



NABORS DRILLING TECHNOLOGIES USA, INC.
515 West Greens Road
Houston, TX 77067
Phone: 281.874.0035
Fax: 281.872.5205

Sunday, August 12, 2018

State of New Mexico
County of Eddy

Subject: **Survey Certification Letter**

Survey Company: NABORS DRILLING TECH USA, INC.
Job Number: T5169
Survey Job Type: Nabors MWD
Customer: Devon Energy Corporation
Well Name: Cotton Draw Unit 516H
Rig Name: Nabors X20

Surface: 32.1942688 N 103.7243942 W
A.P.I. No: 30-015-44717
Location: Eddy, NM
RKB Height: 32'
Distance to Bit: 61'

Surveyor Name	Surveyor Title	Borehole Number	Start Depth	End Depth	Start Date	End Date	Type of	TD Straight Line
								Projection
Joe Moore	MWD Supervisor	OH	145'	19281'	07/27/18	08/12/18	MWD	19342'

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by NABORS DRILLING TECHNOLOGIES USA, INC. I am authorized and qualified to review the data, calculations and these reports; the reports represents true and correct Directional Surveys of this well based on the original data, the minimum curvature method, corrected to Grid North and obtained at the well site.



Joe Moore
MWD Supervisor
NABORS DRILLING TECHNOLOGIES USA, INC.



Devon Energy Corporation

**Eddy Co., NM
Cotton Draw Unit
516H**

OH

Design: Surveys

Standard Survey Report

13 August, 2018



NABORS



Nabors
Survey Report



Company:	Devon Energy Corporation	Local Co-ordinate Reference:	Well 516H
Project:	Eddy Co., NM	TVD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Site:	Cotton Draw Unit	MD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Well:	516H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Ryan USA_ODBC_32bit

Project	Eddy Co., NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Cotton Draw Unit		
Site Position:	Map	Northing:	434,943.040 usft
From:		Easting:	729,763.800 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32° 11' 39.367416 N
		Longitude:	103° 43' 27.121085 W
		Grid Convergence:	0.32 °

Well	516H		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	32° 11' 39.367710 N
		Longitude:	103° 43' 27.819111 W
		Ground Level:	3,541.50 ft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	User Defined	6/1/2018	6.93
			Dip Angle
			(°)
			59.92
			Field Strength
			(nT)
			48,027.30000000

Design	Surveys		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			(°)
			186.03

Survey Program	Date 8/13/2018		
From	To	Survey (Wellbore)	Tool Name
(ft)	(ft)		
145.00	19,342.00	Survey #1 (OH)	MWD+HRGM
			Description
			OWSG MWD + HRGM

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145.00	0.56	123.15	145.00	-0.39	0.59	0.32	0.39	0.39	0.00
234.00	0.75	110.32	233.99	-0.83	1.50	0.67	0.27	0.21	-14.42
309.00	0.75	124.21	308.99	-1.27	2.37	1.02	0.24	0.00	18.52
408.00	0.88	122.10	407.98	-2.04	3.55	1.66	0.13	0.13	-2.13
507.00	0.75	137.04	506.97	-2.92	4.64	2.42	0.25	-0.13	15.09
606.00	0.50	162.00	605.96	-3.81	5.21	3.24	0.37	-0.25	25.21
697.00	0.56	189.42	696.96	-4.62	5.26	4.04	0.28	0.07	30.13
878.00	0.81	199.44	877.94	-6.70	4.69	6.17	0.15	0.14	5.54
969.00	1.19	275.20	968.93	-7.22	3.53	6.81	1.39	0.42	83.25



Nabors
Survey Report



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Project:	Eddy Co., NM	TVD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Site:	Cotton Draw Unit	MD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Well:	516H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Ryan USA_ODBC_32bit

