

Devon Energy Corporation

Thistle Unit 159H

Lea County, NM

Nabors X05

API# 30-025-43659

HOBBS OCD
OCT 24 2019
RECEIVED

March 21, 2019 - April 18, 2019

MO-XX-0905554820

Sperry Drilling

MWD Survey Report

Submitted by:

3950 Interwood South Parkway Houston, TX 77032

Ph: 281.986.4400

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Sperry Drilling

[REDACTED]

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3950 Interwood S. Pkwy • Houston, TX 77032
PHONE 281.986.4400 • FAX 281.986.4499

State of Texas, Lea County, NM

I, Ralph Clarke, certify that I am employed by Halliburton Energy Services, Inc. (aka Sperry Drilling) and that on the dates of March 21, 2019 through April 18, 2019, I did conduct or supervise the taking of MWD directional surveys for the Thistle Unit 159H well from a depth of 143' MD to a depth of 25,076' MD. This data is true, correct, complete and within the limitations of the tools as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling). I am authorized and qualified to make this report and these surveys were conducted at the request of Devon Energy Corporation, for the Thistle Unit 159H well, API # 30-025-43659 in Lea County, NM. I have reviewed this report and find that it confirms to the principles and procedures as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling).



Ralph Clarke
Service Coordinator

Devon Energy Corporation

Lea County, NM (NAD 83)

Sec 33 - 23S - 33E (Thistle Unit)

Thistle Unit 159H

Wellbore #1

Design: Actual Drilled

Survey Report - Geographic

22 April, 2019

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Survey Report - Geographic

Company:	Devon Energy Corporation	Local Co-ordinate Reference:	Well Thistle Unit 159H
Project:	Lea County, NM (NAD 83)	TVD Reference:	RKB (Nabors X05) 33 + GL @ 3686.5usft
Site:	Sec 33 - 23S - 33E (Thistle Unit)	MD Reference:	RKB (Nabors X05) 33 + GL @ 3686.5usft
Well:	Thistle Unit 159H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual Drilled	Database:	SOUTH US

Project	Lea 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	Sec 33 - 23S - 33E (Thistle Unit)				
Site Position:		Northing:	457,083.16 usft	Latitude:	32° 15' 15.548 N
From:	Map	Easting:	775,859.81 usft	Longitude:	103° 34' 28.879 W
Position Uncertainty:	5.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.40 °

Well	Thistle Unit 159H					
Well Position	+N/-S	0.0 usft	Northing:	457,083.16 usft	Latitude:	32° 15' 15.548 N
	+E/-W	0.0 usft	Easting:	775,859.81 usft	Longitude:	103° 34' 28.879 W
Position Uncertainty		0.5 usft	Wellhead Elevation:	usft	Ground Level:	3,653.5 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2018	1/23/2019	6.85	60.02	47,827.93333309

Design	Actual Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	0.00	

Survey Program	Date	4/22/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
143.0	25,018.0	MWD (Wellbore #1)	2_MWD+IFR1	A005Mb: IFR declination correction only	
25,076.0	25,076.0	Projection to TD (Wellbore #1)	2_Blind	A026Ua: Blind drilling - no survey data	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	457,083.16	775,859.81	32° 15' 15.548 N	103° 34' 28.879 W	
143.0	0.72	174.33	143.0	-0.9	0.1	457,082.27	775,859.90	32° 15' 15.540 N	103° 34' 28.878 W	
First MWD Survey										
232.0	0.59	156.25	232.0	-1.9	0.3	457,081.29	775,860.14	32° 15' 15.530 N	103° 34' 28.876 W	
330.0	0.44	151.54	330.0	-2.7	0.7	457,080.50	775,860.52	32° 15' 15.522 N	103° 34' 28.871 W	
426.0	0.45	153.84	426.0	-3.3	1.1	457,079.84	775,860.86	32° 15' 15.515 N	103° 34' 28.867 W	
521.0	0.34	137.03	521.0	-3.9	1.4	457,079.29	775,861.22	32° 15' 15.510 N	103° 34' 28.863 W	
615.0	0.39	107.39	615.0	-4.2	1.9	457,078.99	775,861.71	32° 15' 15.507 N	103° 34' 28.858 W	
711.0	0.50	111.45	711.0	-4.4	2.6	457,078.74	775,862.41	32° 15' 15.505 N	103° 34' 28.849 W	
806.0	0.57	114.23	806.0	-4.8	3.4	457,078.40	775,863.23	32° 15' 15.501 N	103° 34' 28.840 W	
901.0	0.47	104.61	901.0	-5.1	4.2	457,078.11	775,864.04	32° 15' 15.498 N	103° 34' 28.831 W	

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Survey Report - Geographic

Company: Devon Energy Corporation	Local Co-ordinate Reference: Well Thistle Unit 159H	
Project: Lea County, NM (NAD 83)	TVD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft	
Site: Sec 33 - 23S - 33E (Thistle Unit)	MD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft	
Well: Thistle Unit 159H	North Reference: Grid	
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature	
Design: Actual Drilled	Database: SOUTH US	

