

Project: Lea County, NM (NAD-83)

Site: Thistle Unit Sec 22-27 Trac Pad

Well: Thistle Unit 111H

Wellbore: OH

Design: Plan #2

3707.4' GE +23.5' KB @ 3730.90usft

Ground Level: 3707.40



Azimuths to Grid North

True North: -0.42°

Magnetic North: 6.42°

Magnetic Field

Strength: 48166.0snT

Dip Angle: 60.12°

Date: 9/20/2017

Model: HDGM

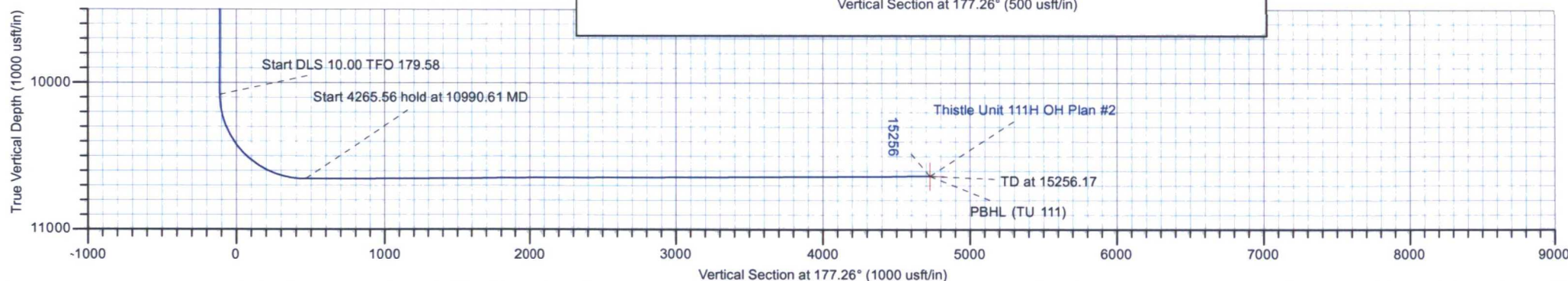
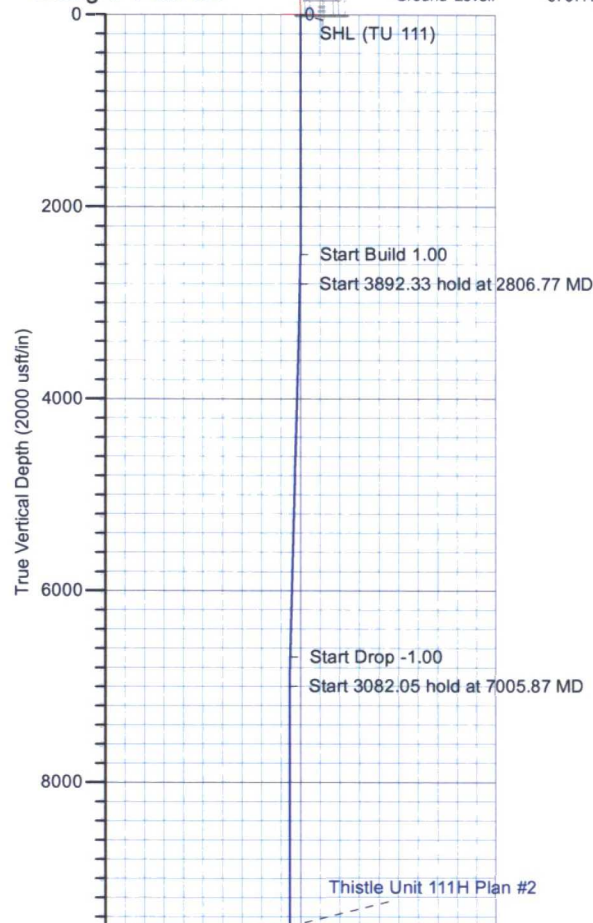
PROJECT DETAILS: Lea County, NM (NAD-83)

