

DEVON ENERGY

Project: Lea County, NM (NAD-83)
 Site: Thistle Unit
 Well: 109H
 Wellbore: OH
 Design: Plan #2



Azimuths to Grid North
 True North: -0.41°
 Magnetic North: 6.87°

Magnetic Field
 Strength: 48202.8snT
 Dip Angle: 60.15°
 Date: 6/12/2015
 Model: BGGM2014

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
 System Datum: Mean Sea Level

SECTION DETAILS

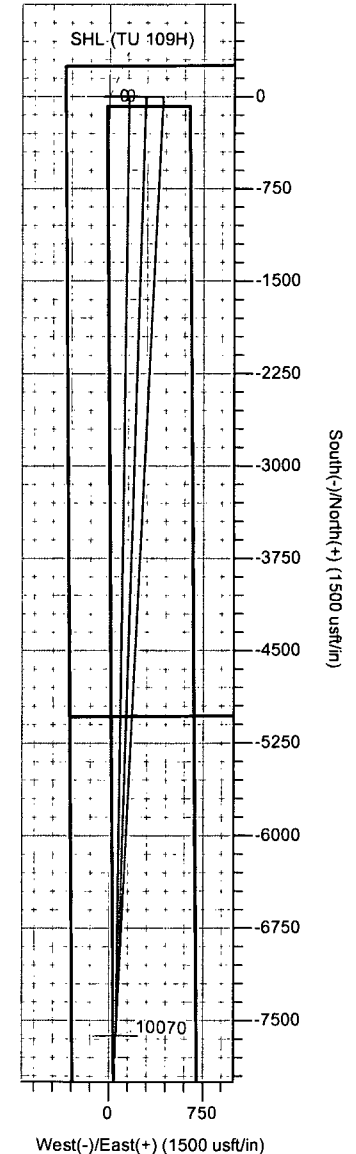
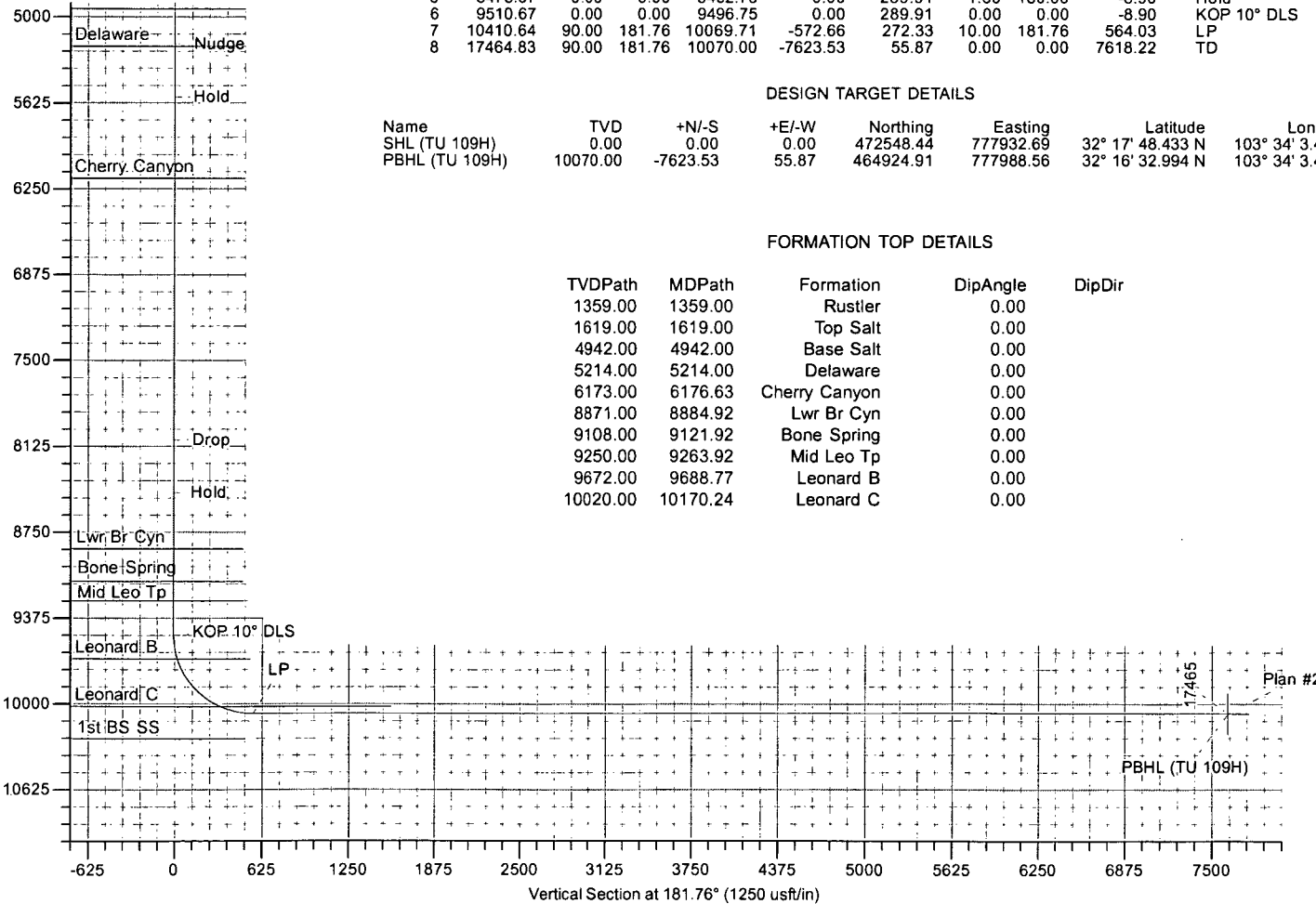
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5200.00	0.00	0.00	5200.00	0.00	0.00	0.00	0.00	0.00	Nudge
3	5583.33	5.75	90.00	5582.69	0.00	19.22	1.50	90.00	-0.59	Hold
4	8093.33	5.75	90.00	8080.06	0.00	270.69	0.00	0.00	-8.31	Drop
5	8476.67	0.00	0.00	8462.75	0.00	289.91	1.50	180.00	-8.90	Hold
6	9510.70	0.00	0.00	9496.75	0.00	289.91	0.00	0.00	-8.90	KOP 10° DLS
7	10410.64	90.00	181.76	10069.71	-572.66	272.33	10.00	181.76	564.03	LP
8	17464.83	90.00	181.76	10070.00	-7623.53	55.87	0.00	0.00	7618.22	TD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL (TU 109H)	0.00	0.00	0.00	472548.44	777932.69	32° 17' 48.433 N	103° 34' 3.456 W
PBHL (TU 109H)	10070.00	-7623.53	55.87	464924.91	777988.56	32° 16' 32.994 N	103° 34' 3.439 W