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
996.0	0.47	102.93	996.0	-5.2	5.0	457,077.92	775,864.80	32° 15' 15.496 N	103° 34' 28.822 W
1,092.0	0.34	105.10	1,092.0	-5.4	5.6	457,077.76	775,865.45	32° 15' 15.495 N	103° 34' 28.814 W
1,187.0	0.22	137.98	1,187.0	-5.6	6.0	457,077.55	775,865.85	32° 15' 15.492 N	103° 34' 28.809 W
1,282.0	0.09	35.16	1,282.0	-5.7	6.2	457,077.47	775,866.01	32° 15' 15.492 N	103° 34' 28.808 W
1,314.0	0.24	109.49	1,314.0	-5.7	6.3	457,077.47	775,866.09	32° 15' 15.492 N	103° 34' 28.807 W
1,411.0	0.39	336.54	1,411.0	-5.5	6.3	457,077.71	775,866.15	32° 15' 15.494 N	103° 34' 28.806 W
1,506.0	0.44	346.57	1,506.0	-4.8	6.1	457,078.36	775,865.94	32° 15' 15.500 N	103° 34' 28.808 W
1,602.0	0.59	341.59	1,602.0	-4.0	5.9	457,079.19	775,865.70	32° 15' 15.509 N	103° 34' 28.811 W
1,697.0	0.71	0.77	1,696.9	-2.9	5.7	457,080.24	775,865.55	32° 15' 15.519 N	103° 34' 28.813 W
1,792.0	0.35	344.11	1,791.9	-2.1	5.7	457,081.11	775,865.48	32° 15' 15.528 N	103° 34' 28.813 W
1,887.0	0.25	16.87	1,886.9	-1.6	5.7	457,081.58	775,865.46	32° 15' 15.532 N	103° 34' 28.814 W
1,983.0	0.07	279.16	1,982.9	-1.4	5.7	457,081.79	775,865.46	32° 15' 15.534 N	103° 34' 28.814 W
2,078.0	0.92	251.32	2,077.9	-1.6	4.9	457,081.56	775,864.68	32° 15' 15.532 N	103° 34' 28.823 W
2,173.0	1.47	244.45	2,172.9	-2.4	3.1	457,080.79	775,862.86	32° 15' 15.525 N	103° 34' 28.844 W
2,268.0	1.93	253.84	2,267.9	-3.3	0.4	457,079.82	775,860.22	32° 15' 15.515 N	103° 34' 28.875 W
2,363.0	2.58	256.25	2,362.8	-4.3	-3.2	457,078.87	775,856.61	32° 15' 15.506 N	103° 34' 28.917 W
2,458.0	3.46	251.94	2,457.7	-5.7	-8.0	457,077.47	775,851.81	32° 15' 15.493 N	103° 34' 28.973 W
2,553.0	4.27	252.95	2,552.5	-7.6	-14.1	457,075.54	775,845.70	32° 15' 15.474 N	103° 34' 29.044 W
2,649.0	5.10	254.83	2,648.1	-9.8	-21.6	457,073.38	775,838.17	32° 15' 15.453 N	103° 34' 29.132 W
2,744.0	5.68	255.91	2,742.7	-12.0	-30.3	457,071.13	775,829.53	32° 15' 15.431 N	103° 34' 29.233 W
2,839.0	6.61	260.00	2,837.2	-14.1	-40.2	457,069.03	775,819.59	32° 15' 15.411 N	103° 34' 29.349 W
2,934.0	6.28	260.98	2,931.6	-15.9	-50.7	457,067.27	775,809.07	32° 15' 15.395 N	103° 34' 29.471 W
3,029.0	5.94	261.66	3,026.0	-17.4	-60.7	457,065.74	775,799.07	32° 15' 15.380 N	103° 34' 29.588 W
3,124.0	6.51	264.51	3,120.5	-18.6	-71.0	457,064.51	775,788.85	32° 15' 15.369 N	103° 34' 29.707 W
3,220.0	6.19	260.96	3,215.9	-20.0	-81.5	457,063.18	775,778.32	32° 15' 15.356 N	103° 34' 29.830 W
3,315.0	6.60	258.86	3,310.3	-21.8	-91.9	457,061.32	775,767.91	32° 15' 15.339 N	103° 34' 29.951 W
3,410.0	6.89	259.65	3,404.6	-23.9	-102.9	457,059.24	775,756.94	32° 15' 15.319 N	103° 34' 30.079 W
3,505.0	6.73	263.30	3,499.0	-25.6	-114.0	457,057.57	775,745.81	32° 15' 15.303 N	103° 34' 30.209 W
3,601.0	6.20	269.42	3,594.3	-26.3	-124.8	457,056.86	775,735.04	32° 15' 15.297 N	103° 34' 30.334 W
3,696.0	6.36	269.04	3,688.8	-26.4	-135.2	457,056.72	775,724.65	32° 15' 15.296 N	103° 34' 30.455 W
3,791.0	6.60	269.95	3,783.2	-26.5	-145.9	457,056.63	775,713.93	32° 15' 15.296 N	103° 34' 30.580 W
3,886.0	6.43	259.11	3,877.6	-27.5	-156.6	457,055.62	775,703.24	32° 15' 15.287 N	103° 34' 30.705 W
3,981.0	6.98	249.24	3,971.9	-30.6	-167.2	457,052.57	775,692.62	32° 15' 15.257 N	103° 34' 30.829 W
4,076.0	6.72	247.67	4,066.2	-34.8	-177.7	457,048.41	775,682.08	32° 15' 15.217 N	103° 34' 30.952 W
4,171.0	6.79	246.59	4,160.6	-39.1	-188.0	457,044.07	775,671.79	32° 15' 15.175 N	103° 34' 31.072 W
4,267.0	6.99	247.19	4,255.9	-43.6	-198.6	457,039.55	775,661.20	32° 15' 15.131 N	103° 34' 31.196 W
4,362.0	6.91	252.93	4,350.2	-47.5	-209.4	457,035.63	775,650.40	32° 15' 15.093 N	103° 34' 31.322 W
4,448.0	5.91	253.73	4,435.6	-50.3	-218.6	457,032.87	775,641.21	32° 15' 15.066 N	103° 34' 31.429 W
100' FSL Perf Line Cross 4448' MD/ 4435' TVD (100.26' FSL, 2057.88' FEL of Sec 33)									
4,457.0	5.81	253.83	4,444.6	-50.5	-219.5	457,032.61	775,640.32	32° 15' 15.064 N	103° 34' 31.439 W
4,552.0	5.24	251.08	4,539.2	-53.3	-228.2	457,029.87	775,631.60	32° 15' 15.037 N	103° 34' 31.541 W
4,647.0	5.91	253.56	4,633.7	-56.1	-237.0	457,027.07	775,622.81	32° 15' 15.010 N	103° 34' 31.644 W
4,742.0	6.26	256.82	4,728.2	-58.7	-246.7	457,024.51	775,613.07	32° 15' 14.985 N	103° 34' 31.757 W
4,838.0	6.17	259.91	4,823.6	-60.7	-256.9	457,022.41	775,602.90	32° 15' 14.965 N	103° 34' 31.876 W
4,933.0	6.20	260.03	4,918.1	-62.5	-267.0	457,020.63	775,592.82	32° 15' 14.948 N	103° 34' 31.993 W
5,028.0	6.41	268.00	5,012.5	-63.6	-277.3	457,019.56	775,582.47	32° 15' 14.938 N	103° 34' 32.114 W
5,123.0	6.76	268.41	5,106.9	-63.9	-288.2	457,019.22	775,571.58	32° 15' 14.936 N	103° 34' 32.241 W
5,176.0	6.22	266.63	5,159.5	-64.2	-294.2	457,018.96	775,565.59	32° 15' 14.934 N	103° 34' 32.311 W
5,284.0	5.67	267.86	5,266.9	-64.7	-305.4	457,018.42	775,554.42	32° 15' 14.929 N	103° 34' 32.441 W
5,379.0	6.55	270.26	5,361.4	-64.9	-315.5	457,018.27	775,544.31	32° 15' 14.928 N	103° 34' 32.559 W
5,474.0	7.84	265.05	5,455.6	-65.4	-327.4	457,017.73	775,532.44	32° 15' 14.924 N	103° 34' 32.697 W
5,570.0	7.64	262.13	5,550.8	-66.9	-340.2	457,016.29	775,519.59	32° 15' 14.911 N	103° 34' 32.847 W
5,665.0	7.69	261.78	5,644.9	-68.6	-352.8	457,014.52	775,507.05	32° 15' 14.894 N	103° 34' 32.993 W
5,760.0	7.62	261.23	5,739.1	-70.5	-365.3	457,012.65	775,494.53	32° 15' 14.876 N	103° 34' 33.139 W
5,855.0	7.40	261.48	5,833.3	-72.4	-377.6	457,010.78	775,482.26	32° 15' 14.859 N	103° 34' 33.282 W

