

Devon Energy

Project: Lea County, NM (NAD-83)
Site: Thistle Unit
Well: 117H
Wellbore: OH
Design: Plan #1



Azimuths to Grid North
True North: -0.42°
Magnetic North: 6.48°

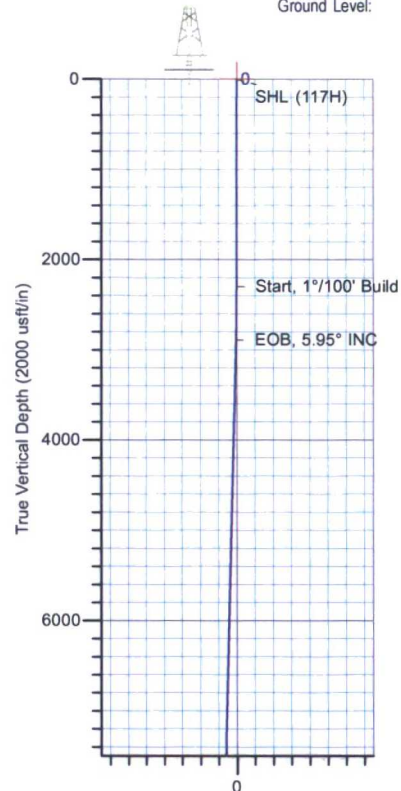
Magnetic Field
Strength: 48205.2snT
Dip Angle: 60.05°
Date: 1/5/2017
Model: HDGM

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



3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Ground Level: 3637.80



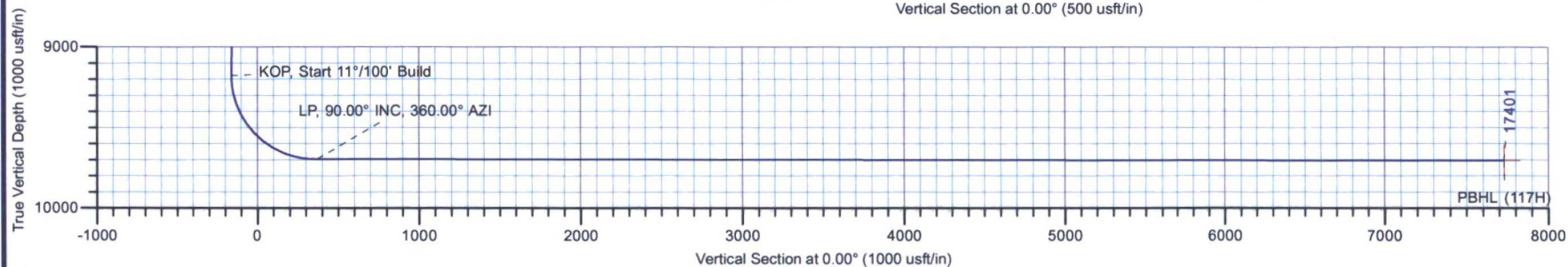
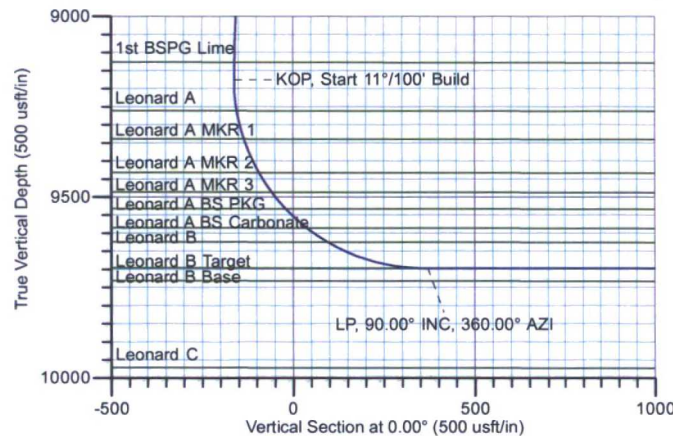
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2300.00	0.00	0.00	2300.00	0.00	0.00	0.00	0.00	0.00	Start, 1°/100' Build
3	2895.31	5.95	256.41	2894.24	-7.26	-30.03	1.00	256.41	-7.26	EOB, 5.95° INC
4	9200.93	5.95	256.41	9165.85	-160.98	-665.70	0.00	0.00	-160.98	
5	10031.09	89.92	0.00	9696.71	359.02	-719.43	11.00	103.53	359.02	
6	17401.09	89.92	0.00	9707.00	7729.01	-719.43	0.00	0.00	7729.01	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
PBHL (117H)	9707.00	7729.01	-719.43	32° 16' 32.335 N	103° 33' 19.076 W
SHL (117H)	0.00	0.00	0.00	32° 15' 15.805 N	103° 33' 11.351 W

