.63
4,700.00	8.56	260.73	4,687.22	-28.67	-199.34	-22.22	0.85	0.74	2.99
4,800.00	8.08	262.91	4,786.16	-30.72	-213.67	-23.80	0.57	-0.48	2.18
4,900.00	7.80	263.54	4,885.22	-32.26	-227.26	-24.91	0.29	-0.28	0.63
5,000.00	8.30	261.73	4,984.25	-34.04	-241.07	-26.24	0.56	0.50	-1.81
5,100.00	9.45	260.84	5,083.08	-36.44	-256.09	-28.16	1.17	1.16	-0.89
5,200.00	9.47	259.84	5,181.67	-39.19	-272.60	-30.37	0.17	0.02	-1.00
5,300.00	9.39	259.01	5,280.35	-42.23	-288.54	-32.89	0.16	-0.08	-0.83

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Site:	Thistle Unit	MD Reference:	KB = 24' @ 3675.00usft (Cactus 167)
Well:	156H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.00	9.81	264.17	5,378.95	-45.04	-304.94	-35.17	0.96	0.42	5.16
5,500.00	10.21	269.42	5,477.41	-45.64	-322.40	-35.21	1.00	0.40	5.26
5,600.00	10.41	269.90	5,575.80	-45.73	-340.29	-34.72	0.21	0.20	0.47
5,700.00	10.08	265.85	5,674.17	-46.14	-358.23	-34.55	0.79	-0.32	-4.05
5,800.00	9.31	262.46	5,772.74	-48.01	-375.02	-35.88	0.96	-0.78	-3.39
5,900.00	8.56	260.87	5,871.53	-50.27	-390.35	-37.64	0.79	-0.75	-1.58
6,000.00	8.40	260.06	5,970.45	-52.71	-404.80	-39.62	0.20	-0.18	-0.81
6,100.00	7.70	261.86	6,069.45	-54.98	-418.71	-41.43	0.74	-0.70	1.80
6,200.00	7.25	260.09	6,168.60	-56.97	-431.54	-43.01	0.51	-0.46	-1.77
6,300.00	7.16	259.60	6,267.81	-59.19	-443.87	-44.83	0.10	-0.08	-0.49
6,400.00	6.57	261.38	6,367.10	-61.16	-455.65	-46.41	0.63	-0.59	1.78
6,500.00	6.40	261.61	6,466.46	-62.82	-466.79	-47.72	0.17	-0.17	0.23
6,600.00	6.37	261.89	6,565.82	-64.48	-477.94	-49.01	0.04	-0.04	0.09
6,700.00	5.17	263.88	6,665.31	-65.79	-487.97	-50.01	1.21	-1.19	2.19
6,800.00	3.45	267.69	6,765.01	-66.32	-495.59	-50.28	1.75	-1.72	3.81
6,900.00	1.61	268.61	6,864.92	-66.48	-499.78	-50.31	1.84	-1.84	0.92
7,000.00	0.97	271.98	6,964.90	-66.46	-501.79	-50.22	0.65	-0.64	3.37
7,100.00	1.01	272.70	7,064.88	-66.39	-503.53	-50.10	0.04	0.04	0.71
7,200.00	0.98	275.16	7,164.87	-66.28	-505.26	-49.93	0.05	-0.02	2.47
7,300.00	1.12	273.53	7,264.85	-66.11	-507.03	-49.71	0.13	0.13	-1.63
7,400.00	1.23	273.92	7,364.83	-66.01	-509.12	-49.54	0.12	0.12	0.39
7,500.00	1.19	275.42	7,464.81	-65.83	-511.25	-49.29	0.06	-0.05	1.50
7,600.00	1.04	272.95	7,564.79	-65.67	-513.20	-49.06	0.15	-0.14	-2.47
7,700.00	1.15	271.59	7,664.77	-65.60	-515.05	-48.94	0.11	0.11	-1.35
7,800.00	1.33	274.08	7,764.75	-65.51	-517.22	-48.77	0.19	0.18	2.49
7,900.00	0.86	277.93	7,864.73	-65.31	-519.21	-48.52	0.48	-0.47	3.85