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Survey Report - Geographic

Company: Devon Energy Corporation	Local Co-ordinate Reference: Well Thistle Unit 159H
Project: Lea County, NM (NAD 83)	TVD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
Site: Sec 33 - 23S - 33E (Thistle Unit)	MD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
Well: Thistle Unit 159H	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Actual Drilled	Database: SOUTH US

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,951.0	7.23	260.42	5,928.5	-74.3	-389.6	457,008.86	775,470.19	32° 15' 14.840 N	103° 34' 33.422 W
6,046.0	6.70	259.44	6,022.8	-76.3	-401.0	457,006.85	775,458.84	32° 15' 14.821 N	103° 34' 33.555 W
6,141.0	6.18	259.93	6,117.2	-78.2	-411.4	457,004.94	775,448.36	32° 15' 14.803 N	103° 34' 33.677 W
6,236.0	6.19	269.04	6,211.6	-79.2	-421.6	457,003.96	775,438.20	32° 15' 14.794 N	103° 34' 33.795 W
6,331.0	6.58	262.75	6,306.0	-80.0	-432.1	457,003.19	775,427.68	32° 15' 14.787 N	103° 34' 33.918 W
6,427.0	6.38	261.03	6,401.4	-81.5	-442.8	457,001.66	775,416.96	32° 15' 14.773 N	103° 34' 34.043 W
6,522.0	6.06	261.65	6,495.9	-83.0	-453.0	457,000.11	775,406.78	32° 15' 14.758 N	103° 34' 34.161 W
6,617.0	6.84	262.48	6,590.3	-84.5	-463.6	456,998.64	775,396.21	32° 15' 14.744 N	103° 34' 34.285 W
6,712.0	6.67	261.49	6,684.6	-86.1	-474.7	456,997.09	775,385.15	32° 15' 14.730 N	103° 34' 34.414 W
6,807.0	6.50	261.30	6,779.0	-87.7	-485.4	456,995.46	775,374.38	32° 15' 14.714 N	103° 34' 34.539 W
6,902.0	5.90	260.79	6,873.4	-89.3	-495.6	456,993.86	775,364.24	32° 15' 14.699 N	103° 34' 34.657 W
6,997.0	6.24	261.32	6,967.9	-90.9	-505.5	456,992.30	775,354.32	32° 15' 14.685 N	103° 34' 34.773 W
7,092.0	6.07	262.51	7,062.3	-92.3	-515.6	456,990.87	775,344.23	32° 15' 14.671 N	103° 34' 34.891 W
7,188.0	5.94	264.43	7,157.8	-93.4	-525.5	456,989.72	775,334.26	32° 15' 14.661 N	103° 34' 35.007 W
7,283.0	5.70	265.09	7,252.3	-94.3	-535.1	456,988.84	775,324.66	32° 15' 14.652 N	103° 34' 35.119 W
7,378.0	5.38	264.94	7,346.9	-95.1	-544.3	456,988.05	775,315.53	32° 15' 14.645 N	103° 34' 35.225 W
7,473.0	5.46	262.19	7,441.5	-96.1	-553.2	456,987.04	775,306.61	32° 15' 14.636 N	103° 34' 35.329 W
7,568.0	4.98	258.20	7,536.1	-97.6	-561.7	456,985.58	775,298.10	32° 15' 14.622 N	103° 34' 35.428 W
7,664.0	3.64	249.26	7,631.8	-99.5	-568.6	456,983.65	775,291.17	32° 15' 14.603 N	103° 34' 35.509 W
7,759.0	3.51	248.54	7,726.6	-101.6	-574.2	456,981.52	775,285.64	32° 15' 14.583 N	103° 34' 35.574 W
7,854.0	2.54	244.27	7,821.5	-103.6	-578.8	456,979.54	775,281.04	32° 15' 14.563 N	103° 34' 35.627 W
7,949.0	2.48	241.87	7,916.4	-105.5	-582.5	456,977.66	775,277.33	32° 15' 14.545 N	103° 34' 35.671 W
8,044.0	1.33	243.67	8,011.3	-107.0	-585.3	456,976.20	775,274.53	32° 15' 14.531 N	103° 34' 35.703 W
8,140.0	0.62	228.51	8,107.3	-107.8	-586.7	456,975.36	775,273.14	32° 15' 14.523 N	103° 34' 35.720 W
8,235.0	0.84	225.90	8,202.3	-108.6	-587.5	456,974.54	775,272.26	32° 15' 14.515 N	103° 34' 35.730 W
8,330.0	0.17	307.18	8,297.3	-109.0	-588.2	456,974.14	775,271.65	32° 15' 14.511 N	103° 34' 35.737 W
8,425.0	0.22	304.88	8,392.3	-108.8	-588.4	456,974.33	775,271.38	32° 15' 14.513 N	103° 34' 35.740 W
8,520.0	0.40	301.86	8,487.3	-108.6	-588.9	456,974.61	775,270.95	32° 15' 14.515 N	103° 34' 35.745 W
8,616.0	0.10	300.76	8,583.3	-108.3	-589.2	456,974.83	775,270.60	32° 15' 14.518 N	103° 34' 35.749 W
8,711.0	0.33	214.34	8,678.3	-108.5	-589.4	456,974.64	775,270.37	32° 15' 14.516 N	103° 34' 35.752 W
8,806.0	0.42	227.56	8,773.3	-109.0	-589.8	456,974.18	775,269.96	32° 15' 14.511 N	103° 34' 35.757 W
8,901.0	0.74	225.71	8,868.3	-109.6	-590.5	456,973.52	775,269.26	32° 15' 14.505 N	103° 34' 35.765 W
KOP 8901' MD/ 8868' TVD (43.17' FSL, 2430.27' FEL of Sec 33)									
9,015.0	4.76	352.17	8,982.2	-105.5	-591.7	456,977.69	775,268.09	32° 15' 14.546 N	103° 34' 35.778 W
9,111.0	17.78	353.45	9,076.1	-86.9	-593.9	456,998.28	775,265.87	32° 15' 14.730 N	103° 34' 35.803 W
9,161.0	24.08	352.63	9,122.8	-69.2	-596.1	457,014.00	775,263.69	32° 15' 14.906 N	103° 34' 35.827 W
9,199.0	28.54	353.62	9,156.8	-52.4	-598.1	457,030.72	775,261.68	32° 15' 15.071 N	103° 34' 35.849 W
100' FSL Perf Line Cross 9199' MD/9156' TVD (100.42' FSL, 2437.41' FEL of Sec 33)									
9,206.0	29.36	353.77	9,163.0	-49.1	-598.5	457,034.08	775,261.31	32° 15' 15.105 N	103° 34' 35.853 W
9,256.0	33.13	356.85	9,205.7	-23.2	-600.6	457,059.92	775,259.23	32° 15' 15.360 N	103° 34' 35.875 W
9,300.0	34.72	357.06	9,242.2	1.3	-601.9	457,084.44	775,257.92	32° 15' 15.603 N	103° 34' 35.888 W
9,348.0	36.83	357.20	9,281.2	29.3	-603.3	457,112.47	775,256.52	32° 15' 15.881 N	103° 34' 35.902 W
9,395.0	39.27	358.64	9,318.2	58.3	-604.3	457,141.41	775,255.48	32° 15' 16.167 N	103° 34' 35.912 W
9,445.0	42.01	0.54	9,356.1	90.8	-604.5	457,173.97	775,255.26	32° 15' 16.489 N	103° 34' 35.912 W
9,491.0	44.68	1.55	9,389.6	122.4	-604.0	457,205.54	775,255.84	32° 15' 16.802 N	103° 34' 35.902 W
9,541.0	46.93	1.24	9,424.4	158.2	-603.1	457,241.37	775,256.71	32° 15' 17.156 N	103° 34' 35.889 W
9,586.0	48.35	0.72	9,454.7	191.5	-602.5	457,274.62	775,257.28	32° 15' 17.485 N	103° 34' 35.880 W
9,636.0	49.66	0.89	9,487.5	229.2	-602.0	457,312.35	775,257.81	32° 15' 17.858 N	103° 34' 35.871 W
9,681.0	53.16	1.51	9,515.6	264.4	-601.3	457,347.51	775,258.55	32° 15' 18.206 N	103° 34' 35.859 W
9,731.0	57.39	0.89	9,544.1	305.4	-600.4	457,388.59	775,259.41	32° 15' 18.613 N	103° 34' 35.846 W
9,776.0	61.63	0.89	9,566.9	344.2	-599.8	457,427.35	775,260.01	32° 15' 18.996 N	103° 34' 35.835 W
9,826.0	66.34	1.13	9,588.8	389.1	-599.0	457,472.27	775,260.80	32° 15' 19.440 N	103° 34' 35.823 W
9,871.0	71.74	1.33	9,604.9	431.1	-598.1	457,514.26	775,261.71	32° 15' 19.856 N	103° 34' 35.809 W
9,892.0	73.80	1.52	9,611.1	451.2	-597.6	457,534.31	775,262.21	32° 15' 20.054 N	103° 34' 35.801 W
Leonard B POE 9892' MD/9811' TVD (604.0077' FSL, 2433.0402' FEL of Sec 33)									

