

NM OIL CONSERVATION
ARTESIA DISTRICT

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

NOV 26 2019

Form C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

RECEIVED

☒ AMENDED REPORT
AS DRILLED

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code	³ Pool Name
	98220	PURPLE SAGE; WOLFCAMP
⁴ Property Code	⁵ Property Name	⁶ Well Number
320827	SPUD MUFFIN 31-30 COM	623H
⁷ OGRID No.	⁸ Operator Name	⁹ Elevation
6137	DEVON ENERGY PRODUCTION COMPANY, L.P.	2959.3

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	31	23 S	29 E		625	SOUTH	2435	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	30	23 S	29 E		21	NORTH	1893	EAST	EDDY
¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.						
640									

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

	¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Erin Workman</i> 11/21/2019 Signature Date Erin Workman Printed Name Erin.workman@dmv.com E-mail Address
	¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. DECEMBER 19, 2019 Date of Survey <i>FILIMON F. JARAMILLO</i> Signature and Seal of Professional Surveyor Certificate Number: FILIMON F. JARAMILLO, PLS 12797 SURVEY NO. 5961D

Intent ☐ As Drilled ☒

API #

Operator Name: DEVON ENERGY PRODUCTION COMPANY, L.P.	Property Name: SPUD MUFFIN 31-30	Well Number 623H
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Kick Off Point (KOP)

UL O	Section 31	Township 23S	Range 29E	Lot	Feet 62	From N/S SOUTH	Feet 2016	From E/W EAST	County EDDY
Latitude 32.2544042					Longitude 104.0217636				NAD 83

First Take Point (FTP)

UL O	Section 31	Township 23S	Range 29E	Lot	Feet 503	From N/S SOUTH	Feet 1976	From E/W EAST	County EDDY
Latitude 32.2556143					Longitude 104.0216587				NAD 83

Last Take Point (LTP)

UL B	Section 30	Township 23S	Range 29E	Lot	Feet 193	From N/S NORTH	Feet 1890	From E/W EAST	County EDDY
Latitude 32.2827846					Longitude 104.0216436				NAD 83

Is this well the defining well for the Horizontal Spacing Unit? ☐

Is this well an infill well? ☒

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API # 30-015-45268	Operator Name: Devon Energy Production Company, LP	Property Name: Spud Muffin 31-30	Well Number 624H
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KZ 06/29/2018



NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 26 2019

RECEIVED

February 19, 2019

Devon Energy Corporation
20 N. Broadway
Oklahoma City, Oklahoma 73102

Attn: Alex Bernhard

Re: Final Directional Report
Spud Muffin 31-30 623H
Eddy County, NM

Mr. Bernhard,

Included in this report are a directional comparison plot and final survey report, daily directional drilling reports, and final BHA reports.

The report covers the following:

LEAM Job #: MD-190059 for the (OH) from January 22, 2019 to February 14, 2019;
Drilling start depth of 0' MD to 20,155' total MD.

We appreciate you giving LEAM Drilling Services the opportunity of doing business with you and look forward to working with you in the future.

Regards,

Nora Tucker
Well Planner - Manager

LEAM Drilling Services



Final Directional Report

Devon Energy

Spud Muffin 31-30 623H

Eddy County, NM

Prepared for Mr. Alex Bernhard



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BHA SUMMARY	SECTION 4
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SECTION 1
PROPOSED VS. ACTUAL PLOT