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,060.00	3.06	285.57	1,059.87	-6.48	0.25	6.42	2.09	2.05	11.40	
1,151.00	4.75	288.21	1,150.65	-4.65	-5.67	5.22	1.87	1.86	2.90	
1,242.00	6.38	295.95	1,241.22	-1.26	-13.79	2.71	1.97	1.79	8.51	
1,333.00	7.69	297.70	1,331.53	3.78	-23.73	-1.26	1.46	1.44	1.92	
1,424.00	9.38	293.84	1,421.52	9.61	-35.90	-5.78	1.96	1.86	-4.24	
1,517.00	9.38	292.43	1,513.28	15.56	-49.84	-10.24	0.25	0.00	-1.52	
1,605.00	8.50	292.43	1,600.21	20.78	-62.48	-14.10	1.00	-1.00	0.00	
1,696.00	8.94	291.90	1,690.16	25.98	-75.26	-17.93	0.49	0.48	-0.58	
1,796.00	10.31	294.54	1,788.75	32.60	-90.61	-22.90	1.44	1.37	2.64	
1,890.00	10.31	294.54	1,881.23	39.58	-105.91	-28.24	0.00	0.00	0.00	
1,984.00	10.19	293.31	1,973.73	46.37	-121.20	-33.38	0.27	-0.13	-1.31	
2,078.00	9.50	291.55	2,066.35	52.51	-136.05	-37.93	0.80	-0.73	-1.87	
2,172.00	9.13	291.55	2,159.11	58.10	-150.20	-42.00	0.39	-0.39	0.00	
2,267.00	8.56	288.56	2,252.98	63.12	-163.92	-45.55	0.77	-0.60	-3.15	
2,361.00	8.56	288.56	2,345.93	67.57	-177.18	-48.58	0.00	0.00	0.00	
2,456.00	8.38	289.79	2,439.89	72.16	-190.40	-51.76	0.27	-0.19	1.29	
2,549.00	8.13	288.39	2,531.93	76.53	-203.01	-54.78	0.34	-0.27	-1.51	
2,644.00	8.88	292.43	2,625.89	81.45	-216.17	-58.29	1.01	0.79	4.25	
2,738.00	9.19	292.61	2,718.72	87.10	-229.80	-62.48	0.33	0.33	0.19	
2,832.00	8.56	291.20	2,811.59	92.52	-243.25	-66.45	0.71	-0.67	-1.50	
2,927.00	9.75	291.55	2,905.38	98.03	-257.33	-70.46	1.25	1.25	0.37	
3,021.00	10.25	290.85	2,997.95	103.93	-272.55	-74.73	0.55	0.53	-0.74	
3,115.00	9.75	291.55	3,090.52	109.83	-287.77	-78.99	0.55	-0.53	0.74	
3,209.00	9.13	292.25	3,183.25	115.58	-302.07	-83.21	0.67	-0.66	0.74	
3,304.00	10.25	290.15	3,276.89	121.35	-316.98	-87.38	1.24	1.18	-2.21	
3,398.00	10.25	293.13	3,369.40	127.51	-332.52	-91.87	0.56	0.00	3.17	
3,493.00	9.56	294.54	3,462.98	134.11	-347.47	-96.86	0.77	-0.73	1.48	
3,587.00	8.88	292.25	3,555.76	140.10	-361.29	-101.37	0.82	-0.72	-2.44	
3,681.00	9.25	291.02	3,648.59	145.55	-375.06	-105.35	0.44	0.39	-1.31	
3,776.00	9.06	290.15	3,742.38	150.87	-389.21	-109.15	0.25	-0.20	-0.92	
3,870.00	9.13	284.17	3,835.20	155.25	-403.39	-112.01	1.01	0.07	-6.36	
3,964.00	9.06	286.45	3,928.02	159.17	-417.71	-114.41	0.39	-0.07	2.43	
4,059.00	9.06	289.44	4,021.83	163.77	-431.94	-117.49	0.50	0.00	3.15	
4,153.00	8.19	292.25	4,114.77	168.77	-445.12	-121.08	1.03	-0.93	2.99	
4,247.00	8.63	284.70	4,207.76	173.10	-458.14	-124.01	1.26	0.47	-8.03	
4,342.00	10.06	284.34	4,301.50	176.96	-473.07	-126.29	1.51	1.51	-0.38	
4,435.00	9.44	285.93	4,393.16	181.07	-488.27	-128.77	0.73	-0.67	1.71	
4,529.00	9.75	286.98	4,485.84	185.51	-503.30	-131.61	0.38	0.33	1.12	
4,551.00	9.75	288.04	4,507.52	186.63	-506.85	-132.35	0.82	0.00	4.82	
4,719.00	9.00	287.86	4,673.28	195.06	-532.89	-138.00	0.45	-0.45	-0.11	
4,813.00	10.06	291.73	4,765.98	200.36	-547.51	-141.73	1.32	1.13	4.12	
4,908.00	10.19	291.20	4,859.50	206.47	-563.05	-146.18	0.17	0.14	-0.56	
5,001.00	10.44	292.61	4,951.00	212.68	-578.50	-150.74	0.38	0.27	1.52	
5,096.00	10.88	292.25	5,044.36	219.39	-594.75	-155.70	0.47	0.46	-0.38	