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1359.00	1359.00	Rustler	0.00	
1619.00	1619.00	Top Salt	0.00	
4942.00	4942.00	Base Salt	0.00	
5214.00	5214.00	Delaware	0.00	
6173.00	6176.63	Cherry Canyon	0.00	
8871.00	8884.92	Lwr Br Cyn	0.00	
9108.00	9121.92	Bone Spring	0.00	
9250.00	9263.92	Mid Leo Tp	0.00	
9672.00	9688.77	Leonard B	0.00	
10020.00	10170.24	Leonard C	0.00	



30-025-42680

JUL 14 2015



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

Plan: Plan #2 (109H/OH)
 Thistle Unit
 Created By: Brady Deaver Date: 14:59, July 01 2015
 Date: _____
 Approved: _____ Date: _____

DEVON ENERGY

Lea County, NM (NAD-83)

Thistle Unit

109H

OH

Plan: Plan #2

Standard Planning Report

01 July, 2015

LEAM Drilling Systems LLC
Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 109H
Company:	DEVON ENERGY	TVD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Project:	Lea County, NM (NAD-83)	MD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Site:	Thistle Unit	North Reference:	Grid
Well:	109H	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				
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	109H					
Well Position	+N/-S	4,521.54 usft	Northing:	472,548.44 usft	Latitude:	32° 17' 48.433 N
	+E/-W	-2,789.87 usft	Easting:	777,932.69 usft	Longitude:	103° 34' 3.456 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	3,739.60 usft	Ground Level:	3,714.60 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	6/12/2015	7.28	60.15	48,203