8,000.00	0.55	342.19	7,964.72	-64.78	-520.11	-47.96	0.80	-0.31	64.26
8,100.00	0.54	32.15	8,064.72	-63.91	-519.99	-47.09	0.46	-0.01	49.96
8,200.00	0.66	26.64	8,164.71	-62.98	-519.49	-46.18	0.13	0.12	-5.51
8,300.00	0.59	32.91	8,264.71	-62.02	-518.91	-45.24	0.09	-0.06	6.27
8,400.00	0.34	359.79	8,364.70	-61.33	-518.67	-44.55	0.36	-0.25	-33.13
8,500.00	0.36	352.80	8,464.70	-60.63	-518.71	-43.85	0.05	0.02	-6.98
8,600.00	0.12	302.23	8,564.70	-60.34	-518.82	-43.56	0.30	-0.25	-50.57
8,700.00	0.26	285.48	8,664.70	-60.21	-519.12	-43.42	0.16	0.15	-16.75
8,800.00	0.43	277.57	8,764.70	-60.10	-519.72	-43.29	0.18	0.17	-7.91
8,900.00	0.61	270.75	8,864.69	-60.03	-520.62	-43.19	0.19	0.18	-6.82
9,000.00	0.90	265.61	8,964.68	-60.12	-521.93	-43.23	0.30	0.29	-5.14
9,100.00	2.62	344.83	9,064.68	-58.75	-523.21	-41.83	2.61	1.72	79.22
9,200.00	9.89	3.16	9,164.02	-48.14	-523.44	-31.22	7.44	7.26	18.33
9,300.00	18.02	2.26	9,260.95	-23.91	-522.25	-7.04	8.14	8.13	-0.90
9,400.00	26.07	2.58	9,353.61	13.42	-520.61	30.22	8.05	8.04	0.32
9,500.00	36.26	2.17	9,439.30	64.66	-518.66	81.37	10.19	10.19	-0.41
9,600.00	50.57	2.20	9,511.83	133.03	-516.12	149.62	14.31	14.31	0.03

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,700.00	63.75	3.45	9,566.03	216.70	-511.84	233.11	13.22	13.18	1.25
9,800.00	73.61	1.94	9,602.11	309.67	-508.43	325.86	9.96	9.86	-1.51
9,900.00	82.44	0.09	9,621.78	407.60	-504.84	423.68	9.02	8.83	-1.86
10,000.00	87.25	0.69	9,630.69	507.17	-504.54	523.19	4.85	4.81	0.61
10,005.28	87.36	0.62	9,630.93	512.44	-504.48	528.46	2.60	2.15	-1.47
FTP[TU156H]									
10,100.00	89.40	359.23	9,633.40	607.12	-504.72	623.10	2.60	2.15	-1.46
10,200.00	89.69	358.98	9,634.18	707.10	-508.38	723.08	0.38	0.29	-0.25
10,300.00	89.81	359.11	9,634.60	807.09	-507.90	823.07	0.17	0.12	0.12
10,400.00	89.91	358.74	9,634.89	907.07	-509.90	923.06	0.38	0.10	-0.36
10,500.00	90.07	358.41	9,634.83	1,007.04	-512.13	1,023.05	0.37	0.16	-0.34
10,600.00	89.75	358.01	9,634.85	1,106.98	-515.68	1,123.05	0.51	-0.33	-0.40
10,700.00	89.16	358.95	9,635.86	1,206.94	-518.38	1,223.04	1.11	-0.59	0.94
10,800.00	88.98	359.40	9,637.61	1,306.92	-519.55	1,323.01	0.48	-0.17	0.45
10,900.00	88.99	358.76	9,639.34	1,406.89	-520.97	1,422.97	0.64	0.01	-0.64
11,000.00	89.04	0.19	9,641.10	1,506.85	-522.71	1,522.94	1.43	0.05	1.43
11,100.00	89.16	1.09	9,642.66	1,606.83	-520.97	1,622.81	0.91	0.12	0.90
11,200.00	89.35	1.21	9,643.99	1,706.80	-519.04	1,722.67	0.22	0.19	0.11
