

Devon Energy

Lea County, NM (NAD83 NME)
Fighting Okra 18-19 Fed
#85H

OH

Survey: SDI Survey #1

Standard Survey Report

02 August, 2018

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Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well #85H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB = 32' @ 3401.00usft (Nabors X04)
Site:	Fighting Okra 18-19 Fed	MD Reference:	KB = 32' @ 3401.00usft (Nabors X04)
Well:	#85H	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		Fighting Okra 18-19 Fed				
Site Position:		Northing:	382,643.65 usft	Latitude:	32° 2' 57.315 N	
From:	Map	Easting:	798,304.66 usft	Longitude:	103° 30' 14.199 W	
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.44 °

Well	#85H					
Well Position	+N/-S	0.00 usft	Northing:	382,643.65 usft	Latitude:	32° 2' 57.312 N
	+E/-W	0.00 usft	Easting:	798,334.65 usft	Longitude:	103° 30' 13.851 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,369.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/17/2018	6.72	59.72	47,785

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 (bearing)	
	0.00	0.00	-29.99	0.00	

Survey Program	Date 8/2/2018				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
202.00	12,883.00	MWD Survey (OH)	MWD	MWD - Standard ISCWSA	
12,934.00	23,262.00	SDI Survey #1 (OH)	MWD+HDGM	OWSG MWD + HDGM	

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)	
12,883.00	49.88	181.72	12,777.61	331.85	690.54	331.85	0.00	0.00	0.00	
12,934.00	54.64	181.33	12,808.81	291.54	689.47	291.54	9.35	9.33	-0.76	
12,966.00	57.28	179.65	12,826.73	265.03	689.25	265.03	9.33	8.25	-5.25	
12,998.00	59.62	177.39	12,843.47	237.78	689.96	237.78	9.47	7.31	-7.06	
13,030.00	62.72	175.41	12,858.90	209.80	691.73	209.80	11.10	9.69	-6.19	
13,061.00	64.50	174.77	12,872.68	182.14	694.11	182.14	6.03	5.74	-2.06	
13,093.00	66.87	175.01	12,885.85	153.09	696.71	153.09	7.44	7.41	0.75	
13,125.00	69.36	175.30	12,897.78	123.51	699.21	123.51	7.83	7.78	0.91	
13,156.00	71.82	176.31	12,908.08	94.35	701.35	94.35	8.51	7.94	3.26	
13,188.00	74.95	176.46	12,917.23	63.75	703.28	63.75	9.79	9.78	0.47	