Geodetic System: US State Plane 1983

Datum: North American Datum 1983

Ellipsoid: GRS 1980

Zone: New Mexico Eastern Zone

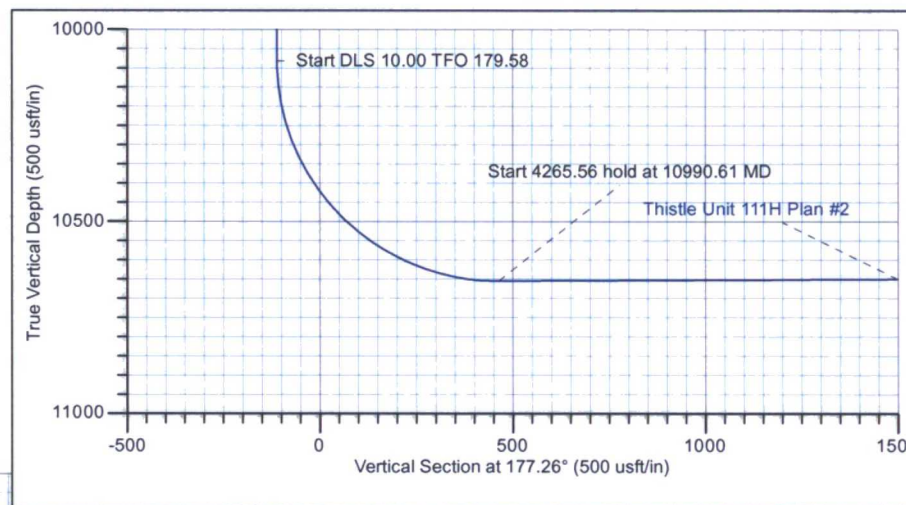


SECTION DETAILS

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	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	0.00	Start Build 1.00
2806.77	3.07	57.72	2806.62	4.38	6.94	1.00	57.72	-4.05	Start 3892.33 hold at 2806.77 MD
6699.10	3.07	57.72	6693.38	115.62	183.06	0.00	0.00	-106.75	Start Drop -1.00
7005.87	0.00	0.00	7000.00	120.00	190.00	1.00	180.00	-110.79	Start 3082.05 hold at 7005.87 MD
10087.92	0.00	0.00	10082.05	120.00	190.00	0.00	0.00	-110.79	Start DLS 10.00 TFO 179.58
10990.61	90.27	179.58	10655.00	-455.63	194.24	10.00	179.58	464.38	Start 4265.56 hold at 10990.61 MD
15256.17	90.27	179.58	10635.00	-4721.03	225.62	0.00	0.00	4726.42	TD at 15256.17

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
PBHL (TU 111)	10635.00	-4721.03	225.62	32° 17' 1.8087 N	103° 33' 10.4404 W
SHL (TU 111)	0.00	0.00	0.00	32° 17' 48.5397 N	103° 33' 12.6687 W



LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301

Plan: Plan #2 (Thistle Unit 111H/OH)
Thistle Unit Sec 22-27 Trac Pad
Created By: Dustin Ault
Date: 16:44, September 20 2017

Devon Energy

Project: Lea County, NM (NAD-83)
Site: Thistle Unit Sec 22-27 Trac Pad
Well: Thistle Unit 111H
Wellbore: OH
Design: Plan #2



Azimuths to Grid North
True North: -0.42°
Magnetic North: 6.42°
Magnetic Field
Strength: 48166.0snT
Dip Angle: 60.12°
Date: 9/20/2017
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

