

DEC 02 2019

Form C-102

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

Revised August 1, 2011

DISTRICT 7 - ARTES Submit one
AO.C.D.

District Office

☒ AMENDED REPORT
AS DRILLED

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-45302	² Pool Code 11520	³ Pool Name CEDAR CANYON; BONE SPRING
⁴ Property Code	⁵ Property Name SPUD MUFFIN 31-30	⁶ Well Number 332H
⁷ OGRID No. 6137	⁸ Operator Nam DEVON ENERGY PRODUCTION COMPANY, L.P.	⁹ Elevation 2959.4

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	2405	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no. B	Section 30	Township 23 S	Range 29 E	Lot Idn	Feet from the 22	North/South line NORTH	Feet from the	East/West line EAST	County EDDY
¹² Dedicated Acres 640	¹³ Joint or Infill	¹⁴ Consolidation Code		¹⁵ Order No.					

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>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>	
Signature _____	Date 11/25/19
Printed Name Erin Workman	
E-mail Address Erin.workman@dvn.com	
E-mail Address	
SURVEYOR CERTIFICATION <i>I hereby certify that the well location shown on this plot 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.</i>	
SEPTEMBER 12, 2018	
Date of Survey	
Signature and Seal of Professional Surveyor	
Certificate Number FID-1000-11-AMM-CO-PLS-2797	

Intent ☐ As Drilled ☒

API # 30-015-45302			
Operator Name: DEVON ENERGY PRODUCTION COMPANY, L.P.		Property Name: SPUD MUFFIN 31-30	Well Number 332H

Kick Off Point (KOP)

UL N	Section 31	Township 23S	Range 29E	Lot	Feet 93	From N/S SOUTH	Feet 2551	From E/W WEST	County EDDY
Latitude 32.2545078					Longitude 104.0240999				NAD 83

First Take Point (FTP)

UL N	Section 31	Township 23S	Range 29E	Lot	Feet 479	From N/S SOUTH	Feet 2555	From E/W WEST	County EDDY
Latitude 32.2555672					Longitude 104.0240802				NAD 83

Last Take Point (LTP)

UL B	Section 30	Township 23S	Range 29E	Lot	Feet 195	From N/S NORTH	Feet 2607	From E/W EAST	County EDDY
Latitude 32.2828402					Longitude 104.0239627				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 #			
Operator Name:		Property Name:	Well Number

KZ 06/29/2018



RECEIVED

DEC 02 2019

DISTRICT 7 - ARTESIA O.C.D.

March 13, 2019

Devon Energy Production Company, LP
Well: Spud Muffin 31-30 332H
County/Parish: Eddy County, NM

LEAM MWD: (OH) from 0' MD – 19,890' MD
Projection: 19,942' MD

This Borehole Survey taken between 01/21/19 and 03/10/19 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: March 13, 2019



Survey Certification Form

State of New Mexico

Eddy County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Services, that I did on the day(s) of January 21, 2019 through March 10, 2019, conduct or supervise the taking of MWD Survey from a depth of 0' MD to 19,942' MD; that the data is true, correct, complete and within the limitations of the tools as set forth by LEAM Drilling Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Devon Energy Production Company, LP for the Spud Muffin 31-30 332H in Eddy County, New Mexico; and that I reviewed this report and find that it conforms to the principals and procedures as set forth by LEAM Drilling Services.

A handwritten signature in black ink, appearing to read 'Randy W. Rakowitz', is written over a horizontal line.

