

NABORS

NABORS DRILLING TECHNOLOGIES USA, INC.

515 West Greens Road

Houston, TX 77067

Phone: 281.874.0035

Fax: 281.872.5205

Thursday, April 26, 2018

HOBBS OCD

State of New Mexico

County of Lea

OCT 01 2018

RECEIVED

Subject: **Survey Certification Letter**

Survey Company: **NABORS DRILLING TECH USA, INC.**

Job Number: **T4525**

Survey Job Type: **Nabors MWD**

Customer: **Devon Energy Corporation**

Well Name: **Thistle Unit 128H**

Rig Name: **Nabors X20**

Surface: **32 17 47.542419 N 103 33 25.016305**

A.P.I. No: **30-025-44086**

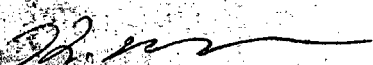
Location: **Lea, NM**

RKB Height: **32'**

Distance to Bit: **69'**

Surveyor Name	Surveyor Title	Borehole Number	Start Depth	End Depth	Start Date	End Date	Type of	TD Straight Line Projection
Kevin Moore	MWD Supervisor	OH	1427'	17231'	04/12/18	04/25/18	MWD	17300'

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.


Kevin Moore

MWD Supervisor

NABORS DRILLING TECHNOLOGIES USA, INC.



devon

Devon Energy Corporation

**Lea Co., NM
Thistle Unit
128H
OH**

Design: Surveys

Completion Report

27 April, 2018

HOBBS OCD

OCT 01 2018

RECEIVED



devon

WELL DETAILS: 128H

Ground Elevation: 3713.10
RKB Elevation: KB-32' (Nabors X20) @ 3745.10ft (Nabors X20)
Rig Name: Nabors X20

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	472482.140	781232.750 32° 17'	47.542419 N	103° 33' 25.016305 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	VSecl
1322.00	0.18	82.00	1321.88	5.34	2.37	0.00	0.00	-5.19
4320.03	0.18	82.00	4320.00	10.49	8.97	0.00	0.00	-8.94
4858.32	5.51	72.29	4858.44	18.80	34.12	1.00	20.88	-10.73
8043.20	5.51	72.29	8027.58	111.84	325.76	0.00	0.00	-82.31
8594.47	0.00	0.00	8578.00	120.00	351.00	1.00	180.00	-88.85
9194.81	0.00	0.00	9178.04	120.00	351.00	0.00	0.00	-88.85
10094.81	90.00	178.82	9751.00	-452.85	352.80	10.00	178.82	473.19
14355.87	90.00	178.82	9751.00	-4724.00	386.18	0.00	0.00	4737.43
14387.83	90.00	178.18	9751.00	-4755.96	386.46	2.00	-90.00	4768.35
17237.10	90.00	178.18	9751.00	-7695.24	407.03	0.00	0.00	7605.99

Thistle128H_KOP
Thistle128H_T1
Thistle128H_BHL

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
Thistle128H_BHL	9751.00	-7595.24	407.03	48488.920	781538.780
Thistle128H_EOC	9751.00	-452.85	352.80	47209.191	781588.548
Thistle128H_KOP	9178.04	120.00	351.00	472802.140	781583.748
Thistle128H_T1	9751.00	-4724.00	386.18	467758.148	781598.929

PROJECT DETAILS: Lea Co., NM
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