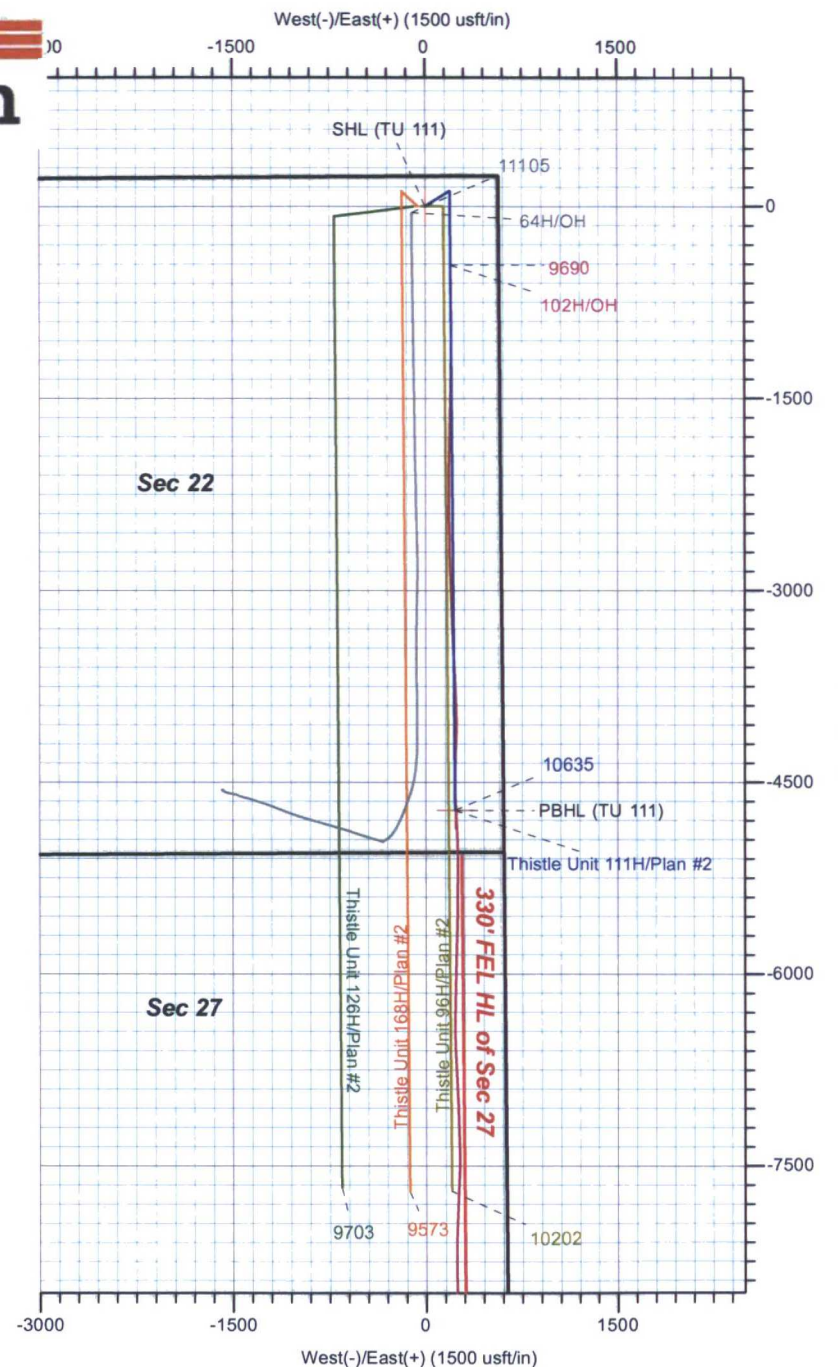
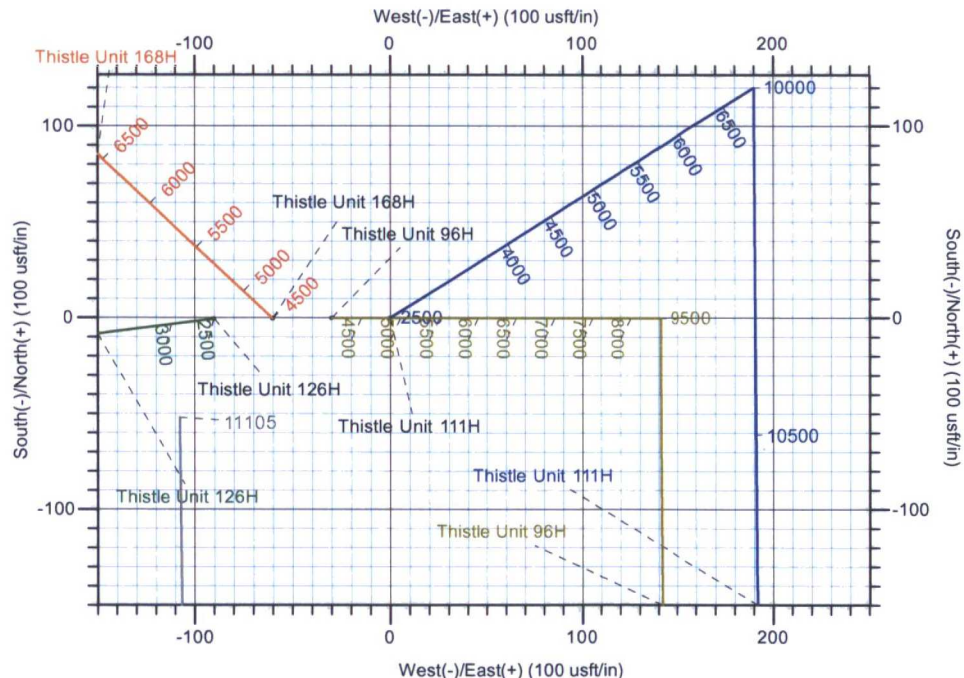