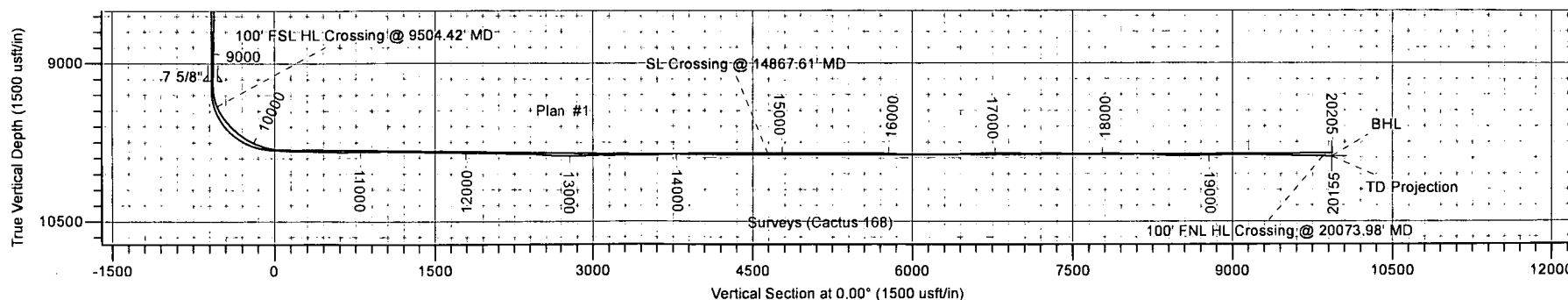
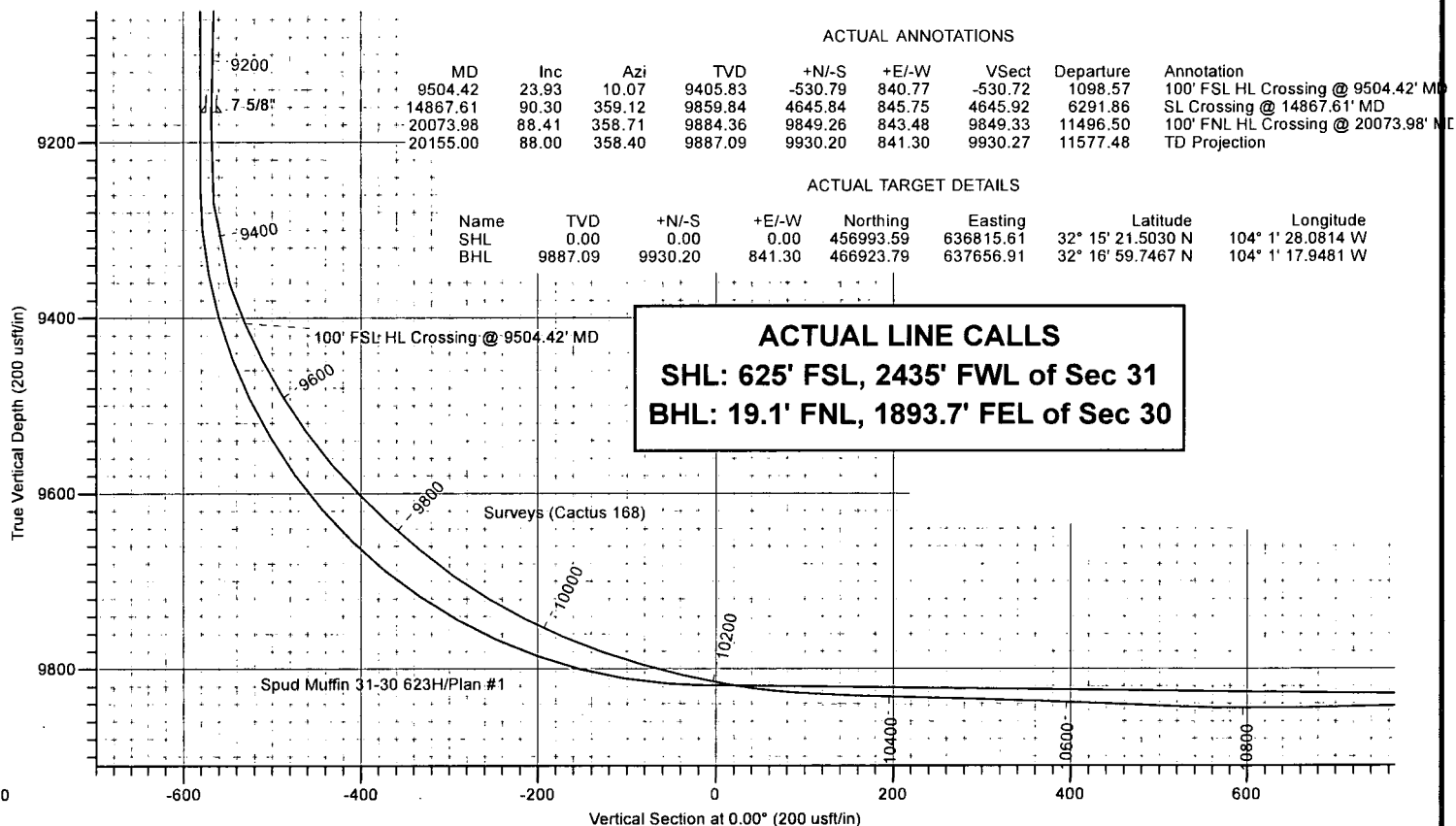
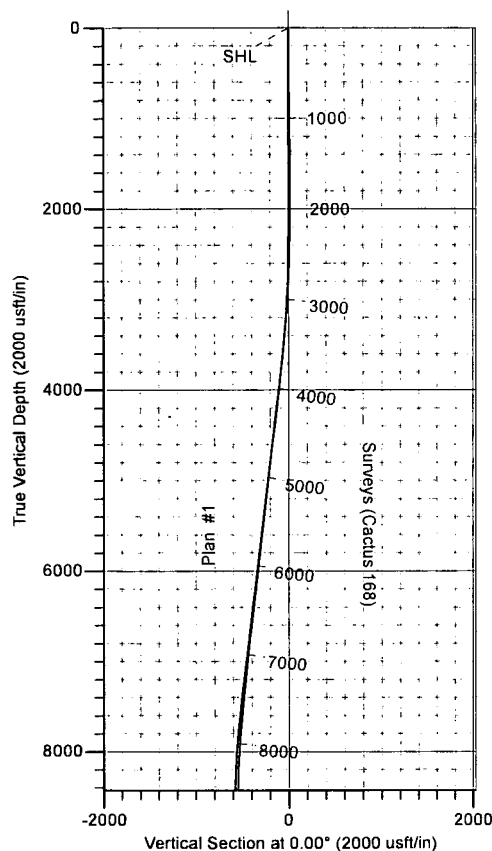
Devon Energy

Project: Eddy County, NM (NAD-83)
Site: Spud Muffin 31-30 Com
Well: Spud Muffin 31-30 623H
Wellbore: OH
Design: OH

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
System Datum: Mean Sea Level
Elevation: 2959.3' GE + 23.5' KB @ 2982.80usft



Azimuths to Grid North
True North: -0.16°
Magnetic North: 6.95°
Magnetic Field
Strength: 47955.1nT
Dip Angle: 60.03°
Date: 12/3/2018
Model: HDGM



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

Design: OH (Spud Muffin 31-30 623H/OH)
Spud Muffin 31-30 Com
Created By: Jameson Shadid Date: 19:35, March 01 2019
Date: _____
Approved: _____ Date: _____

Devon Energy

Project: Eddy County, NM (NAD-83)
Site: Spud Muffin 31-30 Com
Well: Spud Muffin 31-30 623H
Wellbore: OH
Design: OH



