

Amended

3001544097

Devon Energy

Project: Eddy County, NM (NAD-83)
Site: Emerald PWU 20-22
Well: 12H
Wellbore: OH
Design: Plan #3

3313.8' GE + 23.5' KB @ 3337.30usft
Ground Level: 3313.80



Azimuths to Grid North
True North: -0.12°
Magnetic North: 7.34°

Magnetic Field
Strength: 48234.4nT
Dip Angle: 60.52°
Date: 2/28/2017
Model: HDGM

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

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

Datum: 3313.8' GE + 23.5' KB @ 3337.30usft

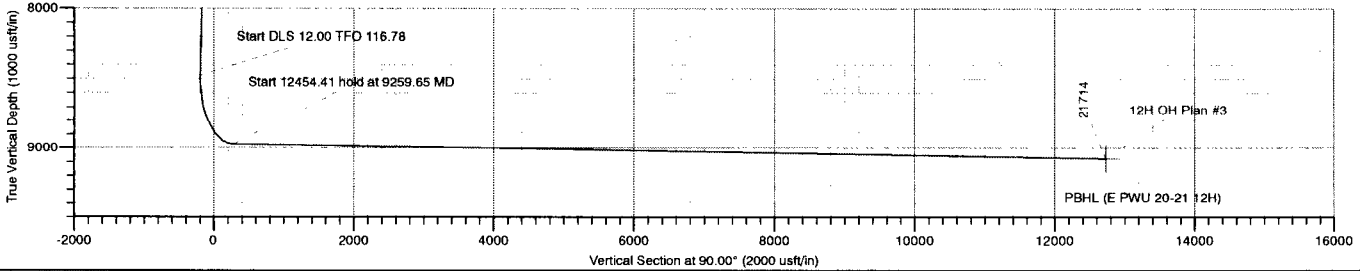
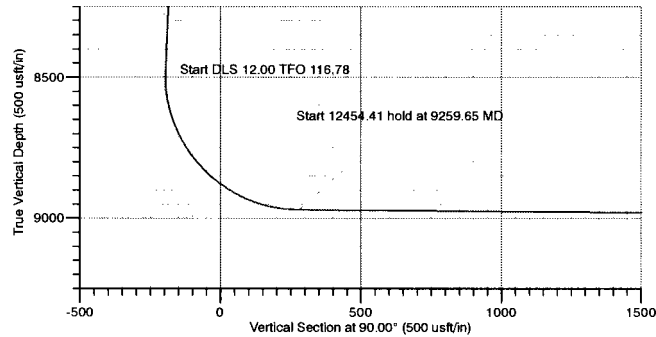
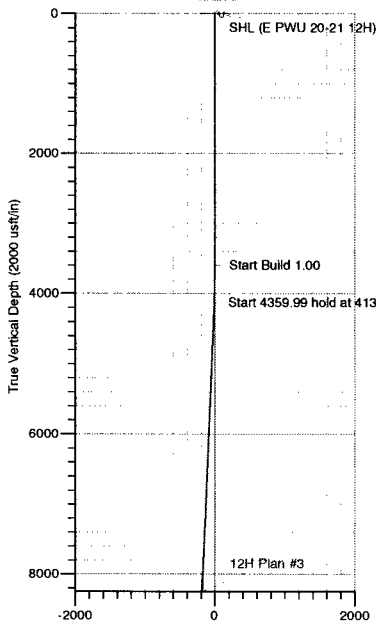


SECTION DETAILS

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	Start Build 1.00
3600.00	0.00	0.00	3600.00	0.00	0.00	0.00	0.00	0.00	Start 4359.99 hold at 4133.72 MD
4133.72	5.34	333.16	4132.95	22.17	-11.22	1.00	333.16	-11.22	Start DLS 12.00 TFO 116.78
8493.72	5.34	333.16	8474.04	384.04	-194.31	0.00	0.00	-194.31	Start 12454.41 hold at 9259.65 MD
9259.65	89.50	90.00	8969.85	425.01	278.61	12.00	116.78	278.61	TD at 21714.06
21714.06	89.50	90.00	9077.68	425.01	12732.55	0.00	0.00	12732.55	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
PBHL (E PWU 20-21 12H)	9077.68	425.01	12732.55	32° 38' 24.908 N	104° 3' 48.139 W
SHL (E PWU 20-21 12H)	0.00	0.00	0.00	32° 38' 20.998 N	104° 6' 17.060 W



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

Plan: Plan #3 (12H/OH)
Emerald PWU 20-22
Created By: Dustin Ault
Date: 16/23, July 26 2017
Approved: _____ Date: _____

Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Emerald PWU 20-22
 Well: 12H
 Wellbore: OH
 Design: Plan #3



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	
3600.00	0.00	0.00	3600.00	0.00	0.00	0.00	0.00	0.00	Start Build 1.00
4133.72	5.34	333.16	4132.95	22.17	-11.22	1.00	333.16	-11.22	Start 4359.99 hold at 4133.72 MD
8493.72	5.34	333.16	8474.04	384.04	-194.31	0.00	0.00	-194.31	Start DLS 12.00 TFO 116.78
9259.65	89.50	90.00	8969.85	425.01	278.61	12.00	116.78	278.61	Start 12454.41 hold at 9259.65 MD
21714.06	89.50	90.00	9077.68	425.01	12732.55	0.00	0.00	12732.55	TD at 21714.06

DESIGN TARGET DETAILS

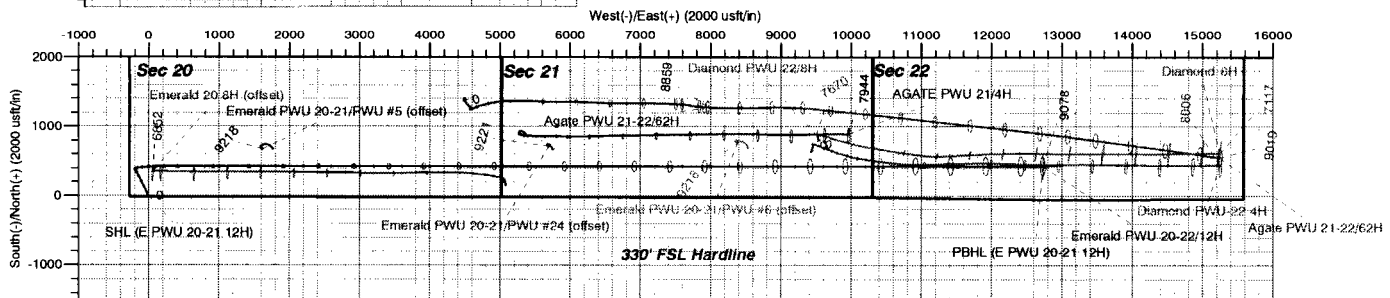
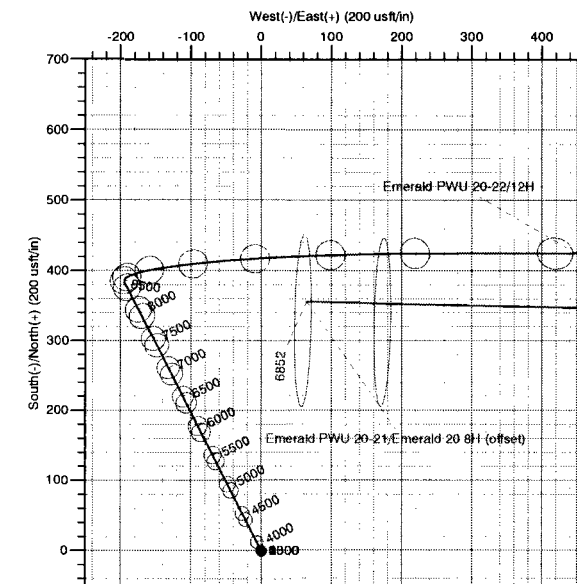
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL (E PWU 20-21 12H)	0.00	0.00	0.00	596335.28	611703.17	32° 38' 20.998 N	104° 6' 17.060 W
PBHL (E PWU 20-21 12H)	9077.68	425.01	12732.55	596760.27	624435.72	32° 38' 24.908 N	104° 3' 48.139 W



Azimuths to Grid North
 True North: -0.12°
 Magnetic North: 7.34°

Magnetic Field
 Strength: 48234.4nT
 Dip Angle: 60.52°
 Date: 2/28/2017
 Model: HDGM

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



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

Plan: Plan #3 (12H/01H)
 Created By: Dustin Ault
 Date: 16/24, July 26 2017
 Approved: _____
 Date: _____

Devon Energy
Eddy County, NM (NAD-83)
Emerald PWU 20-22
12H

OH

Plan: Plan #3

Standard Planning Report

26 July, 2017

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Emerald PWU 20-22
Well: 12H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well 12H
TVD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
MD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy 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	Emerald PWU 20-22		
Site Position:	Map	Northings:	596,335.26 usft
From:		Easting:	611,703.17 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 38' 20.998 N
		Longitude:	104° 6' 17.060 W
		Grid Convergence:	0.12 °