SECTION DETAILS

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	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	0.00	
2806.77	3.07	57.72	2806.62	4.38	6.94	1.00	57.72	-4.05	
6699.10	3.07	57.72	6693.38	115.62	183.06	0.00	0.00	-106.75	
7005.87	0.00	0.00	7000.00	120.00	190.00	1.00	180.00	-110.79	
10087.92	0.00	0.00	10082.05	120.00	190.00	0.00	0.00	-110.79	
10990.61	90.27	179.58	10655.00	-455.63	194.24	10.00	179.58	464.38	
15256.17	90.27	179.58	10635.00	-4721.03	225.62	0.00	0.00	4726.42	PBHL (TU 111)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (TU 111)	10635.00	-4721.03	225.62	467869.58	782517.47	32° 17' 1.8087 N	103° 33' 10.4404 W
SHL (TU 111)	0.00	0.00	0.00	472590.61	782291.85	32° 17' 48.5397 N	103° 33' 12.6687 W



LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301

Plan: Plan #2 (Thistle Unit 111H/OH)
Thistle Unit Sec 22-27 Trac Pad
Created By: Dustin Ault
Date: 16:45, September 20 2017

Devon Energy

Lea County, NM (NAD-83)

Thistle Unit Sec 22-27 Trac Pad

Thistle Unit 111H

OH

Plan: Plan #2

Standard Planning Report

20 September, 2017

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Thistle Unit 111H
Company:	Devon Energy	TVD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 111H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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 111H					
Well Position	+N/-S	42.18 usft	Northing:	472,590.61 usft	Latitude:	32° 17' 48.5397 N
	+E/-W	4,359.16 usft	Easting:	782,291.85 usft	Longitude:	103° 33' 12.6687 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,707.40 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/20/2017	6.83	60.12	48,166

Design	Plan #2			
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	177.26

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	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,806.77	3.07	57.72	2,806.62	4.38	6.94	1.00	1.00	0.00	57.72	
6,699.10	3.07	57.72	6,693.38	115.62	183.06	0.00	0.00	0.00	0.00	
7,005.87	0.00	0.00	7,000.00	120.00	190.00	1.00	-1.00	0.00	180.00	
10,087.92	0.00	0.00	10,082.05	120.00	190.00	0.00	0.00	0.00	0.00	
10,990.61	90.27	179.58	10,655.00	-455.63	194.24	10.00	10.00	19.89	179.58	
15,256.17	90.27	179.58	10,635.00	-4,721.03	225.62	0.00	0.00	0.00	0.00	PBHL (TU 111)