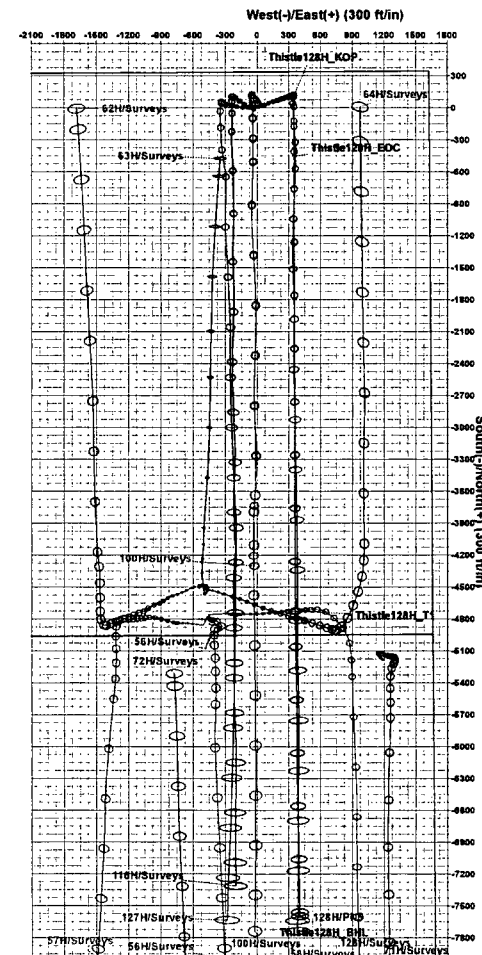
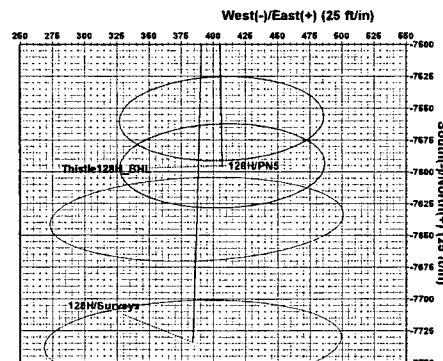
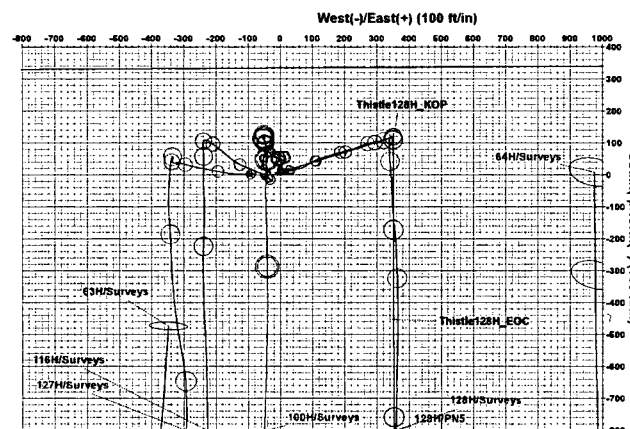
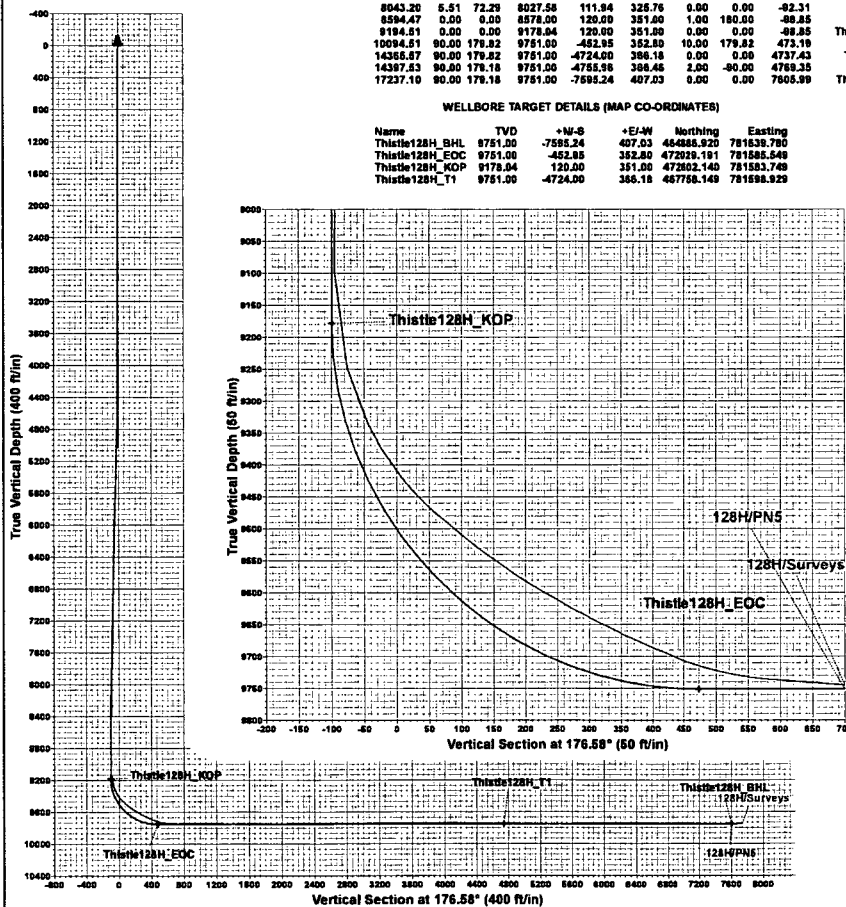
Project: Lea Co., NM
Site: Thistle Unit
Well: 128H
Wellbore: OH
Plan: PN5 (128H/OH)