Well	12H		
Well Position	+N/-S	0.00 usft	Northings:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 38' 20.998 N
		Longitude:	104° 6' 17.060 W
		Ground Level:	3,313.80 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	HDGM	2/28/2017	7.47
			Dip Angle
			60.52
			Field Strength
			48,234

Design	Plan #3		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			90.00

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	
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,133.72	5.34	333.16	4,132.95	22.17	-11.22	1.00	1.00	0.00	333.16	
8,493.72	5.34	333.16	8,474.04	384.04	-194.31	0.00	0.00	0.00	0.00	
9,259.65	89.50	90.00	8,969.85	425.01	278.61	12.00	10.99	15.25	116.78	
21,714.06	89.50	90.00	9,077.68	425.01	12,732.55	0.00	0.00	0.00	0.00	PBHL (E PWU 20-21)

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Emerald PWU 20-22
 Well: 12H
 Wellbore: OH
 Design: Plan #3

Local Co-ordinate Reference: Well 12H
 TVD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
 MD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
 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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (E PWU 20-21 12H)									
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
Start Build 1.00									
3,700.00	1.00	333.16	3,700.00	0.78	-0.39	-0.39	1.00	1.00	0.00
3,800.00	2.00	333.16	3,799.96	3.11	-1.58	-1.58	1.00	1.00	0.00
3,900.00	3.00	333.16	3,899.86	7.01	-3.55	-3.55	1.00	1.00	0.00
4,000.00	4.00	333.16	3,999.68	12.45	-6.30	-6.30	1.00	1.00	0.00
4,100.00	5.00	333.16	4,099.37	19.45	-9.84	-9.84	1.00	1.00	0.00
4,133.72	5.34	333.16	4,132.95	22.17	-11.22	-11.22	1.00	1.00	0.00
Start 4359.99 hold at 4133.72 MD									
4,200.00	5.34	333.16	4,198.94	27.67	-14.00	-14.00	0.00	0.00	0.00
4,300.00	5.34	333.16	4,298.51	35.97	-18.20	-18.20	0.00	0.00	0.00
4,400.00	5.34	333.16	4,398.07	44.27	-22.40	-22.40	0.00	0.00	0.00
4,500.00	5.34	333.16	4,497.64	52.57	-26.60	-26.60	0.00	0.00	0.00
4,600.00	5.34	333.16	4,597.21	60.87	-30.80	-30.80	0.00	0.00	0.00
4,700.00	5.34	333.16	4,696.77	69.16	-35.00	-35.00	0.00	0.00	0.00
4,800.00	5.34	333.16	4,796.34	77.46	-39.20	-39.20	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Emerald PWU 20-22
 Well: 12H
 Wellbore: OH
 Design: Plan #3