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Well:	516H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Ryan USA_ODBC_32bit

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,190.00	10.88	290.67	5,136.67	225.88	-611.26	-160.42	0.32	0.00	-1.68
5,285.00	10.69	289.62	5,229.99	232.00	-627.94	-164.75	0.29	-0.20	-1.11
5,379.00	10.63	288.04	5,322.37	237.61	-644.40	-168.61	0.32	-0.06	-1.68
5,474.00	10.88	287.16	5,415.70	242.97	-661.30	-172.16	0.31	0.26	-0.93
5,569.00	11.06	285.22	5,508.96	248.01	-678.66	-175.35	0.43	0.19	-2.04
5,663.00	10.94	283.99	5,601.24	252.53	-696.01	-178.02	0.28	-0.13	-1.31
5,757.00	11.63	288.39	5,693.42	257.68	-713.66	-181.28	1.17	0.73	4.68
5,852.00	11.13	294.01	5,786.56	264.43	-731.12	-186.16	1.28	-0.53	5.92
5,946.00	11.25	294.19	5,878.77	271.88	-747.77	-191.82	0.13	0.13	0.19
6,040.00	11.19	294.01	5,970.97	279.35	-764.47	-197.50	0.07	-0.06	-0.19
6,135.00	10.56	293.84	6,064.27	286.62	-780.85	-203.00	0.66	-0.66	-0.18
6,229.00	10.38	292.78	6,156.70	293.38	-796.54	-208.08	0.28	-0.19	-1.13
6,323.00	9.63	292.08	6,249.27	299.61	-811.63	-212.69	0.81	-0.80	-0.74
6,418.00	9.44	291.55	6,342.96	305.46	-826.24	-216.97	0.22	-0.20	-0.56
6,512.00	9.31	290.50	6,435.70	310.96	-840.53	-220.94	0.23	-0.14	-1.12
6,607.00	9.13	289.97	6,529.48	316.22	-854.82	-224.67	0.21	-0.19	-0.56
6,700.00	9.19	289.97	6,621.29	321.28	-868.73	-228.24	0.06	0.06	0.00
6,794.00	9.13	289.97	6,714.09	326.39	-882.80	-231.84	0.06	-0.06	0.00
6,889.00	9.25	283.64	6,807.87	330.76	-897.30	-234.67	1.07	0.13	-6.66
6,983.00	8.94	281.18	6,900.69	333.96	-911.81	-236.33	0.53	-0.33	-2.62
7,077.00	7.75	284.70	6,993.70	336.98	-925.10	-237.94	1.38	-1.27	3.74
7,171.00	7.94	288.74	7,086.82	340.68	-937.38	-240.32	0.62	0.20	4.30
7,265.00	7.81	289.62	7,179.93	344.91	-949.55	-243.25	0.19	-0.14	0.94
7,360.00	8.88	287.86	7,273.92	349.33	-962.61	-246.27	1.16	1.13	-1.85
7,454.00	9.94	288.39	7,366.66	354.11	-977.21	-249.50	1.13	1.13	0.56
7,548.00	10.75	289.62	7,459.13	359.61	-993.17	-253.29	0.89	0.86	1.31
7,642.00	10.25	289.09	7,551.55	365.29	-1,009.33	-257.24	0.54	-0.53	-0.56
7,736.00	9.56	287.51	7,644.15	370.38	-1,024.68	-260.69	0.79	-0.73	-1.68
7,830.00	8.38	286.98	7,737.00	374.73	-1,038.67	-263.54	1.26	-1.26	-0.56
7,924.00	6.75	292.08	7,830.18	378.80	-1,050.34	-266.37	1.87	-1.73	5.43
8,019.00	4.75	291.73	7,924.70	382.36	-1,059.17	-268.98	2.11	-2.11	-0.37
8,113.00	2.94	295.95	8,018.48	384.85	-1,064.95	-270.85	1.95	-1.93	4.49
8,208.00	2.94	287.33	8,113.36	386.65	-1,069.47	-272.16	0.46	0.00	-9.07
8,302.00	2.44	287.86	8,207.25	387.98	-1,073.68	-273.04	0.53	-0.53	0.56
8,396.00	1.56	266.77	8,301.20	388.52	-1,076.86	-273.25	1.21	-0.94	-22.44
8,490.00	1.69	257.98	8,395.16	388.16	-1,079.49	-272.61	0.30	0.14	-9.35
8,510.00	1.69	252.35	8,415.15	388.01	-1,080.06	-272.40	0.83	0.00	-28.15
8,584.00	2.19	190.65	8,489.12	386.29	-1,081.36	-270.55	2.75	0.68	-83.38
8,610.24	5.85	177.54	8,515.28	384.46	-1,081.40	-268.73	14.28	13.93	-49.98
CDU_516H_KOP									
8,679.00	15.63	172.72	8,582.76	371.74	-1,080.07	-256.22	14.28	14.23	-7.01
8,724.00	22.31	170.09	8,625.29	357.30	-1,077.83	-242.09	14.96	14.84	-5.84
8,773.00	27.56	164.29	8,669.72	337.21	-1,073.16	-222.61	11.81	10.71	-11.84