HOBBS OCD
JAN 18 2017
RECEIVED



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

Plan: Plan #1 (117H/OH)
Thistle Unit
Created By: Brady Deaver
Date: _____
Approved: _____
Date: 13:51, January 12 2017

Devon Energy

Project: Lea County, NM (NAD-83)
Site: Thistle Unit
Well: 117H
Wellbore: OH
Design: Plan #1



Azimuths to Grid North
True North: -0.42°
Magnetic North: 6.48°

Magnetic Field
Strength: 48205.2snT
Dip Angle: 60.05°
Date: 1/5/2017
Model: HDGM

devon

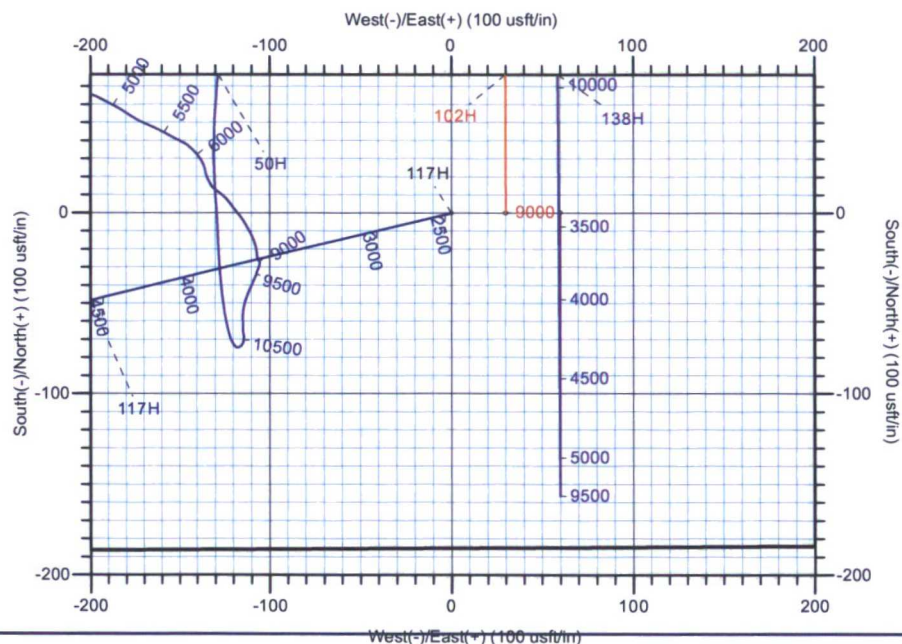
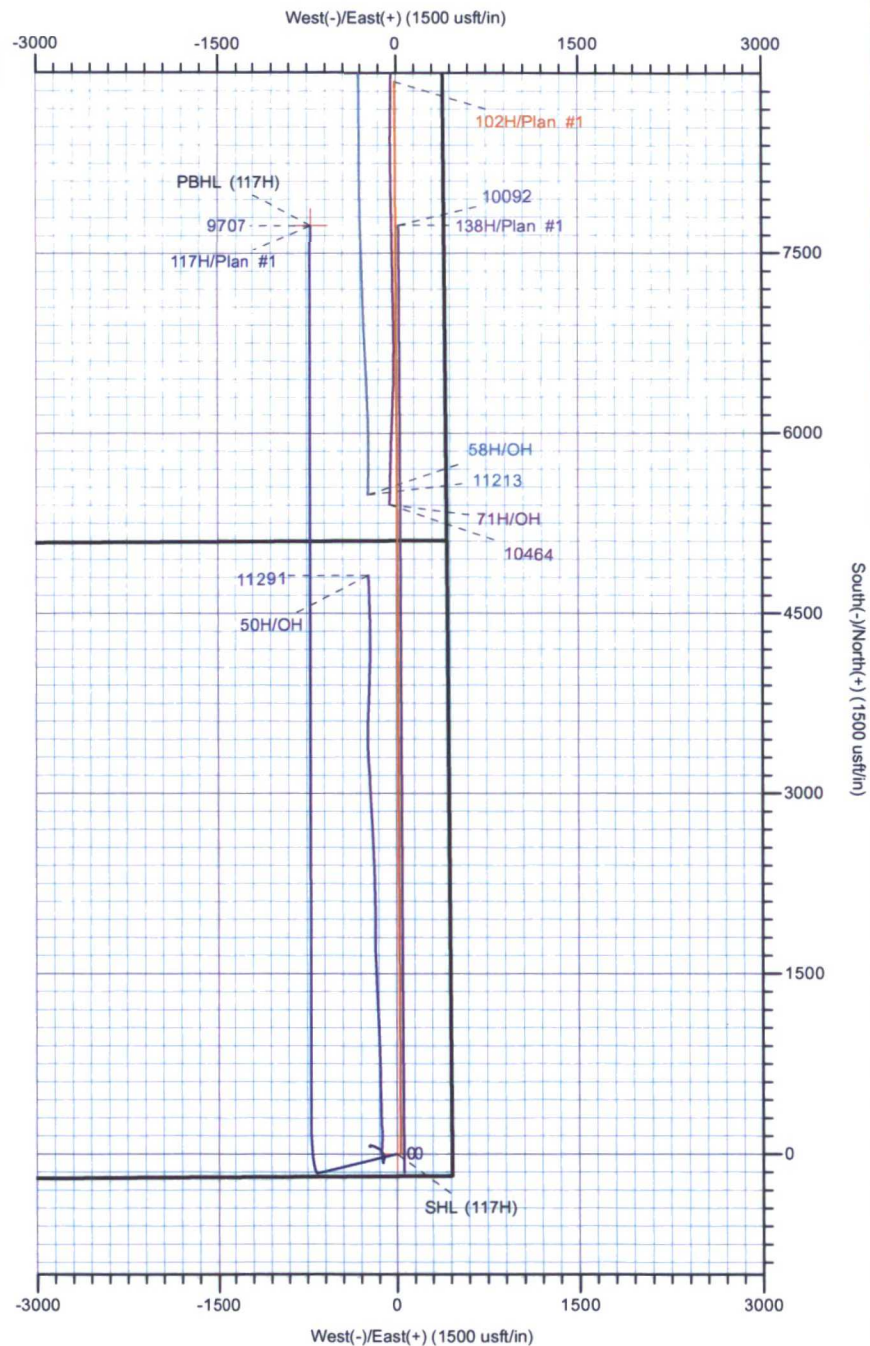
PROJECT DETAILS: Lea County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2300.00	0.00	0.00	2300.00	0.00	0.00	0.00	0.00	0.00	
2895.31	5.95	256.41	2894.24	-7.26	-30.03	1.00	256.41	-7.26	
9200.93	5.95	256.41	9165.85	-160.98	-665.70	0.00	0.00	-160.98	
10031.09	89.92	0.00	9696.71	359.02	-719.43	11.00	103.53	359.02	
17401.09	89.92	0.00	9707.00	7729.01	-719.43	0.00	0.00	7729.01	PBHL (117H)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (117H)	9707.00	7729.01	-719.43	464885.77	781797.76	32° 16' 32.335 N	103° 33' 19.076 W
SHL (117H)	0.00	0.00	0.00	457156.76	782517.19	32° 15' 15.805 N	103° 33' 11.351 W