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	181.76

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		
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00		
5,583.33	5.75	90.00	5,582.69	0.00	19.22	1.50	1.50	0.00	0.00	90.00	
8,093.33	5.75	90.00	8,080.06	0.00	270.69	0.00	0.00	0.00	0.00		
8,476.67	0.00	0.00	8,462.75	0.00	289.91	1.50	-1.50	0.00	180.00		
9,510.67	0.00	0.00	9,496.75	0.00	289.91	0.00	0.00	0.00	0.00		
10,410.64	90.00	181.76	10,069.71	-572.66	272.33	10.00	10.00	-19.81	181.76		
17,464.83	90.00	181.76	10,070.00	-7,623.53	55.87	0.00	0.00	0.00	0.00	PBHL (TU 109H)	

LEAM Drilling Systems LLC

Planning Report

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Company:	DEVON ENERGY	TVD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Project:	Lea County, NM (NAD-83)	MD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Site:	Thistle Unit	North Reference:	Grid
Well:	109H	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 109H)									
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
1,359.00	0.00	0.00	1,359.00	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
1,619.00	0.00	0.00	1,619.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Salt									
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	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

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Company:	DEVON ENERGY	TVD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
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Site:	Thistle Unit	North Reference:	Grid
Well:	109H	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)	
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,942.00	0.00	0.00	4,942.00	0.00	0.00	0.00	0.00	0.00	0.00	
Base Salt										
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nudge										
5,214.00	0.21	90.00	5,214.00	0.00	0.03	0.00	1.50	1.50	0.00	
Delaware										
5,300.00	1.50	90.00	5,299.99	0.00	1.31	-0.04	1.50	1.50	0.00	
5,400.00	3.00	90.00	5,399.91	0.00	5.23	-0.16	1.50	1.50	0.00	
5,500.00	4.50	90.00	5,499.69	0.00	11.77	-0.36	1.50	1.50	0.00	
5,583.33	5.75	90.00	5,582.69	0.00	19.22	-0.59	1.50	1.50	0.00	
Hold										
5,600.00	5.75	90.00	5,599.27	0.00	20.89	-0.64	0.00	0.00	0.00	
5,700.00	5.75	90.00	5,698.77	0.00	30.91	-0.95	0.00	0.00	0.00	
5,800.00	5.75	90.00	5,798.27	0.00	40.93	-1.26	0.00	0.00	0.00	
5,900.00	5.75	90.00	5,897.76	0.00	50.95	-1.56	0.00	0.00	0.00	
6,000.00	5.75	90.00	5,997.26	0.00	60.96	-1.87	0.00	0.00	0.00	
6,100.00	5.75	90.00	6,096.76	0.00	70.98	-2.18	0.00	0.00	0.00	
6,176.63	5.75	90.00	6,173.00	0.00	78.66	-2.42	0.00	0.00	0.00	
Cherry Canyon										
6,200.00	5.75	90.00	6,196.25	0.00	81.00	-2.49	0.00	0.00	0.00	
6,300.00	5.75	90.00	6,295.75	0.00	91.02	-2.80	0.00	0.00	0.00	
6,400.00	5.75	90.00	6,395.25	0.00	101.04	-3.10	0.00	0.00	0.00	
6,500.00	5.75	90.00	6,494.74	0.00	111.06	-3.41	0.00	0.00	0.00	
6,600.00	5.75	90.00	6,594.24	0.00	121.08	-3.72	0.00	0.00	0.00	
6,700.00	5.75	90.00	6,693.74	0.00	131.10	-4.03	0.00	0.00	0.00	
6,800.00	5.75	90.00	6,793.24	0.00	141.11	-4.33	0.00	0.00	0.00	
6,900.00	5.75	90.00	6,892.73	0.00	151.13	-4.64	0.00	0.00	0.00	
7,000.00	5.75	90.00	6,992.23	0.00	161.15	-4.95	0.00	0.00	0.00	
7,100.00	5.75	90.00	7,091.73	0.00	171.17	-5.26	0.00	0.00	0.00	
7,200.00	5.75	90.00	7,191.22	0.00	181.19	-5.56	0.00	0.00	0.00	
7,300.00	5.75	90.00	7,290.72	0.00	191.21	-5.87	0.00	0.00	0.00	
7,400.00	5.75	90.00	7,390.22	0.00	201.23	-6.18	0.00	0.00	0.00	
7,500.00	5.75	90.00	7,489.71	0.00	211.25	-6.49	0.00	0.00	0.00	
7,600.00	5.75	90.00	7,589.21	0.00	221.26	-6.80	0.00	0.00	0.00	
7,700.00	5.75	90.00	7,688.71	0.00	231.28	-7.10	0.00	0.00	0.00	
7,800.00	5.75	90.00	7,788.20	0.00	241.30	-7.41	0.00	0.00	0.00	
7,900.00	5.75	90.00	7,887.70	0.00	251.32	-7.72	0.00	0.00	0.00	
8,000.00	5.75	90.00	7,987.20	0.00	261.34	-8.03	0.00	0.00	0.00	
8,093.33	5.75	90.00	8,080.06	0.00	270.69	-8.31	0.00	0.00	0.00	
Drop										
8,100.00	5.65	90.00	8,086.70	0.00	271.35	-8.33	1.50	-1.50	0.00	
8,200.00	4.15	90.00	8,186.33	0.00	279.89	-8.60	1.50	-1.50	0.00	
8,300.00	2.65	90.00	8,286.15	0.00	285.82	-8.78	1.50	-1.50	0.00	
8,400.00	1.15	90.00	8,386.09	0.00	289.14	-8.88	1.50	-1.50	0.00	
8,476.67	0.00	0.00	8,462.75	0.00	289.91	-8.90	1.50	-1.50	0.00	
Hold										