Local Co-ordinate Reference: Well 12H
 TVD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
 MD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
 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)
4,900.00	5.34	333.16	4,895.91	85.76	-43.40	-43.40	0.00	0.00	0.00
5,000.00	5.34	333.16	4,995.47	94.06	-47.59	-47.59	0.00	0.00	0.00
5,100.00	5.34	333.16	5,095.04	102.36	-51.79	-51.79	0.00	0.00	0.00
5,200.00	5.34	333.16	5,194.61	110.66	-55.99	-55.99	0.00	0.00	0.00
5,300.00	5.34	333.16	5,294.17	118.96	-60.19	-60.19	0.00	0.00	0.00
5,400.00	5.34	333.16	5,393.74	127.26	-64.39	-64.39	0.00	0.00	0.00
5,500.00	5.34	333.16	5,493.31	135.56	-68.59	-68.59	0.00	0.00	0.00
5,600.00	5.34	333.16	5,592.87	143.86	-72.79	-72.79	0.00	0.00	0.00
5,700.00	5.34	333.16	5,692.44	152.16	-76.99	-76.99	0.00	0.00	0.00
5,800.00	5.34	333.16	5,792.00	160.46	-81.19	-81.19	0.00	0.00	0.00
5,900.00	5.34	333.16	5,891.57	168.76	-85.39	-85.39	0.00	0.00	0.00
6,000.00	5.34	333.16	5,991.14	177.06	-89.59	-89.59	0.00	0.00	0.00
6,100.00	5.34	333.16	6,090.70	185.36	-93.79	-93.79	0.00	0.00	0.00
6,200.00	5.34	333.16	6,190.27	193.66	-97.99	-97.99	0.00	0.00	0.00
6,300.00	5.34	333.16	6,289.84	201.96	-102.19	-102.19	0.00	0.00	0.00
6,400.00	5.34	333.16	6,389.40	210.26	-106.39	-106.39	0.00	0.00	0.00
6,500.00	5.34	333.16	6,488.97	218.56	-110.59	-110.59	0.00	0.00	0.00
6,600.00	5.34	333.16	6,588.54	226.86	-114.79	-114.79	0.00	0.00	0.00
6,700.00	5.34	333.16	6,688.10	235.16	-118.99	-118.99	0.00	0.00	0.00
6,800.00	5.34	333.16	6,787.67	243.46	-123.19	-123.19	0.00	0.00	0.00
6,900.00	5.34	333.16	6,887.24	251.76	-127.39	-127.39	0.00	0.00	0.00
7,000.00	5.34	333.16	6,986.80	260.06	-131.59	-131.59	0.00	0.00	0.00
7,100.00	5.34	333.16	7,086.37	268.36	-135.78	-135.78	0.00	0.00	0.00
7,200.00	5.34	333.16	7,185.93	276.66	-139.98	-139.98	0.00	0.00	0.00
7,300.00	5.34	333.16	7,285.50	284.96	-144.18	-144.18	0.00	0.00	0.00
7,400.00	5.34	333.16	7,385.07	293.26	-148.38	-148.38	0.00	0.00	0.00
7,500.00	5.34	333.16	7,484.63	301.56	-152.58	-152.58	0.00	0.00	0.00
7,600.00	5.34	333.16	7,584.20	309.86	-156.78	-156.78	0.00	0.00	0.00
7,700.00	5.34	333.16	7,683.77	318.16	-160.98	-160.98	0.00	0.00	0.00
7,800.00	5.34	333.16	7,783.33	326.46	-165.18	-165.18	0.00	0.00	0.00
7,900.00	5.34	333.16	7,882.90	334.76	-169.38	-169.38	0.00	0.00	0.00
8,000.00	5.34	333.16	7,982.47	343.06	-173.58	-173.58	0.00	0.00	0.00
8,100.00	5.34	333.16	8,082.03	351.36	-177.78	-177.78	0.00	0.00	0.00
8,200.00	5.34	333.16	8,181.60	359.66	-181.98	-181.98	0.00	0.00	0.00
8,300.00	5.34	333.16	8,281.17	367.96	-186.18	-186.18	0.00	0.00	0.00
8,400.00	5.34	333.16	8,380.73	376.26	-190.38	-190.38	0.00	0.00	0.00
8,493.72	5.34	333.16	8,474.04	384.04	-194.31	-194.31	0.00	0.00	0.00
Start DLS 12.00 TFO 116.78									
8,500.00	5.04	340.84	8,480.30	384.56	-194.54	-194.54	12.00	-4.69	122.25
8,525.00	4.95	15.82	8,505.21	386.63	-194.60	-194.60	12.00	-0.37	139.89
8,550.00	6.44	42.49	8,530.09	388.71	-193.36	-193.36	12.00	5.98	106.70
8,575.00	8.75	57.25	8,554.87	390.77	-190.81	-190.81	12.00	9.21	59.02
8,600.00	11.38	65.58	8,579.49	392.82	-186.97	-186.97	12.00	10.52	33.32
8,625.00	14.15	70.75	8,603.87	394.85	-181.84	-181.84	12.00	11.11	20.68
8,650.00	17.01	74.23	8,627.95	396.85	-175.43	-175.43	12.00	11.41	13.94
8,675.00	19.90	76.73	8,651.66	398.82	-167.77	-167.77	12.00	11.58	10.01
8,700.00	22.82	78.62	8,674.94	400.75	-158.88	-158.88	12.00	11.68	7.55
8,725.00	25.76	80.10	8,697.72	402.64	-148.77	-148.77	12.00	11.75	5.91
8,750.00	28.71	81.29	8,719.95	404.49	-137.48	-137.48	12.00	11.80	4.77
8,775.00	31.67	82.28	8,741.56	406.28	-125.04	-125.04	12.00	11.83	3.95
8,800.00	34.63	83.11	8,762.49	408.01	-111.48	-111.48	12.00	11.86	3.34
8,825.00	37.60	83.83	8,782.68	409.68	-96.84	-96.84	12.00	11.88	2.87
8,850.00	40.58	84.46	8,802.08	411.29	-81.16	-81.16	12.00	11.90	2.51
8,875.00	43.55	85.01	8,820.64	412.82	-64.49	-64.49	12.00	11.91	2.22

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Emerald PWU 20-22
 Well: 12H
 Wellbore: OH
 Design: Plan #3