Halliburton

Survey Report - Geographic

Company: Devon Energy Corporation
Project: Lea County, NM (NAD 83)
Site: Sec 33 - 23S - 33E (Thistle Unit)
Well: Thistle Unit 159H
Wellbore: Wellbore #1
Design: Actual Drilled

Local Co-ordinate Reference: Well Thistle Unit 159H
TVD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
MD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SOUTH US

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,921.0	76.64	1.77	9,618.5	479.2	-596.8	457,562.34	775,263.01	32° 15' 20.332 N	103° 34' 35.789 W
9,967.0	80.96	1.28	9,627.5	524.3	-595.6	457,607.44	775,264.21	32° 15' 20.778 N	103° 34' 35.772 W
10,017.0	86.43	0.56	9,633.0	573.9	-594.8	457,657.11	775,265.01	32° 15' 21.269 N	103° 34' 35.758 W
10,062.0	87.35	0.63	9,635.4	618.9	-594.3	457,702.04	775,265.47	32° 15' 21.714 N	103° 34' 35.749 W
10,157.0	88.52	0.13	9,638.8	713.8	-593.7	457,796.97	775,266.10	32° 15' 22.653 N	103° 34' 35.734 W
10,252.0	90.21	0.11	9,639.9	808.8	-593.5	457,891.96	775,266.30	32° 15' 23.593 N	103° 34' 35.724 W
10,347.0	90.59	359.97	9,639.2	903.8	-593.4	457,986.96	775,266.37	32° 15' 24.533 N	103° 34' 35.716 W
10,442.0	89.85	359.39	9,638.8	998.8	-594.0	458,081.96	775,265.84	32° 15' 25.473 N	103° 34' 35.714 W
10,538.0	92.04	359.60	9,637.3	1,094.8	-594.8	458,177.94	775,264.99	32° 15' 26.423 N	103° 34' 35.716 W
10,633.0	91.54	358.96	9,634.3	1,189.7	-596.0	458,272.88	775,263.80	32° 15' 27.362 N	103° 34' 35.722 W
10,728.0	88.70	357.19	9,634.1	1,284.7	-599.2	458,367.81	775,260.61	32° 15' 28.302 N	103° 34' 35.751 W
10,823.0	87.91	358.30	9,636.9	1,379.5	-602.9	458,462.70	775,256.87	32° 15' 29.241 N	103° 34' 35.787 W
10,918.0	88.37	0.30	9,640.0	1,474.5	-604.1	458,557.63	775,255.71	32° 15' 30.181 N	103° 34' 35.793 W
11,013.0	90.19	0.16	9,641.2	1,569.5	-603.7	458,652.62	775,256.09	32° 15' 31.121 N	103° 34' 35.781 W
11,108.0	88.55	0.40	9,642.2	1,664.5	-603.3	458,747.61	775,256.56	32° 15' 32.061 N	103° 34' 35.767 W
11,204.0	88.71	358.99	9,644.5	1,760.4	-603.8	458,843.58	775,256.04	32° 15' 33.010 N	103° 34' 35.765 W
11,299.0	89.66	358.59	9,645.9	1,855.4	-605.8	458,938.55	775,254.04	32° 15' 33.950 N	103° 34' 35.781 W
11,394.0	92.94	359.51	9,643.7	1,950.3	-607.3	459,033.50	775,252.46	32° 15' 34.890 N	103° 34' 35.792 W
11,489.0	91.76	0.24	9,639.8	2,045.3	-607.6	459,128.42	775,252.26	32° 15' 35.829 N	103° 34' 35.786 W
11,584.0	91.67	1.24	9,637.0	2,140.2	-606.3	459,223.36	775,253.48	32° 15' 36.768 N	103° 34' 35.764 W
11,680.0	85.66	0.02	9,639.2	2,236.1	-605.3	459,319.29	775,254.54	32° 15' 37.717 N	103° 34' 35.744 W
11,775.0	85.43	359.07	9,646.6	2,330.8	-606.0	459,413.99	775,253.79	32° 15' 38.655 N	103° 34' 35.745 W
11,870.0	86.33	359.11	9,653.4	2,425.6	-607.5	459,508.74	775,252.28	32° 15' 39.592 N	103° 34' 35.755 W
11,965.0	88.24	359.00	9,657.9	2,520.5	-609.1	459,603.61	775,250.72	32° 15' 40.531 N	103° 34' 35.765 W
12,060.0	86.83	359.23	9,662.0	2,615.4	-610.8	459,698.51	775,249.25	32° 15' 41.470 N	103° 34' 35.774 W
12,156.0	86.47	359.64	9,667.6	2,711.2	-611.5	459,794.34	775,248.31	32° 15' 42.419 N	103° 34' 35.777 W
12,250.0	87.13	0.37	9,672.9	2,805.0	-611.5	459,888.19	775,248.31	32° 15' 43.347 N	103° 34' 35.770 W
