

Devon Energy

Project: Lea County, NM (NAD-83)
Site: Thistle Unit Sec 22-27 Trac Pad
Well: Thistle Unit 100H
Wellbore: OH
Design: Plan #3

3713.2' GE +23.5' KB @ 3736.70usft
Ground Level: 3713.20

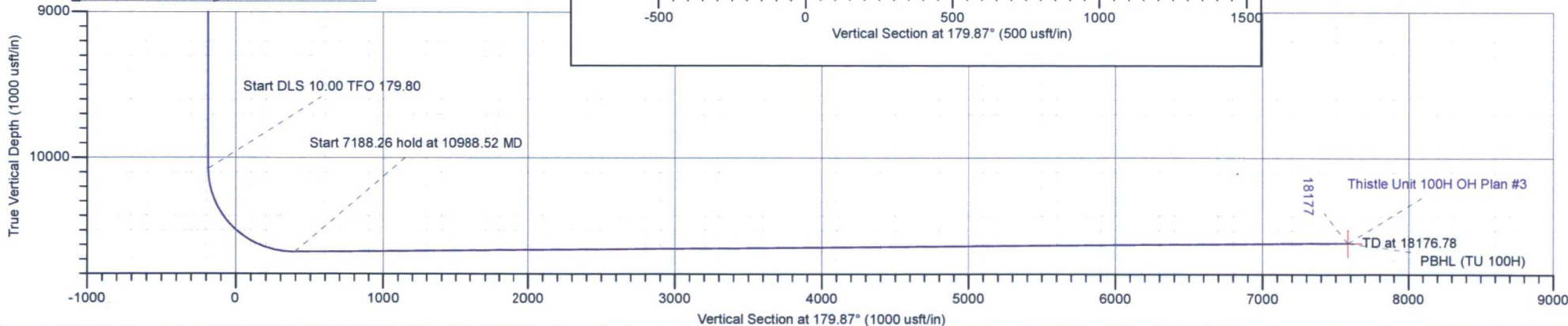
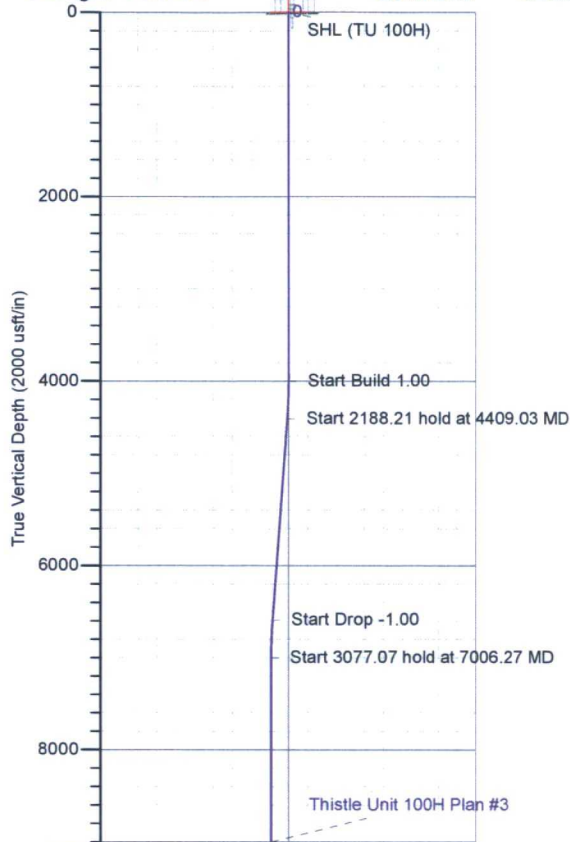


Azimuths to Grid North
True North: -0.41°
Magnetic North: 6.43°

Magnetic Field
Strength: 48158.9snT
Dip Angle: 60.08°
Date: 9/19/2017
Model: HDGM