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Well:	#85H	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)
13,219.00	76.82	176.92	12,924.79	33.74	705.02	33.74	6.20	6.03	1.48
13,250.00	78.09	176.68	12,931.52	3.53	706.71	3.53	4.17	4.10	-0.77
13,281.00	80.28	177.32	12,937.34	-26.88	708.30	-26.88	7.35	7.06	2.06
13,313.00	82.46	177.50	12,942.14	-58.48	709.73	-58.48	6.84	6.81	0.56
13,345.00	84.92	178.29	12,945.66	-90.26	710.90	-90.26	8.07	7.69	2.47
13,409.00	91.21	179.33	12,947.82	-154.18	712.22	-154.18	9.96	9.83	1.63
13,503.00	90.67	182.02	12,946.28	-248.15	711.12	-248.15	2.92	-0.57	2.86
13,598.00	90.00	182.92	12,945.72	-343.06	707.02	-343.06	1.18	-0.71	0.95
13,692.00	90.03	180.86	12,945.70	-437.00	703.92	-437.00	2.19	0.03	-2.19
13,787.00	89.19	180.00	12,946.34	-532.00	703.21	-532.00	1.27	-0.88	-0.91
13,882.00	88.05	179.31	12,948.63	-626.97	703.78	-626.97	1.40	-1.20	-0.73
13,977.00	89.36	179.35	12,950.78	-721.93	704.89	-721.93	1.38	1.38	0.04
14,072.00	89.76	178.83	12,951.51	-816.92	706.40	-816.92	0.69	0.42	-0.55
14,167.00	85.83	180.77	12,955.16	-911.82	706.73	-911.82	4.61	-4.14	2.04
14,262.00	86.81	180.52	12,961.26	-1,006.62	705.67	-1,006.62	1.06	1.03	-0.26
14,357.00	89.60	182.34	12,964.24	-1,101.53	703.30	-1,101.53	3.51	2.94	1.92
14,452.00	89.19	181.22	12,965.24	-1,196.48	700.35	-1,196.48	1.26	-0.43	-1.18
14,547.00	90.30	180.56	12,965.66	-1,291.46	698.87	-1,291.46	1.36	1.17	-0.69
14,642.00	89.30	179.51	12,965.99	-1,386.46	698.81	-1,386.46	1.53	-1.05	-1.11
14,737.00	88.82	178.98	12,967.55	-1,481.44	700.06	-1,481.44	0.75	-0.51	-0.56
14,832.00	90.07	177.71	12,968.47	-1,576.39	702.81	-1,576.39	1.88	1.32	-1.34
14,927.00	93.03	177.66	12,965.90	-1,671.27	706.64	-1,671.27	3.12	3.12	-0.05
15,021.00	96.06	179.09	12,958.45	-1,764.92	709.30	-1,764.92	3.56	3.22	1.52
15,116.00	92.79	181.67	12,951.12	-1,859.62	708.67	-1,859.62	4.38	-3.44	2.72
15,211.00	91.55	181.80	12,947.53	-1,954.50	705.80	-1,954.50	1.31	-1.31	0.14
15,306.00	88.12	181.14	12,947.80	-2,049.46	703.36	-2,049.46	3.68	-3.61	-0.69
15,401.00	86.81	180.39	12,952.00	-2,144.35	702.09	-2,144.35	1.59	-1.38	-0.79
15,496.00	87.11	178.42	12,957.04	-2,239.21	703.08	-2,239.21	2.09	0.32	-2.07
15,590.00	90.27	181.38	12,959.19	-2,333.16	703.24	-2,333.16	4.61	3.36	3.15
15,685.00	88.69	180.92	12,960.05	-2,428.14	701.33	-2,428.14	1.73	-1.66	-0.48
15,779.00	88.99	182.61	12,961.96	-2,522.07	698.44	-2,522.07	1.83	0.32	1.80
15,874.00	89.36	181.18	12,963.32	-2,617.00	695.30	-2,617.00	1.55	0.39	-1.51
15,969.00	90.84	181.06	12,963.16	-2,711.98	693.44	-2,711.98	1.56	1.56	-0.13
16,063.00	93.77	180.19	12,959.38	-2,805.89	692.42	-2,805.89	3.25	3.12	-0.93
16,158.00	91.44	178.89	12,955.06	-2,900.78	693.18	-2,900.78	2.81	-2.45	-1.37
16,253.00	89.53	178.50	12,954.26	-2,995.75	695.34	-2,995.75	2.05	-2.01	-0.41
16,348.00	88.89	176.77	12,955.57	-3,090.65	699.26	-3,090.65	1.94	-0.67	-1.82
16,442.00	89.13	175.63	12,957.19	-3,184.43	705.49	-3,184.43	1.24	0.26	-1.21
16,537.00	89.97	176.60	12,957.94	-3,279.21	711.93	-3,279.21	1.35	0.88	1.02
16,632.00	90.91	177.05	12,957.21	-3,374.06	717.19	-3,374.06	1.10	0.99	0.47
16,726.00	90.13	176.51	12,956.35	-3,467.90	722.47	-3,467.90	1.01	-0.83	-0.57
16,821.00	92.49	178.12	12,954.18	-3,562.77	726.92	-3,562.77	3.01	2.48	1.69
16,914.00	93.26	179.92	12,949.52	-3,655.63	728.51	-3,655.63	2.10	0.83	1.94