Randy W. Rakowitz
MWD Operations Coordinator

LEAM Drilling Systems

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 332H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Well:	Spud Muffin 31-30 332H	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:		Northing:	456,837.82 usft
From:	Map	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 332H		
Well Position	+N/-S	0.00 usft	Latitude: 32° 15' 21.5066 N
	+E/-W	0.00 usft	Longitude: 104° 1' 28.4302 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Ground Level:	2,959.40 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	HDGM	12/3/2018	7.12
			(°)
			60.03
			47,955.00000000

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

Survey Program	Date	3/12/2019		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
172.00	19,890.00	Survey #1 - MWD (OH)	LEAM MWD+HDGM	MWD+HDGM
19,942.00	19,942.00	Projection (OH)	Project	Projection

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
172.00	0.20	77.80	172.00	0.06	0.29	0.06	0.12	0.12	0.00
263.00	0.00	248.30	263.00	0.10	0.45	0.10	0.22	-0.22	0.00
427.00	0.30	353.60	427.00	0.52	0.40	0.52	0.18	0.18	0.00
514.00	0.80	337.10	513.99	1.31	0.14	1.31	0.60	0.57	-18.97
606.00	1.00	336.50	605.98	2.64	-0.43	2.64	0.22	0.22	-0.65
699.00	1.60	336.50	698.96	4.57	-1.27	4.57	0.65	0.65	0.00
781.00	1.40	323.00	780.93	6.42	-2.33	6.42	0.49	-0.24	-16.46
873.00	0.70	301.20	872.92	7.61	-3.49	7.61	0.86	-0.76	-23.70
965.00	1.10	331.10	964.90	8.68	-4.40	8.68	0.66	0.43	32.50

LEAM Drilling Systems

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Site:	Spud Muffin 31-30 Com	MD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Well:	Spud Muffin 31-30 332H	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)
1,057.00	1.10	328.50	1,056.89	10.20	-5.28	10.20	0.05	0.00	-2.83
1,149.00	0.20	318.60	1,148.88	11.07	-5.85	11.07	0.98	-0.98	-10.76
1,240.00	0.50	321.40	1,239.88	11.50	-6.20	11.50	0.33	0.33	3.08
1,331.00	0.60	2.60	1,330.87	12.29	-6.43	12.29	0.44	0.11	45.27
1,423.00	0.40	113.60	1,422.87	12.64	-6.11	12.64	0.90	-0.22	120.65
1,514.00	0.40	93.60	1,513.87	12.50	-5.51	12.50	0.15	0.00	-21.98
1,610.00	0.40	29.10	1,609.87	12.77	-5.01	12.77	0.44	0.00	-67.19
1,703.00	1.00	359.00	1,702.86	13.86	-4.87	13.86	0.74	0.65	-32.37
1,794.00	1.20	342.50	1,793.84	15.57	-5.17	15.57	0.41	0.22	-18.13