System Datum: Mean Sea Level
Local North: Grid



Azimuths to Grid North
True North: -0.41°
Magnetic North: 6.45°

Magnetic Field
Strength: 48131.6snT
Dip Angle: 60.08°
Date: 4/17/2018
Model: USER DEFINED



Company: Devon Energy Corporation
Project: Lea Co., NM
Site: Thistle Unit
Well: 128H
Wellbore: OH
Design: Surveys

Local Co-ordinate Reference: Well 128H
TVD Reference: KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)
MD Reference: KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: RyanUSA_ODBC_32Bit

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

System Datum: Mean Sea Level

Site Thistle Unit

Site Position:	Northing:	472,481.790 usft	Latitude:	32° 17' 47.543254 N
From: Map	Easting:	781,172.750 usft	Longitude:	103° 33' 25.715331 W
Position Uncertainty: 0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 °

Well 128H

Well Position	+N-S	0.00 ft	Northing:	472,482.140 usft	Latitude:	32° 17' 47.542419 N
	+E-W	0.00 ft	Easting:	781,232.750 usft	Longitude:	103° 33' 25.016305 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,713.10 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	4/17/2018	6.86	60.08	48,131.60000000

Design Surveys

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.00

Vertical Section:	Depth From (TVD) (ft)	+N-S (ft)	+E-W (ft)	Direction (°)
	0.00	0.00	0.00	176.58

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Survey Program Date 4/27/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
32.00	1,322.00	Survey #1 - VES (OH)	VES GyroFlex	
1,427.00	17,300.00	Survey #2 NDS (OH)	MWD+HRGM	OWSG MWD + HRGM

Survey

MD (ft)	Inc (")	Azi (azimuth) (")	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (")	DLeg ("/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32.00	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	0.00
132.00	0.46	34.56	132.00	-0.32	0.33	0.23	0.40	34.56	0.46
232.00	0.36	40.74	232.00	-0.86	0.90	0.66	1.12	36.30	0.11
332.00	0.28	30.96	331.99	-1.29	1.35	0.99	1.67	36.35	0.10
432.00	0.31	24.75	431.99	-1.73	1.80	1.23	2.18	34.32	0.04
532.00	0.23	24.90	531.99	-2.14	2.23	1.43	2.65	32.64	0.08
632.00	0.10	49.12	631.99	-2.37	2.47	1.58	2.93	32.59	0.14
732.00	0.30	16.61	731.99	-2.67	2.78	1.72	3.27	31.76	0.22
832.00	0.30	10.31	831.99	-3.17	3.29	1.84	3.77	29.26	0.03
932.00	0.23	7.27	931.99	-3.62	3.74	1.91	4.20	27.08	0.07
1,032.00	0.42	3.93	1,031.99	-4.18	4.31	1.96	4.73	24.51	0.19
1,132.00	0.23	17.00	1,131.99	-4.73	4.86	2.05	5.28	22.83	0.20
1,232.00	0.16	39.44	1,231.98	-5.02	5.16	2.19	5.61	23.03	0.10
1,322.00	0.16	52.00	1,321.98	-5.19	5.34	2.37	5.84	23.97	0.04
1,427.00	0.31	307.91	1,426.98	-5.46	5.60	2.27	6.04	22.01	0.36
1,518.00	0.25	319.16	1,517.98	-5.78	5.90	1.94	6.22	18.20	0.09
1,609.00	0.38	331.65	1,608.98	-6.21	6.32	1.67	6.54	14.78	0.16
1,699.00	0.56	333.05	1,698.98	-6.88	6.98	1.33	7.10	10.77	0.20
1,794.00	0.50	340.08	1,793.97	-7.71	7.78	0.98	7.84	7.15	0.09
1,886.00	0.50	350.10	1,885.97	-8.49	8.55	0.77	8.59	5.14	0.09