PROJECT DETAILS: Lea County, NM (NAD-83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	0.00	
4409.03	4.09	356.91	4408.68	14.57	-0.79	1.00	356.91	-14.57	
6597.24	4.09	356.91	6591.32	170.43	-9.21	0.00	0.00	-170.45	
7006.27	0.00	0.00	7000.00	185.00	-10.00	1.00	180.00	-185.02	
10083.34	0.00	0.00	10077.07	185.00	-10.00	0.00	0.00	-185.02	
10988.52	90.52	179.80	10650.00	-393.14	-7.99	10.00	179.80	393.12	
18176.78	90.52	179.80	10585.00	-7581.06	17.01	0.00	0.00	7581.08	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
PBHL (TU 100H)	10585.00	-7581.06	17.01	32° 16' 32.5269 N	103° 33' 25.8069 W
SHL (TU 100H)	0.00	0.00	0.00	32° 17' 47.5432 N	103° 33' 25.3660 W



LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7577, Fax: 936/756-7595

Plan: Plan #3 (Thistle Unit 100H/OH)
Thistle Unit Sec 22-27 Trac Pad
Created By: Dustin Ault
Date: 17:20, January 22 2018
Approved: _____
Date: _____

Devon Energy

Project: Lea County, NM (NAD-83)
Site: Thistle Unit Sec 22-27 Trac Pad
Well: Thistle Unit 100H
Wellbore: OH
Design: Plan #3



Azimuths to Grid North
True North: -0.41°
Magnetic North: 6.43°

Magnetic Field
Strength: 48158.9snT
Dip Angle: 60.08°
Date: 9/19/2017
Model: HDGM