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Well:	#85H	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)
17,009.00	94.70	180.26	12,942.92	-3,750.40	728.36	-3,750.40	1.56	1.52	0.36
17,102.00	95.15	181.16	12,934.94	-3,843.05	727.21	-3,843.05	1.08	0.48	0.97
17,197.00	87.95	179.31	12,932.37	-3,937.94	726.82	-3,937.94	7.82	-7.58	-1.95
17,291.00	87.95	180.28	12,935.73	-4,031.88	727.16	-4,031.88	1.03	0.00	1.03
17,385.00	88.29	179.28	12,938.82	-4,125.83	727.52	-4,125.83	1.12	0.36	-1.06
17,479.00	87.31	177.41	12,942.43	-4,219.72	730.23	-4,219.72	2.24	-1.04	-1.99
17,573.00	87.35	178.33	12,946.80	-4,313.55	733.72	-4,313.55	0.98	0.04	0.98
17,666.00	88.79	178.94	12,949.94	-4,406.47	735.94	-4,406.47	1.68	1.55	0.66
17,759.00	88.29	179.39	12,952.31	-4,499.43	737.29	-4,499.43	0.72	-0.54	0.48
17,854.00	87.72	180.08	12,955.61	-4,594.37	737.73	-4,594.37	0.94	-0.60	0.73
17,949.00	91.31	182.11	12,956.42	-4,689.32	735.91	-4,689.32	4.34	3.78	2.14
18,044.00	89.06	180.34	12,956.11	-4,784.29	733.88	-4,784.29	3.01	-2.37	-1.86
18,138.00	91.51	182.06	12,955.64	-4,878.26	731.91	-4,878.26	3.18	2.61	1.83
18,233.00	89.50	179.78	12,954.81	-4,973.23	730.39	-4,973.23	3.20	-2.12	-2.40
18,327.00	92.18	179.95	12,953.43	-5,067.21	730.61	-5,067.21	2.86	2.85	0.18
18,421.00	89.90	178.84	12,951.72	-5,161.19	731.60	-5,161.19	2.70	-2.43	-1.18
18,515.00	88.22	178.66	12,953.26	-5,255.15	733.65	-5,255.15	1.80	-1.79	-0.19
18,610.00	92.75	180.84	12,952.46	-5,350.11	734.07	-5,350.11	5.29	4.77	2.29
18,704.00	91.04	179.38	12,949.35	-5,444.06	733.89	-5,444.06	2.39	-1.82	-1.55
18,799.00	88.15	179.01	12,950.02	-5,539.03	735.22	-5,539.03	3.07	-3.04	-0.39
18,893.00	91.68	180.23	12,950.16	-5,633.01	735.85	-5,633.01	3.97	3.76	1.30
18,988.00	88.86	179.87	12,949.71	-5,728.00	735.76	-5,728.00	2.99	-2.97	-0.38
19,083.00	89.26	180.24	12,951.27	-5,822.99	735.67	-5,822.99	0.57	0.42	0.39
19,177.00	89.63	180.46	12,952.18	-5,916.98	735.10	-5,916.98	0.46	0.39	0.23
19,272.00	90.23	180.16	12,952.30	-6,011.98	734.59	-6,011.98	0.71	0.63	-0.32
19,366.00	89.90	179.05	12,952.19	-6,105.98	735.23	-6,105.98	1.23	-0.35	-1.18
19,460.00	93.29	180.04	12,949.58	-6,199.92	735.98	-6,199.92	3.76	3.61	1.05
19,556.00	90.84	179.77	12,946.12	-6,295.85	736.14	-6,295.85	2.57	-2.55	-0.28
19,651.00	87.98	179.13	12,947.10	-6,390.83	737.05	-6,390.83	3.08	-3.01	-0.67
19,746.00	92.39	180.75	12,946.79	-6,485.81	737.15	-6,485.81	4.95	4.64	1.71
19,839.00	86.54	178.77	12,947.66	-6,578.76	737.54	-6,578.76	6.64	-6.29	-2.13
19,934.00	86.78	179.26	12,953.19	-6,673.58	739.17	-6,673.58	0.57	0.25	0.52
20,027.00	85.97	179.73	12,959.07	-6,766.39	739.99	-6,766.39	1.01	-0.87	0.51
20,121.00	91.44	181.37	12,961.20	-6,860.32	739.08	-6,860.32	6.07	5.82	1.74
20,216.00	90.54	183.16	12,959.55	-6,955.23	735.33	-6,955.23	2.11	-0.95	1.88
20,311.00	89.19	182.92	12,959.78	-7,050.09	730.29	-7,050.09	1.44	-1.42	-0.25
20,406.00	89.40	183.15	12,960.95	-7,144.95	725.26	-7,144.95	0.33	0.22	0.24
20,501.00	92.08	184.35	12,959.72	-7,239.73	719.05	-7,239.73	3.09	2.82	1.26
20,596.00	90.50	183.69	12,957.58	-7,334.47	712.39	-7,334.47	1.80	-1.66	-0.69
20,692.00	90.84	182.92	12,956.46	-7,430.30	706.86	-7,430.30	0.88	0.35	-0.80
20,787.00	91.07	182.73	12,954.88	-7,525.17	702.18	-7,525.17	0.31	0.24	-0.20
20,882.00	89.06	184.04	12,954.77	-7,620.00	696.57	-7,620.00	2.53	-2.12	1.38
20,977.00	86.91	183.20	12,958.11	-7,714.75	690.57	-7,714.75	2.43	-2.26	-0.88