Local Co-ordinate Reference: Well 12H
 TVD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
 MD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
 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)
8,900.00	46.53	85.51	8,838.30	414.28	-46.86	-46.86	12.00	11.92	1.99
8,925.00	49.51	85.96	8,855.02	415.66	-28.33	-28.33	12.00	11.92	1.80
8,950.00	52.50	86.37	8,870.75	416.96	-8.94	-8.94	12.00	11.93	1.65
8,975.00	55.48	86.76	8,885.45	418.17	11.24	11.24	12.00	11.94	1.52
9,000.00	58.47	87.11	8,899.07	419.29	32.17	32.17	12.00	11.94	1.42
9,025.00	61.45	87.44	8,911.59	420.32	53.78	53.78	12.00	11.94	1.33
9,050.00	64.44	87.76	8,922.96	421.25	76.03	76.03	12.00	11.95	1.26
9,075.00	67.43	88.06	8,933.15	422.08	98.84	98.84	12.00	11.95	1.20
9,100.00	70.41	88.34	8,942.14	422.81	122.15	122.15	12.00	11.95	1.14
9,125.00	73.40	88.62	8,949.90	423.44	145.90	145.90	12.00	11.95	1.10
9,150.00	76.39	88.89	8,956.42	423.97	170.03	170.03	12.00	11.96	1.07
9,175.00	79.38	89.15	8,961.66	424.39	194.47	194.47	12.00	11.96	1.04
9,200.00	82.37	89.40	8,965.63	424.70	219.15	219.15	12.00	11.96	1.02
9,225.00	85.36	89.65	8,968.30	424.91	244.00	244.00	12.00	11.96	1.01
9,250.00	88.35	89.90	8,969.67	425.00	268.96	268.96	12.00	11.96	1.00
9,259.65	89.50	90.00	8,969.85	425.01	278.61	278.61	12.00	11.96	1.00
Start 12454.41 hold at 9259.65 MD									
9,300.00	89.50	90.00	8,970.20	425.01	318.95	318.95	0.00	0.00	0.00
9,400.00	89.50	90.00	8,971.07	425.01	418.95	418.95	0.00	0.00	0.00
9,500.00	89.50	90.00	8,971.93	425.01	518.95	518.95	0.00	0.00	0.00
9,600.00	89.50	90.00	8,972.80	425.01	618.94	618.94	0.00	0.00	0.00
9,700.00	89.50	90.00	8,973.66	425.01	718.94	718.94	0.00	0.00	0.00
9,800.00	89.50	90.00	8,974.53	425.01	818.94	818.94	0.00	0.00	0.00
9,900.00	89.50	90.00	8,975.39	425.01	918.93	918.93	0.00	0.00	0.00
10,000.00	89.50	90.00	8,976.26	425.01	1,018.93	1,018.93	0.00	0.00	0.00
10,100.00	89.50	90.00	8,977.13	425.01	1,118.92	1,118.92	0.00	0.00	0.00
10,200.00	89.50	90.00	8,977.99	425.01	1,218.92	1,218.92	0.00	0.00	0.00
10,300.00	89.50	90.00	8,978.86	425.01	1,318.92	1,318.92	0.00	0.00	0.00
10,400.00	89.50	90.00	8,979.72	425.01	1,418.91	1,418.91	0.00	0.00	0.00
10,500.00	89.50	90.00	8,980.59	425.01	1,518.91	1,518.91	0.00	0.00	0.00
10,600.00	89.50	90.00	8,981.45	425.01	1,618.91	1,618.91	0.00	0.00	0.00
10,700.00	89.50	90.00	8,982.32	425.01	1,718.90	1,718.90	0.00	0.00	0.00
10,800.00	89.50	90.00	8,983.19	425.01	1,818.90	1,818.90	0.00	0.00	0.00
10,900.00	89.50	90.00	8,984.05	425.01	1,918.89	1,918.89	0.00	0.00	0.00
11,000.00	89.50	90.00	8,984.92	425.01	2,018.89	2,018.89	0.00	0.00	0.00
11,100.00	89.50	90.00	8,985.78	425.01	2,118.89	2,118.89	0.00	0.00	0.00
11,200.00	89.50	90.00	8,986.65	425.01	2,218.88	2,218.88	0.00	0.00	0.00
11,300.00	89.50	90.00	8,987.52	425.01	2,318.88	2,318.88	0.00	0.00	0.00
11,400.00	89.50	90.00	8,988.38	425.01	2,418.88	2,418.88	0.00	0.00	0.00
11,500.00	89.50	90.00	8,989.25	425.01	2,518.87	2,518.87	0.00	0.00	0.00
11,600.00	89.50	90.00	8,990.11	425.01	2,618.87	2,618.87	0.00	0.00	0.00
11,700.00	89.50	90.00	8,990.98	425.01	2,718.86	2,718.86	0.00	0.00	0.00
11,800.00	89.50	90.00	8,991.84	425.01	2,818.86	2,818.86	0.00	0.00	0.00
11,900.00	89.50	90.00	8,992.71	425.01	2,918.86	2,918.86	0.00	0.00	0.00
12,000.00	89.50	90.00	8,993.58	425.01	3,018.85	3,018.85	0.00	0.00	0.00
12,100.00	89.50	90.00	8,994.44	425.01	3,118.85	3,118.85	0.00	0.00	0.00
12,200.00	89.50	90.00	8,995.31	425.01	3,218.85	3,218.85	0.00	0.00	0.00
12,300.00	89.50	90.00	8,996.17	425.01	3,318.84	3,318.84	0.00	0.00	0.00
12,400.00	89.50	90.00	8,997.04	425.01	3,418.84	3,418.84	0.00	0.00	0.00
12,500.00	89.50	90.00	8,997.90	425.01	3,518.83	3,518.83	0.00	0.00	0.00
12,600.00	89.50	90.00	8,998.77	425.01	3,618.83	3,618.83	0.00	0.00	0.00
12,700.00	89.50	90.00	8,999.64	425.01	3,718.83	3,718.83	0.00	0.00	0.00
12,800.00	89.50	90.00	9,000.50	425.01	3,818.82	3,818.82	0.00	0.00	0.00