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

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Thistle Unit
Created By: Brady Deaver
Date: 13:51, January 12 2017
Approved: _____ Date: _____

Devon Energy

Lea County, NM (NAD-83)

Thistle Unit

117H

OH

Plan: Plan #1

HOBBS OCD

JAN 18 2017

RECEIVED

Standard Planning Report

12 January, 2017

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
Company: Devon Energy
Project: Lea County, NM (NAD-83)
Site: Thistle Unit
Well: 117H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well 117H
TVD Reference: 3637.8' GE + 23.5' KB @ 3661.30usft
(Original Well Elev)
MD Reference: 3637.8' GE + 23.5' KB @ 3661.30usft
(Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project: Lea County, NM (NAD-83)
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: 468,026.90 usft Latitude: 32° 17' 3.494 N
From: Map Easting: 780,722.56 usft Longitude: 103° 33' 31.335 W
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 0.41 °

Well: 117H
Well Position: +N/-S -10,870.14 usft Northing: 457,156.76 usft Latitude: 32° 15' 15.805 N
+E/-W 1,794.63 usft Easting: 782,517.19 usft Longitude: 103° 33' 11.351 W
Position Uncertainty: 0.00 usft Wellhead Elevation: 3,661.30 usft Ground Level: 3,637.80 usft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/5/2017	6.90	60.05	48,205

Design: Plan #1

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

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	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,895.31	5.95	256.41	2,894.24	-7.26	-30.03	1.00	1.00	0.00	256.41	
9,200.93	5.95	256.41	9,165.85	-160.98	-665.70	0.00	0.00	0.00	0.00	
10,031.09	89.92	0.00	9,696.71	359.02	-719.43	11.00	10.11	12.48	103.53	
17,401.09	89.92	0.00	9,707.00	7,729.01	-719.43	0.00	0.00	0.00	0.00	PBHL (117H)