Azimuths to Grid North
True North: -0.16°
Magnetic North: 6.95°

Magnetic Field
Strength: 47955.1nT
Dip Angle: 60.03°
Date: 12/3/2018
Model: HDGM

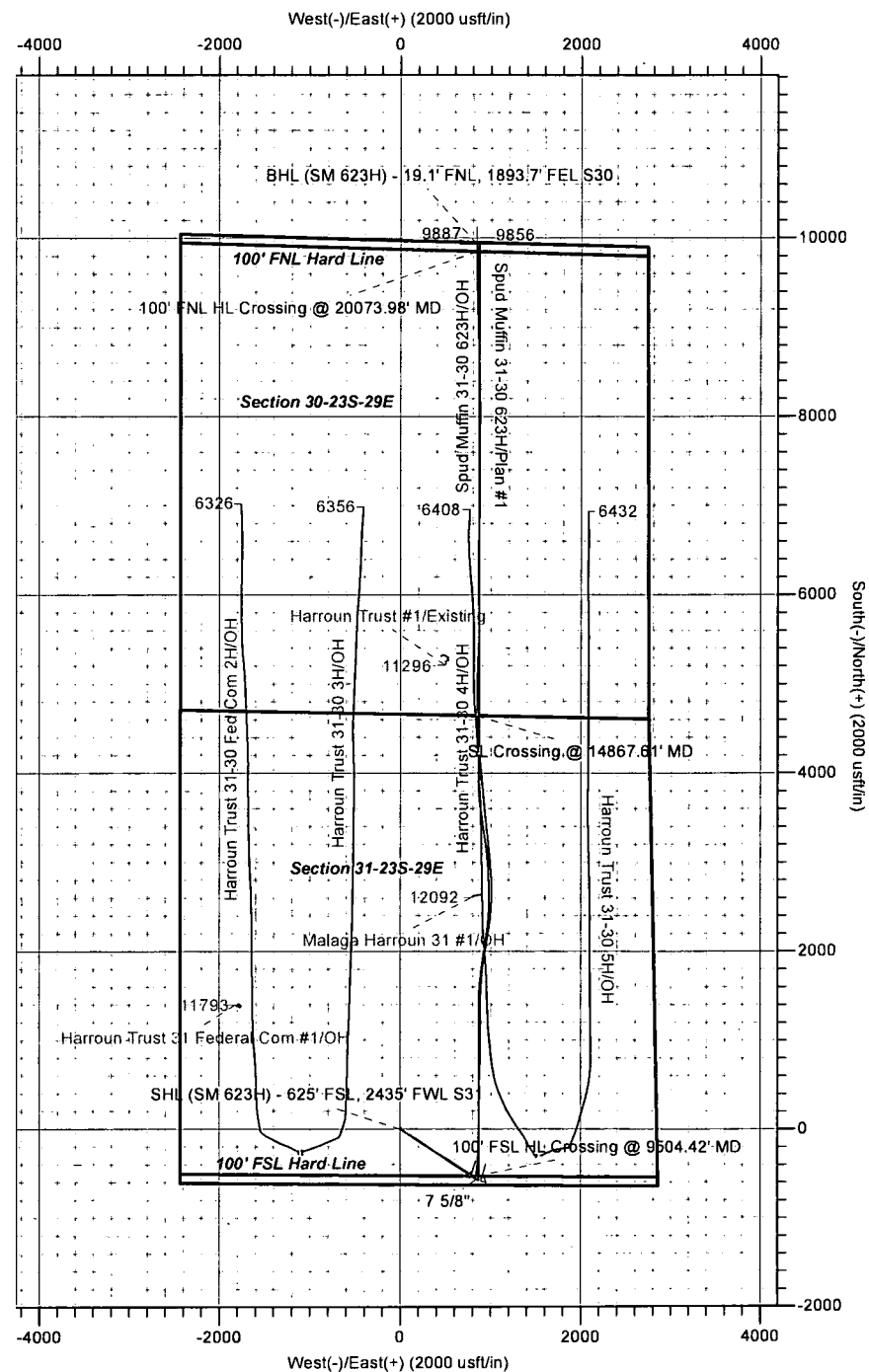
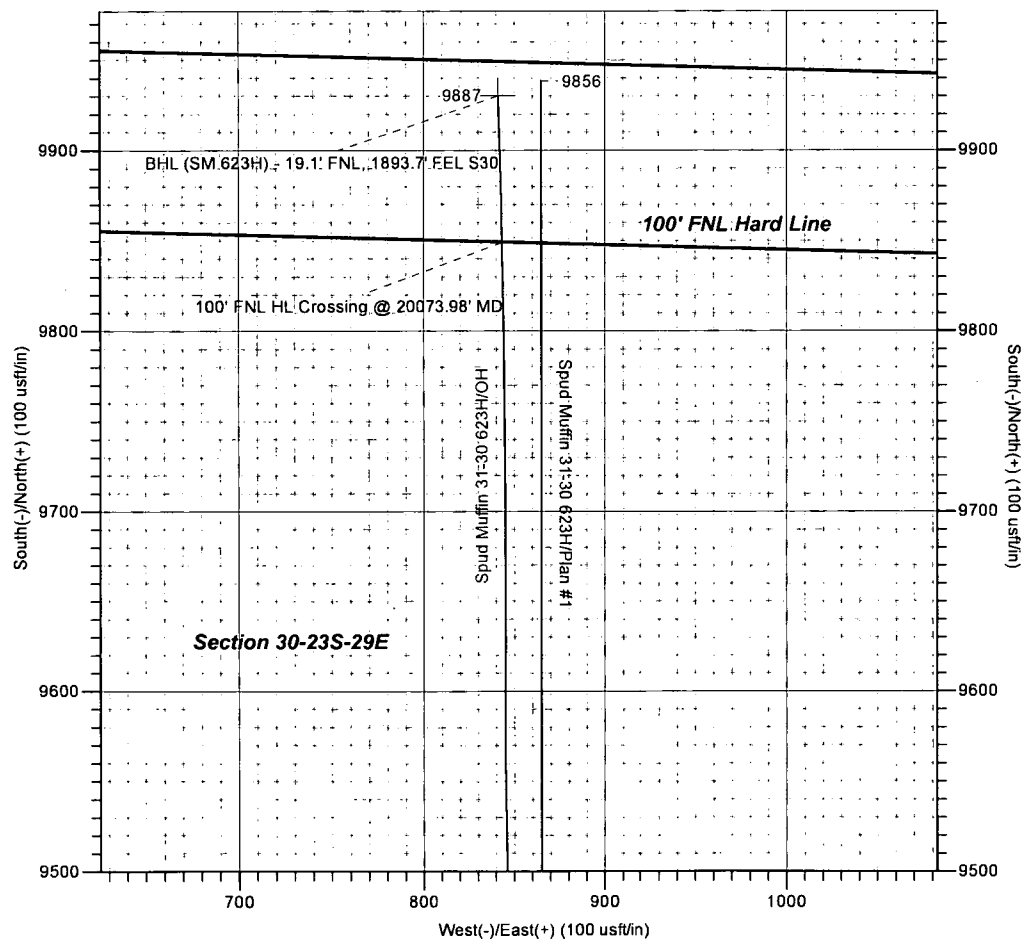
PROJECT DETAILS: Eddy County, NM (NAD-83)

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

Elevation: 2959.3' GE + 23.5' KB @ 2982.80usft

ACTUAL CASING DETAILS

TVD	MD	Name
9165.66	9259.00	7 5/8"