Scientific Drilling, Intl

Survey Report

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Well:	#85H	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)
21,072.00	91.48	179.60	12,959.44	-7,809.67	688.26	-7,809.67	6.12	4.81	-3.79
21,167.00	89.53	175.93	12,958.61	-7,904.57	691.96	-7,904.57	4.37	-2.05	-3.86
21,263.00	90.50	178.99	12,958.58	-8,000.47	696.21	-8,000.47	3.34	1.01	3.19
21,357.00	88.86	175.29	12,959.11	-8,094.33	700.90	-8,094.33	4.31	-1.74	-3.94
21,451.00	88.09	181.33	12,961.61	-8,188.21	703.67	-8,188.21	6.48	-0.82	6.43
21,546.00	92.45	181.70	12,961.16	-8,283.15	701.16	-8,283.15	4.61	4.59	0.39
21,641.00	90.64	178.49	12,958.60	-8,378.10	701.01	-8,378.10	3.88	-1.91	-3.38
21,736.00	88.83	176.18	12,959.04	-8,472.99	705.42	-8,472.99	3.09	-1.91	-2.43
21,831.00	89.43	175.55	12,960.48	-8,567.73	712.27	-8,567.73	0.92	0.63	-0.66
21,925.00	91.41	174.79	12,959.79	-8,661.39	720.19	-8,661.39	2.26	2.11	-0.81
22,020.00	90.47	173.77	12,958.23	-8,755.90	729.65	-8,755.90	1.46	-0.99	-1.07
22,113.00	88.02	175.67	12,959.46	-8,848.48	738.21	-8,848.48	3.33	-2.63	2.04
22,208.00	89.40	179.00	12,961.60	-8,943.34	742.62	-8,943.34	3.79	1.45	3.51
22,302.00	91.31	178.87	12,961.02	-9,037.32	744.37	-9,037.32	2.04	2.03	-0.14
22,396.00	91.31	180.60	12,958.87	-9,131.29	744.81	-9,131.29	1.84	0.00	1.84
22,491.00	91.04	182.28	12,956.92	-9,226.24	742.42	-9,226.24	1.79	-0.28	1.77
22,586.00	87.78	181.18	12,957.90	-9,321.17	739.55	-9,321.17	3.62	-3.43	-1.16
22,680.00	88.72	183.58	12,960.77	-9,415.04	735.65	-9,415.04	2.74	1.00	2.55
22,775.00	87.78	184.93	12,963.67	-9,509.73	728.61	-9,509.73	1.73	-0.99	1.42
22,869.00	89.13	188.11	12,966.20	-9,603.07	717.94	-9,603.07	3.67	1.44	3.38
22,907.00	87.85	188.24	12,967.21	-9,640.67	712.53	-9,640.67	3.39	-3.37	0.34
22,953.05	87.28	188.21	12,969.16	-9,686.21	705.95	-9,686.21	1.23	-1.23	-0.07
BHL[FO#85H]									
22,964.00	87.15	188.20	12,969.69	-9,697.04	704.39	-9,697.04	1.23	-1.23	-0.07
23,058.00	87.38	185.10	12,974.18	-9,790.29	693.52	-9,790.29	3.30	0.24	-3.30
23,152.00	89.66	185.47	12,976.61	-9,883.85	684.87	-9,883.85	2.46	2.43	0.39
23,207.00	90.54	182.76	12,976.51	-9,938.70	680.92	-9,938.70	5.18	1.60	-4.93
FINAL MWD Survey (23207.00' MD)									
23,262.00	90.54	182.76	12,975.99	-9,993.63	678.27	-9,993.63	0.00	0.00	0.00
FINAL Proj. to Bit (23262.00' MD)									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
23,207.00	12,976.51	-9,938.70	680.92	FINAL MWD Survey (23207.00' MD)
23,262.00	12,975.99	-9,993.63	678.27	FINAL Proj. to Bit (23262.00' MD)

Checked By: _____	Approved By: _____	Date: _____
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