Nabors
Survey Report



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Site:	Cotton Draw Unit	MD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Well:	516H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Ryan USA_ODBC_32bit

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,818.00	30.50	155.50	8,709.08	316.78	-1,065.60	-203.09	11.50	6.53	-19.53	
8,867.00	33.75	169.38	8,750.63	292.05	-1,057.92	-179.30	16.42	6.63	28.33	
8,912.00	36.63	179.40	8,787.43	266.31	-1,055.47	-153.96	14.32	6.40	22.27	
8,962.00	42.38	178.70	8,825.99	234.52	-1,054.93	-122.40	11.53	11.50	-1.40	
9,007.00	45.69	180.28	8,858.34	203.25	-1,054.67	-91.33	7.75	7.36	3.51	
9,055.00	48.56	181.86	8,891.00	168.08	-1,055.33	-56.29	6.45	5.98	3.29	
9,100.00	50.75	182.57	8,920.13	133.81	-1,056.66	-22.07	5.01	4.87	1.58	
9,149.00	58.88	179.75	8,948.34	93.81	-1,057.42	17.79	17.24	16.59	-5.76	
9,194.00	63.25	178.17	8,970.11	54.45	-1,056.70	56.86	10.19	9.71	-3.51	
9,243.00	62.00	176.77	8,992.64	10.98	-1,054.78	99.88	3.60	-2.55	-2.86	
9,288.00	61.25	176.59	9,014.03	-28.55	-1,052.49	138.95	1.70	-1.67	-0.40	
9,336.00	66.50	178.88	9,035.16	-71.59	-1,050.80	181.58	11.75	10.94	4.77	
9,381.00	72.50	180.46	9,050.91	-113.72	-1,050.57	223.45	13.73	13.33	3.51	
9,431.00	77.63	180.81	9,063.79	-162.01	-1,051.11	271.53	10.28	10.26	0.70	
9,467.85	79.98	179.37	9,070.95	-198.16	-1,051.16	307.48	7.44	6.38	-3.92	
CDU_516H_EOC										
9,476.00	80.50	179.05	9,072.33	-206.19	-1,051.05	315.46	7.44	6.39	-3.88	
9,525.00	84.44	178.00	9,078.75	-254.74	-1,049.80	363.61	8.32	8.04	-2.14	
9,556.00	87.06	177.82	9,081.05	-285.63	-1,048.67	394.21	8.47	8.45	-0.58	
9,591.00	87.56	177.47	9,082.69	-320.56	-1,047.24	428.80	1.74	1.43	-1.00	
9,685.00	88.63	179.05	9,085.82	-414.46	-1,044.38	521.88	2.03	1.14	1.68	
9,779.00	89.13	179.58	9,087.65	-508.44	-1,043.26	615.22	0.78	0.53	0.56	
9,874.00	87.50	178.70	9,090.45	-603.38	-1,041.84	709.49	1.95	-1.72	-0.93	
9,968.00	90.50	181.16	9,092.09	-697.35	-1,041.72	802.92	4.13	3.19	2.62	
10,062.00	90.94	181.16	9,090.91	-791.32	-1,043.63	896.57	0.47	0.47	0.00	
10,156.00	89.63	180.28	9,090.44	-885.31	-1,044.81	990.17	1.68	-1.39	-0.94	
10,251.00	86.88	178.70	9,093.33	-980.25	-1,043.96	1,084.49	3.34	-2.89	-1.66	
10,345.00	86.19	179.05	9,099.01	-1,074.06	-1,042.12	1,177.59	0.82	-0.73	0.37	
10,439.00	88.94	181.16	9,103.01	-1,167.96	-1,042.29	1,270.99	3.69	2.93	2.24	
10,533.00	88.06	181.51	9,105.47	-1,261.90	-1,044.48	1,364.64	1.01	-0.94	0.37	
10,627.00	92.06	184.50	9,105.37	-1,355.74	-1,049.41	1,458.48	5.31	4.26	3.18	
10,719.00	92.88	185.38	9,101.40	-1,447.31	-1,057.32	1,550.38	1.31	0.89	0.96	
10,809.00	93.19	184.85	9,096.64	-1,536.83	-1,065.34	1,640.24	0.68	0.34	-0.59	
10,900.00	93.13	184.15	9,091.62	-1,627.41	-1,072.47	1,731.07	0.77	-0.07	-0.77	
10,991.00	89.00	180.81	9,089.93	-1,718.28	-1,076.40	1,821.84	5.84	-4.54	-3.67	
11,082.00	88.56	180.46	9,091.87	-1,809.25	-1,077.41	1,912.42	0.62	-0.48	-0.38	
11,173.00	88.13	180.28	9,094.50	-1,900.21	-1,077.99	2,002.94	0.51	-0.47	-0.20	
11,263.00	90.13	179.75	9,095.86	-1,990.19	-1,078.02	2,092.43	2.30	2.22	-0.59	
11,355.00	91.63	179.23	9,094.45	-2,082.18	-1,077.20	2,183.81	1.73	1.63	-0.57	
11,446.00	91.00	178.52	9,092.36	-2,173.13	-1,075.41	2,274.08	1.04	-0.69	-0.78	
11,537.00	90.69	177.65	9,091.02	-2,264.07	-1,072.37	2,364.20	1.01	-0.34	-0.96	
11,574.54	90.59	177.57	9,090.60	-2,301.58	-1,070.81	2,401.33	0.34	-0.28	-0.20	
CDU_516H_T1										
11,627.00	90.44	177.47	9,090.13	-2,353.99	-1,068.54	2,453.21	0.34	-0.28	-0.20	

Company:	Devon Energy Corporation	Local Co-ordinate Reference:	Well 516H
Project:	Eddy Co., NM	TVD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Site:	Cotton Draw Unit	MD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Well:	516H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Ryan USA_ODBC_32bit