1,888.00	0.40	10.50	1,887.84	16.83	-5.40	16.83	0.92	-0.85	29.79
1,982.00	0.50	142.10	1,981.83	16.83	-5.09	16.83	0.87	0.11	140.00
2,076.00	0.00	170.30	2,075.83	16.50	-4.84	16.50	0.53	-0.53	0.00
2,171.00	0.60	177.60	2,170.83	16.01	-4.82	16.01	0.63	0.63	0.00
2,266.00	2.00	181.00	2,265.80	13.85	-4.83	13.85	1.48	1.47	3.58
2,361.00	3.60	178.20	2,360.69	9.21	-4.76	9.21	1.69	1.68	-2.95
2,455.00	3.40	153.90	2,454.52	3.76	-3.44	3.76	1.58	-0.21	-25.85
2,550.00	4.30	157.80	2,549.30	-2.07	-0.86	-2.07	0.99	0.95	4.11
2,644.00	4.30	157.90	2,643.04	-8.60	1.80	-8.60	0.01	0.00	0.11
2,739.00	3.80	152.80	2,737.80	-14.70	4.58	-14.70	0.65	-0.53	-5.37
2,833.00	3.50	149.90	2,831.61	-19.95	7.44	-19.95	0.37	-0.32	-3.09
2,928.00	3.40	150.70	2,926.44	-24.91	10.28	-24.91	0.12	-0.11	0.84
3,023.00	3.30	151.30	3,021.28	-29.77	12.97	-29.77	0.11	-0.11	0.63
3,117.00	3.10	148.30	3,115.13	-34.31	15.60	-34.31	0.28	-0.21	-3.19
3,212.00	3.90	157.80	3,209.95	-39.48	18.17	-39.48	1.04	0.84	10.00
3,307.00	4.90	162.00	3,304.67	-46.33	20.65	-46.33	1.11	1.05	4.42
3,401.00	4.30	162.20	3,398.37	-53.51	22.96	-53.51	0.64	-0.64	0.21
3,495.00	5.40	166.40	3,492.03	-61.16	25.08	-61.16	1.23	1.17	4.47
3,589.00	6.80	171.50	3,585.50	-70.96	26.94	-70.96	1.60	1.49	5.43
3,684.00	7.70	170.80	3,679.74	-82.81	28.79	-82.81	0.95	0.95	-0.74
3,779.00	7.60	170.30	3,773.89	-95.28	30.87	-95.28	0.13	-0.11	-0.53
3,874.00	7.20	169.70	3,868.10	-107.33	32.99	-107.33	0.43	-0.42	-0.63
3,969.00	6.90	169.70	3,962.38	-118.81	35.08	-118.81	0.32	-0.32	0.00
4,062.00	7.60	169.00	4,054.64	-130.34	37.25	-130.34	0.76	0.75	-0.75
4,157.00	7.30	169.50	4,148.83	-142.44	39.55	-142.44	0.32	-0.32	0.53
4,251.00	6.80	170.60	4,242.12	-153.80	41.55	-153.80	0.55	-0.53	1.17
4,346.00	7.10	169.40	4,336.42	-165.12	43.54	-165.12	0.35	0.32	-1.26
4,441.00	7.40	170.40	4,430.67	-176.93	45.64	-176.93	0.34	0.32	1.05
4,534.00	7.10	171.30	4,522.92	-188.51	47.51	-188.51	0.34	-0.32	0.97
4,629.00	6.90	171.30	4,617.21	-199.96	49.26	-199.96	0.21	-0.21	0.00
4,723.00	6.60	172.50	4,710.56	-210.89	50.82	-210.89	0.35	-0.32	1.28
4,817.00	7.00	172.20	4,803.90	-221.92	52.31	-221.92	0.43	0.43	-0.32
4,912.00	6.60	174.10	4,898.23	-233.09	53.65	-233.09	0.48	-0.42	2.00
5,007.00	6.90	171.30	4,992.57	-244.16	55.08	-244.16	0.47	0.32	-2.95