11,300.00	89.45	1.45	9,645.01	1,806.77	-516.73	1,822.51	0.26	0.10	0.24
11,400.00	89.35	1.38	9,646.04	1,906.73	-514.21	1,922.34	0.12	-0.10	-0.07
11,500.00	89.42	0.26	9,647.13	2,006.71	-512.67	2,022.21	1.12	0.07	-1.12
11,600.00	90.45	0.90	9,647.31	2,106.70	-511.79	2,122.13	1.21	1.03	0.64
11,700.00	89.51	0.22	9,647.35	2,206.70	-510.81	2,222.04	1.16	-0.94	-0.68
11,800.00	89.93	0.56	9,647.86	2,306.69	-510.14	2,321.96	0.54	0.42	0.34
11,900.00	90.55	1.01	9,647.31	2,406.68	-508.68	2,421.85	0.76	0.61	0.45
12,000.00	90.14	1.02	9,648.75	2,506.66	-507.04	2,521.73	0.40	-0.40	0.00
12,100.00	89.65	1.42	9,648.70	2,606.64	-504.66	2,621.57	0.64	-0.49	0.41
12,200.00	88.50	0.74	9,648.59	2,706.60	-502.83	2,721.42	1.34	-1.15	-0.69
12,300.00	88.28	0.50	9,651.31	2,806.56	-501.88	2,821.30	0.32	-0.22	-0.24
12,400.00	88.68	0.44	9,654.43	2,906.50	-500.94	2,921.16	0.40	0.40	-0.06
12,500.00	90.89	0.32	9,655.02	3,006.49	-500.42	3,021.08	2.21	2.20	-0.12
12,600.00	91.05	0.80	9,652.21	3,106.45	-499.56	3,120.96	0.52	0.17	0.49
12,700.00	89.05	0.89	9,652.27	3,206.43	-497.82	3,220.83	2.01	-2.01	0.09
12,800.00	88.69	0.69	9,654.71	3,306.39	-496.52	3,320.69	0.41	-0.36	-0.20
12,900.00	88.43	1.16	9,657.00	3,406.35	-495.05	3,420.56	0.54	-0.26	0.47
13,000.00	88.35	359.82	9,659.94	3,506.30	-493.69	3,520.41	1.35	-0.08	-1.35
13,100.00	88.88	359.05	9,662.44	3,606.26	-494.94	3,620.35	0.93	0.53	-0.76
13,200.00	90.12	358.58	9,663.40	3,706.23	-496.99	3,720.34	1.33	1.24	-0.47
13,300.00	91.09	359.09	9,662.31	3,806.20	-498.12	3,820.33	1.09	0.96	0.51
13,400.00	91.61	358.42	9,659.93	3,906.15	-501.22	3,920.29	0.85	0.52	-0.67
13,500.00	92.55	359.11	9,658.23	4,006.05	-503.39	4,020.21	1.17	0.94	0.69
13,600.00	91.85	0.03	9,652.42	4,105.98	-504.06	4,120.11	1.16	-0.70	0.92
13,700.00	91.25	0.04	9,649.51	4,205.93	-503.94	4,220.01	0.60	-0.60	0.01
13,800.00	89.24	359.24	9,649.23	4,305.92	-504.34	4,319.96	2.17	-2.01	-0.80

Scientific Drilling, Intl Survey Report

Company: Devon Energy
Project: Lea County, NM (NAD83 NME)
Site: Thistle Unit
Well: 156H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 156H
TVD Reference: KB = 24' @ 3675.00usft (Cactus 167)
MD Reference: KB = 24' @ 3675.00usft (Cactus 167)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,900.00	88.27	357.58	9,651.59	4,405.85	-507.38	4,419.93	1.91	-0.96	-1.65
14,000.00	88.60	357.99	9,654.62	4,505.70	-511.80	4,519.87	0.53	0.33	0.41
14,100.00	89.71	359.34	9,655.91	4,605.67	-513.53	4,619.85	1.74	1.10	1.35