LEAM Drilling Systems LLC

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Design: Plan #3

Local Co-ordinate Reference: Well 12H
TVD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
MD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
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)
12,900.00	89.50	90.00	9,001.37	425.01	3,918.82	3,918.82	0.00	0.00	0.00
13,000.00	89.50	90.00	9,002.23	425.01	4,018.82	4,018.82	0.00	0.00	0.00
13,100.00	89.50	90.00	9,003.10	425.01	4,118.81	4,118.81	0.00	0.00	0.00
13,200.00	89.50	90.00	9,003.96	425.01	4,218.81	4,218.81	0.00	0.00	0.00
13,300.00	89.50	90.00	9,004.83	425.01	4,318.80	4,318.80	0.00	0.00	0.00
13,400.00	89.50	90.00	9,005.70	425.01	4,418.80	4,418.80	0.00	0.00	0.00
13,500.00	89.50	90.00	9,006.56	425.01	4,518.80	4,518.80	0.00	0.00	0.00
13,600.00	89.50	90.00	9,007.43	425.01	4,618.79	4,618.79	0.00	0.00	0.00
13,700.00	89.50	90.00	9,008.29	425.01	4,718.79	4,718.79	0.00	0.00	0.00
13,800.00	89.50	90.00	9,009.16	425.01	4,818.79	4,818.79	0.00	0.00	0.00
13,900.00	89.50	90.00	9,010.03	425.01	4,918.78	4,918.78	0.00	0.00	0.00
14,000.00	89.50	90.00	9,010.89	425.01	5,018.78	5,018.78	0.00	0.00	0.00
14,100.00	89.50	90.00	9,011.76	425.01	5,118.77	5,118.77	0.00	0.00	0.00
14,200.00	89.50	90.00	9,012.62	425.01	5,218.77	5,218.77	0.00	0.00	0.00
14,300.00	89.50	90.00	9,013.49	425.01	5,318.77	5,318.77	0.00	0.00	0.00
14,400.00	89.50	90.00	9,014.35	425.01	5,418.76	5,418.76	0.00	0.00	0.00
14,500.00	89.50	90.00	9,015.22	425.01	5,518.76	5,518.76	0.00	0.00	0.00
14,600.00	89.50	90.00	9,016.09	425.01	5,618.76	5,618.76	0.00	0.00	0.00
14,700.00	89.50	90.00	9,016.95	425.01	5,718.75	5,718.75	0.00	0.00	0.00
14,800.00	89.50	90.00	9,017.82	425.01	5,818.75	5,818.75	0.00	0.00	0.00
14,900.00	89.50	90.00	9,018.68	425.01	5,918.74	5,918.74	0.00	0.00	0.00
15,000.00	89.50	90.00	9,019.55	425.01	6,018.74	6,018.74	0.00	0.00	0.00
15,100.00	89.50	90.00	9,020.41	425.01	6,118.74	6,118.74	0.00	0.00	0.00
15,200.00	89.50	90.00	9,021.28	425.01	6,218.73	6,218.73	0.00	0.00	0.00
15,300.00	89.50	90.00	9,022.15	425.01	6,318.73	6,318.73	0.00	0.00	0.00