LEAM Drilling Systems

Survey Report

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Well:	Spud Muffin 31-30 332H	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)	
5,102.00	6.90	170.30	5,086.89	-255.43	56.90	-255.43	0.13	0.00	-1.05	
5,197.00	7.00	167.10	5,181.19	-266.70	59.16	-266.70	0.42	0.11	-3.37	
5,291.00	6.10	166.20	5,274.57	-277.13	61.63	-277.13	0.96	-0.96	-0.96	
5,386.00	5.90	168.10	5,369.05	-286.81	63.84	-286.81	0.30	-0.21	2.00	
5,480.00	7.20	166.00	5,462.44	-297.25	66.26	-297.25	1.41	1.38	-2.23	
5,574.00	7.40	167.10	5,555.68	-308.87	69.03	-308.87	0.26	0.21	1.17	
5,668.00	6.80	168.00	5,648.95	-320.21	71.54	-320.21	0.65	-0.64	0.96	
5,763.00	7.50	163.40	5,743.22	-331.66	74.48	-331.66	0.95	0.74	-4.84	
5,858.00	8.20	158.60	5,837.33	-343.91	78.73	-343.91	1.01	0.74	-5.05	
5,953.00	7.80	158.80	5,931.40	-356.22	83.53	-356.22	0.42	-0.42	0.21	
6,047.00	6.90	158.60	6,024.63	-367.43	87.90	-367.43	0.96	-0.96	-0.21	
6,142.00	6.40	158.80	6,118.99	-377.68	91.89	-377.68	0.53	-0.53	0.21	
6,235.00	6.50	158.30	6,211.40	-387.40	95.71	-387.40	0.12	0.11	-0.54	
6,329.00	8.40	161.60	6,304.60	-398.86	99.85	-398.86	2.07	2.02	3.51	
6,424.00	8.30	163.70	6,398.60	-412.03	103.96	-412.03	0.34	-0.11	2.21	
6,519.00	7.20	163.20	6,492.73	-424.31	107.61	-424.31	1.16	-1.16	-0.53	
6,614.00	5.70	161.80	6,587.12	-434.49	110.80	-434.49	1.59	-1.58	-1.47	
6,709.00	5.90	160.80	6,681.64	-443.58	113.88	-443.58	0.24	0.21	-1.05	
6,804.00	6.00	161.80	6,776.12	-452.91	117.04	-452.91	0.15	0.11	1.05	
6,899.00	4.70	158.80	6,870.71	-461.25	120.00	-461.25	1.40	-1.37	-3.16	
6,993.00	3.20	147.20	6,964.48	-467.05	122.81	-467.05	1.80	-1.60	-12.34	
7,088.00	3.10	153.20	7,059.34	-471.57	125.41	-471.57	0.36	-0.11	6.32	
7,182.00	4.80	172.70	7,153.12	-477.74	127.05	-477.74	2.28	1.81	20.74	
7,277.00	5.20	176.90	7,247.76	-485.98	127.79	-485.98	0.57	0.42	4.42	
7,371.00	4.80	176.60	7,341.40	-494.16	128.25	-494.16	0.43	-0.43	-0.32	
7,467.00	5.20	177.80	7,437.03	-502.52	128.66	-502.52	0.43	0.42	1.25	
7,561.00	4.90	175.70	7,530.67	-510.78	129.12	-510.78	0.37	-0.32	-2.23	
7,655.00	3.80	174.50	7,624.40	-517.88	129.72	-517.88	1.17	-1.17	-1.28	
7,750.00	2.60	172.20	7,719.25	-523.15	130.32	-523.15	1.27	-1.26	-2.42	
7,845.00	2.80	158.30	7,814.14	-527.44	131.47	-527.44	0.72	0.21	-14.63	
7,939.00	2.10	144.10	7,908.06	-530.97	133.33	-530.97	0.98	-0.74	-15.11	
8,033.00	1.80	79.70	8,002.01	-532.10	135.79	-532.10	2.23	-0.32	-68.51	
8,128.00	2.60	59.00	8,096.94	-530.73	139.10	-530.73	1.17	0.84	-21.79	
8,223.00	1.80	41.20	8,191.87	-528.49	141.93	-528.49	1.10	-0.84	-18.74	
8,312.00	1.30	39.40	8,280.84	-526.66	143.50	-526.66	0.56	-0.56	-2.02	
8,406.00	0.60	89.90	8,374.83	-525.84	144.66	-525.84	1.09	-0.74	53.72	
8,501.00	1.00	175.30	8,469.82	-526.66	145.23	-526.66	1.18	0.42	89.89	
8,596.00	0.80	205.80	8,564.81	-528.09	145.01	-528.09	0.54	-0.21	32.11	
8,690.00	1.30	277.10	8,658.80	-528.54	143.67	-528.54	1.37	0.53	75.85	
8,784.00	0.60	211.60	8,752.79	-528.83	142.35	-528.83	1.26	-0.74	-69.68	
8,879.00	1.60	131.20	8,847.77	-530.13	143.09	-530.13	1.70	1.05	-84.63	
8,966.00	1.10	152.40	8,934.75	-531.67	144.39	-531.67	0.80	-0.57	24.37	
9,078.00	1.70	160.20	9,046.71	-534.19	145.45	-534.19	0.56	0.54	6.96	