LEAM Drilling Systems LLC

Planning Report

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Well:	109H	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)
8,500.00	0.00	0.00	8,486.08	0.00	289.91	-8.90	0.00	0.00	0.00
8,600.00	0.00	0.00	8,586.08	0.00	289.91	-8.90	0.00	0.00	0.00
8,700.00	0.00	0.00	8,686.08	0.00	289.91	-8.90	0.00	0.00	0.00
8,800.00	0.00	0.00	8,786.08	0.00	289.91	-8.90	0.00	0.00	0.00
8,884.92	0.00	0.00	8,871.00	0.00	289.91	-8.90	0.00	0.00	0.00
Lwr Br Cyn									
8,900.00	0.00	0.00	8,886.08	0.00	289.91	-8.90	0.00	0.00	0.00
9,000.00	0.00	0.00	8,986.08	0.00	289.91	-8.90	0.00	0.00	0.00
9,100.00	0.00	0.00	9,086.08	0.00	289.91	-8.90	0.00	0.00	0.00
9,121.92	0.00	0.00	9,108.00	0.00	289.91	-8.90	0.00	0.00	0.00
Bone Spring									
9,200.00	0.00	0.00	9,186.08	0.00	289.91	-8.90	0.00	0.00	0.00
9,263.92	0.00	0.00	9,250.00	0.00	289.91	-8.90	0.00	0.00	0.00
Mid Leo Tp									
9,300.00	0.00	0.00	9,286.08	0.00	289.91	-8.90	0.00	0.00	0.00
9,400.00	0.00	0.00	9,386.08	0.00	289.91	-8.90	0.00	0.00	0.00
9,500.00	0.00	0.00	9,486.08	0.00	289.91	-8.90	0.00	0.00	0.00
9,510.67	0.00	0.00	9,496.75	0.00	289.91	-8.90	0.00	0.00	0.00
KOP 10° DLS									
9,550.00	3.93	181.76	9,536.05	-1.35	289.87	-7.55	10.00	10.00	0.00
9,600.00	8.93	181.76	9,585.72	-6.95	289.70	-1.95	10.00	10.00	0.00
9,650.00	13.93	181.76	9,634.72	-16.85	289.39	7.95	10.00	10.00	0.00
9,688.77	17.81	181.76	9,672.00	-27.45	289.07	18.56	10.00	10.00	0.00
Leonard B									
9,700.00	18.93	181.76	9,682.66	-30.98	288.96	22.09	10.00	10.00	0.00
9,750.00	23.93	181.76	9,729.19	-49.24	288.40	40.36	10.00	10.00	0.00
9,800.00	28.93	181.76	9,773.94	-71.48	287.72	62.61	10.00	10.00	0.00
9,850.00	33.93	181.76	9,816.59	-97.54	286.92	88.68	10.00	10.00	0.00
9,900.00	38.93	181.76	9,856.81	-127.21	286.00	118.36	10.00	10.00	0.00
9,950.00	43.93	181.76	9,894.28	-160.27	284.99	151.44	10.00	10.00	0.00
10,000.00	48.93	181.76	9,928.73	-196.47	283.88	187.66	10.00	10.00	0.00
10,050.00	53.93	181.76	9,959.89	-235.53	282.68	226.74	10.00	10.00	0.00
10,100.00	58.93	181.76	9,987.53	-277.16	281.40	268.39	10.00	10.00	0.00
10,150.00	63.93	181.76	10,011.43	-321.04	280.05	312.29	10.00	10.00	0.00
10,170.24	65.96	181.76	10,020.00	-339.36	279.49	330.62	10.00	10.00	0.00
Leonard C									
10,200.00	68.93	181.76	10,031.41	-366.83	278.65	358.10	10.00	10.00	0.00
10,250.00	73.93	181.76	10,047.33	-414.19	277.19	405.48	10.00	10.00	0.00
10,300.00	78.93	181.76	10,059.05	-462.76	275.70	454.07	10.00	10.00	0.00
10,350.00	83.93	181.76	10,066.50	-512.16	274.19	503.50	10.00	10.00	0.00
10,400.00	88.93	181.76	10,069.61	-562.03	272.66	553.39	10.00	10.00	0.00
10,410.64	90.00	181.76	10,069.71	-572.66	272.33	564.03	10.00	10.00	0.00
LP									
10,500.00	90.00	181.76	10,069.71	-661.98	269.59	653.39	0.00	0.00	0.00
10,600.00	90.00	181.76	10,069.72	-761.93	266.52	753.39	0.00	0.00	0.00
10,700.00	90.00	181.76	10,069.72	-861.89	263.45	853.39	0.00	0.00	0.00
10,800.00	90.00	181.76	10,069.73	-961.84	260.38	953.39	0.00	0.00	0.00
10,900.00	90.00	181.76	10,069.73	-1,061.79	257.31	1,053.39	0.00	0.00	0.00
11,000.00	90.00	181.76	10,069.73	-1,161.74	254.24	1,153.39	0.00	0.00	0.00
11,100.00	90.00	181.76	10,069.74	-1,261.70	251.18	1,253.39	0.00	0.00	0.00
11,200.00	90.00	181.76	10,069.74	-1,361.65	248.11	1,353.39	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 109H
Company:	DEVON ENERGY	TVD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Project:	Lea County, NM (NAD-83)	MD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Site:	Thistle Unit	North Reference:	Grid
Well:	109H	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)
11,300.00	90.00	181.76	10,069.75	-1,461.60	245.04	1,453.39	0.00	0.00	0.00
11,400.00	90.00	181.76	10,069.75	-1,561.56	241.97	1,553.39	0.00	0.00	0.00