14,200.00	90.42	359.43	9,655.88	4,705.66	-514.90	4,719.83	0.72	0.71	0.09
14,300.00	90.18	359.94	9,654.82	4,805.65	-515.25	4,819.78	0.56	-0.24	0.51
14,400.00	89.39	0.19	9,655.52	4,905.65	-515.22	4,919.73	0.82	-0.79	0.24
14,500.00	90.34	0.37	9,656.13	5,005.65	-514.65	5,019.65	0.97	0.95	0.18
14,600.00	90.68	0.73	9,654.80	5,105.63	-513.81	5,119.56	0.49	0.34	0.36
14,700.00	89.39	1.82	9,654.51	5,205.61	-511.73	5,219.41	1.69	-1.29	1.10
14,800.00	88.25	2.61	9,656.68	5,305.50	-507.74	5,319.13	1.38	-1.14	0.78
14,900.00	88.13	2.86	9,659.99	5,405.33	-502.91	5,418.75	0.28	-0.12	0.26
15,000.00	87.17	0.63	9,663.95	5,505.19	-499.55	5,518.44	2.43	-0.97	-2.23
15,006.68	87.19	0.66	9,664.28	5,511.86	-499.47	5,525.11	0.52	0.29	0.44
T1[TU156H]									
15,100.00	87.45	1.07	9,668.78	5,605.06	-498.36	5,618.23	0.52	0.29	0.44
15,200.00	87.27	0.77	9,673.35	5,704.94	-496.70	5,718.00	0.35	-0.18	-0.30
15,300.00	87.38	0.40	9,678.01	5,804.83	-495.66	5,817.80	0.39	0.11	-0.38
15,400.00	87.21	359.68	9,682.76	5,904.71	-495.69	5,917.64	0.73	-0.17	-0.71
15,500.00	87.87	0.12	9,687.28	6,004.61	-495.76	6,017.49	0.79	0.66	0.44
15,600.00	89.91	359.75	9,688.95	6,104.59	-495.83	6,117.42	2.07	2.04	-0.37
15,700.00	90.24	359.24	9,688.76	6,204.59	-496.78	6,217.39	0.61	0.33	-0.51
15,800.00	90.48	359.11	9,688.25	6,304.57	-498.24	6,317.37	0.28	0.24	-0.13
15,900.00	91.07	359.31	9,686.81	6,404.55	-499.77	6,417.35	0.62	0.58	0.19
16,000.00	91.45	359.77	9,684.66	6,504.52	-500.45	6,517.29	0.61	0.39	0.47
16,100.00	91.51	359.89	9,681.84	6,604.48	-500.75	6,617.21	0.13	0.06	0.12
16,200.00	90.72	359.94	9,679.78	6,704.46	-500.86	6,717.14	0.80	-0.78	0.05
16,300.00	90.41	359.37	9,678.09	6,804.46	-501.25	6,817.09	0.64	-0.30	-0.57
16,400.00	90.43	358.67	9,678.24	6,904.44	-503.06	6,917.08	0.70	0.02	-0.70
16,500.00	90.63	358.57	9,677.43	7,004.40	-505.59	7,017.07	0.22	0.20	-0.10
16,600.00	91.59	359.09	9,675.64	7,104.36	-507.73	7,117.05	1.10	0.96	0.52
16,700.00	91.75	359.68	9,672.51	7,204.31	-508.78	7,216.98	0.61	0.16	0.59
16,800.00	91.43	359.68	9,669.70	7,304.27	-509.25	7,316.90	0.32	-0.32	-0.02
16,900.00	88.70	359.84	9,669.30	7,404.25	-509.73	7,416.85	2.74	-2.73	0.18
17,000.00	88.68	359.97	9,671.83	7,504.22	-509.89	7,516.77	0.13	-0.02	0.13
17,100.00	89.95	1.34	9,673.03	7,604.20	-508.78	7,616.66	1.88	1.28	1.38
17,200.00	88.44	1.63	9,674.53	7,704.15	-506.17	7,716.48	1.54	-1.51	0.28
17,300.00	88.80	1.54	9,676.97	7,804.09	-503.49	7,816.27	0.37	0.36	-0.09
17,400.00	89.46	2.13	9,678.51	7,904.02	-500.13	7,916.04	0.89	0.66	0.59