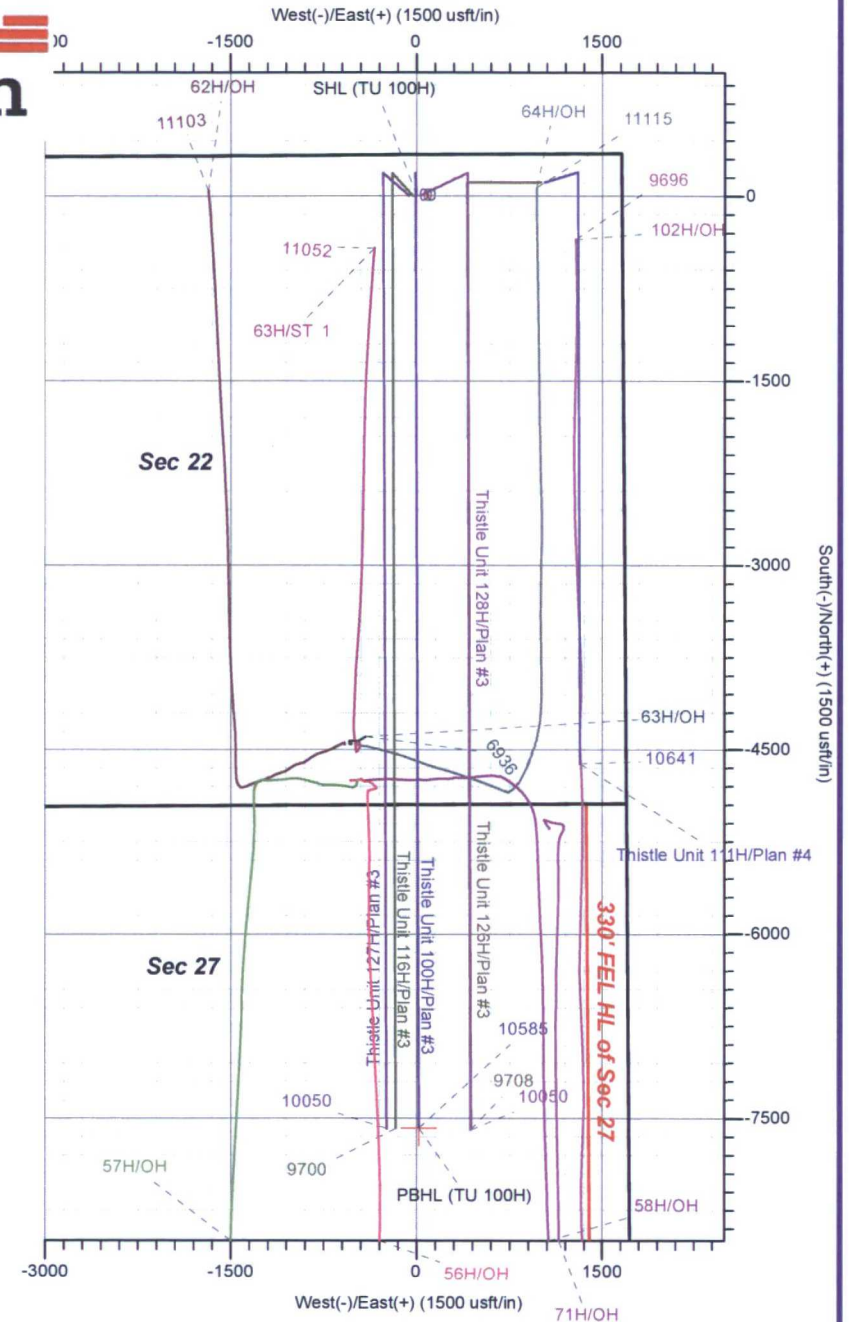
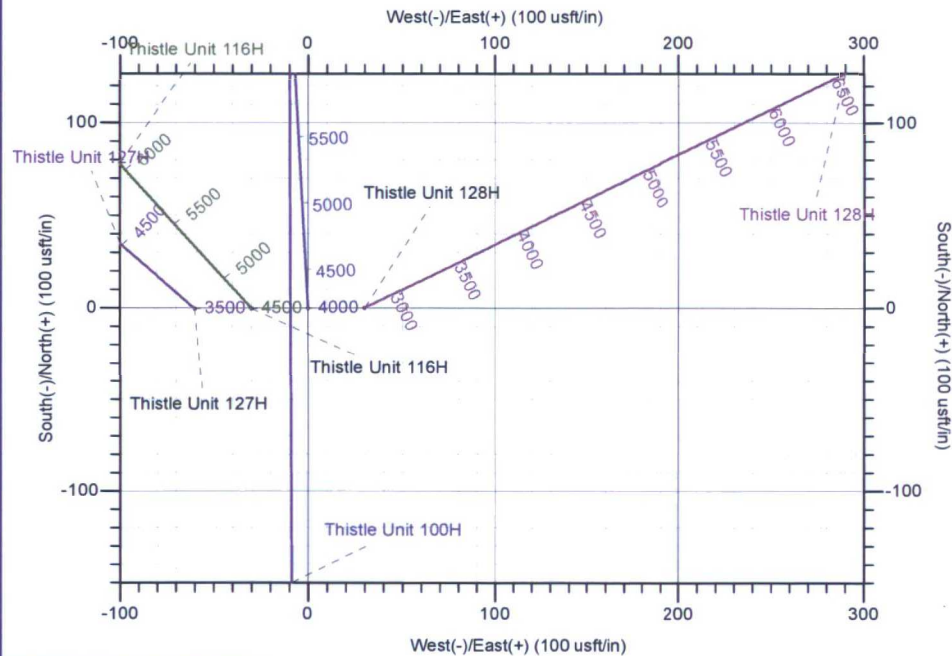
PROJECT DETAILS: Lea County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	0.00	
4409.03	4.09	356.91	4408.68	14.57	-0.79	1.00	356.91	-14.57	
6597.24	4.09	356.91	6591.32	170.43	-9.21	0.00	0.00	-170.45	
7006.27	0.00	0.00	7000.00	185.00	-10.00	1.00	180.00	-185.02	
10083.34	0.00	0.00	10077.07	185.00	-10.00	0.00	0.00	-185.02	
10988.52	90.52	179.80	10650.00	-393.14	-7.99	10.00	179.80	393.12	
18176.78	90.52	179.80	10585.00	-7581.06	17.01	0.00	0.00	7581.08	PBHL (TU 100H)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (TU 100H)	10585.00	-7581.06	17.01	464900.94	781219.75	32° 16' 32.5269 N	103° 33' 25.8069 W
SHL (TU 100H)	0.00	0.00	0.00	472482.00	781202.74	32° 17' 47.5432 N	103° 33' 25.3660 W



LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7577, Fax: 936/756-7595

Plan: Plan #3 (Thistle Unit 100H/OH)
Thistle Unit Sec 22-27 Trac Pad
Created By: Dustin Ault
Date: 17:21, January 22 2018
Approved: _____
Date: _____

Devon Energy

Lea County, NM (NAD-83)

Thistle Unit Sec 22-27 Trac Pad

Thistle Unit 100H

OH

Plan: Plan #3

Standard Planning Report

22 January, 2018

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Thistle Unit 100H
Company:	Devon Energy	TVD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 100H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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		Thistle Unit Sec 22-27 Trac Pad			
Site Position:		Northing:	472,548.43 usft	Latitude:	32° 17' 48.4331 N
From:	Map	Easting:	777,932.69 usft	Longitude:	103° 34' 3.4563 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41

Well		Thistle Unit 100H				
Well Position	+N/-S	-66.43 usft	Northing:	472,482.00 usft	Latitude:	32° 17' 47.5432 N
	+E/-W	3,270.05 usft	Easting:	781,202.73 usft	Longitude:	103° 33' 25.3660 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,713.20 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/19/2017	6.85	60.08	48,159

Design	Plan #3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.87

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.01	4,000.00	0.00	0.00	0.00	0.00	0.00	0.01	
4,409.03	4.09	356.91	4,408.68	14.57	-0.79	1.00	1.00	0.00	356.91	
6,597.24	4.09	356.91	6,591.32	170.43	-9.21	0.00	0.00	0.00	0.00	
7,006.27	0.00	0.01	7,000.00	185.00	-10.00	1.00	-1.00	0.00	180.00	
10,083.34	0.00	0.01	10,077.07	185.00	-10.00	0.00	0.00	0.00	0.01	
10,988.52	90.52	179.80	10,650.00	-393.14	-7.99	10.00	10.00	19.86	179.80	
18,176.78	90.52	179.80	10,585.00	-7,581.06	17.01	0.00	0.00	0.00	0.00	PBHL (TU 100H)