15,400.00	89.50	90.00	9,023.01	425.01	6,418.73	6,418.73	0.00	0.00	0.00
15,500.00	89.50	90.00	9,023.88	425.01	6,518.72	6,518.72	0.00	0.00	0.00
15,600.00	89.50	90.00	9,024.74	425.01	6,618.72	6,618.72	0.00	0.00	0.00
15,700.00	89.50	90.00	9,025.61	425.01	6,718.71	6,718.71	0.00	0.00	0.00
15,800.00	89.50	90.00	9,026.48	425.01	6,818.71	6,818.71	0.00	0.00	0.00
15,900.00	89.50	90.00	9,027.34	425.01	6,918.71	6,918.71	0.00	0.00	0.00
16,000.00	89.50	90.00	9,028.21	425.01	7,018.70	7,018.70	0.00	0.00	0.00
16,100.00	89.50	90.00	9,029.07	425.01	7,118.70	7,118.70	0.00	0.00	0.00
16,200.00	89.50	90.00	9,029.94	425.01	7,218.70	7,218.70	0.00	0.00	0.00
16,300.00	89.50	90.00	9,030.80	425.01	7,318.69	7,318.69	0.00	0.00	0.00
16,400.00	89.50	90.00	9,031.67	425.01	7,418.69	7,418.69	0.00	0.00	0.00
16,500.00	89.50	90.00	9,032.54	425.01	7,518.68	7,518.68	0.00	0.00	0.00
16,600.00	89.50	90.00	9,033.40	425.01	7,618.68	7,618.68	0.00	0.00	0.00
16,700.00	89.50	90.00	9,034.27	425.01	7,718.68	7,718.68	0.00	0.00	0.00
16,800.00	89.50	90.00	9,035.13	425.01	7,818.67	7,818.67	0.00	0.00	0.00
16,900.00	89.50	90.00	9,036.00	425.01	7,918.67	7,918.67	0.00	0.00	0.00
17,000.00	89.50	90.00	9,036.86	425.01	8,018.67	8,018.67	0.00	0.00	0.00
17,100.00	89.50	90.00	9,037.73	425.01	8,118.66	8,118.66	0.00	0.00	0.00
17,200.00	89.50	90.00	9,038.60	425.01	8,218.66	8,218.66	0.00	0.00	0.00
17,300.00	89.50	90.00	9,039.46	425.01	8,318.66	8,318.66	0.00	0.00	0.00
17,400.00	89.50	90.00	9,040.33	425.01	8,418.65	8,418.65	0.00	0.00	0.00
17,500.00	89.50	90.00	9,041.19	425.01	8,518.65	8,518.65	0.00	0.00	0.00
17,600.00	89.50	90.00	9,042.06	425.01	8,618.64	8,618.64	0.00	0.00	0.00
17,700.00	89.50	90.00	9,042.93	425.01	8,718.64	8,718.64	0.00	0.00	0.00
17,800.00	89.50	90.00	9,043.79	425.01	8,818.64	8,818.64	0.00	0.00	0.00
17,900.00	89.50	90.00	9,044.66	425.01	8,918.63	8,918.63	0.00	0.00	0.00
18,000.00	89.50	90.00	9,045.52	425.01	9,018.63	9,018.63	0.00	0.00	0.00
18,100.00	89.50	90.00	9,046.39	425.01	9,118.63	9,118.63	0.00	0.00	0.00
18,200.00	89.50	90.00	9,047.25	425.01	9,218.62	9,218.62	0.00	0.00	0.00