12,345.0	90.89	0.37	9,674.5	2,900.0	-610.9	459,983.16	775,248.93	32° 15' 44.287 N	103° 34' 35.755 W
12,441.0	90.89	1.39	9,673.0	2,996.0	-609.4	460,079.14	775,250.40	32° 15' 45.237 N	103° 34' 35.730 W
12,536.0	93.73	1.34	9,669.2	3,090.9	-607.1	460,174.02	775,252.66	32° 15' 46.175 N	103° 34' 35.696 W
12,631.0	94.35	2.87	9,662.5	3,185.6	-603.7	460,268.72	775,256.14	32° 15' 47.112 N	103° 34' 35.647 W
12,726.0	91.02	1.69	9,658.0	3,280.4	-599.9	460,363.52	775,259.92	32° 15' 48.050 N	103° 34' 35.596 W
12,821.0	91.33	0.80	9,656.1	3,375.3	-597.8	460,458.48	775,261.98	32° 15' 48.989 N	103° 34' 35.564 W
12,917.0	91.48	0.09	9,653.7	3,471.3	-597.1	460,554.45	775,262.73	32° 15' 49.939 N	103° 34' 35.547 W
13,011.0	91.26	357.67	9,650.8	3,565.2	-599.5	460,678.38	775,260.30	32° 15' 51.165 N	103° 34' 35.565 W
13,137.0	90.25	359.40	9,649.5	3,691.2	-602.0	460,774.34	775,257.85	32° 15' 52.115 N	103° 34' 35.586 W
13,233.0	89.72	359.30	9,649.5	3,787.2	-603.0	460,870.33	775,256.76	32° 15' 53.065 N	103° 34' 35.591 W
13,328.0	89.91	359.98	9,649.8	3,882.2	-603.6	460,965.33	775,256.16	32° 15' 54.005 N	103° 34' 35.590 W
13,423.0	89.69	0.06	9,650.2	3,977.2	-603.6	461,060.33	775,256.20	32° 15' 54.945 N	103° 34' 35.582 W
13,519.0	90.12	359.76	9,650.3	4,073.2	-603.8	461,156.33	775,256.04	32° 15' 55.895 N	103° 34' 35.576 W
13,614.0	90.80	359.32	9,649.6	4,168.2	-604.5	461,251.32	775,255.28	32° 15' 56.835 N	103° 34' 35.577 W
13,708.0	91.26	359.22	9,647.9	4,262.1	-605.7	461,345.30	775,254.08	32° 15' 57.765 N	103° 34' 35.583 W
13,803.0	89.63	0.23	9,647.1	4,357.1	-606.2	461,440.29	775,253.63	32° 15' 58.705 N	103° 34' 35.580 W
13,898.0	89.91	0.73	9,647.5	4,452.1	-605.4	461,535.28	775,254.42	32° 15' 59.645 N	103° 34' 35.563 W
13,994.0	89.20	0.88	9,648.3	4,548.1	-604.0	461,631.27	775,255.77	32° 16' 0.595 N	103° 34' 35.540 W
14,089.0	89.57	359.85	9,649.3	4,643.1	-603.4	461,726.26	775,256.38	32° 16' 1.535 N	103° 34' 35.525 W
14,184.0	89.94	358.76	9,649.7	4,738.1	-604.6	461,821.25	775,255.23	32° 16' 2.475 N	103° 34' 35.530 W
14,279.0	90.49	358.69	9,649.3	4,833.1	-606.7	461,916.23	775,253.11	32° 16' 3.415 N	103° 34' 35.547 W
14,374.0	91.36	358.92	9,647.8	4,928.0	-608.7	462,011.19	775,251.13	32° 16' 4.354 N	103° 34' 35.563 W
14,470.0	92.19	359.75	9,644.8	5,024.0	-609.8	462,107.14	775,250.02	32° 16' 5.304 N	103° 34' 35.568 W
14,565.0	92.43	0.48	9,641.0	5,118.9	-609.6	462,202.06	775,250.21	32° 16' 6.243 N	103° 34' 35.558 W
14,583.0	92.00	0.36	9,640.3	5,136.9	-609.5	462,220.05	775,250.34	32° 16' 6.421 N	103° 34' 35.555 W
Sec 33/28 Cross 14583' MD/9640' TVD (0.09' FSL, 2409.03' FEL of Sec 28)									
14,680.0	90.15	359.85	9,638.9	5,213.9	-609.3	462,297.03	775,250.48	32° 16' 7.183 N	103° 34' 35.547 W
14,755.0	90.93	0.38	9,638.0	5,308.9	-609.1	462,392.02	775,250.67	32° 16' 8.123 N	103° 34' 35.537 W

Halliburton

Survey Report - Geographic

Company: Devon Energy Corporation	Local Co-ordinate Reference: Well Thistle Unit 159H
Project: Lea County, NM (NAD 83)	TVD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
Site: Sec 33 - 23S - 33E (Thistle Unit)	MD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
Well: Thistle Unit 159H	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Actual Drilled	Database: SOUTH US