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Thistle Unit 100H
Company:	Devon Energy	TVD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 100H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (TU 100H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.01	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	1.00	356.91	4,100.00	0.87	-0.05	-0.87	1.00	1.00	0.00
4,200.00	2.00	356.91	4,199.96	3.49	-0.19	-3.49	1.00	1.00	0.00
4,300.00	3.00	356.91	4,299.86	7.84	-0.42	-7.84	1.00	1.00	0.00
4,409.03	4.09	356.91	4,408.68	14.57	-0.79	-14.57	1.00	1.00	0.00
4,500.00	4.09	356.91	4,499.42	21.05	-1.14	-21.05	0.00	0.00	0.00
4,600.00	4.09	356.91	4,599.17	28.17	-1.52	-28.18	0.00	0.00	0.00
4,700.00	4.09	356.91	4,698.91	35.30	-1.91	-35.30	0.00	0.00	0.00
4,800.00	4.09	356.91	4,798.66	42.42	-2.29	-42.42	0.00	0.00	0.00
4,900.00	4.09	356.91	4,898.40	49.54	-2.68	-49.55	0.00	0.00	0.00
5,000.00	4.09	356.91	4,998.15	56.66	-3.06	-56.67	0.00	0.00	0.00
5,100.00	4.09	356.91	5,097.89	63.79	-3.45	-63.79	0.00	0.00	0.00
5,200.00	4.09	356.91	5,197.64	70.91	-3.83	-70.92	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Thistle Unit 100H
Company:	Devon Energy	TVD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 100H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.00	4.09	356.91	5,297.38	78.03	-4.22	-78.04	0.00	0.00	0.00
5,400.00	4.09	356.91	5,397.13	85.15	-4.60	-85.16	0.00	0.00	0.00
5,500.00	4.09	356.91	5,496.87	92.28	-4.99	-92.29	0.00	0.00	0.00
5,600.00	4.09	356.91	5,596.62	99.40	-5.37	-99.41	0.00	0.00	0.00
5,700.00	4.09	356.91	5,696.36	106.52	-5.76	-106.53	0.00	0.00	0.00
5,800.00	4.09	356.91	5,796.11	113.64	-6.14	-113.66	0.00	0.00	0.00
5,900.00	4.09	356.91	5,895.86	120.77	-6.53	-120.78	0.00	0.00	0.00
6,000.00	4.09	356.91	5,995.60	127.89	-6.91	-127.90	0.00	0.00	0.00
6,100.00	4.09	356.91	6,095.35	135.01	-7.30	-135.03	0.00	0.00	0.00
6,200.00	4.09	356.91	6,195.09	142.13	-7.68	-142.15	0.00	0.00	0.00
6,300.00	4.09	356.91	6,294.84	149.26	-8.07	-149.27	0.00	0.00	0.00
6,400.00	4.09	356.91	6,394.58	156.38	-8.45	-156.40	0.00	0.00	0.00
6,500.00	4.09	356.91	6,494.33	163.50	-8.84	-163.52	0.00	0.00	0.00
6,597.24	4.09	356.91	6,591.32	170.43	-9.21	-170.45	0.00	0.00	0.00
6,600.00	4.06	356.91	6,594.07	170.62	-9.22	-170.64	1.00	-1.00	0.00
6,700.00	3.06	356.91	6,693.88	176.83	-9.56	-176.85	1.00	-1.00	0.00
6,800.00	2.06	356.91	6,793.78	181.29	-9.80	-181.31	1.00	-1.00	0.00
6,900.00	1.06	356.91	6,893.74	184.02	-9.95	-184.04	1.00	-1.00	0.00
7,006.27	0.00	0.01	7,000.00	185.00	-10.00	-185.02	1.00	-1.00	0.00
7,100.00	0.00	0.00	7,093.73	185.00	-10.00	-185.02	0.00	0.00	0.00
7,200.00	0.00	0.00	7,193.73	185.00	-10.00	-185.02	0.00	0.00	0.00
7,300.00	0.00	0.00	7,293.73	185.00	-10.00	-185.02	0.00	0.00	0.00
7,400.00	0.00	0.00	7,393.73	185.00	-10.00	-185.02	0.00	0.00	0.00
7,500.00	0.00	0.00	7,493.73	185.00	-10.00	-185.02	0.00	0.00	0.00
7,600.00	0.00	0.00	7,593.73	185.00	-10.00	-185.02	0.00	0.00	0.00
7,700.00	0.00	0.00	7,693.73	185.00	-10.00	-185.02	0.00	0.00	0.00
7,800.00	0.00	0.00	7,793.73	185.00	-10.00	-185.02	0.00	0.00	0.00