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: RyanUSA_ODBC_32Bit

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	DLeg (°/100ft)
1,981.00	0.50	347.99	1,980.97	-9.31	9.37	0.61	9.39	3.74	0.02
2,075.00	0.38	334.63	2,074.96	-10.01	10.05	0.39	10.06	2.24	0.17
2,169.00	0.56	79.40	2,168.96	-10.35	10.41	0.71	10.44	3.91	0.80
2,263.00	0.75	83.44	2,262.96	-10.44	10.57	1.77	10.72	9.53	0.21
2,357.00	0.69	84.50	2,356.95	-10.50	10.69	2.95	11.09	15.41	0.07
2,452.00	0.63	80.45	2,451.94	-10.58	10.84	4.03	11.56	20.41	0.08
2,546.00	0.69	81.68	2,545.94	-10.68	11.00	5.10	12.13	24.88	0.07
2,640.00	0.63	78.70	2,639.93	-10.80	11.19	6.17	12.77	28.88	0.07
2,733.00	0.56	74.83	2,732.93	-10.96	11.41	7.11	13.44	31.94	0.09
2,828.00	0.56	84.50	2,827.92	-11.07	11.57	8.02	14.08	34.72	0.10
2,921.00	0.56	79.40	2,920.92	-11.15	11.70	8.92	14.71	37.32	0.05
3,015.00	0.19	43.89	3,014.91	-11.31	11.90	9.48	15.21	38.55	0.45
3,109.00	0.25	23.85	3,108.91	-11.60	12.19	9.67	15.56	38.41	0.10
3,204.00	0.50	42.31	3,203.91	-12.07	12.69	10.03	16.18	38.33	0.29
3,298.00	0.38	123.70	3,297.91	-12.17	12.82	10.57	16.61	39.50	0.62
3,393.00	0.44	139.87	3,392.91	-11.69	12.37	11.06	16.59	41.82	0.14
3,487.00	0.44	110.51	3,486.90	-11.25	11.97	11.64	16.69	44.20	0.24
3,582.00	0.56	102.07	3,581.90	-10.98	11.74	12.43	17.10	46.64	0.15
3,676.00	0.56	85.90	3,675.90	-10.86	11.68	13.34	17.73	48.80	0.17
3,771.00	0.81	87.13	3,770.89	-10.86	11.74	14.47	18.64	50.94	0.26
3,866.00	0.19	214.57	3,865.89	-10.73	11.65	15.05	19.03	52.27	0.99
3,959.00	0.31	225.47	3,958.89	-10.44	11.34	14.79	18.64	52.50	0.14
4,054.00	0.31	226.53	4,053.88	-10.11	10.99	14.42	18.13	52.69	0.01
4,148.00	0.38	210.18	4,147.88	-9.68	10.54	14.08	17.59	53.17	0.13
4,242.00	0.44	209.83	4,241.88	-9.12	9.96	13.74	16.97	54.06	0.06
4,336.00	0.50	78.17	4,335.88	-8.88	9.73	13.96	17.02	55.12	0.91
4,430.00	2.25	75.53	4,429.85	-9.29	10.28	16.15	19.14	57.53	1.86

Company: Devon Energy Corporation
Project: Lea Co., NM
Site: Thistle Unit
Well: 128H
Wellbore: OH
Design: Surveys

Local Co-ordinate Reference: Well 128H
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Database: RyanUSA_ODBC_32Bit

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	DLeg (°/100ft)
4,524.00	3.56	79.22	4,523.73	-10.02	11.28	20.80	23.67	61.52	1.41
4,618.00	4.31	79.57	4,617.50	-10.83	12.47	27.14	29.87	65.33	0.80
4,713.00	4.88	71.49	4,712.20	-12.32	14.40	34.49	37.37	67.34	0.91
4,807.00	5.50	76.24	4,805.81	-14.16	16.74	42.65	45.82	68.57	0.80
4,901.00	5.81	81.86	4,899.36	-15.36	18.48	51.74	54.94	70.34	0.67
4,995.00	5.94	75.53	4,992.86	-16.69	20.37	61.16	64.46	71.58	0.70
5,090.00	4.81	64.63	5,087.45	-19.12	23.31	69.52	73.32	71.46	1.60
5,184.00	4.31	58.66	5,181.15	-22.25	26.83	76.10	80.69	70.58	0.73
5,278.00	3.88	58.66	5,274.91	-25.39	30.33	81.83	87.27	69.67	0.46
5,314.00	3.88	59.18	5,310.83	-26.52	31.58	83.91	89.66	69.38	0.10
5,467.00	4.88	60.24	5,463.38	-31.79	37.47	94.01	101.20	68.27	0.66
5,561.00	4.88	59.89	5,557.04	-35.36	41.46	100.94	109.12	67.67	0.03
5,655.00	5.25	57.78	5,650.67	-39.23	45.75	108.04	117.33	67.05	0.44
5,749.00	4.56	63.05	5,744.33	-42.79	49.74	115.01	125.30	66.61	0.88
5,844.00	5.31	74.83	5,838.98	-45.19	52.60	122.62	133.42	66.78	1.32
5,938.00	6.19	76.41	5,932.50	-46.98	54.93	131.74	142.73	67.37	0.95
6,033.00	5.88	75.88	6,026.97	-48.78	57.32	141.44	152.61	67.94	0.33
6,127.00	5.19	73.42	6,120.54	-50.64	59.71	150.18	161.62	68.32	0.78
6,221.00	4.38	71.66	6,214.21	-52.54	62.05	157.66	169.44	68.52	0.88
6,315.00	4.25	71.14	6,307.94	-54.39	64.31	164.37	176.50	68.63	0.14
6,409.00	4.00	72.37	6,401.70	-56.12	66.43	170.79	183.25	68.75	0.28
6,503.00	5.31	73.42	6,495.39	-57.92	68.66	178.08	190.86	68.92	1.40
6,597.00	5.25	75.18	6,588.99	-59.76	71.00	186.41	199.47	69.15	0.18
6,692.00	5.38	75.18	6,683.58	-61.50	73.25	194.91	208.23	69.40	0.14
6,785.00	5.50	74.30	6,776.16	-63.31	75.57	203.42	217.01	69.62	0.16
6,880.00	5.44	73.07	6,870.73	-65.33	78.12	212.11	226.04	69.78	0.14
6,974.00	5.63	71.49	6,964.29	-67.57	80.88	220.75	235.10	69.88	0.26