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

Design: OH (Spud Muffin 31-30 623H/OH)
Spud Muffin 31-30 Com
Created By: Jameson Shadid Date: 14:53, March 01 2019
Date: _____
Approved: _____ Date: _____

NM OIL CONSERVATION

ARTESIA DISTRICT

NOV 26 2019

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Devon Energy

Eddy County, NM (NAD-83)

Spud Muffin 31-30 Com

Spud Muffin 31-30 623H

OH

Design: OH

Standard Survey Report

01 March, 2019

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 623H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Well:	Spud Muffin 31-30 623H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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	Spud Muffin 31-30 Com		
Site Position:	Map	Northing:	456,837.82 usft
From:		Easting:	637,646.02 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 15' 19.9378 N
		Longitude:	104° 1' 18.4160 W
		Grid Convergence:	0.17 °

Well	Spud Muffin 31-30 623H					
Well Position	+N/-S	0.00 usft	Northing:	456,993.59 usft	Latitude:	32° 15' 21.5030 N
	+E/-W	0.00 usft	Easting:	636,815.61 usft	Longitude:	104° 1' 28.0814 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	2,959.30 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/3/2018	7.12	60.03	47,955.10000000

Design		OH			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00		0.01

Survey Program	Date	3/1/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
172.00	20,101.00	Survey #1 - MWD (OH)	LEAM MWD+HDGM	MWD+HDGM	
20,155.00	20,155.00	Projection (OH)	Project	Projection	

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 (SM 623H) - 625' FSL, 2435' FWL S31										
172.00	0.40	1.00	172.00	0.60	0.01	0.60	0.23	0.23	0.00	
263.00	0.70	358.70	262.99	1.47	0.00	1.47	0.33	0.33	-2.53	
299.00	0.80	346.90	298.99	1.94	-0.06	1.94	0.51	0.28	-32.78	
414.00	0.60	330.20	413.98	3.24	-0.54	3.24	0.25	-0.17	-14.52	
506.00	0.90	339.90	505.97	4.34	-1.03	4.34	0.35	0.33	10.54	
598.00	1.20	347.40	597.96	5.96	-1.49	5.96	0.36	0.33	8.15	
690.00	1.50	349.70	689.93	8.08	-1.91	8.08	0.33	0.33	2.50	
783.00	1.80	353.40	782.89	10.73	-2.30	10.73	0.34	0.32	3.98	

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 623H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Well:	Spud Muffin 31-30 623H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)	
875.00	0.90	338.80	874.87	12.84	-2.72	12.84	1.04	-0.98	-15.87	
967.00	1.30	348.80	966.85	14.54	-3.19	14.54	0.48	0.43	10.87	
1,058.00	1.10	332.10	1,057.83	16.32	-3.80	16.32	0.44	-0.22	-18.35	
1,149.00	0.20	248.50	1,148.83	17.04	-4.35	17.04	1.20	-0.99	-91.87	
1,241.00	0.40	338.80	1,240.83	17.28	-4.62	17.28	0.49	0.22	98.15	
1,332.00	0.90	7.50	1,331.82	18.28	-4.64	18.28	0.64	0.55	31.54	
1,423.00	0.60	139.30	1,422.82	18.63	-4.24	18.63	1.51	-0.33	144.84	
1,514.00	0.40	116.30	1,513.81	18.13	-3.64	18.13	0.31	-0.22	-25.27	
1,606.00	0.30	78.80	1,605.81	18.03	-3.12	18.03	0.27	-0.11	-40.76	
1,698.00	0.40	43.90	1,697.81	18.31	-2.66	18.31	0.25	0.11	-37.93	
1,791.00	0.60	158.60	1,790.81	18.09	-2.26	18.09	0.91	0.22	123.33	
1,885.00	0.40	181.30	1,884.80	17.30	-2.08	17.30	0.30	-0.21	24.15	
1,979.00	0.10	263.20	1,978.80	16.97	-2.17	16.97	0.42	-0.32	87.13	
2,074.00	0.50	308.60	2,073.80	17.21	-2.58	17.21	0.46	0.42	47.79	
2,169.00	0.20	351.50	2,168.80	17.64	-2.93	17.64	0.40	-0.32	45.16	
2,264.00	1.40	140.40	2,263.79	16.91	-2.21	16.91	1.66	1.26	156.74	
2,358.00	2.20	152.10	2,357.74	14.43	-0.64	14.43	0.93	0.85	12.45	
2,453.00	2.30	134.00	2,452.67	11.49	1.59	11.49	0.75	0.11	-19.05	
2,547.00	2.80	145.50	2,546.58	8.29	4.25	8.29	0.76	0.53	12.23	
2,641.00	2.60	147.90	2,640.47	4.59	6.68	4.59	0.24	-0.21	2.55	
2,736.00	2.40	147.40	2,735.38	1.09	8.90	1.09	0.21	-0.21	-0.53	
2,831.00	3.50	138.40	2,830.26	-2.75	11.89	-2.75	1.25	1.16	-9.47	
2,926.00	4.40	131.80	2,925.03	-7.35	16.54	-7.35	1.06	0.95	-6.95	
3,020.00	5.50	130.30	3,018.68	-12.67	22.66	-12.67	1.18	1.17	-1.60	
3,115.00	6.60	128.40	3,113.15	-19.00	30.41	-19.00	1.18	1.16	-2.00	
3,210.00	7.70	128.90	3,207.41	-26.39	39.64	-26.39	1.16	1.16	0.53	
3,304.00	7.80	129.30	3,300.55	-34.39	49.48	-34.38	0.12	0.11	0.43	
3,398.00	8.40	125.40	3,393.61	-42.40	60.01	-42.40	0.87	0.64	-4.15	
3,493.00	9.10	124.00	3,487.51	-50.63	71.90	-50.62	0.77	0.74	-1.47	
3,587.00	9.90	121.40	3,580.22	-58.99	84.96	-58.99	0.97	0.85	-2.77	
3,682.00	10.80	120.30	3,673.67	-67.74	99.61	-67.73	0.97	0.95	-1.16	
3,777.00	11.70	119.80	3,766.84	-77.02	115.66	-77.01	0.95	0.95	-0.53	
3,871.00	12.60	121.40	3,858.74	-87.09	132.68	-87.08	1.02	0.96	1.70	
3,966.00	12.50	122.40	3,951.47	-98.00	150.20	-97.99	0.25	-0.11	1.05	
4,060.00	12.50	121.20	4,043.24	-108.72	167.49	-108.71	0.28	0.00	-1.28	
4,154.00	11.70	121.40	4,135.15	-118.96	184.33	-118.94	0.85	-0.85	0.21	
4,249.00	10.60	121.00	4,228.36	-128.48	200.04	-128.46	1.16	-1.16	-0.42	
4,344.00	10.90	124.00	4,321.69	-138.00	214.98	-137.98	0.67	0.32	3.16	
4,438.00	12.00	126.30	4,413.82	-148.76	230.22	-148.74	1.27	1.17	2.45	
4,532.00	12.20	126.00	4,505.73	-160.38	246.13	-160.36	0.22	0.21	-0.32	
4,627.00	12.00	126.50	4,598.62	-172.15	262.19	-172.13	0.24	-0.21	0.53	
4,721.00	12.00	125.30	4,690.56	-183.61	278.02	-183.59	0.27	0.00	-1.28	
4,814.00	11.70	125.10	4,781.58	-194.62	293.63	-194.60	0.33	-0.32	-0.22	