17,500.00	89.80	1.50	9,678.81	8,003.97	-496.94	8,015.84	0.72	0.35	-0.63
17,600.00	88.53	1.06	9,680.51	8,103.93	-494.93	8,115.68	1.34	-1.27	-0.44
17,700.00	88.61	1.64	9,683.12	8,203.86	-492.52	8,215.49	0.58	0.08	0.58
17,800.00	88.52	1.09	9,685.24	8,303.80	-489.63	8,315.28	0.55	-0.10	-0.55
17,900.00	87.62	359.31	9,688.88	8,403.73	-489.54	8,415.15	1.99	-0.89	-1.78

Scientific Drilling, Intl Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well 156H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB = 24' @ 3675.00usft (Cactus 167)
Site:	Thistle Unit	MD Reference:	KB = 24' @ 3675.00usft (Cactus 167)
Well:	156H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
18,000.00	87.89	358.81	9,692.97	8,503.63	-491.42	8,515.06	0.57	0.27	-0.50
18,100.00	87.79	358.24	9,698.35	8,603.54	-493.68	8,614.99	0.57	-0.10	-0.57
18,200.00	87.87	358.33	9,700.60	8,703.39	-497.27	8,714.80	0.12	0.08	0.09
18,300.00	89.34	359.48	9,703.17	8,803.33	-499.06	8,814.85	1.87	1.47	1.15
18,400.00	90.20	359.69	9,703.26	8,903.33	-499.54	8,914.82	0.88	0.88	0.20
18,500.00	90.60	359.85	9,702.59	9,003.33	-500.06	9,014.78	0.43	0.40	0.17
18,600.00	90.25	359.40	9,701.64	9,103.32	-500.50	9,114.73	0.58	-0.36	-0.46
18,700.00	90.20	358.54	9,701.40	9,203.30	-502.29	9,214.72	0.85	-0.05	-0.85
18,800.00	90.57	357.52	9,700.76	9,303.24	-505.70	9,314.72	1.09	0.38	-1.02
18,900.00	91.08	359.38	9,699.33	9,403.18	-508.81	9,414.70	1.93	0.51	1.86
19,000.00	91.23	358.59	9,697.27	9,503.14	-510.27	9,514.66	0.81	0.15	-0.79
19,100.00	91.41	358.00	9,694.97	9,603.07	-513.27	9,614.63	0.61	0.17	-0.59
19,200.00	91.34	358.85	9,692.57	9,703.00	-516.03	9,714.60	0.86	-0.06	0.85
19,300.00	91.25	359.28	9,690.41	9,802.87	-517.61	9,814.57	0.43	-0.10	0.42
19,400.00	89.05	0.75	9,689.24	9,902.84	-518.03	9,914.51	2.84	-2.19	1.48
19,500.00	86.51	359.21	9,693.35	10,002.84	-517.28	10,014.33	2.97	-2.55	-1.54
19,600.00	88.53	1.32	9,698.41	10,102.70	-517.65	10,114.14	2.92	2.02	2.11
19,700.00	89.23	1.65	9,700.05	10,202.64	-514.66	10,213.94	0.78	0.70	0.33
19,800.00	87.56	0.84	9,702.68	10,302.57	-512.44	10,313.75	1.85	-1.67	-0.81
19,900.00	89.31	2.91	9,705.56	10,402.47	-509.29	10,413.49	2.70	1.75	2.06
20,000.00	89.47	2.54	9,708.64	10,502.35	-504.56	10,513.17	0.40	0.16	-0.37
20,100.00	90.30	3.14	9,706.77	10,602.23	-499.58	10,612.83	1.03	0.83	0.60
20,168.46	90.32	3.15	9,706.42	10,668.58	-495.94	10,679.03	0.03	0.03	0.01
T2[TU156H]									
20,200.00	90.33	3.15	9,708.27	10,702.06	-493.89	10,712.43	0.03	0.03	0.01