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Survey

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7,069.00	5.63	71.14	7,058.83	-70.02	83.87	229.57	244.41	69.93	0.04
7,163.00	5.44	70.26	7,152.39	-72.50	86.86	238.13	253.48	69.96	0.22
7,257.00	5.31	67.45	7,245.98	-75.18	90.03	246.34	262.28	69.92	0.31
7,352.00	5.38	70.61	7,340.57	-77.84	93.20	254.60	271.13	69.89	0.32
7,446.00	5.13	70.96	7,434.17	-80.19	96.03	262.73	279.73	69.92	0.27
7,540.00	5.00	74.83	7,527.80	-82.15	98.47	270.66	288.02	70.01	0.39
7,635.00	4.81	75.88	7,622.46	-83.74	100.53	278.52	296.11	70.15	0.22
7,729.00	4.81	77.64	7,716.13	-85.08	102.33	286.19	303.94	70.32	0.16
7,823.00	3.56	76.94	7,809.87	-86.18	103.84	292.88	310.74	70.48	1.33
7,916.00	3.13	79.40	7,902.71	-86.98	104.96	298.19	316.12	70.61	0.49
8,011.00	2.94	86.08	7,997.58	-87.33	105.60	303.17	321.04	70.80	0.42
8,106.00	2.69	87.66	8,092.47	-87.31	105.86	307.83	325.52	71.02	0.28
8,200.00	1.94	90.82	8,186.39	-87.15	105.93	311.62	329.13	71.23	0.81
8,294.00	1.88	70.96	8,280.34	-87.45	106.41	314.67	332.18	71.32	0.70
8,388.00	2.38	73.42	8,374.27	-88.30	107.47	318.00	335.67	71.33	0.54
8,482.00	2.25	79.57	8,468.20	-88.97	108.36	321.69	339.44	71.38	0.30
8,576.00	2.25	84.67	8,562.12	-89.26	108.86	325.34	343.07	71.50	0.21
8,670.00	2.19	53.03	8,656.06	-90.32	110.11	328.61	346.57	71.47	1.29
8,763.00	2.06	51.27	8,748.99	-92.26	112.23	331.33	349.82	71.29	0.16
8,857.00	1.50	59.71	8,842.95	-93.80	113.91	333.71	352.62	71.15	0.66
8,952.00	1.13	72.37	8,937.92	-94.59	114.82	335.68	354.77	71.12	0.49
9,046.00	0.88	71.84	9,031.91	-95.00	115.32	337.25	356.42	71.12	0.27
9,110.00	0.75	88.72	9,095.90	-95.11	115.49	338.13	357.31	71.14	0.42
9,191.17	7.68	179.22	9,176.82	-89.66	110.07	338.74	356.17	72.00	9.52
Thistle128H_KOP									
9,263.00	14.50	181.87	9,247.27	-75.89	96.26	338.51	351.93	74.13	9.52
9,357.00	25.50	177.31	9,335.47	-43.84	64.19	339.08	345.10	79.28	11.81



Nabors
Completion Report



Company: Devon Energy Corporation
Project: Lea Co., NM
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Well: 128H
Wellbore: OH
Design: Surveys