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 623H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Well:	Spud Muffin 31-30 623H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
4,909.00	11.30	124.90	4,874.68	-205.49	309.14	-205.46	0.42	-0.42	-0.21
5,005.00	10.60	122.60	4,968.93	-215.62	324.30	-215.60	0.86	-0.73	-2.40
5,100.00	11.30	126.70	5,062.20	-225.89	339.12	-225.86	1.10	0.74	4.32
5,194.00	12.20	126.70	5,154.23	-237.33	354.47	-237.30	0.96	0.96	0.00
5,289.00	11.20	125.10	5,247.25	-248.64	370.06	-248.61	1.11	-1.05	-1.68
5,383.00	11.30	123.80	5,339.45	-259.01	385.19	-258.98	0.29	0.11	-1.38
5,477.00	12.20	122.60	5,431.48	-269.49	401.21	-269.45	0.99	0.96	-1.28
5,572.00	11.60	121.60	5,524.43	-279.90	417.80	-279.86	0.67	-0.63	-1.05
5,666.00	11.10	121.60	5,616.60	-289.59	433.55	-289.55	0.53	-0.53	0.00
5,761.00	12.20	121.60	5,709.64	-299.64	449.89	-299.60	1.16	1.16	0.00
5,856.00	12.70	120.90	5,802.40	-310.27	467.40	-310.23	0.55	0.53	-0.74
5,950.00	12.10	120.20	5,894.21	-320.53	484.78	-320.49	0.66	-0.64	-0.74
6,045.00	11.50	120.70	5,987.20	-330.37	501.53	-330.33	0.64	-0.63	0.53
6,138.00	10.80	120.30	6,078.45	-339.50	517.03	-339.46	0.76	-0.75	-0.43
6,233.00	11.30	121.70	6,171.68	-348.88	532.63	-348.84	0.60	0.53	1.47
6,327.00	12.40	124.20	6,263.68	-359.39	548.82	-359.35	1.29	1.17	2.66
6,422.00	12.00	124.00	6,356.54	-370.65	565.44	-370.60	0.42	-0.42	-0.21
6,517.00	11.30	123.30	6,449.58	-381.28	581.41	-381.23	0.75	-0.74	-0.74
6,612.00	10.50	125.80	6,542.86	-391.46	596.21	-391.40	0.98	-0.84	2.63
6,707.00	11.20	124.20	6,636.16	-401.71	610.86	-401.65	0.80	0.74	-1.68
6,801.00	11.60	124.40	6,728.31	-412.18	626.21	-412.12	0.43	0.43	0.21
6,896.00	11.90	126.70	6,821.32	-423.43	641.94	-423.37	0.59	0.32	2.42
6,991.00	9.80	121.40	6,914.62	-433.49	656.70	-433.44	2.45	-2.21	-5.58
7,086.00	10.60	121.00	7,008.12	-442.21	671.09	-442.15	0.85	0.84	-0.42
7,180.00	11.00	124.50	7,100.45	-451.74	685.89	-451.68	0.82	0.43	3.72
7,274.00	11.30	122.80	7,192.68	-461.81	701.02	-461.75	0.47	0.32	-1.81
7,370.00	9.50	120.20	7,287.10	-470.89	715.77	-470.83	1.94	-1.88	-2.71
7,464.00	10.30	125.10	7,379.70	-479.62	729.36	-479.56	1.24	0.85	5.21
7,558.00	11.20	127.00	7,472.05	-489.95	743.52	-489.88	1.03	0.96	2.02
7,653.00	9.90	127.20	7,565.44	-500.44	757.40	-500.37	1.37	-1.37	0.21
7,747.00	9.50	123.80	7,658.10	-509.64	770.28	-509.57	0.74	-0.43	-3.62
7,842.00	7.90	120.00	7,752.00	-517.27	782.45	-517.20	1.79	-1.68	-4.00
7,936.00	7.10	112.10	7,845.20	-522.68	793.43	-522.61	1.39	-0.85	-8.40
8,032.00	7.20	124.20	7,940.46	-528.30	803.90	-528.23	1.57	0.10	12.60
8,126.00	6.50	128.10	8,033.79	-534.89	812.96	-534.82	0.89	-0.74	4.15
8,220.00	4.20	127.50	8,127.37	-540.27	819.88	-540.20	2.45	-2.45	-0.64
8,315.00	3.20	130.90	8,222.17	-544.12	824.64	-544.05	1.08	-1.05	3.58
8,410.00	2.60	140.40	8,317.05	-547.52	828.02	-547.45	0.81	-0.63	10.00
8,505.00	2.70	149.50	8,411.95	-551.11	830.53	-551.04	0.45	0.11	9.58
8,599.00	2.50	154.30	8,505.85	-554.86	832.54	-554.79	0.31	-0.21	5.11
8,693.00	1.80	155.10	8,599.79	-558.05	834.05	-557.98	0.75	-0.74	0.85
8,788.00	1.10	165.30	8,694.76	-560.29	834.91	-560.21	0.78	-0.74	10.74
8,883.00	1.20	165.50	8,789.74	-562.13	835.39	-562.06	0.11	0.11	0.21