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
11,719.00	91.81	177.82	9,088.32	-2,445.89	-1,064.76	2,544.21	1.54	1.49	0.38	
11,811.00	90.75	179.23	9,086.27	-2,537.83	-1,062.39	2,635.39	1.92	-1.15	1.53	
11,903.00	90.25	179.23	9,085.47	-2,629.82	-1,061.16	2,726.74	0.54	-0.54	0.00	
11,996.00	89.75	178.35	9,085.47	-2,722.80	-1,059.19	2,819.00	1.09	-0.54	-0.95	
12,090.00	89.56	178.35	9,086.03	-2,816.76	-1,056.49	2,912.15	0.20	-0.20	0.00	
12,184.00	89.31	178.35	9,086.96	-2,910.71	-1,053.78	3,005.31	0.27	-0.27	0.00	
12,278.00	89.88	178.88	9,087.62	-3,004.68	-1,051.51	3,098.52	0.83	0.61	0.56	
12,372.00	90.56	179.40	9,087.26	-3,098.67	-1,050.10	3,191.84	0.91	0.72	0.55	
12,465.00	91.50	179.40	9,085.59	-3,191.65	-1,049.12	3,284.20	1.01	1.01	0.00	
12,559.00	91.94	179.40	9,082.77	-3,285.60	-1,048.14	3,377.53	0.47	0.47	0.00	
12,653.00	89.38	182.04	9,081.69	-3,379.57	-1,049.32	3,471.10	3.91	-2.72	2.81	
12,747.00	90.06	181.86	9,082.15	-3,473.52	-1,052.52	3,564.86	0.75	0.72	-0.19	
12,841.00	90.44	181.51	9,081.74	-3,567.47	-1,055.28	3,658.59	0.55	0.40	-0.37	
12,936.00	90.19	181.51	9,081.21	-3,662.44	-1,057.79	3,753.29	0.26	-0.26	0.00	
13,030.00	90.75	181.34	9,080.44	-3,756.41	-1,060.13	3,846.99	0.62	0.60	-0.18	
13,124.00	91.44	181.51	9,078.65	-3,850.36	-1,062.46	3,940.67	0.76	0.73	0.18	
13,218.00	92.88	181.69	9,075.10	-3,944.25	-1,065.09	4,034.32	1.54	1.53	0.19	
13,313.00	91.00	180.46	9,071.89	-4,039.18	-1,066.87	4,128.90	2.36	-1.98	-1.29	
13,407.00	92.38	180.81	9,069.12	-4,133.13	-1,067.91	4,222.44	1.51	1.47	0.37	
13,501.00	86.69	180.11	9,069.88	-4,227.08	-1,068.66	4,315.96	6.10	-6.05	-0.74	
13,596.00	89.25	179.23	9,073.24	-4,322.01	-1,068.11	4,410.30	2.85	2.69	-0.93	
13,688.00	90.94	179.58	9,073.09	-4,414.00	-1,067.16	4,501.69	1.88	1.84	0.38	
13,782.00	95.38	181.34	9,067.91	-4,507.83	-1,067.91	4,595.07	5.08	4.72	1.87	
13,876.00	90.69	180.63	9,062.93	-4,601.66	-1,069.52	4,688.55	5.05	-4.99	-0.76	
13,970.00	90.38	179.93	9,062.06	-4,695.65	-1,069.98	4,782.07	0.81	-0.33	-0.74	
14,064.00	91.00	179.93	9,060.92	-4,789.64	-1,069.87	4,875.53	0.66	0.66	0.00	
14,159.00	91.63	179.75	9,058.74	-4,884.62	-1,069.60	4,969.95	0.69	0.66	-0.19	
14,253.00	91.19	178.88	9,056.43	-4,978.58	-1,068.48	5,063.28	1.04	-0.47	-0.93	
14,347.00	90.88	178.35	9,054.73	-5,072.54	-1,066.21	5,156.48	0.65	-0.33	-0.56	
14,440.00	90.69	177.82	9,053.46	-5,165.48	-1,063.10	5,248.58	0.61	-0.20	-0.57	
14,534.00	90.63	177.47	9,052.38	-5,259.39	-1,059.24	5,341.56	0.38	-0.06	-0.37	
14,629.00	90.13	177.12	9,051.75	-5,354.28	-1,054.75	5,435.46	0.64	-0.53	-0.37	
14,723.00	92.63	178.52	9,049.48	-5,448.18	-1,051.18	5,528.46	3.05	2.66	1.49	
14,818.00	92.13	179.93	9,045.54	-5,543.09	-1,049.89	5,622.71	1.57	-0.53	1.48	
14,912.00	90.75	179.75	9,043.18	-5,637.05	-1,049.63	5,716.13	1.48	-1.47	-0.19	
15,006.00	90.13	179.23	9,042.45	-5,731.05	-1,048.79	5,809.51	0.86	-0.66	-0.55	
15,100.00	89.69	178.88	9,042.60	-5,825.03	-1,047.24	5,902.81	0.60	-0.47	-0.37	
15,194.00	89.69	178.70	9,043.11	-5,919.01	-1,045.26	5,996.06	0.19	0.00	-0.19	
15,288.00	91.69	179.58	9,041.98	-6,012.99	-1,043.85	6,089.37	2.32	2.13	0.94	
15,383.00	92.81	179.58	9,038.25	-6,107.91	-1,043.15	6,183.70	1.18	1.18	0.00	
15,397.63	92.43	179.91	9,037.58	-6,122.53	-1,043.09	6,198.23	3.42	-2.58	2.25	
CDU_516H_T2										
15,477.00	90.38	181.69	9,035.63	-6,201.86	-1,044.20	6,277.23	3.42	-2.59	2.24	