LEAM Drilling Systems

Survey Report

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Well:	Spud Muffin 31-30 332H	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)
9,173.00	2.90	17.70	9,141.68	-533.22	146.66	-533.22	4.60	1.26	-150.00
9,239.22	9.84	4.04	9,207.45	-525.97	147.57	-525.97	10.66	10.49	-20.63
100' FSL HL Crossing @ 9239.22' MD									
9,268.00	12.90	2.70	9,235.66	-520.31	147.89	-520.31	10.66	10.62	-4.64
9,316.00	18.50	4.00	9,281.85	-507.35	148.67	-507.35	11.69	11.67	2.71
9,362.00	24.10	3.90	9,324.69	-490.68	149.82	-490.68	12.17	12.17	-0.22
9,409.00	29.60	3.20	9,366.61	-469.50	151.13	-469.50	11.72	11.70	-1.49
9,456.00	35.30	1.10	9,406.26	-444.32	152.03	-444.32	12.36	12.13	-4.47
9,503.00	40.20	359.40	9,443.41	-415.55	152.14	-415.55	10.66	10.43	-3.62
9,550.00	44.20	359.70	9,478.22	-383.99	151.89	-383.99	8.52	8.51	0.64
9,597.00	49.20	359.10	9,510.44	-349.80	151.53	-349.80	10.68	10.64	-1.28
9,645.00	53.90	358.30	9,540.28	-312.23	150.67	-312.23	9.88	9.79	-1.67
9,692.00	57.00	359.30	9,566.94	-273.53	149.86	-273.53	6.82	6.60	2.13
9,740.00	60.20	0.20	9,591.94	-232.57	149.69	-232.57	6.86	6.67	1.88
9,787.00	64.50	0.30	9,613.75	-190.94	149.87	-190.94	9.15	9.15	0.21
9,834.00	70.10	0.00	9,631.88	-147.60	149.98	-147.60	11.93	11.91	-0.64
9,881.00	73.30	359.90	9,646.63	-102.98	149.94	-102.98	6.81	6.81	-0.21
9,929.00	76.30	0.40	9,659.22	-56.67	150.06	-56.67	6.33	6.25	1.04
9,976.00	79.40	359.40	9,669.11	-10.73	149.98	-10.73	6.92	6.60	-2.13
10,024.00	81.90	358.70	9,676.91	36.62	149.20	36.62	5.40	5.21	-1.46
10,071.00	88.40	359.30	9,680.88	83.42	148.38	83.42	13.89	13.83	1.28
10,119.00	89.30	359.00	9,681.84	131.41	147.67	131.41	1.98	1.88	-0.63
10,213.00	89.30	359.20	9,682.99	225.39	146.19	225.39	0.21	0.00	0.21
10,308.00	90.00	358.10	9,683.57	320.36	143.95	320.36	1.37	0.74	-1.16
10,402.00	91.30	357.30	9,682.50	414.27	140.18	414.27	1.62	1.38	-0.85
10,496.00	88.60	358.50	9,682.59	508.20	136.74	508.20	3.14	-2.87	1.28
10,591.00	88.80	0.10	9,684.74	603.17	135.58	603.17	1.70	0.21	1.68
10,686.00	88.90	359.80	9,686.65	698.15	135.49	698.15	0.33	0.11	-0.32
10,780.00	89.10	359.50	9,688.29	792.13	134.92	792.13	0.38	0.21	-0.32
10,874.00	90.10	359.60	9,688.95	886.12	134.18	886.12	1.07	1.06	0.11
10,969.00	90.50	359.20	9,688.45	981.12	133.19	981.12	0.60	0.42	-0.42
11,064.00	90.50	0.20	9,687.62	1,076.11	132.69	1,076.11	1.05	0.00	1.05
11,159.00	87.40	1.10	9,689.36	1,171.08	133.77	1,171.08	3.40	-3.26	0.95
11,253.00	87.20	0.60	9,693.79	1,264.96	135.16	1,264.96	0.57	-0.21	-0.53
11,348.00	87.10	0.50	9,698.51	1,359.84	136.07	1,359.84	0.15	-0.11	-0.11
11,443.00	89.60	1.20	9,701.25	1,454.78	137.48	1,454.78	2.73	2.63	0.74
11,537.00	89.30	1.20	9,702.15	1,548.76	139.45	1,548.76	0.32	-0.32	0.00
11,632.00	89.30	0.30	9,703.31	1,643.74	140.69	1,643.74	0.95	0.00	-0.95
11,727.00	90.20	1.10	9,703.72	1,738.73	141.85	1,738.73	1.27	0.95	0.84
11,822.00	90.60	359.50	9,703.06	1,833.72	142.35	1,833.72	1.74	0.42	-1.68
11,916.00	91.20	359.10	9,701.58	1,927.70	141.20	1,927.70	0.77	0.64	-0.43
12,010.00	91.20	359.20	9,699.62	2,021.67	139.81	2,021.67	0.11	0.00	0.11
12,105.00	91.20	359.70	9,697.63	2,116.65	138.90	2,116.65	0.53	0.00	0.53
12,199.00	90.20	358.90	9,696.48	2,210.63	137.75	2,210.63	1.36	-1.06	-0.85