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 623H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Well:	Spud Muffin 31-30 623H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
8,977.00	0.90	114.70	8,883.72	-563.39	836.31	-563.32	1.00	-0.32	-54.04
9,072.00	1.20	150.90	8,978.71	-564.57	837.47	-564.50	0.75	0.32	38.11
9,167.00	1.20	179.40	9,073.69	-566.44	837.96	-566.36	0.62	0.00	30.00
9,205.00	1.30	192.90	9,111.68	-567.25	837.87	-567.18	0.82	0.26	35.53
9,259.00	1.30	196.24	9,165.66	-568.44	837.56	-568.37	0.14	0.00	6.19
7 5/8"									
9,268.00	1.30	196.80	9,174.66	-568.64	837.51	-568.56	0.14	0.00	6.19
9,340.86	3.32	353.60	9,247.49	-567.33	837.03	-567.25	6.24	2.78	215.21
KOP (SM 623H) - 50' FSL, 1870' FEL S31									
9,363.00	4.70	355.50	9,269.58	-565.78	836.89	-565.71	6.24	6.21	8.59
9,457.00	17.90	6.60	9,361.56	-547.51	838.25	-547.44	14.17	14.04	11.81
9,504.42	23.93	10.07	9,405.83	-530.79	840.77	-530.72	12.97	12.71	7.31
100' FSL HL Crossing @ 9504.42' MD									
9,505.00	24.00	10.10	9,406.36	-530.56	840.82	-530.49	12.97	12.77	5.53
9,551.00	26.80	9.60	9,447.91	-511.12	844.19	-511.05	6.10	6.09	-1.09
9,559.87	27.63	9.20	9,455.80	-507.12	844.85	-507.05	9.56	9.34	-4.52
FTP (SM 623H) - 100' FSL, 1870' FEL S31									
9,598.00	31.20	7.70	9,489.01	-488.60	847.59	-488.52	9.56	9.37	-3.93
9,646.00	36.10	5.50	9,528.96	-462.18	850.61	-462.11	10.52	10.21	-4.58
9,693.00	39.60	4.00	9,566.06	-433.45	852.98	-433.37	7.70	7.45	-3.19
9,741.00	44.60	2.70	9,601.67	-401.33	854.84	-401.26	10.57	10.42	-2.71
9,788.00	47.50	3.10	9,634.28	-367.54	856.56	-367.47	6.20	6.17	0.85
9,836.00	50.50	3.40	9,665.77	-331.38	858.61	-331.31	6.27	6.25	0.63
9,883.00	54.30	3.10	9,694.44	-294.21	860.72	-294.13	8.10	8.09	-0.64
9,930.00	58.60	3.30	9,720.41	-255.11	862.91	-255.03	9.16	9.15	0.43
9,977.00	63.00	3.30	9,743.34	-214.16	865.27	-214.08	9.36	9.36	0.00
10,024.00	66.50	2.40	9,763.38	-171.71	867.38	-171.63	7.65	7.45	-1.91
10,071.00	70.40	1.10	9,780.64	-128.03	868.71	-127.95	8.69	8.30	-2.77
10,120.00	74.10	359.40	9,795.58	-81.37	868.90	-81.29	8.24	7.55	-3.47
10,167.00	76.20	358.70	9,807.63	-35.95	868.15	-35.87	4.69	4.47	-1.49
10,214.00	79.80	358.90	9,817.40	10.01	867.19	10.08	7.67	7.66	0.43
10,261.00	83.40	359.70	9,824.26	56.49	866.62	56.57	7.84	7.66	1.70
10,309.00	86.90	0.10	9,828.32	104.31	866.54	104.39	7.34	7.29	0.83
10,403.00	88.40	0.30	9,832.17	198.23	866.87	198.31	1.61	1.60	0.21
10,498.00	88.50	0.40	9,834.74	293.19	867.45	293.27	0.15	0.11	0.11
10,592.00	87.70	0.60	9,837.86	387.14	868.27	387.21	0.88	-0.85	0.21
10,686.00	87.50	1.00	9,841.80	481.05	869.58	481.12	0.48	-0.21	0.43
10,781.00	88.90	2.70	9,844.78	575.94	872.64	576.02	2.32	1.47	1.79
10,876.00	91.60	3.10	9,844.36	670.81	877.45	670.89	2.87	2.84	0.42
10,970.00	90.80	1.50	9,842.40	764.71	881.22	764.79	1.90	-0.85	-1.70
11,065.00	89.80	0.30	9,841.90	859.70	882.71	859.77	1.64	-1.05	-1.26
11,159.00	90.50	1.30	9,841.65	953.68	884.02	953.76	1.30	0.74	1.06
11,254.00	88.40	0.30	9,842.56	1,048.66	885.35	1,048.74	2.45	-2.21	-1.05
11,349.00	89.10	0.10	9,844.64	1,143.64	885.68	1,143.72	0.77	0.74	-0.21