Local Co-ordinate Reference: Well 128H
TVD Reference: KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)
MD Reference: KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: RyanUSA_ODBC_32Bit

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	DLeg (°/100ft)
9,402.00	31.06	173.97	9,375.09	-22.54	42.95	340.76	343.45	82.82	12.84
9,452.00	37.38	175.02	9,416.41	5.54	14.97	343.43	343.76	87.50	12.69
9,497.00	43.38	177.84	9,450.68	34.68	-14.11	345.20	345.49	92.34	13.93
9,545.00	50.13	178.19	9,483.55	69.61	-49.03	346.41	349.86	98.06	14.07
9,590.00	50.44	177.13	9,512.30	104.22	-83.62	347.82	357.73	103.52	1.94
9,638.00	54.88	175.02	9,541.41	142.36	-121.67	350.45	370.97	109.15	9.89
9,683.00	55.13	174.15	9,567.22	179.21	-158.37	353.93	387.75	114.11	1.68
9,732.00	59.88	176.25	9,593.54	220.51	-199.54	357.37	409.30	119.18	10.35
9,777.00	60.13	176.78	9,616.03	259.48	-238.44	359.74	431.59	123.54	1.16
9,827.00	63.44	178.01	9,639.67	303.53	-282.45	361.73	458.94	127.98	6.97
9,872.00	63.19	178.01	9,659.88	343.72	-322.63	363.13	485.75	131.62	0.56
9,920.00	66.81	178.89	9,680.16	387.19	-366.11	364.30	516.48	135.14	7.72
9,965.00	67.25	178.72	9,697.72	428.59	-407.54	365.16	547.20	138.14	1.04
10,015.00	73.00	180.30	9,714.71	475.53	-454.53	365.55	583.29	141.19	11.88
10,022.66	73.90	180.51	9,716.90	482.86	-461.87	365.50	589.00	141.64	12.09
Thistle128H_EOC									
10,060.00	78.31	181.53	9,725.86	518.99	-498.11	364.85	617.44	143.78	12.09
10,133.00	85.63	181.00	9,736.05	590.98	-570.33	363.26	676.19	147.51	10.05
10,227.00	85.56	181.18	9,743.27	684.41	-664.03	361.48	756.04	151.44	0.20
10,322.00	89.00	181.53	9,747.78	778.96	-758.88	359.23	839.61	154.67	3.64
10,416.00	92.19	183.11	9,746.80	872.47	-852.79	355.43	923.89	157.37	3.79
10,510.00	92.00	183.11	9,743.37	965.80	-946.59	350.33	1,009.33	159.69	0.20
10,604.00	90.25	182.76	9,741.52	1,059.20	-1,040.44	345.52	1,096.31	161.63	1.90
10,698.00	87.69	181.00	9,743.21	1,152.77	-1,134.36	342.44	1,184.92	163.20	3.30
10,793.00	87.94	180.65	9,746.83	1,247.44	-1,229.28	341.07	1,275.72	164.49	0.45
10,887.00	88.50	181.18	9,749.75	1,341.13	-1,323.23	339.57	1,366.10	165.61	0.82
10,981.00	87.19	178.19	9,753.29	1,434.91	-1,417.14	340.09	1,457.38	166.51	3.47



Nabors
Completion Report



Company: Devon Energy Corporation
Project: Lea Co., NM
Site: Thistle Unit
Well: 128H
Wellbore: OH
Design: Surveys

Local Co-ordinate Reference: Well 128H
TVD Reference: KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)
MD Reference: KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: RyanUSA_ODBC_32Bit