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Thistle Unit 111H
Company:	Devon Energy	TVD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 111H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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 111)									
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
Start Build 1.00									
2,600.00	1.00	57.72	2,599.99	0.47	0.74	-0.43	1.00	1.00	0.00
2,700.00	2.00	57.72	2,699.96	1.86	2.95	-1.72	1.00	1.00	0.00
2,806.77	3.07	57.72	2,806.62	4.38	6.94	-4.05	1.00	1.00	0.00
Start 3892.33 hold at 2806.77 MD									
2,900.00	3.07	57.72	2,899.72	7.05	11.16	-6.51	0.00	0.00	0.00
3,000.00	3.07	57.72	2,999.58	9.91	15.68	-9.15	0.00	0.00	0.00
3,100.00	3.07	57.72	3,099.43	12.76	20.21	-11.78	0.00	0.00	0.00
3,200.00	3.07	57.72	3,199.29	15.62	24.73	-14.42	0.00	0.00	0.00
3,300.00	3.07	57.72	3,299.15	18.48	29.26	-17.06	0.00	0.00	0.00
3,400.00	3.07	57.72	3,399.00	21.34	33.78	-19.70	0.00	0.00	0.00
3,500.00	3.07	57.72	3,498.86	24.19	38.31	-22.34	0.00	0.00	0.00
3,600.00	3.07	57.72	3,598.72	27.05	42.83	-24.98	0.00	0.00	0.00
3,700.00	3.07	57.72	3,698.57	29.91	47.36	-27.62	0.00	0.00	0.00
3,800.00	3.07	57.72	3,798.43	32.77	51.88	-30.25	0.00	0.00	0.00
3,900.00	3.07	57.72	3,898.29	35.63	56.41	-32.89	0.00	0.00	0.00
4,000.00	3.07	57.72	3,998.14	38.48	60.93	-35.53	0.00	0.00	0.00
4,100.00	3.07	57.72	4,098.00	41.34	65.46	-38.17	0.00	0.00	0.00
4,200.00	3.07	57.72	4,197.86	44.20	69.98	-40.81	0.00	0.00	0.00
4,300.00	3.07	57.72	4,297.71	47.06	74.51	-43.45	0.00	0.00	0.00
4,400.00	3.07	57.72	4,397.57	49.91	79.03	-46.08	0.00	0.00	0.00
4,500.00	3.07	57.72	4,497.43	52.77	83.56	-48.72	0.00	0.00	0.00
4,600.00	3.07	57.72	4,597.28	55.63	88.08	-51.36	0.00	0.00	0.00
4,700.00	3.07	57.72	4,697.14	58.49	92.60	-54.00	0.00	0.00	0.00
4,800.00	3.07	57.72	4,797.00	61.34	97.13	-56.64	0.00	0.00	0.00
4,900.00	3.07	57.72	4,896.85	64.20	101.65	-59.28	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 111H
Company:	Devon Energy	TVD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 111H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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)
5,000.00	3.07	57.72	4,996.71	67.06	106.18	-61.92	0.00	0.00	0.00
5,100.00	3.07	57.72	5,096.57	69.92	110.70	-64.55	0.00	0.00	0.00
5,200.00	3.07	57.72	5,196.42	72.78	115.23	-67.19	0.00	0.00	0.00
5,300.00	3.07	57.72	5,296.28	75.63	119.75	-69.83	0.00	0.00	0.00
5,400.00	3.07	57.72	5,396.14	78.49	124.28	-72.47	0.00	0.00	0.00
5,500.00	3.07	57.72	5,495.99	81.35	128.80	-75.11	0.00	0.00	0.00
5,600.00	3.07	57.72	5,595.85	84.21	133.33	-77.75	0.00	0.00	0.00
5,700.00	3.07	57.72	5,695.71	87.06	137.85	-80.38	0.00	0.00	0.00
5,800.00	3.07	57.72	5,795.56	89.92	142.38	-83.02	0.00	0.00	0.00
5,900.00	3.07	57.72	5,895.42	92.78	146.90	-85.66	0.00	0.00	0.00
6,000.00	3.07	57.72	5,995.28	95.64	151.43	-88.30	0.00	0.00	0.00
6,100.00	3.07	57.72	6,095.13	98.50	155.95	-90.94	0.00	0.00	0.00
6,200.00	3.07	57.72	6,194.99	101.35	160.48	-93.58	0.00	0.00	0.00
6,300.00	3.07	57.72	6,294.85	104.21	165.00	-96.22	0.00	0.00	0.00
6,400.00	3.07	57.72	6,394.70	107.07	169.52	-98.85	0.00	0.00	0.00
6,500.00	3.07	57.72	6,494.56	109.93	174.05	-101.49	0.00	0.00	0.00
6,600.00	3.07	57.72	6,594.42	112.78	178.57	-104.13	0.00	0.00	0.00
6,699.10	3.07	57.72	6,693.38	115.62	183.06	-106.75	0.00	0.00	0.00