LEAM Drilling Systems

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 332H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Well:	Spud Muffin 31-30 332H	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)
12,294.00	91.30	359.70	9,695.23	2,305.61	136.59	2,305.61	1.43	1.16	0.84
12,388.00	91.50	1.00	9,692.94	2,399.58	137.16	2,399.58	1.40	0.21	1.38
12,483.00	90.70	1.10	9,691.11	2,494.55	138.90	2,494.55	0.85	-0.84	0.11
12,577.00	90.90	1.50	9,689.80	2,588.51	141.03	2,588.51	0.48	0.21	0.43
12,672.00	86.10	359.20	9,692.29	2,683.45	141.62	2,683.45	5.60	-5.05	-2.42
12,767.00	85.80	358.80	9,699.00	2,778.19	139.96	2,778.19	0.53	-0.32	-0.42
12,861.00	87.00	359.30	9,704.90	2,871.99	138.41	2,871.99	1.38	1.28	0.53
12,956.00	88.90	359.30	9,708.30	2,966.92	137.25	2,966.92	2.00	2.00	0.00
13,051.00	90.80	0.90	9,708.55	3,061.91	137.41	3,061.91	2.61	2.00	1.68
13,145.00	90.60	1.60	9,707.40	3,155.88	139.46	3,155.88	0.77	-0.21	0.74
13,239.00	91.20	1.10	9,705.92	3,249.84	141.68	3,249.84	0.83	0.64	-0.53
13,334.00	91.20	2.40	9,703.93	3,344.78	144.58	3,344.78	1.37	0.00	1.37
13,429.00	89.10	0.80	9,703.68	3,439.73	147.23	3,439.73	2.78	-2.21	-1.68
13,522.00	87.80	0.00	9,706.20	3,532.69	147.88	3,532.69	1.64	-1.40	-0.86
13,617.00	87.90	0.00	9,709.76	3,627.63	147.88	3,627.63	0.11	0.11	0.00
13,712.00	88.30	359.50	9,712.91	3,722.57	147.46	3,722.57	0.67	0.42	-0.53
13,806.00	88.00	359.20	9,715.95	3,816.52	146.40	3,816.52	0.45	-0.32	-0.32
13,901.00	88.80	0.10	9,718.60	3,911.48	145.82	3,911.48	1.27	0.84	0.95
13,996.00	88.20	359.80	9,721.09	4,006.44	145.74	4,006.44	0.71	-0.63	-0.32
14,091.00	92.00	1.40	9,720.92	4,101.42	146.73	4,101.42	4.34	4.00	1.68
14,185.00	91.90	0.60	9,717.72	4,195.35	148.37	4,195.35	0.86	-0.11	-0.85
14,279.00	92.20	1.40	9,714.36	4,289.27	150.01	4,289.27	0.91	0.32	0.85
14,374.00	92.30	1.30	9,710.63	4,384.17	152.25	4,384.17	0.15	0.11	-0.11
14,468.00	91.50	0.20	9,707.51	4,478.11	153.48	4,478.11	1.45	-0.85	-1.17
14,563.00	90.80	0.30	9,705.61	4,573.09	153.89	4,573.09	0.74	-0.74	0.11
14,650.01	88.97	359.38	9,705.78	4,660.10	153.65	4,660.10	2.35	-2.11	-1.05
SL Crossing @ 14650.01' MD									
14,658.00	88.80	359.30	9,705.94	4,668.08	153.56	4,668.08	2.35	-2.11	-1.05
14,753.00	88.40	359.00	9,708.26	4,763.04	152.15	4,763.04	0.53	-0.42	-0.32
14,848.00	88.30	359.00	9,710.99	4,857.99	150.49	4,857.99	0.11	-0.11	0.00
14,942.00	89.70	359.60	9,712.63	4,951.97	149.34	4,951.97	1.62	1.49	0.64
15,036.00	90.20	0.00	9,712.72	5,045.97	149.02	5,045.97	0.68	0.53	0.43
15,131.00	93.20	2.50	9,709.90	5,140.88	151.09	5,140.88	4.11	3.16	2.63
15,224.00	94.10	2.80	9,703.98	5,233.59	155.38	5,233.59	1.02	0.97	0.32
15,318.00	92.00	1.00	9,698.98	5,327.40	158.49	5,327.40	2.94	-2.23	-1.91
15,413.00	90.30	1.90	9,697.07	5,422.35	160.89	5,422.35	2.02	-1.79	0.95
15,507.00	90.30	1.00	9,696.58	5,516.31	163.27	5,516.31	0.96	0.00	-0.96
15,602.00	88.80	0.80	9,697.32	5,611.30	164.76	5,611.30	1.59	-1.58	-0.21
15,696.00	91.70	2.30	9,696.91	5,705.25	167.30	5,705.25	3.47	3.09	1.60
15,766.00	89.00	1.10	9,696.49	5,775.21	169.38	5,775.21	4.22	-3.86	-1.71
15,860.00	88.10	0.90	9,698.86	5,869.16	171.02	5,869.16	0.98	-0.96	-0.21
15,956.00	87.30	358.40	9,702.72	5,965.07	170.43	5,965.07	2.73	-0.83	-2.60
16,051.00	87.00	358.60	9,707.44	6,059.92	167.95	6,059.92	0.38	-0.32	0.21