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well 117H
Company:	Devon Energy	TVD Reference:	3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Project:	Lea County, NM (NAD-83)	MD Reference:	3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Site:	Thistle Unit	North Reference:	Grid
Well:	117H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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 (117H)									
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
1,313.30	0.00	0.00	1,313.30	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
1,815.30	0.00	0.00	1,815.30	0.00	0.00	0.00	0.00	0.00	0.00
Top of Salt									
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
Start, 1°/100' Build									
2,400.00	1.00	256.41	2,399.99	-0.21	-0.85	-0.21	1.00	1.00	0.00
2,500.00	2.00	256.41	2,499.96	-0.82	-3.39	-0.82	1.00	1.00	0.00
2,600.00	3.00	256.41	2,599.86	-1.85	-7.63	-1.85	1.00	1.00	0.00
2,700.00	4.00	256.41	2,699.68	-3.28	-13.57	-3.28	1.00	1.00	0.00
2,800.00	5.00	256.41	2,799.37	-5.12	-21.19	-5.12	1.00	1.00	0.00
2,894.51	5.95	256.41	2,893.44	-7.24	-29.95	-7.24	1.00	1.00	0.00
EOB, 5.95° INC									
2,895.31	5.95	256.41	2,894.24	-7.26	-30.03	-7.26	1.00	1.00	0.00
2,900.00	5.95	256.41	2,898.90	-7.38	-30.51	-7.38	0.00	0.00	0.00
3,000.00	5.95	256.41	2,998.36	-9.81	-40.59	-9.81	0.00	0.00	0.00
3,100.00	5.95	256.41	3,097.83	-12.25	-50.67	-12.25	0.00	0.00	0.00
3,200.00	5.95	256.41	3,197.29	-14.69	-60.75	-14.69	0.00	0.00	0.00
3,300.00	5.95	256.41	3,296.75	-17.13	-70.83	-17.13	0.00	0.00	0.00
3,400.00	5.95	256.41	3,396.21	-19.57	-80.91	-19.57	0.00	0.00	0.00
3,500.00	5.95	256.41	3,495.67	-22.00	-90.99	-22.00	0.00	0.00	0.00
3,600.00	5.95	256.41	3,595.13	-24.44	-101.07	-24.44	0.00	0.00	0.00
3,700.00	5.95	256.41	3,694.59	-26.88	-111.15	-26.88	0.00	0.00	0.00
3,800.00	5.95	256.41	3,794.05	-29.32	-121.23	-29.32	0.00	0.00	0.00
3,900.00	5.95	256.41	3,893.51	-31.75	-131.32	-31.75	0.00	0.00	0.00
4,000.00	5.95	256.41	3,992.97	-34.19	-141.40	-34.19	0.00	0.00	0.00
4,100.00	5.95	256.41	4,092.43	-36.63	-151.48	-36.63	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
Company: Devon Energy
Project: Lea County, NM (NAD-83)
Site: Thistle Unit
Well: 117H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well 117H
TVD Reference: 3637.8' GE + 23.5' KB @ 3661.30usft
(Original Well Elev)
MD Reference: 3637.8' GE + 23.5' KB @ 3661.30usft
(Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
4,200.00	5.95	256.41	4,191.89	-39.07	-161.56	-39.07	0.00	0.00	0.00
4,300.00	5.95	256.41	4,291.35	-41.50	-171.64	-41.50	0.00	0.00	0.00
4,400.00	5.95	256.41	4,390.81	-43.94	-181.72	-43.94	0.00	0.00	0.00
4,500.00	5.95	256.41	4,490.28	-46.38	-191.80	-46.38	0.00	0.00	0.00
4,600.00	5.95	256.41	4,589.74	-48.82	-201.88	-48.82	0.00	0.00	0.00
4,700.00	5.95	256.41	4,689.20	-51.26	-211.96	-51.26	0.00	0.00	0.00
4,800.00	5.95	256.41	4,788.66	-53.69	-222.04	-53.69	0.00	0.00	0.00
4,900.00	5.95	256.41	4,888.12	-56.13	-232.13	-56.13	0.00	0.00	0.00
4,957.41	5.95	256.41	4,945.22	-57.53	-237.91	-57.53	0.00	0.00	0.00
Base of Salt									
5,000.00	5.95	256.41	4,987.58	-58.57	-242.21	-58.57	0.00	0.00	0.00
5,100.00	5.95	256.41	5,087.04	-61.01	-252.29	-61.01	0.00	0.00	0.00
5,200.00	5.95	256.41	5,186.50	-63.44	-262.37	-63.44	0.00	0.00	0.00
5,225.85	5.95	256.41	5,212.21	-64.07	-264.97	-64.07	0.00	0.00	0.00
Delaware									
5,300.00	5.95	256.41	5,285.96	-65.88	-272.45	-65.88	0.00	0.00	0.00
5,400.00	5.95	256.41	5,385.42	-68.32	-282.53	-68.32	0.00	0.00	0.00
5,500.00	5.95	256.41	5,484.88	-70.76	-292.61	-70.76	0.00	0.00	0.00
5,600.00	5.95	256.41	5,584.34	-73.19	-302.69	-73.19	0.00	0.00	0.00
5,700.00	5.95	256.41	5,683.80	-75.63	-312.77	-75.63	0.00	0.00	0.00
5,800.00	5.95	256.41	5,783.26	-78.07	-322.85	-78.07	0.00	0.00	0.00
5,900.00	5.95	256.41	5,882.73	-80.51	-332.93	-80.51	0.00	0.00	0.00
6,000.00	5.95	256.41	5,982.19	-82.95	-343.02	-82.95	0.00	0.00	0.00
6,100.00	5.95	256.41	6,081.65	-85.38	-353.10	-85.38	0.00	0.00	0.00
6,200.00	5.95	256.41	6,181.11	-87.82	-363.18	-87.82	0.00	0.00	0.00
6,300.00	5.95	256.41	6,280.57	-90.26	-373.26	-90.26	0.00	0.00	0.00
6,400.00	5.95	256.41	6,380.03	-92.70	-383.34	-92.70	0.00	0.00	0.00
6,500.00	5.95	256.41	6,479.49	-95.13	-393.42	-95.13	0.00	0.00	0.00
6,600.00	5.95	256.41	6,578.95	-97.57	-403.50	-97.57	0.00	0.00	0.00
6,700.00	5.95	256.41	6,678.41	-100.01	-413.58	-100.01	0.00	0.00	0.00
6,800.00	5.95	256.41	6,777.87	-102.45	-423.66	-102.45	0.00	0.00	0.00
6,900.00	5.95	256.41	6,877.33	-104.89	-433.74	-104.89	0.00	0.00	0.00
7,000.00	5.95	256.41	6,976.79	-107.32	-443.83	-107.32	0.00	0.00	0.00
7,100.00	5.95	256.41	7,076.25	-109.76	-453.91	-109.76	0.00	0.00	0.00
7,200.00	5.95	256.41	7,175.71	-112.20	-463.99	-112.20	0.00	0.00	0.00
7,300.00	5.95	256.41	7,275.18	-114.64	-474.07	-114.64	0.00	0.00	0.00
7,400.00	5.95	256.41	7,374.64	-117.07	-484.15	-117.07	0.00	0.00	0.00
7,500.00	5.95	256.41	7,474.10	-119.51	-494.23	-119.51	0.00	0.00	0.00
7,600.00	5.95	256.41	7,573.56	-121.95	-504.31	-121.95	0.00	0.00	0.00
7,700.00	5.95	256.41	7,673.02	-124.39	-514.39	-124.39	0.00	0.00	0.00
7,800.00	5.95	256.41	7,772.48	-126.82	-524.47	-126.82	0.00	0.00	0.00
7,900.00	5.95	256.41	7,871.94	-129.26	-534.55	-129.26	0.00	0.00	0.00
8,000.00	5.95	256.41	7,971.40	-131.70	-544.63	-131.70	0.00	0.00	0.00
8,100.00	5.95	256.41	8,070.86	-134.14	-554.72	-134.14	0.00	0.00	0.00
8,200.00	5.95	256.41	8,170.32	-136.58	-564.80	-136.58	0.00	0.00	0.00
8,300.00	5.95	256.41	8,269.78	-139.01	-574.88	-139.01	0.00	0.00	0.00
8,400.00	5.95	256.41	8,369.24	-141.45	-584.96	-141.45	0.00	0.00	0.00
8,500.00	5.95	256.41	8,468.70	-143.89	-595.04	-143.89	0.00	0.00	0.00
8,600.00	5.95	256.41	8,568.16	-146.33	-605.12	-146.33	0.00	0.00	0.00
8,700.00	5.95	256.41	8,667.63	-148.76	-615.20	-148.76	0.00	0.00	0.00
8,800.00	5.95	256.41	8,767.09	-151.20	-625.28	-151.20	0.00	0.00	0.00
8,900.00	5.95	256.41	8,866.55	-153.64	-635.36	-153.64	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