20,300.00	90.75	1.52	9,705.36	10,801.97	-489.73	10,812.15	1.68	0.42	-1.63
20,400.00	91.13	359.69	9,703.63	10,901.85	-488.84	10,912.05	1.88	0.39	-1.84
20,500.00	91.11	358.71	9,701.68	11,001.92	-490.31	11,012.01	0.97	-0.02	-0.97
20,600.00	91.11	358.13	9,699.74	11,101.86	-493.13	11,111.99	0.58	0.00	-0.58
20,700.00	91.13	357.74	9,697.79	11,201.77	-496.72	11,211.97	0.39	0.02	-0.39
20,800.00	91.47	357.74	9,695.65	11,301.66	-500.87	11,311.94	0.33	0.33	0.00
20,900.00	92.07	358.58	9,692.53	11,401.56	-504.21	11,411.89	1.04	0.60	0.84
21,000.00	92.07	359.80	9,688.70	11,501.47	-505.64	11,511.80	1.22	0.00	1.22
21,100.00	91.41	0.82	9,685.59	11,601.42	-505.01	11,611.68	1.21	-0.66	1.01
21,200.00	90.37	0.48	9,683.95	11,701.39	-503.49	11,711.55	1.10	-1.05	-0.33
21,300.00	89.29	359.46	9,684.29	11,801.39	-503.54	11,811.49	1.49	-1.08	-1.03
21,400.00	89.32	359.51	9,685.78	11,901.37	-504.72	11,911.46	0.06	0.03	0.06
21,500.00	89.83	359.85	9,686.53	12,001.37	-505.24	12,011.42	0.81	0.51	0.34
21,600.00	89.93	359.64	9,686.67	12,101.37	-505.60	12,111.38	0.24	0.10	-0.21
21,700.00	89.75	0.11	9,686.93	12,201.36	-505.92	12,211.34	0.50	-0.18	0.47
21,800.00	89.76	359.80	9,687.37	12,301.36	-505.92	12,311.28	0.31	0.01	-0.31
21,900.00	89.30	359.36	9,688.17	12,401.36	-506.66	12,411.25	0.63	-0.45	-0.43
22,000.00	90.89	1.11	9,687.99	12,501.35	-506.22	12,511.17	2.36	1.59	1.75
22,100.00	91.54	1.15	9,685.85	12,601.31	-504.26	12,611.02	0.65	0.65	0.04

Scientific Drilling, Intl **Survey Report**

Company: Devon Energy
Project: Lea County, NM (NAD83 NME)
Site: Thistle Unit
Well: 156H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 156H
TVD Reference: KB = 24' @ 3875.00usft (Cactus 167)
MD Reference: KB = 24' @ 3875.00usft (Cactus 167)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
22,200.00	91.93	1.33	9,682.88	12,701.24	-502.07	12,710.83	0.43	0.39	0.19
22,300.00	92.86	1.36	9,678.79	12,801.13	-499.77	12,810.59	0.93	0.93	0.03
22,400.00	93.77	1.58	9,672.64	12,900.90	-497.13	12,910.22	0.94	0.92	0.22
22,500.00	93.00	1.39	9,666.83	13,000.70	-494.54	13,009.89	0.80	-0.77	-0.18
22,600.00	92.46	1.35	9,661.96	13,100.55	-492.23	13,109.61	0.54	-0.54	-0.05
22,700.00	91.55	1.53	9,658.47	13,200.46	-489.71	13,209.39	0.93	-0.91	0.19
22,800.00	90.17	1.81	9,656.73	13,300.40	-486.85	13,309.18	1.41	-1.38	0.27
22,900.00	89.34	2.12	9,657.70	13,400.33	-483.37	13,408.95	0.89	-0.83	0.31
22,974.49	89.43	1.61	9,658.50	13,474.78	-480.95	13,483.28	0.70	0.12	-0.69