11,500.00	90.00	181.76	10,069.75	-1,661.51	238.90	1,653.39	0.00	0.00	0.00
11,600.00	90.00	181.76	10,069.76	-1,761.46	235.83	1,753.39	0.00	0.00	0.00
11,700.00	90.00	181.76	10,069.76	-1,861.41	232.76	1,853.39	0.00	0.00	0.00
11,800.00	90.00	181.76	10,069.77	-1,961.37	229.70	1,953.39	0.00	0.00	0.00
11,900.00	90.00	181.76	10,069.77	-2,061.32	226.63	2,053.39	0.00	0.00	0.00
12,000.00	90.00	181.76	10,069.77	-2,161.27	223.56	2,153.39	0.00	0.00	0.00
12,100.00	90.00	181.76	10,069.78	-2,261.23	220.49	2,253.39	0.00	0.00	0.00
12,200.00	90.00	181.76	10,069.78	-2,361.18	217.42	2,353.39	0.00	0.00	0.00
12,300.00	90.00	181.76	10,069.79	-2,461.13	214.35	2,453.39	0.00	0.00	0.00
12,400.00	90.00	181.76	10,069.79	-2,561.08	211.29	2,553.39	0.00	0.00	0.00
12,500.00	90.00	181.76	10,069.80	-2,661.04	208.22	2,653.39	0.00	0.00	0.00
12,600.00	90.00	181.76	10,069.80	-2,760.99	205.15	2,753.39	0.00	0.00	0.00
12,700.00	90.00	181.76	10,069.80	-2,860.94	202.08	2,853.39	0.00	0.00	0.00
12,800.00	90.00	181.76	10,069.81	-2,960.90	199.01	2,953.39	0.00	0.00	0.00
12,900.00	90.00	181.76	10,069.81	-3,060.85	195.94	3,053.39	0.00	0.00	0.00
13,000.00	90.00	181.76	10,069.82	-3,160.80	192.87	3,153.39	0.00	0.00	0.00
13,100.00	90.00	181.76	10,069.82	-3,260.75	189.81	3,253.39	0.00	0.00	0.00
13,200.00	90.00	181.76	10,069.82	-3,360.71	186.74	3,353.39	0.00	0.00	0.00
13,300.00	90.00	181.76	10,069.83	-3,460.66	183.67	3,453.39	0.00	0.00	0.00
13,400.00	90.00	181.76	10,069.83	-3,560.61	180.60	3,553.39	0.00	0.00	0.00
13,500.00	90.00	181.76	10,069.84	-3,660.57	177.53	3,653.39	0.00	0.00	0.00
13,600.00	90.00	181.76	10,069.84	-3,760.52	174.46	3,753.39	0.00	0.00	0.00
13,700.00	90.00	181.76	10,069.85	-3,860.47	171.39	3,853.39	0.00	0.00	0.00
13,800.00	90.00	181.76	10,069.85	-3,960.43	168.33	3,953.39	0.00	0.00	0.00
13,900.00	90.00	181.76	10,069.85	-4,060.38	165.26	4,053.39	0.00	0.00	0.00
14,000.00	90.00	181.76	10,069.86	-4,160.33	162.19	4,153.39	0.00	0.00	0.00
14,100.00	90.00	181.76	10,069.86	-4,260.28	159.12	4,253.39	0.00	0.00	0.00
14,200.00	90.00	181.76	10,069.87	-4,360.24	156.05	4,353.39	0.00	0.00	0.00
14,300.00	90.00	181.76	10,069.87	-4,460.19	152.98	4,453.39	0.00	0.00	0.00
14,400.00	90.00	181.76	10,069.87	-4,560.14	149.91	4,553.39	0.00	0.00	0.00
14,500.00	90.00	181.76	10,069.88	-4,660.10	146.85	4,653.39	0.00	0.00	0.00
14,600.00	90.00	181.76	10,069.88	-4,760.05	143.78	4,753.39	0.00	0.00	0.00
14,700.00	90.00	181.76	10,069.89	-4,860.00	140.71	4,853.39	0.00	0.00	0.00
14,800.00	90.00	181.76	10,069.89	-4,959.95	137.64	4,953.39	0.00	0.00	0.00
14,900.00	90.00	181.76	10,069.89	-5,059.91	134.57	5,053.39	0.00	0.00	0.00
15,000.00	90.00	181.76	10,069.90	-5,159.86	131.50	5,153.39	0.00	0.00	0.00
15,100.00	90.00	181.76	10,069.90	-5,259.81	128.44	5,253.39	0.00	0.00	0.00
15,200.00	90.00	181.76	10,069.91	-5,359.77	125.37	5,353.39	0.00	0.00	0.00
15,300.00	90.00	181.76	10,069.91	-5,459.72	122.30	5,453.39	0.00	0.00	0.00
15,400.00	90.00	181.76	10,069.92	-5,559.67	119.23	5,553.39	0.00	0.00	0.00
15,500.00	90.00	181.76	10,069.92	-5,659.62	116.16	5,653.39	0.00	0.00	0.00
15,600.00	90.00	181.76	10,069.92	-5,759.58	113.09	5,753.39	0.00	0.00	0.00
15,700.00	90.00	181.76	10,069.93	-5,859.53	110.02	5,853.39	0.00	0.00	0.00
15,800.00	90.00	181.76	10,069.93	-5,959.48	106.96	5,953.39	0.00	0.00	0.00
15,900.00	90.00	181.76	10,069.94	-6,059.44	103.89	6,053.39	0.00	0.00	0.00
16,000.00	90.00	181.76	10,069.94	-6,159.39	100.82	6,153.39	0.00	0.00	0.00
16,100.00	90.00	181.76	10,069.94	-6,259.34	97.75	6,253.39	0.00	0.00	0.00
16,200.00	90.00	181.76	10,069.95	-6,359.30	94.68	6,353.39	0.00	0.00	0.00
16,300.00	90.00	181.76	10,069.95	-6,459.25	91.61	6,453.39	0.00	0.00	0.00
16,400.00	90.00	181.76	10,069.96	-6,559.20	88.54	6,553.39	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