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 623H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Well:	Spud Muffin 31-30 623H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
11,444.00	88.50	359.40	9,846.63	1,238.62	885.27	1,238.69	0.97	-0.63	-0.74
11,496.00	88.90	358.90	9,847.81	1,290.60	884.50	1,290.68	1.23	0.77	-0.96
11,587.00	90.10	359.90	9,848.60	1,381.59	883.54	1,381.66	1.72	1.32	1.10
11,679.00	91.00	1.30	9,847.72	1,473.57	884.51	1,473.65	1.81	0.98	1.52
11,770.00	88.90	2.20	9,847.80	1,564.53	887.29	1,564.60	2.51	-2.31	0.99
11,862.00	88.60	4.00	9,849.80	1,656.37	892.26	1,656.44	1.98	-0.33	1.96
11,953.00	89.20	5.20	9,851.55	1,747.05	899.56	1,747.13	1.47	0.66	1.32
12,043.00	89.10	8.40	9,852.89	1,836.40	910.21	1,836.48	3.56	-0.11	3.56
12,135.00	88.30	7.80	9,854.97	1,927.46	923.17	1,927.54	1.09	-0.87	-0.65
12,226.00	89.30	9.80	9,856.88	2,017.36	937.09	2,017.44	2.46	1.10	2.20
12,321.00	89.30	9.40	9,858.04	2,111.02	952.93	2,111.11	0.42	0.00	-0.42
12,416.00	88.70	8.40	9,859.70	2,204.86	967.62	2,204.95	1.23	-0.63	-1.05
12,510.00	87.30	7.30	9,862.98	2,297.92	980.46	2,298.01	1.89	-1.49	-1.17
12,605.00	89.40	7.10	9,865.71	2,392.13	992.36	2,392.21	2.22	2.21	-0.21
12,699.00	86.00	3.40	9,869.49	2,485.63	1,000.95	2,485.72	5.34	-3.62	-3.94
12,794.00	86.80	2.00	9,875.45	2,580.33	1,005.42	2,580.42	1.69	0.84	-1.47
12,889.00	88.20	358.90	9,879.60	2,675.22	1,006.16	2,675.31	3.58	1.47	-3.26
12,983.00	90.10	357.80	9,880.99	2,769.17	1,003.45	2,769.26	2.34	2.02	-1.17
13,078.00	91.80	357.50	9,879.42	2,864.07	999.56	2,864.16	1.82	1.79	-0.32
13,172.00	92.50	357.50	9,875.89	2,957.92	995.46	2,958.00	0.74	0.74	0.00
13,267.00	90.20	354.60	9,873.65	3,052.65	988.92	3,052.73	3.90	-2.42	-3.05
13,361.00	89.00	353.20	9,874.31	3,146.11	978.93	3,146.20	1.96	-1.28	-1.49
13,456.00	91.60	353.10	9,873.81	3,240.42	967.60	3,240.51	2.74	2.74	-0.11
13,550.00	89.50	353.20	9,872.91	3,333.74	956.39	3,333.83	2.24	-2.23	0.11
13,644.00	89.10	353.40	9,874.06	3,427.09	945.43	3,427.18	0.48	-0.43	0.21
13,739.00	89.60	354.30	9,875.13	3,521.54	935.25	3,521.62	1.08	0.53	0.95
13,834.00	94.50	355.50	9,871.74	3,616.07	926.81	3,616.15	5.31	5.16	1.26
13,928.00	91.50	355.90	9,866.82	3,709.67	919.77	3,709.75	3.22	-3.19	0.43
14,023.00	91.70	354.80	9,864.17	3,804.32	912.08	3,804.40	1.18	0.21	-1.16
14,118.00	91.80	354.30	9,861.26	3,898.84	903.06	3,898.92	0.54	0.11	-0.53
14,212.00	92.70	354.60	9,857.57	3,992.33	893.97	3,992.41	1.01	0.96	0.32
14,307.00	90.60	354.80	9,854.84	4,086.88	885.20	4,086.95	2.22	-2.21	0.21
14,401.00	89.60	355.00	9,854.67	4,180.50	876.85	4,180.58	1.08	-1.06	0.21
14,495.00	87.80	354.10	9,856.81	4,274.05	867.92	4,274.13	2.14	-1.91	-0.96
14,590.00	90.00	355.50	9,858.63	4,368.63	859.31	4,368.71	2.74	2.32	1.47
14,685.00	90.00	356.20	9,858.63	4,463.38	852.44	4,463.46	0.74	0.00	0.74
14,780.00	89.10	358.20	9,859.38	4,558.26	847.80	4,558.34	2.31	-0.95	2.11
14,867.61	90.30	359.12	9,859.84	4,645.84	845.75	4,645.92	1.73	1.37	1.05
SL Crossing @ 14867.61' MD									
14,875.00	90.40	359.20	9,859.79	4,653.23	845.64	4,653.31	1.73	1.37	1.05
14,969.00	90.90	1.70	9,858.72	4,747.22	846.38	4,747.29	2.71	0.53	2.66
15,064.00	90.10	0.60	9,857.90	4,842.19	848.29	4,842.27	1.43	-0.84	-1.16
15,158.00	87.70	0.10	9,859.70	4,936.17	848.86	4,936.24	2.61	-2.55	-0.53
15,252.00	90.80	1.70	9,860.93	5,030.13	850.34	5,030.21	3.71	3.30	1.70