Start Drop -1.00									
6,800.00	2.06	57.72	6,794.17	118.03	186.87	-108.97	1.00	-1.00	0.00
6,900.00	1.06	57.72	6,894.14	119.48	189.17	-110.31	1.00	-1.00	0.00
7,005.87	0.00	0.00	7,000.00	120.00	190.00	-110.79	1.00	-1.00	0.00
Start 3082.05 hold at 7005.87 MD									
7,100.00	0.00	0.00	7,094.13	120.00	190.00	-110.79	0.00	0.00	0.00
7,200.00	0.00	0.00	7,194.13	120.00	190.00	-110.79	0.00	0.00	0.00
7,300.00	0.00	0.00	7,294.13	120.00	190.00	-110.79	0.00	0.00	0.00
7,400.00	0.00	0.00	7,394.13	120.00	190.00	-110.79	0.00	0.00	0.00
7,500.00	0.00	0.00	7,494.13	120.00	190.00	-110.79	0.00	0.00	0.00
7,600.00	0.00	0.00	7,594.13	120.00	190.00	-110.79	0.00	0.00	0.00
7,700.00	0.00	0.00	7,694.13	120.00	190.00	-110.79	0.00	0.00	0.00
7,800.00	0.00	0.00	7,794.13	120.00	190.00	-110.79	0.00	0.00	0.00
7,900.00	0.00	0.00	7,894.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,000.00	0.00	0.00	7,994.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,100.00	0.00	0.00	8,094.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,200.00	0.00	0.00	8,194.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,300.00	0.00	0.00	8,294.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,400.00	0.00	0.00	8,394.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,500.00	0.00	0.00	8,494.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,600.00	0.00	0.00	8,594.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,700.00	0.00	0.00	8,694.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,800.00	0.00	0.00	8,794.13	120.00	190.00	-110.79	0.00	0.00	0.00
8,900.00	0.00	0.00	8,894.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,000.00	0.00	0.00	8,994.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,100.00	0.00	0.00	9,094.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,200.00	0.00	0.00	9,194.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,300.00	0.00	0.00	9,294.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,400.00	0.00	0.00	9,394.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,500.00	0.00	0.00	9,494.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,600.00	0.00	0.00	9,594.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,700.00	0.00	0.00	9,694.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,800.00	0.00	0.00	9,794.13	120.00	190.00	-110.79	0.00	0.00	0.00
9,900.00	0.00	0.00	9,894.13	120.00	190.00	-110.79	0.00	0.00	0.00
10,000.00	0.00	0.00	9,994.13	120.00	190.00	-110.79	0.00	0.00	0.00
10,087.92	0.00	0.00	10,082.05	120.00	190.00	-110.79	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 111H
Company:	Devon Energy	TVD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 111H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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)
Start DLS 10.00 TFO 179.58									
10,100.00	1.21	179.58	10,094.13	119.87	190.00	-110.67	10.00	10.00	0.00
10,150.00	6.21	179.58	10,144.01	116.64	190.02	-107.44	10.00	10.00	0.00
10,200.00	11.21	179.58	10,193.42	109.07	190.08	-99.88	10.00	10.00	0.00
10,250.00	16.21	179.58	10,241.98	97.23	190.17	-88.04	10.00	10.00	0.00
10,300.00	21.21	179.58	10,289.32	81.20	190.29	-72.02	10.00	10.00	0.00
10,350.00	26.21	179.58	10,335.09	61.10	190.43	-51.94	10.00	10.00	0.00
10,400.00	31.21	179.58	10,378.93	37.09	190.61	-27.95	10.00	10.00	0.00
10,450.00	36.21	179.58	10,420.51	9.35	190.81	-0.23	10.00	10.00	0.00