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Project:	Lea County, NM (NAD-83)	MD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Site:	Thistle Unit	North Reference:	Grid
Well:	109H	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)
16,500.00	90.00	181.76	10,069.96	-6,659.15	85.48	6,653.39	0.00	0.00	0.00
16,600.00	90.00	181.76	10,069.96	-6,759.11	82.41	6,753.39	0.00	0.00	0.00
16,700.00	90.00	181.76	10,069.97	-6,859.06	79.34	6,853.39	0.00	0.00	0.00
16,800.00	90.00	181.76	10,069.97	-6,959.01	76.27	6,953.39	0.00	0.00	0.00
16,900.00	90.00	181.76	10,069.98	-7,058.97	73.20	7,053.39	0.00	0.00	0.00
17,000.00	90.00	181.76	10,069.98	-7,158.92	70.13	7,153.39	0.00	0.00	0.00
17,100.00	90.00	181.76	10,069.99	-7,258.87	67.06	7,253.39	0.00	0.00	0.00
17,200.00	90.00	181.76	10,069.99	-7,358.82	64.00	7,353.39	0.00	0.00	0.00
17,300.00	90.00	181.76	10,069.99	-7,458.78	60.93	7,453.39	0.00	0.00	0.00
17,400.00	90.00	181.76	10,070.00	-7,558.73	57.86	7,553.39	0.00	0.00	0.00
17,464.83	90.00	181.76	10,070.00	-7,623.53	55.87	7,618.22	0.00	0.00	0.00