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,851.0	89.88	359.89	9,637.3	5,404.9	-608.9	462,488.02	775,250.90	32° 16' 9.073 N	103° 34' 35.526 W
14,946.0	91.02	0.93	9,636.5	5,499.9	-608.2	462,583.01	775,251.58	32° 16' 10.013 N	103° 34' 35.510 W
15,041.0	89.75	1.79	9,635.9	5,594.8	-606.0	462,677.98	775,253.83	32° 16' 10.952 N	103° 34' 35.476 W
15,136.0	88.28	1.17	9,637.5	5,689.8	-603.5	462,772.93	775,256.29	32° 16' 11.892 N	103° 34' 35.440 W
15,231.0	89.38	1.95	9,639.5	5,784.7	-600.9	462,867.87	775,258.87	32° 16' 12.831 N	103° 34' 35.402 W
15,326.0	89.75	2.19	9,640.2	5,879.6	-597.5	462,962.81	775,262.30	32° 16' 13.770 N	103° 34' 35.354 W
15,421.0	88.89	0.85	9,641.3	5,974.6	-595.0	463,057.77	775,264.82	32° 16' 14.709 N	103° 34' 35.317 W
15,516.0	88.09	0.43	9,643.8	6,069.6	-593.9	463,152.73	775,265.88	32° 16' 15.649 N	103° 34' 35.297 W
15,611.0	89.42	1.85	9,645.9	6,164.5	-592.0	463,247.68	775,267.77	32° 16' 16.589 N	103° 34' 35.267 W
15,706.0	88.12	1.57	9,647.9	6,259.5	-589.2	463,342.61	775,270.61	32° 16' 17.528 N	103° 34' 35.226 W
15,802.0	87.38	0.71	9,651.7	6,355.4	-587.3	463,438.52	775,272.52	32° 16' 18.477 N	103° 34' 35.196 W
15,897.0	85.44	0.67	9,657.7	6,450.2	-586.1	463,533.32	775,273.66	32° 16' 19.415 N	103° 34' 35.175 W
15,992.0	86.39	0.62	9,664.4	6,544.9	-585.1	463,628.07	775,274.72	32° 16' 20.352 N	103° 34' 35.155 W
16,088.0	88.40	1.11	9,668.8	6,640.8	-583.6	463,723.96	775,276.17	32° 16' 21.301 N	103° 34' 35.130 W
16,183.0	89.44	1.40	9,670.6	6,735.8	-581.6	463,818.92	775,278.25	32° 16' 22.240 N	103° 34' 35.098 W
16,278.0	90.68	0.28	9,670.5	6,830.7	-580.2	463,913.90	775,279.65	32° 16' 23.180 N	103° 34' 35.074 W
16,373.0	89.54	358.79	9,670.3	6,925.7	-580.9	464,008.89	775,278.87	32° 16' 24.120 N	103° 34' 35.075 W
16,468.0	90.68	359.47	9,670.1	7,020.7	-582.4	464,103.88	775,277.43	32° 16' 25.060 N	103° 34' 35.084 W
16,563.0	88.46	358.77	9,670.8	7,115.7	-583.8	464,198.86	775,275.97	32° 16' 26.000 N	103° 34' 35.093 W
16,658.0	89.57	359.76	9,672.5	7,210.7	-585.1	464,293.84	775,274.76	32° 16' 26.940 N	103° 34' 35.100 W
16,753.0	90.34	359.78	9,672.5	7,305.7	-585.4	464,388.84	775,274.37	32° 16' 27.880 N	103° 34' 35.097 W
16,848.0	90.77	359.53	9,671.6	7,400.7	-586.0	464,483.83	775,273.80	32° 16' 28.820 N	103° 34' 35.095 W
16,943.0	89.81	357.64	9,671.1	7,495.6	-588.4	464,578.79	775,271.46	32° 16' 29.760 N	103° 34' 35.115 W
17,038.0	92.44	356.51	9,669.3	7,590.5	-593.2	464,673.64	775,266.61	32° 16' 30.699 N	103° 34' 35.164 W
17,134.0	90.83	356.93	9,666.5	7,686.3	-598.7	464,769.44	775,261.12	32° 16' 31.647 N	103° 34' 35.220 W
17,229.0	90.28	357.68	9,665.6	7,781.2	-603.2	464,864.33	775,256.65	32° 16' 32.586 N	103° 34' 35.264 W
17,324.0	90.22	358.35	9,665.2	7,876.1	-606.4	464,959.27	775,253.36	32° 16' 33.526 N	103° 34' 35.294 W
17,419.0	89.48	357.79	9,665.4	7,971.1	-609.6	465,054.22	775,250.16	32° 16' 34.466 N	103° 34' 35.324 W
17,514.0	89.78	358.57	9,666.1	8,066.0	-612.7	465,149.17	775,247.15	32° 16' 35.405 N	103° 34' 35.351 W
17,609.0	90.37	357.26	9,665.9	8,160.9	-616.1	465,244.10	775,243.69	32° 16' 36.345 N	103° 34' 35.384 W
17,705.0	93.61	359.40	9,662.6	8,256.8	-618.9	465,339.98	775,240.89	32° 16' 37.294 N	103° 34' 35.408 W
17,800.0	91.41	359.67	9,658.4	8,351.7	-619.7	465,434.88	775,240.12	32° 16' 38.233 N	103° 34' 35.409 W
17,895.0	92.94	2.29	9,654.8	8,446.6	-618.1	465,529.79	775,241.75	32° 16' 39.172 N	103° 34' 35.383 W
17,990.0	90.98	3.03	9,651.6	8,541.5	-613.7	465,624.63	775,246.15	32° 16' 40.110 N	103° 34' 35.324 W
18,085.0	89.81	4.68	9,650.9	8,636.2	-607.3	465,719.40	775,252.54	32° 16' 41.048 N	103° 34' 35.242 W
18,180.0	92.40	4.42	9,649.1	8,730.9	-599.7	465,814.08	775,260.07	32° 16' 41.984 N	103° 34' 35.146 W
18,276.0	91.38	4.00	9,645.9	8,826.6	-592.7	465,909.77	775,267.12	32° 16' 42.930 N	103° 34' 35.056 W
18,371.0	91.39	4.36	9,643.6	8,921.3	-585.8	466,004.49	775,274.04	32° 16' 43.867 N	103° 34' 34.968 W
18,466.0	89.42	3.38	9,643.0	9,016.1	-579.4	466,099.26	775,280.45	32° 16' 44.804 N	103° 34' 34.885 W
18,561.0	87.90	4.15	9,645.2	9,110.9	-573.1	466,194.03	775,286.69	32° 16' 45.742 N	103° 34' 34.805 W
18,657.0	84.97	1.56	9,651.1	9,206.5	-568.3	466,289.70	775,291.46	32° 16' 46.688 N	103° 34' 34.741 W
18,752.0	86.95	0.75	9,657.8	9,301.3	-566.4	466,384.44	775,293.37	32° 16' 47.625 N	103° 34' 34.711 W
18,847.0	91.33	0.80	9,659.3	9,396.2	-565.2	466,479.40	775,294.65	32° 16' 48.565 N	103° 34' 34.688 W
18,942.0	92.13	0.81	9,656.4	9,491.2	-563.8	466,574.35	775,295.99	32° 16' 49.504 N	103° 34' 34.665 W
19,038.0	90.99	359.86	9,653.8	9,587.1	-563.3	466,670.31	775,296.55	32° 16' 50.454 N	103° 34' 34.651 W
19,133.0	89.78	358.58	9,653.1	9,682.1	-564.6	466,765.29	775,295.26	32° 16' 51.394 N	103° 34' 34.658 W
19,228.0	87.93	358.75	9,655.0	9,777.1	-566.8	466,860.24	775,293.04	32° 16' 52.333 N	103° 34' 34.676 W
19,324.0	91.51	359.11	9,655.5	9,873.0	-568.6	466,956.21	775,291.25	32° 16' 53.283 N	103° 34' 34.689 W
19,419.0	92.07	358.30	9,652.5	9,968.0	-570.7	467,051.14	775,289.11	32° 16' 54.223 N	103° 34' 34.706 W
19,514.0	91.63	358.40	9,649.5	10,062.9	-573.4	467,146.05	775,286.37	32° 16' 55.162 N	103° 34' 34.730 W
19,609.0	93.55	358.65	9,645.2	10,157.8	-575.9	467,240.92	775,283.93	32° 16' 56.101 N	103° 34' 34.751 W
19,704.0	94.97	359.32	9,638.1	10,252.5	-577.6	467,335.64	775,282.25	32° 16' 57.038 N	103° 34' 34.763 W
19,799.0	93.18	358.96	9,631.4	10,347.2	-579.0	467,430.38	775,280.83	32° 16' 57.976 N	103° 34' 34.771 W
19,865.0	92.86	0.95	9,627.9	10,413.1	-579.0	467,496.29	775,280.77	32° 16' 58.628 N	103° 34' 34.767 W