10,500.00	41.21	179.58	10,459.51	-21.90	191.04	31.00	10.00	10.00	0.00
10,550.00	46.21	179.58	10,495.64	-56.44	191.30	65.51	10.00	10.00	0.00
10,600.00	51.21	179.58	10,528.63	-94.00	191.57	103.03	10.00	10.00	0.00
10,650.00	56.21	179.58	10,558.21	-134.28	191.87	143.29	10.00	10.00	0.00
10,700.00	61.21	179.58	10,584.18	-176.99	192.19	185.97	10.00	10.00	0.00
10,750.00	66.21	179.58	10,606.32	-221.81	192.51	230.74	10.00	10.00	0.00
10,800.00	71.21	179.58	10,624.47	-268.38	192.86	277.28	10.00	10.00	0.00
10,850.00	76.21	179.58	10,638.49	-316.35	193.21	325.22	10.00	10.00	0.00
10,900.00	81.21	179.58	10,648.28	-365.37	193.57	374.19	10.00	10.00	0.00
10,950.00	86.21	179.58	10,653.75	-415.05	193.94	423.83	10.00	10.00	0.00
10,990.61	90.27	179.58	10,655.00	-455.63	194.24	464.38	10.00	10.00	0.00
Start 4265.56 hold at 10990.61 MD									
11,000.00	90.27	179.58	10,654.96	-465.02	194.30	473.77	0.00	0.00	0.00
11,100.00	90.27	179.58	10,654.49	-565.02	195.04	573.68	0.00	0.00	0.00
11,200.00	90.27	179.58	10,654.02	-665.01	195.78	673.60	0.00	0.00	0.00
11,300.00	90.27	179.58	10,653.55	-765.01	196.51	773.52	0.00	0.00	0.00
11,400.00	90.27	179.58	10,653.08	-865.01	197.25	873.44	0.00	0.00	0.00
11,500.00	90.27	179.58	10,652.61	-965.00	197.98	973.35	0.00	0.00	0.00
11,600.00	90.27	179.58	10,652.14	-1,065.00	198.72	1,073.27	0.00	0.00	0.00
11,700.00	90.27	179.58	10,651.68	-1,164.99	199.45	1,173.19	0.00	0.00	0.00
11,800.00	90.27	179.58	10,651.21	-1,264.99	200.19	1,273.10	0.00	0.00	0.00
11,900.00	90.27	179.58	10,650.74	-1,364.99	200.93	1,373.02	0.00	0.00	0.00
12,000.00	90.27	179.58	10,650.27	-1,464.98	201.66	1,472.94	0.00	0.00	0.00
12,100.00	90.27	179.58	10,649.80	-1,564.98	202.40	1,572.86	0.00	0.00	0.00
12,200.00	90.27	179.58	10,649.33	-1,664.98	203.13	1,672.77	0.00	0.00	0.00
12,300.00	90.27	179.58	10,648.86	-1,764.97	203.87	1,772.69	0.00	0.00	0.00
12,400.00	90.27	179.58	10,648.39	-1,864.97	204.61	1,872.61	0.00	0.00	0.00
12,500.00	90.27	179.58	10,647.92	-1,964.96	205.34	1,972.53	0.00	0.00	0.00
12,600.00	90.27	179.58	10,647.46	-2,064.96	206.08	2,072.44	0.00	0.00	0.00
12,700.00	90.27	179.58	10,646.99	-2,164.96	206.81	2,172.36	0.00	0.00	0.00
12,800.00	90.27	179.58	10,646.52	-2,264.95	207.55	2,272.28	0.00	0.00	0.00
12,900.00	90.27	179.58	10,646.05	-2,364.95	208.28	2,372.20	0.00	0.00	0.00
13,000.00	90.27	179.58	10,645.58	-2,464.94	209.02	2,472.11	0.00	0.00	0.00
13,100.00	90.27	179.58	10,645.11	-2,564.94	209.76	2,572.03	0.00	0.00	0.00
13,200.00	90.27	179.58	10,644.64	-2,664.94	210.49	2,671.95	0.00	0.00	0.00
13,300.00	90.27	179.58	10,644.17	-2,764.93	211.23	2,771.86	0.00	0.00	0.00
13,400.00	90.27	179.58	10,643.70	-2,864.93	211.96	2,871.78	0.00	0.00	0.00
13,500.00	90.27	179.58	10,643.24	-2,964.93	212.70	2,971.70	0.00	0.00	0.00
13,600.00	90.27	179.58	10,642.77	-3,064.92	213.43	3,071.62	0.00	0.00	0.00
13,700.00	90.27	179.58	10,642.30	-3,164.92	214.17	3,171.53	0.00	0.00	0.00
13,800.00	90.27	179.58	10,641.83	-3,264.91	214.91	3,271.45	0.00	0.00	0.00
13,900.00	90.27	179.58	10,641.36	-3,364.91	215.64	3,371.37	0.00	0.00	0.00
14,000.00	90.27	179.58	10,640.89	-3,464.91	216.38	3,471.29	0.00	0.00	0.00
14,100.00	90.27	179.58	10,640.42	-3,564.90	217.11	3,571.20	0.00	0.00	0.00
14,200.00	90.27	179.58	10,639.95	-3,664.90	217.85	3,671.12	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