Company:	Devon Energy Corporation	Local Co-ordinate Reference:	Well 516H
Project:	Eddy Co., NM	TVD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Site:	Cotton Draw Unit	MD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Well:	516H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Ryan USA_ODBC_32bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,571.00	90.31	181.86	9,035.07	-6,295.81	-1,047.11	6,370.97	0.20	-0.07	0.18
15,665.00	90.63	182.04	9,034.29	-6,389.75	-1,050.31	6,464.73	0.39	0.34	0.19
15,759.00	91.81	182.39	9,032.29	-6,483.66	-1,053.94	6,558.50	1.31	1.26	0.37
15,853.00	90.06	179.93	9,030.76	-6,577.61	-1,055.84	6,652.14	3.21	-1.86	-2.62
15,946.00	90.38	180.28	9,030.40	-6,670.61	-1,056.01	6,744.64	0.51	0.34	0.38
16,039.00	91.13	180.28	9,029.18	-6,763.60	-1,056.46	6,837.16	0.81	0.81	0.00
16,133.00	89.25	179.93	9,028.86	-6,857.60	-1,056.64	6,930.65	2.03	-2.00	-0.37
16,227.00	88.25	179.75	9,030.92	-6,951.57	-1,056.37	7,024.08	1.08	-1.06	-0.19
16,321.00	87.81	179.40	9,034.15	-7,045.52	-1,055.68	7,117.43	0.60	-0.47	-0.37
16,415.00	90.56	180.81	9,035.48	-7,139.50	-1,055.85	7,210.91	3.29	2.93	1.50
16,508.00	90.69	179.40	9,034.47	-7,232.49	-1,056.02	7,303.40	1.52	0.14	-1.52
16,602.00	94.38	180.46	9,030.31	-7,326.38	-1,055.90	7,396.76	4.08	3.93	1.13
16,696.00	92.94	180.81	9,024.31	-7,420.18	-1,056.94	7,490.15	1.58	-1.53	0.37
16,789.00	89.44	180.46	9,022.38	-7,513.14	-1,057.97	7,582.71	3.78	-3.76	-0.38
16,883.00	88.06	180.11	9,024.43	-7,607.11	-1,058.44	7,676.21	1.51	-1.47	-0.37
16,976.00	87.75	179.75	9,027.83	-7,700.05	-1,058.33	7,768.62	0.51	-0.33	-0.39
17,069.00	87.56	179.40	9,031.64	-7,792.97	-1,057.64	7,860.95	0.43	-0.20	-0.38
17,162.00	89.19	179.23	9,034.27	-7,885.92	-1,056.53	7,953.28	1.76	1.75	-0.18
17,256.00	89.56	179.23	9,035.30	-7,979.91	-1,055.26	8,046.61	0.39	0.39	0.00