7,900.00	0.00	0.00	7,893.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,000.00	0.00	0.00	7,993.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,100.00	0.00	0.00	8,093.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,200.00	0.00	0.00	8,193.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,300.00	0.00	0.00	8,293.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,400.00	0.00	0.00	8,393.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,500.00	0.00	0.00	8,493.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,600.00	0.00	0.00	8,593.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,700.00	0.00	0.00	8,693.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,800.00	0.00	0.00	8,793.73	185.00	-10.00	-185.02	0.00	0.00	0.00
8,900.00	0.00	0.00	8,893.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,000.00	0.00	0.00	8,993.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,100.00	0.00	0.00	9,093.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,200.00	0.00	0.00	9,193.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,300.00	0.00	0.00	9,293.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,400.00	0.00	0.00	9,393.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,500.00	0.00	0.00	9,493.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,600.00	0.00	0.00	9,593.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,700.00	0.00	0.00	9,693.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,800.00	0.00	0.00	9,793.73	185.00	-10.00	-185.02	0.00	0.00	0.00
9,900.00	0.00	0.00	9,893.73	185.00	-10.00	-185.02	0.00	0.00	0.00
10,000.00	0.00	0.00	9,993.73	185.00	-10.00	-185.02	0.00	0.00	0.00
10,083.34	0.00	0.01	10,077.07	185.00	-10.00	-185.02	0.00	0.00	0.00
10,100.00	1.67	179.80	10,093.73	184.76	-10.00	-184.78	10.00	10.00	0.00
10,150.00	6.67	179.80	10,143.58	181.13	-9.99	-181.15	10.00	10.00	0.00
10,200.00	11.67	179.80	10,192.93	173.16	-9.96	-173.19	10.00	10.00	0.00
10,250.00	16.67	179.80	10,241.39	160.93	-9.92	-160.95	10.00	10.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Thistle Unit 100H
Company:	Devon Energy	TVD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 100H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,300.00	21.67	179.80	10,288.61	144.52	-9.86	-144.54	10.00	10.00	0.00
10,350.00	26.67	179.80	10,334.21	124.06	-9.79	-124.08	10.00	10.00	0.00
10,400.00	31.67	179.80	10,377.86	99.70	-9.70	-99.72	10.00	10.00	0.00
10,450.00	36.67	179.80	10,419.21	71.63	-9.61	-71.65	10.00	10.00	0.00
10,500.00	41.67	179.80	10,457.97	40.06	-9.50	-40.08	10.00	10.00	0.00
10,550.00	46.67	179.80	10,493.82	5.23	-9.37	-5.26	10.00	10.00	0.00
10,600.00	51.67	179.80	10,526.50	-32.58	-9.24	32.56	10.00	10.00	0.00
10,650.00	56.67	179.80	10,555.77	-73.11	-9.10	73.09	10.00	10.00	0.00
10,700.00	61.67	179.80	10,581.39	-116.03	-8.95	116.01	10.00	10.00	0.00
10,750.00	66.67	179.80	10,603.17	-161.01	-8.80	160.99	10.00	10.00	0.00
10,800.00	71.67	179.80	10,620.94	-207.73	-8.63	207.71	10.00	10.00	0.00
10,850.00	76.67	179.80	10,634.58	-255.82	-8.47	255.80	10.00	10.00	0.00