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Project:	Lea County, NM (NAD-83)	MD Reference:	3707.4' GE + 23.5' KB @ 3730.90usft
Site:	Thistle Unit Sec 22-27 Trac Pad	North Reference:	Grid
Well:	Thistle Unit 111H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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)
14,300.00	90.27	179.58	10,639.48	-3,764.90	218.58	3,771.04	0.00	0.00	0.00
14,400.00	90.27	179.58	10,639.01	-3,864.89	219.32	3,870.96	0.00	0.00	0.00
14,500.00	90.27	179.58	10,638.55	-3,964.89	220.06	3,970.87	0.00	0.00	0.00
14,600.00	90.27	179.58	10,638.08	-4,064.88	220.79	4,070.79	0.00	0.00	0.00
14,700.00	90.27	179.58	10,637.61	-4,164.88	221.53	4,170.71	0.00	0.00	0.00
14,800.00	90.27	179.58	10,637.14	-4,264.88	222.26	4,270.62	0.00	0.00	0.00
14,900.00	90.27	179.58	10,636.67	-4,364.87	223.00	4,370.54	0.00	0.00	0.00
15,000.00	90.27	179.58	10,636.20	-4,464.87	223.74	4,470.46	0.00	0.00	0.00
15,100.00	90.27	179.58	10,635.73	-4,564.87	224.47	4,570.38	0.00	0.00	0.00
15,200.00	90.27	179.58	10,635.26	-4,664.86	225.21	4,670.29	0.00	0.00	0.00
15,256.17	90.27	179.58	10,635.00	-4,721.03	225.62	4,726.42	0.00	0.00	0.00
TD at 15256.17 - PBHL (TU 111)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL (TU 111)	0.00	0.00	0.00	0.00	0.00	472,590.61	782,291.85	32° 17' 48.5397 N	103° 33' 12.6687 W
- plan hits target center									
- Point									
PBHL (TU 111)	0.00	0.00	10,635.00	-4,721.03	225.62	467,869.58	782,517.47	32° 17' 1.8087 N	103° 33' 10.4404 W
- plan hits target center									
- Point									

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
2,500.00	2,500.00	0.00	0.00	Start Build 1.00	
2,806.77	2,806.62	4.38	6.94	Start 3892.33 hold at 2806.77 MD	
6,699.10	6,693.38	115.62	183.06	Start Drop -1.00	
7,005.87	7,000.00	120.00	190.00	Start 3082.05 hold at 7005.87 MD	
10,087.92	10,082.05	120.00	190.00	Start DLS 10.00 TFO 179.58	
10,990.61	10,655.00	-455.63	194.24	Start 4265.56 hold at 10990.61 MD	
15,256.17	10,635.00	-4,721.03	225.62	TD at 15256.17	