LEAM Drilling Systems

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 332H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Well:	Spud Muffin 31-30 332H	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)
16,145.00	87.60	358.70	9,711.87	6,153.79	165.74	6,153.79	0.65	0.64	0.11
16,240.00	88.40	358.20	9,715.18	6,248.70	163.17	6,248.70	0.99	0.84	-0.53
16,334.00	89.40	359.00	9,716.99	6,342.65	160.87	6,342.65	1.36	1.06	0.85
16,428.00	89.10	359.00	9,718.22	6,436.63	159.23	6,436.63	0.32	-0.32	0.00
16,522.00	89.10	357.50	9,719.70	6,530.57	156.36	6,530.57	1.60	0.00	-1.60
16,617.00	89.70	356.40	9,720.69	6,625.43	151.31	6,625.43	1.32	0.63	-1.16
16,711.00	91.20	356.50	9,719.95	6,719.24	145.49	6,719.24	1.60	1.60	0.11
16,806.00	90.30	356.50	9,718.71	6,814.06	139.69	6,814.06	0.95	-0.95	0.00
16,900.00	90.70	357.00	9,717.89	6,907.90	134.36	6,907.90	0.68	0.43	0.53
16,995.00	91.10	359.30	9,716.40	7,002.84	131.29	7,002.84	2.46	0.42	2.42
17,090.00	91.30	358.80	9,714.41	7,097.80	129.72	7,097.80	0.57	0.21	-0.53
17,184.00	90.60	1.10	9,712.85	7,191.78	129.64	7,191.78	2.56	-0.74	2.45
17,279.00	89.80	0.70	9,712.52	7,286.77	131.13	7,286.77	0.94	-0.84	-0.42
17,374.00	89.20	0.40	9,713.35	7,381.76	132.04	7,381.76	0.71	-0.63	-0.32
17,468.00	89.40	1.00	9,714.49	7,475.74	133.19	7,475.74	0.67	0.21	0.64
17,561.00	89.70	1.20	9,715.22	7,568.72	134.98	7,568.72	0.39	0.32	0.22
17,656.00	89.40	1.50	9,715.97	7,663.70	137.21	7,663.70	0.45	-0.32	0.32
17,751.00	89.10	1.20	9,717.21	7,758.66	139.45	7,758.66	0.45	-0.32	-0.32
17,846.00	90.20	1.10	9,717.79	7,853.64	141.36	7,853.64	1.16	1.16	-0.11
17,941.00	90.50	0.50	9,717.21	7,948.63	142.69	7,948.63	0.71	0.32	-0.63
18,035.00	90.10	359.70	9,716.72	8,042.62	142.85	8,042.62	0.95	-0.43	-0.85
18,129.00	91.10	0.70	9,715.74	8,136.62	143.18	8,136.62	1.50	1.06	1.06