10,900.00	81.67	179.80	10,643.98	-304.91	-8.30	304.89	10.00	10.00	0.00
10,950.00	86.67	179.80	10,649.06	-354.63	-8.12	354.62	10.00	10.00	0.00
10,988.52	90.52	179.80	10,650.00	-393.14	-7.99	393.12	10.00	10.00	0.00
11,000.00	90.52	179.80	10,649.90	-404.62	-7.95	404.60	0.00	0.00	0.00
11,100.00	90.52	179.80	10,649.00	-504.61	-7.60	504.59	0.00	0.00	0.00
11,200.00	90.52	179.80	10,648.09	-604.61	-7.25	604.59	0.00	0.00	0.00
11,300.00	90.52	179.80	10,647.19	-704.60	-6.91	704.58	0.00	0.00	0.00
11,400.00	90.52	179.80	10,646.28	-804.60	-6.56	804.58	0.00	0.00	0.00
11,500.00	90.52	179.80	10,645.38	-904.59	-6.21	904.58	0.00	0.00	0.00
11,600.00	90.52	179.80	10,644.47	-1,004.59	-5.86	1,004.57	0.00	0.00	0.00
11,700.00	90.52	179.80	10,643.57	-1,104.58	-5.51	1,104.57	0.00	0.00	0.00
11,800.00	90.52	179.80	10,642.67	-1,204.58	-5.17	1,204.56	0.00	0.00	0.00
11,900.00	90.52	179.80	10,641.76	-1,304.57	-4.82	1,304.56	0.00	0.00	0.00
12,000.00	90.52	179.80	10,640.86	-1,404.57	-4.47	1,404.55	0.00	0.00	0.00
12,100.00	90.52	179.80	10,639.95	-1,504.56	-4.12	1,504.55	0.00	0.00	0.00
12,200.00	90.52	179.80	10,639.05	-1,604.56	-3.78	1,604.55	0.00	0.00	0.00
12,300.00	90.52	179.80	10,638.14	-1,704.55	-3.43	1,704.54	0.00	0.00	0.00
12,400.00	90.52	179.80	10,637.24	-1,804.55	-3.08	1,804.54	0.00	0.00	0.00
12,500.00	90.52	179.80	10,636.34	-1,904.54	-2.73	1,904.53	0.00	0.00	0.00
12,600.00	90.52	179.80	10,635.43	-2,004.54	-2.38	2,004.53	0.00	0.00	0.00
12,700.00	90.52	179.80	10,634.53	-2,104.54	-2.04	2,104.53	0.00	0.00	0.00
12,800.00	90.52	179.80	10,633.62	-2,204.53	-1.69	2,204.52	0.00	0.00	0.00
12,900.00	90.52	179.80	10,632.72	-2,304.53	-1.34	2,304.52	0.00	0.00	0.00
13,000.00	90.52	179.80	10,631.81	-2,404.52	-0.99	2,404.51	0.00	0.00	0.00
13,100.00	90.52	179.80	10,630.91	-2,504.52	-0.65	2,504.51	0.00	0.00	0.00
13,200.00	90.52	179.80	10,630.01	-2,604.51	-0.30	2,604.50	0.00	0.00	0.00
13,300.00	90.52	179.80	10,629.10	-2,704.51	0.05	2,704.50	0.00	0.00	0.00
13,400.00	90.52	179.80	10,628.20	-2,804.50	0.40	2,804.50	0.00	0.00	0.00
13,500.00	90.52	179.80	10,627.29	-2,904.50	0.75	2,904.49	0.00	0.00	0.00
13,600.00	90.52	179.80	10,626.39	-3,004.49	1.09	3,004.49	0.00	0.00	0.00
13,700.00	90.52	179.80	10,625.48	-3,104.49	1.44	3,104.48	0.00	0.00	0.00
13,800.00	90.52	179.80	10,624.58	-3,204.48	1.79	3,204.48	0.00	0.00	0.00
13,900.00	90.52	179.80	10,623.68	-3,304.48	2.14	3,304.48	0.00	0.00	0.00
14,000.00	90.52	179.80	10,622.77	-3,404.47	2.49	3,404.47	0.00	0.00	0.00
14,100.00	90.52	179.80	10,621.87	-3,504.47	2.83	3,504.47	0.00	0.00	0.00
14,200.00	90.52	179.80	10,620.96	-3,604.47	3.18	3,604.46	0.00	0.00	0.00
14,300.00	90.52	179.80	10,620.06	-3,704.46	3.53	3,704.46	0.00	0.00	0.00
14,400.00	90.52	179.80	10,619.15	-3,804.46	3.88	3,804.45	0.00	0.00	0.00
14,500.00	90.52	179.80	10,618.25	-3,904.45	4.22	3,904.45	0.00	0.00	0.00
14,600.00	90.52	179.80	10,617.35	-4,004.45	4.57	4,004.45	0.00	0.00	0.00
14,700.00	90.52	179.80	10,616.44	-4,104.44	4.92	4,104.44	0.00	0.00	0.00
14,800.00	90.52	179.80	10,615.54	-4,204.44	5.27	4,204.44	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