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	DLeg (°/100ft)
11,075.00	90.13	178.01	9,755.49	1,528.84	-1,511.06	343.20	1,549.54	167.20	3.13
11,170.00	90.63	177.49	9,754.85	1,623.82	-1,605.98	346.93	1,643.03	167.81	0.76
11,264.00	90.75	178.01	9,753.72	1,717.79	-1,699.90	350.62	1,735.68	168.35	0.57
11,358.00	91.19	179.07	9,752.13	1,811.72	-1,793.86	353.02	1,828.26	168.87	1.22
11,452.00	91.94	179.59	9,749.56	1,905.58	-1,887.81	354.11	1,920.74	169.38	0.97
11,547.00	90.25	180.47	9,747.75	2,000.38	-1,982.79	354.06	2,014.16	169.88	2.01
11,641.00	90.94	180.47	9,746.77	2,094.16	-2,076.78	353.29	2,106.62	170.35	0.73
11,736.00	90.50	180.65	9,745.58	2,188.92	-2,171.77	352.37	2,200.17	170.78	0.50
11,830.00	90.69	180.82	9,744.60	2,282.67	-2,265.76	351.16	2,292.81	171.19	0.27
11,924.00	88.94	180.12	9,744.91	2,376.45	-2,359.75	350.39	2,385.62	171.55	2.01
12,018.00	88.38	180.12	9,747.10	2,470.24	-2,453.72	350.19	2,478.59	171.88	0.60
12,112.00	89.25	178.01	9,749.05	2,564.13	-2,547.68	351.73	2,571.85	172.14	2.43
12,207.00	89.69	178.19	9,749.93	2,659.09	-2,642.63	354.87	2,666.35	172.35	0.50
12,301.00	90.13	178.01	9,750.08	2,753.06	-2,736.58	357.99	2,759.89	172.55	0.51
12,395.00	90.00	178.01	9,749.97	2,847.03	-2,830.52	361.26	2,853.48	172.73	0.14
12,489.00	91.06	179.77	9,749.10	2,940.94	-2,924.49	363.08	2,946.94	172.92	2.19
12,584.00	91.19	179.77	9,747.23	3,035.78	-3,019.47	363.46	3,041.27	173.14	0.14
12,678.00	91.81	179.77	9,744.77	3,129.60	-3,113.44	363.84	3,134.63	173.33	0.66
12,772.00	91.75	179.24	9,741.85	3,223.43	-3,207.39	364.65	3,228.05	173.51	0.57
12,867.00	90.88	179.24	9,739.67	3,318.30	-3,302.36	365.91	3,322.57	173.68	0.92
12,961.00	90.75	179.07	9,738.34	3,412.20	-3,396.34	367.29	3,416.14	173.83	0.23
13,055.00	90.75	178.19	9,737.11	3,506.13	-3,490.30	369.54	3,509.81	173.96	0.94
13,149.00	90.94	177.66	9,735.72	3,600.09	-3,584.23	372.94	3,603.58	174.06	0.60
13,243.00	90.94	178.89	9,734.18	3,694.04	-3,678.17	375.77	3,697.32	174.17	1.31
13,337.00	89.63	179.24	9,733.71	3,787.95	-3,772.16	377.31	3,790.98	174.29	1.44
13,432.00	89.38	179.07	9,734.53	3,882.85	-3,867.14	378.71	3,885.64	174.41	0.32
13,526.00	89.31	179.42	9,735.61	3,976.74	-3,961.13	379.95	3,979.31	174.52	0.38

Company: Devon Energy Corporation
Project: Lea Co., NM
Site: Thistle Unit
Well: 128H
Wellbore: OH
Design: Surveys

Local Co-ordinate Reference: Well 128H
TVD Reference: KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)
MD Reference: KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: RyanUSA_ODBC_32Bit