LEAM Drilling Systems LLC

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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)
18,300.00	89.50	90.00	9,048.12	425.01	9,318.62	9,318.62	0.00	0.00	0.00
18,400.00	89.50	90.00	9,048.99	425.01	9,418.61	9,418.61	0.00	0.00	0.00
18,500.00	89.50	90.00	9,049.85	425.01	9,518.61	9,518.61	0.00	0.00	0.00
18,600.00	89.50	90.00	9,050.72	425.01	9,618.61	9,618.61	0.00	0.00	0.00
18,700.00	89.50	90.00	9,051.58	425.01	9,718.60	9,718.60	0.00	0.00	0.00
18,800.00	89.50	90.00	9,052.45	425.01	9,818.60	9,818.60	0.00	0.00	0.00
18,900.00	89.50	90.00	9,053.31	425.01	9,918.60	9,918.60	0.00	0.00	0.00
19,000.00	89.50	90.00	9,054.18	425.01	10,018.59	10,018.59	0.00	0.00	0.00
19,100.00	89.50	90.00	9,055.05	425.01	10,118.59	10,118.59	0.00	0.00	0.00
19,200.00	89.50	90.00	9,055.91	425.01	10,218.58	10,218.58	0.00	0.00	0.00
19,300.00	89.50	90.00	9,056.78	425.01	10,318.58	10,318.58	0.00	0.00	0.00
19,400.00	89.50	90.00	9,057.64	425.01	10,418.58	10,418.58	0.00	0.00	0.00
19,500.00	89.50	90.00	9,058.51	425.01	10,518.57	10,518.57	0.00	0.00	0.00
19,600.00	89.50	90.00	9,059.37	425.01	10,618.57	10,618.57	0.00	0.00	0.00
19,700.00	89.50	90.00	9,060.24	425.01	10,718.57	10,718.57	0.00	0.00	0.00
19,800.00	89.50	90.00	9,061.11	425.01	10,818.56	10,818.56	0.00	0.00	0.00
19,900.00	89.50	90.00	9,061.97	425.01	10,918.56	10,918.56	0.00	0.00	0.00
20,000.00	89.50	90.00	9,062.84	425.01	11,018.55	11,018.55	0.00	0.00	0.00
20,100.00	89.50	90.00	9,063.70	425.01	11,118.55	11,118.55	0.00	0.00	0.00
20,200.00	89.50	90.00	9,064.57	425.01	11,218.55	11,218.55	0.00	0.00	0.00
20,300.00	89.50	90.00	9,065.44	425.01	11,318.54	11,318.54	0.00	0.00	0.00
20,400.00	89.50	90.00	9,066.30	425.01	11,418.54	11,418.54	0.00	0.00	0.00
20,500.00	89.50	90.00	9,067.17	425.01	11,518.54	11,518.54	0.00	0.00	0.00
20,600.00	89.50	90.00	9,068.03	425.01	11,618.53	11,618.53	0.00	0.00	0.00
20,700.00	89.50	90.00	9,068.90	425.01	11,718.53	11,718.53	0.00	0.00	0.00
20,800.00	89.50	90.00	9,069.76	425.01	11,818.52	11,818.52	0.00	0.00	0.00
20,900.00	89.50	90.00	9,070.63	425.01	11,918.52	11,918.52	0.00	0.00	0.00
21,000.00	89.50	90.00	9,071.50	425.01	12,018.52	12,018.52	0.00	0.00	0.00
21,100.00	89.50	90.00	9,072.36	425.01	12,118.51	12,118.51	0.00	0.00	0.00
21,200.00	89.50	90.00	9,073.23	425.01	12,218.51	12,218.51	0.00	0.00	0.00
21,300.00	89.50	90.00	9,074.09	425.01	12,318.51	12,318.51	0.00	0.00	0.00
21,400.00	89.50	90.00	9,074.96	425.01	12,418.50	12,418.50	0.00	0.00	0.00
21,500.00	89.50	90.00	9,075.82	425.01	12,518.50	12,518.50	0.00	0.00	0.00
21,600.00	89.50	90.00	9,076.69	425.01	12,618.49	12,618.49	0.00	0.00	0.00
21,700.00	89.50	90.00	9,077.56	425.01	12,718.49	12,718.49	0.00	0.00	0.00
21,714.06	89.50	90.00	9,077.68	425.01	12,732.55	12,732.55	0.00	0.00	0.00

TD at 21714.06 - PBHL (E PWU 20-21 12H)

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 (E PWU 20-21 12H)	0.00	0.00	0.00	0.00	0.00	596,335.26	611,703.17	32° 38' 20.998 N	104° 6' 17.060 W
- plan hits target center									
- Point									
PBHL (E PWU 20-21 12)	0.00	0.00	9,077.68	425.01	12,732.55	596,760.27	624,435.72	32° 38' 24.908 N	104° 3' 48.139 W
- plan hits target center									
- Point									

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Emerald PWU 20-22
Well: 12H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well 12H
TVR Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
MD Reference: 3313.8' GE + 23.5' KB @ 3337.30usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,600.00	3,600.00	0.00	0.00	Start Build 1.00
4,133.72	4,132.95	22.17	-11.22	Start 4359.99 hold at 4133.72 MD
8,493.72	8,474.04	384.04	-194.31	Start DLS 12.00 TFO 116.78
9,259.65	8,969.85	425.01	278.61	Start 12454.41 hold at 9259.65 MD
21,714.06	9,077.68	425.01	12,732.55	TD at 21714.06