TD - PBHL (TU 109H)

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL (TU 109H)	0.00	0.00	0.00	0.00	0.00	472,548.44	777,932.69	32° 17' 48.433 N	103° 34' 3.456 W
- plan hits target center									
- Point									
PBHL (TU 109H)	0.00	0.00	10,070.00	-7,623.53	55.87	464,924.91	777,988.56	32° 16' 32.994 N	103° 34' 3.439 W
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,359.00	1,359.00	Rustler		0.00	
1,619.00	1,619.00	Top Salt		0.00	
4,942.00	4,942.00	Base Salt		0.00	
5,214.00	5,214.00	Delaware		0.00	
6,176.63	6,173.00	Cherry Canyon		0.00	
8,884.92	8,871.00	Lwr Br Cyn		0.00	
9,121.92	9,108.00	Bone Spring		0.00	
9,263.92	9,250.00	Mid Leo Tp		0.00	
9,688.77	9,672.00	Leonard B		0.00	
10,170.24	10,020.00	Leonard C		0.00	

LEAM Drilling Systems LLC

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Site:	Thistle Unit	North Reference:	Grid
Well:	109H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,200.00	5,200.00	0.00	0.00	Nudge
5,583.33	5,582.69	0.00	19.22	Hold
8,093.33	8,080.06	0.00	270.69	Drop
8,476.67	8,462.75	0.00	289.91	Hold
9,510.67	9,496.75	0.00	289.91	KOP 10° DLS
10,410.64	10,069.71	-572.66	272.33	LP
17,464.83	10,070.00	-7,623.53	55.87	TD