Sec 28/21 Cross 19865' MD/9627' TVD (0.02' FSL, 2338.39' FEL of Sec 21)

Halliburton

Survey Report - Geographic

Company: Devon Energy Corporation
Project: Lea County, NM (NAD 83)
Site: Sec 33 - 23S - 33E (Thistle Unit)
Well: Thistle Unit 159H
Wellbore: Wellbore #1
Design: Actual Drilled

Local Co-ordinate Reference: Well Thistle Unit 159H
TVD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
MD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SOUTH US

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
19,895.0	92.71	1.85	9,626.4	10,443.1	-578.3	467,526.24	775,281.51	32° 16' 58.924 N	103° 34' 34.756 W
19,990.0	90.99	1.84	9,623.4	10,538.0	-575.2	467,621.14	775,284.56	32° 16' 59.863 N	103° 34' 34.712 W
20,085.0	91.02	1.60	9,621.7	10,632.9	-572.4	467,716.08	775,287.41	32° 17' 0.802 N	103° 34' 34.671 W
20,180.0	90.43	0.45	9,620.5	10,727.9	-570.7	467,811.06	775,289.11	32° 17' 1.742 N	103° 34' 34.644 W
20,276.0	92.10	359.75	9,618.4	10,823.9	-570.5	467,907.03	775,289.28	32° 17' 2.692 N	103° 34' 34.634 W
20,371.0	90.06	358.71	9,616.6	10,918.8	-571.8	468,002.00	775,288.00	32° 17' 3.632 N	103° 34' 34.641 W
20,466.0	89.57	358.18	9,616.9	11,013.8	-574.4	468,096.96	775,285.43	32° 17' 4.571 N	103° 34' 34.663 W
20,561.0	88.98	358.21	9,618.1	11,108.7	-577.4	468,191.91	775,282.43	32° 17' 5.511 N	103° 34' 34.690 W
20,656.0	88.30	358.65	9,620.4	11,203.7	-580.0	468,286.84	775,279.83	32° 17' 6.451 N	103° 34' 34.713 W
20,751.0	87.79	357.94	9,623.6	11,298.6	-582.8	468,381.74	775,277.01	32° 17' 7.390 N	103° 34' 34.738 W
20,847.0	87.81	358.09	9,627.3	11,394.5	-586.1	468,477.62	775,273.68	32° 17' 8.339 N	103° 34' 34.768 W
20,942.0	89.60	359.74	9,629.4	11,489.4	-587.9	468,572.57	775,271.89	32° 17' 9.279 N	103° 34' 34.782 W
21,037.0	88.70	358.45	9,630.8	11,584.4	-589.4	468,667.54	775,270.39	32° 17' 10.218 N	103° 34' 34.791 W
21,132.0	95.06	359.98	9,627.7	11,679.3	-590.7	468,762.43	775,269.08	32° 17' 11.158 N	103° 34' 34.799 W
21,227.0	92.96	0.36	9,621.1	11,774.0	-590.4	468,857.19	775,269.37	32° 17' 12.095 N	103° 34' 34.788 W
21,323.0	92.21	0.66	9,616.8	11,869.9	-589.6	468,953.09	775,270.22	32° 17' 13.044 N	103° 34' 34.770 W
21,418.0	92.56	0.52	9,612.8	11,964.8	-588.6	469,048.00	775,271.20	32° 17' 13.983 N	103° 34' 34.751 W
21,513.0	92.00	0.01	9,609.0	12,059.8	-588.2	469,142.93	775,271.64	32° 17' 14.922 N	103° 34' 34.738 W
21,608.0	92.25	359.75	9,605.5	12,154.7	-588.4	469,237.86	775,271.44	32° 17' 15.862 N	103° 34' 34.732 W
21,703.0	92.59	359.87	9,601.5	12,249.6	-588.7	469,332.77	775,271.12	32° 17' 16.801 N	103° 34' 34.728 W
21,798.0	92.84	0.19	9,597.0	12,344.5	-588.6	469,427.67	775,271.17	32° 17' 17.740 N	103° 34' 34.720 W
21,894.0	92.62	0.19	9,592.4	12,440.4	-588.3	469,523.56	775,271.49	32° 17' 18.689 N	103° 34' 34.708 W
21,989.0	90.77	359.33	9,589.6	12,535.4	-588.7	469,618.51	775,271.09	32° 17' 19.628 N	103° 34' 34.705 W
22,084.0	90.22	359.52	9,588.8	12,630.3	-589.7	469,713.50	775,270.14	32° 17' 20.568 N	103° 34' 34.708 W
22,179.0	89.45	359.09	9,589.1	12,725.3	-590.8	469,808.49	775,268.99	32° 17' 21.508 N	103° 34' 34.714 W
22,274.0	90.15	359.94	9,589.4	12,820.3	-591.6	469,903.49	775,268.18	32° 17' 22.448 N	103° 34' 34.715 W
22,370.0	90.59	0.44	9,588.8	12,916.3	-591.3	469,999.49	775,268.50	32° 17' 23.398 N	103° 34' 34.704 W
22,464.0	92.87	1.06	9,585.9	13,010.3	-590.1	470,093.43	775,269.73	32° 17' 24.328 N	103° 34' 34.682 W
22,559.0	90.15	0.66	9,583.4	13,105.2	-588.7	470,188.37	775,271.15	32° 17' 25.267 N	103° 34' 34.657 W
22,654.0	91.36	1.74	9,582.2	13,200.2	-586.7	470,283.34	775,273.14	32° 17' 26.207 N	103° 34' 34.626 W
22,750.0	93.88	3.74	9,577.8	13,296.0	-582.1	470,379.12	775,277.73	32° 17' 27.154 N	103° 34' 34.565 W
22,845.0	92.31	3.36	9,572.7	13,390.6	-576.2	470,473.80	775,283.60	32° 17' 28.091 N	103° 34' 34.489 W
22,940.0	89.41	2.54	9,571.2	13,485.5	-571.3	470,568.65	775,288.49	32° 17' 29.029 N	103° 34' 34.424 W
23,035.0	88.61	1.62	9,572.9	13,580.4	-567.9	470,663.57	775,291.93	32° 17' 29.968 N	103° 34' 34.376 W
23,130.0	86.80	1.27	9,576.7	13,675.3	-565.5	470,758.46	775,294.33	32° 17' 30.907 N	103° 34' 34.340 W
23,225.0	89.17	0.99	9,580.0	13,770.2	-563.6	470,853.38	775,296.20	32° 17' 31.846 N	103° 34' 34.311 W
23,320.0	90.77	0.33	9,580.1	13,865.2	-562.5	470,948.37	775,297.29	32° 17' 32.786 N	103° 34' 34.290 W
23,416.0	91.42	0.34	9,578.2	13,961.2	-562.0	471,044.35	775,297.86	32° 17' 33.735 N	103° 34' 34.276 W
23,511.0	91.63	0.36	9,575.7	14,056.2	-561.4	471,139.31	775,298.44	32° 17' 34.675 N	103° 34' 34.261 W
23,606.0	90.25	0.55	9,574.2	14,151.1	-560.6	471,234.29	775,299.19	32° 17' 35.615 N	103° 34' 34.245 W
23,686.0	90.59	0.18	9,573.6	14,231.1	-560.1	471,314.29	775,299.70	32° 17' 36.406 N	103° 34' 34.232 W
23,781.0	90.25	0.38	9,572.9	14,326.1	-559.6	471,409.28	775,300.16	32° 17' 37.346 N	103° 34' 34.219 W
23,877.0	88.89	0.37	9,573.6	14,422.1	-559.0	471,505.28	775,300.79	32° 17' 38.296 N	103° 34' 34.204 W
23,972.0	86.52	0.89	9,577.4	14,517.0	-558.0	471,600.19	775,301.84	32° 17' 39.235 N	103° 34' 34.184 W
24,067.0	88.98	0.04	9,581.1	14,611.9	-557.2	471,695.10	775,302.60	32° 17' 40.174 N	103° 34' 34.167 W
24,162.0	90.31	358.20	9,581.7	14,706.9	-558.7	471,790.09	775,301.15	32° 17' 41.114 N	103° 34' 34.176 W
24,257.0	91.97	358.39	9,579.8	14,801.9	-561.5	471,885.02	775,298.32	32° 17' 42.054 N	103° 34' 34.201 W
24,352.0	90.31	358.56	9,577.9	14,896.8	-564.0	471,979.96	775,295.79	32° 17' 42.993 N	103° 34' 34.223 W
24,447.0	86.61	359.25	9,580.5	14,991.7	-565.8	472,074.90	775,293.98	32° 17' 43.933 N	103° 34' 34.265 W
24,543.0	89.17	359.23	9,584.0	15,087.7	-567.1	472,170.81	775,292.70	32° 17' 44.882 N	103° 34' 34.243 W
24,638.0	88.36	359.37	9,586.1	15,182.6	-568.3	472,265.78	775,291.54	32° 17' 45.822 N	103° 34' 34.249 W
24,733.0	87.99	359.26	9,589.1	15,277.6	-569.4	472,360.73	775,290.41	32° 17' 46.762 N	103° 34' 34.254 W
24,828.0	87.93	358.87	9,592.5	15,372.5	-570.9	472,455.66	775,288.86	32° 17' 47.701 N	103° 34' 34.265 W
24,923.0	90.59	358.99	9,593.7	15,467.5	-572.7	472,550.62	775,287.09	32° 17' 48.641 N	103° 34' 34.277 W