T3[TU156H]									
23,000.00	89.46	1.44	9,658.63	13,500.27	-479.91	13,508.72	0.70	0.12	-0.69
23,100.00	89.13	359.67	9,659.80	13,600.25	-478.83	13,608.62	1.79	-0.33	-1.76
23,200.00	88.57	358.34	9,661.78	13,700.21	-480.77	13,708.59	1.44	-0.55	-1.33
23,300.00	88.01	357.80	9,664.77	13,800.10	-484.24	13,808.54	0.78	-0.56	-0.54
23,400.00	88.76	357.89	9,667.87	13,899.98	-488.10	13,908.49	0.75	0.74	0.09
23,500.00	89.42	358.08	9,669.37	13,999.91	-491.60	14,008.48	0.69	0.66	0.19
23,600.00	89.86	357.97	9,669.99	14,099.85	-495.00	14,108.48	0.46	0.44	-0.11
23,700.00	90.80	359.00	9,669.45	14,199.80	-497.73	14,208.47	1.39	0.94	1.03
23,800.00	90.26	357.71	9,668.47	14,299.76	-500.53	14,308.46	1.41	-0.54	-1.30
23,900.00	88.97	357.36	9,669.23	14,399.66	-504.84	14,408.45	1.33	-1.28	-0.35
24,000.00	89.17	357.25	9,670.84	14,499.53	-509.63	14,508.43	0.22	0.19	-0.11
24,100.00	89.20	357.66	9,672.23	14,599.43	-513.89	14,608.41	0.41	0.03	0.41
24,200.00	89.11	357.13	9,673.73	14,699.31	-518.58	14,708.39	0.54	-0.09	-0.53
24,300.00	89.50	357.02	9,675.12	14,799.18	-523.52	14,808.36	0.40	0.39	-0.11
24,400.00	90.78	357.42	9,674.96	14,899.02	-529.07	14,908.33	1.34	1.28	0.40
24,500.00	92.12	359.41	9,672.30	14,998.95	-531.45	15,008.29	2.40	1.34	1.99
24,600.00	92.42	0.26	9,668.03	15,098.86	-531.74	15,108.15	0.90	0.30	0.85
24,700.00	92.22	0.66	9,664.13	15,198.77	-530.75	15,207.99	0.45	-0.20	0.40
24,800.00	92.44	0.42	9,660.09	15,298.69	-529.74	15,307.81	0.33	0.22	-0.24
24,900.00	92.72	0.26	9,655.59	15,398.58	-529.22	15,407.64	0.32	0.28	-0.16
25,000.00	92.91	359.86	9,650.66	15,498.46	-529.00	15,507.46	0.44	0.19	-0.39
25,029.00	92.95	359.69	9,649.18	15,527.42	-529.11	15,536.41	0.61	0.15	-0.60
FINAL MWD Survey (25029.00' MD)									
25,100.00	92.95	359.69	9,645.52	15,598.33	-529.50	15,607.29	0.00	0.00	0.00
BHL[TU156H]									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
25,029.00	9,649.18	15,527.42	-529.11	FINAL MWD Survey (25029.00' MD)
25,101.00	9,645.47	15,599.33	-529.50	FINAL Proj. to Bit (25101.00' MD)

Scientific Drilling, Intl
Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well 156H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB = 24' @ 3675.00usft (Cactus 167)
Site:	Thistle Unit	MD Reference:	KB = 24' @ 3675.00usft (Cactus 167)
Well:	156H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Checked By: _____	Approved By: _____	Date: _____
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