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Survey Calculation Method: Minimum Curvature

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)
8,970.92	5.95	256.41	8,937.08	-155.37	-642.51	-155.37	0.00	0.00	0.00
Lower Brushy									
9,000.00	5.95	256.41	8,966.01	-156.08	-645.44	-156.08	0.00	0.00	0.00
9,100.00	5.95	256.41	9,065.47	-158.51	-655.53	-158.51	0.00	0.00	0.00
9,161.94	5.95	256.41	9,127.08	-160.02	-661.77	-160.02	0.00	0.00	0.00
1st BSPG Lime									
9,200.93	5.95	256.41	9,165.85	-160.98	-665.70	-160.98	0.00	0.00	0.00
9,211.15	5.79	267.29	9,176.02	-161.12	-666.73	-161.12	11.00	-1.56	106.58
KOP, Start 11°/100' Build									
9,250.00	7.03	304.75	9,214.64	-159.86	-670.64	-159.86	11.00	3.18	96.40
9,297.01	10.83	328.02	9,261.08	-154.47	-675.35	-154.47	11.00	8.08	49.51
Leonard A									
9,300.00	11.11	328.94	9,264.02	-153.99	-675.65	-153.99	11.00	9.33	30.63
9,350.00	16.05	339.39	9,312.62	-143.38	-680.57	-143.38	11.00	9.89	20.90
9,377.78	18.93	342.82	9,339.11	-135.48	-683.26	-135.48	11.00	10.36	12.36
Leonard A MKR 1									
9,400.00	21.27	344.91	9,359.98	-128.14	-685.37	-128.14	11.00	10.51	9.42
9,450.00	26.59	348.33	9,405.67	-108.41	-690.00	-108.41	11.00	10.65	6.82
9,480.08	29.82	349.82	9,432.17	-94.45	-692.68	-94.45	11.00	10.75	4.98
Leonard A MKR 2									
9,500.00	31.97	350.66	9,449.26	-84.37	-694.41	-84.37	11.00	10.79	4.21
9,544.80	36.82	352.23	9,486.22	-59.35	-698.16	-59.35	11.00	10.82	3.49
Leonard A MKR 3									
9,550.00	37.39	352.39	9,490.36	-56.24	-698.58	-56.24	11.00	10.85	3.05
9,600.00	42.82	353.73	9,528.60	-24.28	-702.45	-24.28	11.00	10.86	2.68
9,605.03	43.37	353.85	9,532.27	-20.86	-702.82	-20.86	11.00	10.88	2.38
Leonard A BS PKG									
9,650.00	48.26	354.82	9,563.60	11.22	-705.99	11.22	11.00	10.89	2.16
9,683.92	51.96	355.46	9,585.35	37.14	-708.19	37.14	11.00	10.90	1.89
Leonard A BS Carbonate									
9,700.00	53.72	355.74	9,595.07	49.92	-709.17	49.92	11.00	10.91	1.75
9,750.00	59.18	356.54	9,622.69	91.48	-711.97	91.48	11.00	10.92	1.60
9,753.41	59.55	356.59	9,624.43	94.41	-712.14	94.41	11.00	10.92	1.50
Leonard B									
9,800.00	64.64	357.25	9,646.23	135.51	-714.35	135.51	11.00	10.93	1.42
9,850.00	70.11	357.91	9,665.46	181.60	-716.29	181.60	11.00	10.93	1.30
9,900.00	75.58	358.51	9,680.20	229.33	-717.78	229.33	11.00	10.94	1.22
9,950.00	81.05	359.09	9,690.33	278.27	-718.79	278.27	11.00	10.94	1.16
10,000.00	86.52	359.65	9,695.74	327.95	-719.34	327.95	11.00	10.94	1.12
10,031.09	89.92	0.00	9,696.71	359.02	-719.43	359.02	11.00	10.94	1.11
10,042.06	89.92	0.00	9,696.73	369.99	-719.43	369.99	0.00	0.00	0.00
LP, 90.00° INC, 360.00° AZI									
10,100.00	89.92	0.00	9,696.81	427.93	-719.43	427.93	0.00	0.00	0.00
10,200.00	89.92	0.00	9,696.95	527.93	-719.43	527.93	0.00	0.00	0.00
10,300.00	89.92	0.00	9,697.09	627.93	-719.43	627.93	0.00	0.00	0.00
10,400.00	89.92	0.00	9,697.22	727.93	-719.43	727.93	0.00	0.00	0.00
10,500.00	89.92	0.00	9,697.36	827.93	-719.43	827.93	0.00	0.00	0.00
10,600.00	89.92	0.00	9,697.50	927.93	-719.43	927.93	0.00	0.00	0.00
10,700.00	89.92	0.00	9,697.64	1,027.93	-719.43	1,027.93	0.00	0.00	0.00
10,800.00	89.92	0.00	9,697.78	1,127.93	-719.43	1,127.93	0.00	0.00	0.00
10,900.00	89.92	0.00	9,697.92	1,227.93	-719.43	1,227.93	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well 117H
Company:	Devon Energy	TVD Reference:	3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Project:	Lea County, NM (NAD-83)	MD Reference:	3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Site:	Thistle Unit	North Reference:	Grid
Well:	117H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
11,000.00	89.92	0.00	9,698.06	1,327.93	-719.43	1,327.93	0.00	0.00	0.00