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	DLeg (*/100ft)
13,620.00	89.63	179.07	9,736.47	4,070.63	-4,055.11	381.18	4,072.99	174.63	0.50
13,714.00	89.81	178.72	9,736.93	4,164.55	-4,149.10	383.00	4,166.74	174.73	0.42
13,808.00	88.63	180.12	9,738.21	4,258.43	-4,243.08	383.95	4,260.41	174.83	1.95
13,903.00	87.63	179.77	9,741.31	4,353.21	-4,338.03	384.04	4,354.99	174.94	1.12
13,998.00	88.63	180.12	9,744.41	4,447.99	-4,432.97	384.13	4,449.59	175.05	1.12
14,092.00	88.19	179.77	9,747.02	4,541.80	-4,526.94	384.22	4,543.21	175.15	0.60
14,186.00	89.63	180.12	9,748.81	4,635.61	-4,620.92	384.31	4,636.87	175.25	1.58
14,281.00	90.25	179.95	9,748.91	4,730.44	-4,715.92	384.25	4,731.55	175.34	0.68
14,289.09	90.21	179.96	9,748.88	4,738.52	-4,724.01	384.26	4,739.61	175.35	0.56
Thistle128H_T1									
14,375.00	89.75	180.12	9,748.91	4,824.27	-4,809.92	384.20	4,825.24	175.43	0.56
14,469.00	89.25	179.59	9,749.73	4,918.11	-4,903.91	384.43	4,918.96	175.52	0.78
14,563.00	89.44	179.59	9,750.80	5,011.98	-4,997.90	385.11	5,012.72	175.59	0.20
14,657.00	90.00	179.77	9,751.26	5,105.84	-5,091.90	385.63	5,106.48	175.67	0.63
14,752.00	89.63	179.42	9,751.57	5,200.71	-5,186.90	386.30	5,201.26	175.74	0.54
14,846.00	89.31	178.72	9,752.44	5,294.61	-5,280.88	387.83	5,295.10	175.80	0.82
14,940.00	89.13	178.01	9,753.72	5,388.56	-5,374.83	390.51	5,389.00	175.84	0.78
15,033.00	90.75	178.89	9,753.82	5,481.50	-5,467.80	393.03	5,481.90	175.89	1.98
15,128.00	91.38	179.24	9,752.05	5,576.40	-5,562.77	394.58	5,576.74	175.94	0.76
15,222.00	91.44	179.42	9,749.74	5,670.26	-5,656.73	395.67	5,670.55	176.00	0.20
15,316.00	89.81	178.36	9,748.71	5,764.17	-5,750.70	397.49	5,764.42	176.05	2.07
15,409.00	91.06	180.30	9,748.01	5,857.06	-5,843.69	398.58	5,857.26	176.10	2.48
15,503.00	91.50	180.65	9,745.91	5,950.82	-5,937.66	397.80	5,950.97	176.17	0.60
15,597.00	91.81	180.65	9,743.19	6,044.54	-6,031.62	396.74	6,044.65	176.24	0.33
15,691.00	91.25	179.95	9,740.68	6,138.31	-6,125.58	396.25	6,138.38	176.30	0.95
15,790.00	89.25	180.47	9,740.25	6,237.10	-6,224.57	395.88	6,237.15	176.36	2.09
15,884.00	90.31	181.18	9,740.61	6,330.84	-6,318.56	394.53	6,330.87	176.43	1.36

Company: Devon Energy Corporation
Project: Lea Co., NM
Site: Thistle Unit
Well: 128H
Wellbore: OH
Design: Surveys

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

Well 128H

KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)

KB=32' (Nabors X20) @ 3745.10ft (Nabors X20)

Grid

Minimum Curvature

RyanUSA_ODBC_32Bit

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	DLeg (°/100ft)
15,978.00	90.00	181.00	9,740.36	6,424.55	-6,412.54	392.74	6,424.56	176.50	0.38
16,072.00	87.50	180.12	9,742.41	6,518.29	-6,506.51	391.82	6,518.29	176.55	2.82
16,166.00	88.19	179.59	9,745.94	6,612.07	-6,600.44	392.06	6,612.07	176.60	0.93
16,261.00	90.25	179.42	9,747.24	6,706.94	-6,695.42	392.88	6,706.94	176.64	2.18
16,355.00	89.31	179.95	9,747.60	6,800.80	-6,789.42	393.40	6,800.81	176.68	1.15
16,449.00	89.88	181.00	9,748.26	6,894.57	-6,883.41	392.62	6,894.60	176.74	1.27
16,544.00	89.56	179.77	9,748.72	6,989.36	-6,978.41	391.98	6,989.41	176.79	1.34
16,637.00	90.13	179.77	9,748.98	7,082.22	-7,071.40	392.35	7,082.28	176.82	0.61
16,732.00	88.19	179.77	9,750.37	7,177.05	-7,166.39	392.73	7,177.14	176.86	2.04
16,826.00	87.69	180.30	9,753.75	7,270.82	-7,260.33	392.68	7,270.94	176.90	0.77
16,920.00	89.06	180.12	9,756.41	7,364.59	-7,354.29	392.33	7,364.74	176.95	1.47
17,014.00	90.06	180.65	9,757.14	7,458.38	-7,448.28	391.70	7,458.57	176.99	1.20
17,108.00	91.75	181.53	9,755.65	7,552.08	-7,542.25	389.91	7,552.32	177.04	2.03
17,160.64	92.72	181.62	9,753.60	7,604.48	-7,594.83	388.47	7,604.76	177.07	1.85
Thistle128H_BHL									
17,203.00	93.50	181.70	9,751.30	7,646.61	-7,637.11	387.24	7,646.92	177.10	1.85
17,231.00	94.00	181.88	9,749.47	7,674.43	-7,665.03	386.37	7,674.76	177.11	1.90
17,300.00	94.00	181.88	9,744.66	7,742.97	-7,733.83	384.11	7,743.36	177.16	0.00

PTB

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
17,300.00	9,744.66	-7,733.83	384.11	PTB

Checked By: _____

Approved By: _____

Date: _____