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Project:	Lea County, NM (NAD-83)	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 100H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,900.00	90.52	179.80	10,614.63	-4,304.43	5.62	4,304.43	0.00	0.00	0.00
15,000.00	90.52	179.80	10,613.73	-4,404.43	5.96	4,404.43	0.00	0.00	0.00
15,100.00	90.52	179.80	10,612.82	-4,504.42	6.31	4,504.43	0.00	0.00	0.00
15,200.00	90.52	179.80	10,611.92	-4,604.42	6.66	4,604.42	0.00	0.00	0.00
15,300.00	90.52	179.80	10,611.02	-4,704.41	7.01	4,704.42	0.00	0.00	0.00
15,400.00	90.52	179.80	10,610.11	-4,804.41	7.35	4,804.41	0.00	0.00	0.00
15,500.00	90.52	179.80	10,609.21	-4,904.40	7.70	4,904.41	0.00	0.00	0.00
15,600.00	90.52	179.80	10,608.30	-5,004.40	8.05	5,004.40	0.00	0.00	0.00
15,700.00	90.52	179.80	10,607.40	-5,104.39	8.40	5,104.40	0.00	0.00	0.00
15,800.00	90.52	179.80	10,606.49	-5,204.39	8.75	5,204.40	0.00	0.00	0.00
15,900.00	90.52	179.80	10,605.59	-5,304.39	9.09	5,304.39	0.00	0.00	0.00
16,000.00	90.52	179.80	10,604.69	-5,404.38	9.44	5,404.39	0.00	0.00	0.00
16,100.00	90.52	179.80	10,603.78	-5,504.38	9.79	5,504.38	0.00	0.00	0.00
16,200.00	90.52	179.80	10,602.88	-5,604.37	10.14	5,604.38	0.00	0.00	0.00
16,300.00	90.52	179.80	10,601.97	-5,704.37	10.48	5,704.38	0.00	0.00	0.00
16,400.00	90.52	179.80	10,601.07	-5,804.36	10.83	5,804.37	0.00	0.00	0.00
16,500.00	90.52	179.80	10,600.16	-5,904.36	11.18	5,904.37	0.00	0.00	0.00
16,600.00	90.52	179.80	10,599.26	-6,004.35	11.53	6,004.36	0.00	0.00	0.00
16,700.00	90.52	179.80	10,598.35	-6,104.35	11.88	6,104.36	0.00	0.00	0.00
16,800.00	90.52	179.80	10,597.45	-6,204.34	12.22	6,204.36	0.00	0.00	0.00
16,900.00	90.52	179.80	10,596.55	-6,304.34	12.57	6,304.35	0.00	0.00	0.00
17,000.00	90.52	179.80	10,595.64	-6,404.33	12.92	6,404.35	0.00	0.00	0.00
17,100.00	90.52	179.80	10,594.74	-6,504.33	13.27	6,504.34	0.00	0.00	0.00
17,200.00	90.52	179.80	10,593.83	-6,604.32	13.62	6,604.34	0.00	0.00	0.00
17,300.00	90.52	179.80	10,592.93	-6,704.32	13.96	6,704.33	0.00	0.00	0.00
17,400.00	90.52	179.80	10,592.02	-6,804.32	14.31	6,804.33	0.00	0.00	0.00
17,500.00	90.52	179.80	10,591.12	-6,904.31	14.66	6,904.33	0.00	0.00	0.00
17,600.00	90.52	179.80	10,590.22	-7,004.31	15.01	7,004.32	0.00	0.00	0.00
17,700.00	90.52	179.80	10,589.31	-7,104.30	15.35	7,104.32	0.00	0.00	0.00
17,800.00	90.52	179.80	10,588.41	-7,204.30	15.70	7,204.31	0.00	0.00	0.00
17,900.00	90.52	179.80	10,587.50	-7,304.29	16.05	7,304.31	0.00	0.00	0.00
18,000.00	90.52	179.80	10,586.60	-7,404.29	16.40	7,404.31	0.00	0.00	0.00
18,100.00	90.52	179.80	10,585.69	-7,504.28	16.75	7,504.30	0.00	0.00	0.00
18,176.78	90.52	179.80	10,585.00	-7,581.06	17.01	7,581.08	0.00	0.00	0.00
PBHL (TU 100H)									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL (TU 100H) - plan hits target center - Point	0.00	0.01	0.00	0.00	0.00	472,482.00	781,202.73	32° 17' 47.5432 N	103° 33' 25.3660 W
PBHL (TU 100H) - plan hits target center - Point	0.00	0.00	10,585.00	-7,581.06	17.01	464,900.94	781,219.75	32° 16' 32.5270 N	103° 33' 25.8069 W