11,100.00	89.92	0.00	9,698.20	1,427.93	-719.43	1,427.93	0.00	0.00	0.00
11,200.00	89.92	0.00	9,698.34	1,527.93	-719.43	1,527.93	0.00	0.00	0.00
11,300.00	89.92	0.00	9,698.48	1,627.93	-719.43	1,627.93	0.00	0.00	0.00
11,400.00	89.92	0.00	9,698.62	1,727.93	-719.43	1,727.93	0.00	0.00	0.00
11,500.00	89.92	0.00	9,698.76	1,827.93	-719.43	1,827.93	0.00	0.00	0.00
11,600.00	89.92	0.00	9,698.90	1,927.93	-719.43	1,927.93	0.00	0.00	0.00
11,700.00	89.92	0.00	9,699.04	2,027.93	-719.43	2,027.93	0.00	0.00	0.00
11,800.00	89.92	0.00	9,699.18	2,127.93	-719.43	2,127.93	0.00	0.00	0.00
11,900.00	89.92	0.00	9,699.32	2,227.93	-719.43	2,227.93	0.00	0.00	0.00
12,000.00	89.92	0.00	9,699.46	2,327.93	-719.43	2,327.93	0.00	0.00	0.00
12,100.00	89.92	0.00	9,699.60	2,427.93	-719.43	2,427.93	0.00	0.00	0.00
12,200.00	89.92	0.00	9,699.74	2,527.93	-719.43	2,527.93	0.00	0.00	0.00
12,300.00	89.92	0.00	9,699.88	2,627.93	-719.43	2,627.93	0.00	0.00	0.00
12,400.00	89.92	0.00	9,700.02	2,727.93	-719.43	2,727.93	0.00	0.00	0.00
12,500.00	89.92	0.00	9,700.16	2,827.93	-719.43	2,827.93	0.00	0.00	0.00
12,600.00	89.92	0.00	9,700.30	2,927.93	-719.43	2,927.93	0.00	0.00	0.00
12,700.00	89.92	0.00	9,700.44	3,027.93	-719.43	3,027.93	0.00	0.00	0.00
12,800.00	89.92	0.00	9,700.58	3,127.93	-719.43	3,127.93	0.00	0.00	0.00
12,900.00	89.92	0.00	9,700.72	3,227.93	-719.43	3,227.93	0.00	0.00	0.00
13,000.00	89.92	0.00	9,700.86	3,327.93	-719.43	3,327.93	0.00	0.00	0.00
13,100.00	89.92	0.00	9,700.99	3,427.93	-719.43	3,427.93	0.00	0.00	0.00
13,200.00	89.92	0.00	9,701.13	3,527.93	-719.43	3,527.93	0.00	0.00	0.00
13,300.00	89.92	0.00	9,701.27	3,627.93	-719.43	3,627.93	0.00	0.00	0.00
13,400.00	89.92	0.00	9,701.41	3,727.93	-719.43	3,727.93	0.00	0.00	0.00
13,500.00	89.92	0.00	9,701.55	3,827.93	-719.43	3,827.93	0.00	0.00	0.00
13,600.00	89.92	0.00	9,701.69	3,927.93	-719.43	3,927.93	0.00	0.00	0.00
13,700.00	89.92	0.00	9,701.83	4,027.93	-719.43	4,027.93	0.00	0.00	0.00
13,800.00	89.92	0.00	9,701.97	4,127.93	-719.43	4,127.93	0.00	0.00	0.00
13,900.00	89.92	0.00	9,702.11	4,227.93	-719.43	4,227.93	0.00	0.00	0.00
14,000.00	89.92	0.00	9,702.25	4,327.93	-719.43	4,327.93	0.00	0.00	0.00
14,100.00	89.92	0.00	9,702.39	4,427.93	-719.43	4,427.93	0.00	0.00	0.00
14,200.00	89.92	0.00	9,702.53	4,527.93	-719.43	4,527.93	0.00	0.00	0.00
14,300.00	89.92	0.00	9,702.67	4,627.93	-719.43	4,627.93	0.00	0.00	0.00
14,400.00	89.92	0.00	9,702.81	4,727.93	-719.43	4,727.93	0.00	0.00	0.00
14,500.00	89.92	0.00	9,702.95	4,827.93	-719.43	4,827.93	0.00	0.00	0.00
14,600.00	89.92	0.00	9,703.09	4,927.93	-719.43	4,927.93	0.00	0.00	0.00
14,700.00	89.92	0.00	9,703.23	5,027.93	-719.43	5,027.93	0.00	0.00	0.00
14,800.00	89.92	0.00	9,703.37	5,127.93	-719.43	5,127.93	0.00	0.00	0.00
14,900.00	89.92	0.00	9,703.51	5,227.93	-719.43	5,227.93	0.00	0.00	0.00
15,000.00	89.92	0.00	9,703.65	5,327.93	-719.43	5,327.93	0.00	0.00	0.00
15,100.00	89.92	0.00	9,703.79	5,427.92	-719.43	5,427.92	0.00	0.00	0.00
15,200.00	89.92	0.00	9,703.93	5,527.92	-719.43	5,527.92	0.00	0.00	0.00
15,300.00	89.92	0.00	9,704.07	5,627.92	-719.43	5,627.92	0.00	0.00	0.00
15,400.00	89.92	0.00	9,704.21	5,727.92	-719.43	5,727.92	0.00	0.00	0.00
15,500.00	89.92	0.00	9,704.35	5,827.92	-719.43	5,827.92	0.00	0.00	0.00
15,600.00	89.92	0.00	9,704.49	5,927.92	-719.43	5,927.92	0.00	0.00	0.00
15,700.00	89.92	0.00	9,704.63	6,027.92	-719.43	6,027.92	0.00	0.00	0.00
15,800.00	89.92	0.00	9,704.76	6,127.92	-719.43	6,127.92	0.00	0.00	0.00
15,900.00	89.92	0.00	9,704.90	6,227.92	-719.43	6,227.92	0.00	0.00	0.00
16,000.00	89.92	0.00	9,705.04	6,327.92	-719.43	6,327.92	0.00	0.00	0.00
16,100.00	89.92	0.00	9,705.18	6,427.92	-719.43	6,427.92	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