Halliburton

Survey Report - Geographic

Company: Devon Energy Corporation	Local Co-ordinate Reference: Well Thistle Unit 159H
Project: Lea County, NM (NAD 83)	TVD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
Site: Sec 33 - 23S - 33E (Thistle Unit)	MD Reference: RKB (Nabors X05) 33 + GL @ 3686.5usft
Well: Thistle Unit 159H	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Actual Drilled	Database: SOUTH US

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
25,018.0	89.60	359.79	9,593.5	15,562.5	-573.7	472,645.62	775,286.08	32° 17' 49.581 N	103° 34' 34.281 W
Last MWD Survey									
25,053.0	89.60	359.79	9,593.8	15,597.5	-573.9	472,680.62	775,285.95	32° 17' 49.927 N	103° 34' 34.280 W
100' FSL Perf Line Cross 25053' MD/9593.8' TVD (100.29' FNL, 2295.80' FEL of Sec 21)									
25,065.1	89.60	359.79	9,593.9	15,609.6	-573.9	472,692.75	775,285.90	32° 17' 50.047 N	103° 34' 34.280 W
PBHL of Thistle 159H (20' FNL-2310' FEL)									
25,076.0	89.60	359.79	9,593.9	15,620.5	-573.9	472,703.61	775,285.86	32° 17' 50.155 N	103° 34' 34.279 W
PBHL 25076' MD/9593' TVD (77.29' FNL, 2295.72' FEL of Sec 21)									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
143.0	143.0	-0.9	0.1	First MWD Survey
4,448.0	4,435.6	-50.3	-218.6	100' FSL Perf Line Cross 4448' MD/ 4435' TVD (100.26' FSL, 2057.88' FEL of S
8,901.0	8,868.3	-109.6	-590.5	KOP 8901' MD/ 8868' TVD (43.17' FSL, 2430.27' FEL of Sec 33)
9,199.0	9,156.8	-52.4	-598.1	100' FSL Perf Line Cross 9199' MD/9156' TVD (100.42' FSL, 2437.41' FEL of S
9,892.0	9,611.1	451.2	-597.6	Leonard B POE 9892' MD/9611' TVD (604.0077' FSL, 2433.0402' FEL of Sec 3:
14,583.0	9,640.3	5,136.9	-609.5	Sec 33/28 Cross 14583' MD/9640' TVD (0.09' FSL, 2409.03' FEL of Sec 28)
19,865.0	9,627.9	10,413.1	-579.0	Sec 28/21 Cross 19865' MD/9627' TVD (0.02' FSL, 2338.39' FEL of Sec 21)
25,018.0	9,593.5	15,562.5	-573.7	Last MWD Survey
25,053.0	9,593.8	15,597.5	-573.9	100' FSL Perf Line Cross 25053' MD/9593.8' TVD (100.29' FNL, 2295.80' FEL o
25,076.0	9,593.9	15,620.5	-573.9	PBHL 25076' MD/9593' TVD (77.29' FNL, 2295.72' FEL of Sec 21)

Checked By: _____ Approved By: _____ Date: _____