17,349.00	89.56	178.70	9,036.01	-8,072.89	-1,053.58	8,138.90	0.57	0.00	-0.57
17,444.00	91.50	179.40	9,035.13	-8,167.87	-1,052.01	8,233.19	2.17	2.04	0.74
17,537.00	91.81	179.23	9,032.45	-8,260.82	-1,050.90	8,325.51	0.38	0.33	-0.18
17,631.00	90.69	180.28	9,030.40	-8,354.79	-1,050.50	8,418.92	1.63	-1.19	1.12
17,724.00	90.94	180.28	9,029.07	-8,447.78	-1,050.95	8,511.44	0.27	0.27	0.00
17,817.00	88.44	180.28	9,029.58	-8,540.77	-1,051.41	8,603.97	2.69	-2.69	0.00
17,910.00	88.25	180.28	9,032.26	-8,633.73	-1,051.86	8,696.46	0.20	-0.20	0.00
18,004.00	88.44	179.40	9,034.98	-8,727.69	-1,051.60	8,789.87	0.96	0.20	-0.94
18,098.00	88.94	179.23	9,037.13	-8,821.66	-1,050.47	8,883.20	0.56	0.53	-0.18
18,192.00	89.75	179.40	9,038.20	-8,915.65	-1,049.35	8,976.55	0.88	0.86	0.18
18,285.00	90.25	179.23	9,038.20	-9,008.64	-1,048.24	9,068.91	0.57	0.54	-0.18
18,379.00	90.56	178.52	9,037.54	-9,102.62	-1,046.39	9,162.18	0.82	0.33	-0.76
18,472.00	91.00	178.35	9,036.27	-9,195.58	-1,043.85	9,254.35	0.51	0.47	-0.18
18,566.00	89.69	179.75	9,035.71	-9,289.56	-1,042.29	9,347.65	2.04	-1.39	1.49
18,660.00	90.13	181.51	9,035.85	-9,383.55	-1,043.33	9,441.23	1.93	0.47	1.87
18,754.00	90.69	180.99	9,035.18	-9,477.52	-1,045.38	9,534.90	0.81	0.60	-0.55
18,848.00	90.50	180.11	9,034.20	-9,571.51	-1,046.28	9,628.46	0.96	-0.20	-0.94
18,942.00	90.63	179.58	9,033.28	-9,665.51	-1,046.03	9,721.91	0.58	0.14	-0.56
19,016.63	91.23	180.00	9,032.07	-9,740.12	-1,045.75	9,796.09	0.98	0.80	0.56
CDU_516H_BHL									
19,036.00	91.38	180.11	9,031.63	-9,759.49	-1,045.77	9,815.35	0.98	0.80	0.56
19,130.00	90.25	179.93	9,030.29	-9,853.48	-1,045.81	9,908.82	1.22	-1.20	-0.19
19,224.00	90.81	179.93	9,029.42	-9,947.48	-1,045.69	10,002.29	0.60	0.60	0.00
19,281.00	91.31	179.93	9,028.37	-10,004.47	-1,045.62	10,058.95	0.88	0.88	0.00
19,341.30	91.31	179.93	9,026.99	-10,064.75	-1,045.55	10,118.90	0.00	0.00	0.00