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Company:	Devon Energy	TVD Reference:	3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Project:	Lea County, NM (NAD-83)	MD Reference:	3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Site:	Thistle Unit	North Reference:	Grid
Well:	117H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
16,200.00	89.92	0.00	9,705.32	6,527.92	-719.43	6,527.92	0.00	0.00	0.00
16,300.00	89.92	0.00	9,705.46	6,627.92	-719.43	6,627.92	0.00	0.00	0.00
16,400.00	89.92	0.00	9,705.60	6,727.92	-719.43	6,727.92	0.00	0.00	0.00
16,500.00	89.92	0.00	9,705.74	6,827.92	-719.43	6,827.92	0.00	0.00	0.00
16,600.00	89.92	0.00	9,705.88	6,927.92	-719.43	6,927.92	0.00	0.00	0.00
16,700.00	89.92	0.00	9,706.02	7,027.92	-719.43	7,027.92	0.00	0.00	0.00
16,800.00	89.92	0.00	9,706.16	7,127.92	-719.43	7,127.92	0.00	0.00	0.00
16,900.00	89.92	0.00	9,706.30	7,227.92	-719.43	7,227.92	0.00	0.00	0.00
17,000.00	89.92	0.00	9,706.44	7,327.92	-719.43	7,327.92	0.00	0.00	0.00
17,100.00	89.92	0.00	9,706.58	7,427.92	-719.43	7,427.92	0.00	0.00	0.00
17,200.00	89.92	0.00	9,706.72	7,527.92	-719.43	7,527.92	0.00	0.00	0.00
17,300.00	89.92	0.00	9,706.86	7,627.92	-719.43	7,627.92	0.00	0.00	0.00
17,401.09	89.92	0.00	9,707.00	7,729.01	-719.43	7,729.01	0.00	0.00	0.00
PBHL (117H)									