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 623H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Well:	Spud Muffin 31-30 623H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)	
15,346.00	90.00	1.70	9,860.27	5,124.09	853.13	5,124.16	0.85	-0.85	0.00	
15,439.00	89.80	1.50	9,860.44	5,217.05	855.72	5,217.13	0.30	-0.22	-0.22	
15,534.00	90.10	1.70	9,860.52	5,312.01	858.38	5,312.09	0.38	0.32	0.21	
15,630.00	90.80	2.70	9,859.77	5,407.94	862.06	5,408.01	1.27	0.73	1.04	
15,724.00	90.40	1.90	9,858.78	5,501.86	865.83	5,501.93	0.95	-0.43	-0.85	
15,819.00	91.80	2.90	9,856.96	5,596.75	869.81	5,596.83	1.81	1.47	1.05	
15,914.00	86.50	359.70	9,858.37	5,691.67	871.97	5,691.75	6.52	-5.58	-3.37	
16,009.00	86.50	359.20	9,864.17	5,786.49	871.06	5,786.56	0.53	0.00	-0.53	
16,104.00	89.40	358.20	9,867.56	5,881.39	868.90	5,881.47	3.23	3.05	-1.05	
16,198.00	89.10	358.00	9,868.79	5,975.33	865.79	5,975.41	0.38	-0.32	-0.21	
16,293.00	89.10	358.20	9,870.29	6,070.27	862.64	6,070.34	0.21	0.00	0.21	
16,387.00	90.10	0.40	9,870.94	6,164.25	861.49	6,164.33	2.57	1.06	2.34	
16,482.00	90.70	0.10	9,870.28	6,259.25	861.90	6,259.32	0.71	0.63	-0.32	
16,577.00	91.50	0.10	9,868.46	6,354.23	862.07	6,354.30	0.84	0.84	0.00	
16,671.00	91.80	0.30	9,865.75	6,448.19	862.40	6,448.27	0.38	0.32	0.21	
16,766.00	92.50	0.80	9,862.19	6,543.12	863.31	6,543.19	0.91	0.74	0.53	
16,860.00	89.30	0.40	9,860.71	6,637.09	864.29	6,637.16	3.43	-3.40	-0.43	
16,955.00	89.30	0.60	9,861.87	6,732.08	865.12	6,732.15	0.21	0.00	0.21	
17,049.00	92.90	2.00	9,860.07	6,826.02	867.25	6,826.09	4.11	3.83	1.49	
17,144.00	88.80	0.60	9,858.66	6,920.96	869.41	6,921.04	4.56	-4.32	-1.47	
17,238.00	88.70	0.80	9,860.71	7,014.93	870.55	7,015.01	0.24	-0.11	0.21	
17,333.00	89.10	0.10	9,862.53	7,109.91	871.30	7,109.99	0.85	0.42	-0.74	
17,429.00	92.40	1.10	9,861.27	7,205.88	872.30	7,205.96	3.59	3.44	1.04	
17,523.00	90.20	0.10	9,859.14	7,299.85	873.29	7,299.92	2.57	-2.34	-1.06	
17,618.00	87.50	359.40	9,861.05	7,394.82	872.87	7,394.89	2.94	-2.84	-0.74	
17,711.00	89.40	359.40	9,863.56	7,487.77	871.90	7,487.85	2.04	2.04	0.00	
17,805.00	91.80	0.60	9,862.58	7,581.76	871.90	7,581.84	2.85	2.55	1.28	
17,900.00	91.20	0.60	9,860.09	7,676.72	872.89	7,676.80	0.63	-0.63	0.00	
17,996.00	89.60	359.80	9,859.42	7,772.71	873.23	7,772.79	1.86	-1.67	-0.83	
18,090.00	89.40	0.50	9,860.24	7,866.71	873.48	7,866.79	0.77	-0.21	0.74	
18,184.00	89.00	1.00	9,861.56	7,960.69	874.71	7,960.77	0.68	-0.43	0.53	
18,279.00	88.50	1.00	9,863.63	8,055.65	876.36	8,055.73	0.53	-0.53	0.00	
18,374.00	88.40	1.30	9,866.20	8,150.60	878.27	8,150.68	0.33	-0.11	0.32	
18,469.00	87.30	359.80	9,869.76	8,245.53	879.18	8,245.60	1.96	-1.16	-1.58	
18,563.00	86.10	358.50	9,875.17	8,339.36	877.79	8,339.43	1.88	-1.28	-1.38	
18,658.00	86.70	358.20	9,881.14	8,434.13	875.06	8,434.20	0.71	0.63	-0.32	
18,753.00	91.90	358.20	9,882.30	8,529.04	872.08	8,529.12	5.47	5.47	0.00	
18,848.00	92.30	359.10	9,878.82	8,623.95	869.84	8,624.03	1.04	0.42	0.95	
18,941.00	91.30	358.50	9,875.90	8,716.88	867.89	8,716.96	1.25	-1.08	-0.65	
19,035.00	91.20	358.20	9,873.84	8,810.82	865.19	8,810.90	0.34	-0.11	-0.32	
19,130.00	91.10	358.40	9,871.94	8,905.76	862.37	8,905.84	0.24	-0.11	0.21	
19,225.00	90.00	358.20	9,871.03	9,000.71	859.55	9,000.79	1.18	-1.16	-0.21	
19,320.00	89.80	358.90	9,871.19	9,095.68	857.15	9,095.76	0.77	-0.21	0.74	

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 623H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.3' GE + 23.5' KB @ 2982.80usft
Well:	Spud Muffin 31-30 623H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
19,414.00	90.00	359.20	9,871.36	9,189.67	855.59	9,189.74	0.38	0.21	0.32
19,508.00	89.10	358.20	9,872.09	9,283.64	853.46	9,283.71	1.43	-0.96	-1.06
19,603.00	88.00	357.60	9,874.50	9,378.54	849.98	9,378.62	1.32	-1.16	-0.63
19,698.00	87.10	358.20	9,878.56	9,473.39	846.50	9,473.46	1.14	-0.95	0.63
19,792.00	89.20	0.30	9,881.59	9,567.32	845.27	9,567.40	3.16	2.23	2.23
19,886.00	90.60	359.80	9,881.76	9,661.32	845.35	9,661.39	1.58	1.49	-0.53
19,981.00	88.90	359.60	9,882.17	9,756.31	844.85	9,756.39	1.80	-1.79	-0.21
20,073.98	88.41	358.71	9,884.36	9,849.26	843.48	9,849.33	1.10	-0.53	-0.96
100' FNL HL Crossing @ 20073.98' MD									
20,075.00	88.40	358.70	9,884.39	9,850.28	843.46	9,850.35	1.10	-0.53	-0.96
20,081.91	88.29	358.62	9,884.59	9,857.18	843.30	9,857.26	1.92	-1.54	-1.15
LTP (SM 623H) - 100' FNL, 1870' FEL S30									
20,101.00	88.00	358.40	9,885.20	9,876.26	842.80	9,876.33	1.92	-1.54	-1.15
20,155.00	88.00	358.40	9,887.09	9,930.20	841.30	9,930.27	0.00	0.00	0.00
TD Projection - BHL (SM 623H) - 19.1' FNL, 1893.7' FEL S30 - PBHL (SM 623H) - 20' FNL, 1870' FEL S30									

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 (SM 623H) - 625' F:	0.00	0.01	0.00	0.00	0.00	456,993.59	636,815.61	32° 15' 21.5030 N	104° 1' 28.0814 W
- actual wellpath hits target center									
- Point									
BHL (SM 623H) - 19.1' F	0.00	0.00	9,887.09	9,930.20	841.30	466,923.79	637,656.91	32° 16' 59.7467 N	104° 1' 17.9481 W
- actual wellpath hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
9,259.00	9,165.66	7 5/8"	7-5/8	9-7/8	

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
9,504.42	9,405.83	-530.79	840.77	100' FSL HL Crossing @ 9504.42' MD
14,867.61	9,859.84	4,645.84	845.75	SL Crossing @ 14867.61' MD
20,073.98	9,884.36	9,849.26	843.48	100' FNL HL Crossing @ 20073.98' MD
20,155.00	9,887.09	9,930.20	841.30	TD Projection

Checked By: _____ Approved By: _____ Date: _____