Nabors
Survey Report



Company:	Devon Energy Corporation	Local Co-ordinate Reference:	Well 516H
Project:	Eddy Co., NM	TVD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Site:	Cotton Draw Unit	MD Reference:	KB=32' (Nabors X20) @ 3573.50ft (Nabors X20)
Well:	516H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Ryan USA_ODBC_32bit

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
CDU_516H_TD									
19,342.00	91.31	179.93	9,026.97	-10,065.45	-1,045.55	10,119.59	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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Project: Eddy Co., NM
Site: Cotton Draw Unit
Well: 516H
Wellbore: OH
Plan: PN3 (\$16H/OH)

WELL DETAILS: \$16M

Ground Elevation: 3541.50
RXB Elevation: KB=32' (Nabors X20) @ 3573.50m (Nabors X20)

+	N-L-S	+E-L-W	Northing	Easting	Latitude	Longitude
0.00	0.00	434.842.730	726793.820	32° 11' 38.357710 N	109° 43' 27.819111 W	

SECTION DETAILS

[illegible]

WEI | RONG TARGET DETAIL & INVESTU LEADSTL 380813M

Name	TVD	+N-\$	+E-W	North	East
CDU_516H_BHL	9037.00	-8740.48	-1148.82	425202.260	72854.000
CDU_516H_EOC	9037.00	-185.07	-1062.42	434747.563	728541.402
CDU_516H_MOP	9037.00	377.83	-1062.42	435720.619	728541.402
CDU_516H_T1	9037.00	-2201.19	-1062.42	432561.546	728541.402
CDU_516H_T2	9037.07	-8172.30	-1062.42	428870.442	728541.402
CDU_516H_T3	9037.00	-10625.30	-1062.42	424877.750	728541.402

Azimuths to Grid North:
 True North: -0.32°
 Magnetic North: 6.61°
 Magnetic Field:
 Strength: 48027.3 nT
 Dip Angle: 59.92°
 Date: 6/1/2018
 Model: USER DEFINED

FORMATION TOP DETAILS

No formation data is available

PROJECT DETAILS: Eddy Co., NM
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Elevation: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