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 (117H) - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	457,156.76	782,517.19	32° 15' 15.805 N	103° 33' 11.351 W
PBHL (117H) - plan hits target center - Point	0.00	0.00	9,707.00	7,729.01	-719.43	464,885.77	781,797.76	32° 16' 32.335 N	103° 33' 19.076 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,313.30	1,313.30	Rustler		0.08	0.00
1,815.30	1,815.30	Top of Salt		0.08	0.00
4,957.41	4,945.22	Base of Salt		0.08	0.00
5,225.85	5,212.21	Delaware		0.08	0.00
8,970.92	8,937.08	Lower Brushy		0.08	0.00
9,161.94	9,127.08	1st BSPG Lime		0.08	0.00
9,297.01	9,261.08	Leonard A		0.08	0.00
9,377.78	9,339.11	Leonard A MKR 1		0.08	0.00
9,480.08	9,432.17	Leonard A MKR 2		0.08	0.00
9,544.80	9,486.22	Leonard A MKR 3		0.08	0.00
9,605.03	9,532.27	Leonard A BS PKG		0.08	0.00
9,683.92	9,585.35	Leonard A BS Carbonate		0.08	0.00
9,753.41	9,624.43	Leonard B		0.08	0.00

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well 117H
Company:	Devon Energy	TVD Reference:	3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Project:	Lea County, NM (NAD-83)	MD Reference:	3637.8' GE + 23.5' KB @ 3661.30usft (Original Well Elev)
Site:	Thistle Unit	North Reference:	Grid
Well:	117H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,300.00	2,300.00	0.00	0.00	Start, 1°/100' Build
2,894.51	2,893.44	-7.24	-29.95	EOB, 5.95° INC
9,211.15	9,176.02	-161.12	-666.73	KOP, Start 11°/100' Build
10,042.06	9,696.73	369.99	-719.43	LP, 90.00° INC, 360.00° AZI
17,412.06				TD at 17412.06' MD