18,224.00	90.60	0.40	9,714.33	8,231.60	144.09	8,231.60	0.61	-0.53	-0.32
18,318.00	90.30	0.10	9,713.59	8,325.60	144.50	8,325.60	0.45	-0.32	-0.32
18,412.00	89.80	0.40	9,713.51	8,419.60	144.91	8,419.60	0.62	-0.53	0.32
18,506.00	91.20	1.40	9,712.69	8,513.58	146.39	8,513.58	1.83	1.49	1.06
18,601.00	91.00	1.30	9,710.86	8,608.53	148.62	8,608.53	0.24	-0.21	-0.11
18,695.00	92.00	1.10	9,708.40	8,702.48	150.59	8,702.48	1.08	1.06	-0.21
18,790.00	91.70	0.80	9,705.34	8,797.42	152.17	8,797.42	0.45	-0.32	-0.32
18,884.00	91.50	0.90	9,702.71	8,891.37	153.56	8,891.37	0.24	-0.21	0.11
18,978.00	90.60	0.70	9,700.99	8,985.34	154.87	8,985.34	0.98	-0.96	-0.21
19,073.00	89.60	0.40	9,700.82	9,080.34	155.78	9,080.34	1.10	-1.05	-0.32
19,168.00	89.20	0.20	9,701.82	9,175.33	156.28	9,175.33	0.47	-0.42	-0.21
19,262.00	88.70	359.70	9,703.54	9,269.31	156.20	9,269.31	0.75	-0.53	-0.53
19,357.00	89.40	0.00	9,705.12	9,364.30	155.95	9,364.30	0.80	0.74	0.32
19,452.00	91.50	0.70	9,704.37	9,459.29	156.53	9,459.29	2.33	2.21	0.74
19,546.00	91.50	0.50	9,701.91	9,553.25	157.51	9,553.25	0.21	0.00	-0.21
19,640.00	91.30	0.20	9,699.61	9,647.22	158.09	9,647.22	0.38	-0.21	-0.32
19,734.00	91.00	359.70	9,697.73	9,741.20	158.01	9,741.20	0.62	-0.32	-0.53
19,829.00	90.80	359.30	9,696.23	9,836.19	157.18	9,836.19	0.47	-0.21	-0.42
19,861.91	90.64	359.08	9,695.82	9,869.09	156.71	9,869.09	0.82	-0.49	-0.66
100' FNL HL Crossing @ 19861.91' MD									
19,890.00	90.50	358.90	9,695.54	9,897.18	156.22	9,897.18	0.82	-0.49	-0.66
19,942.00	90.50	358.90	9,695.09	9,949.16	155.22	9,949.16	0.00	0.00	0.00

LEAM Drilling Systems

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Spud Muffin 31-30 332H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Site:	Spud Muffin 31-30 Com	MD Reference:	2959.4' GE + 23.5' KB @ 2982.90usft
Well:	Spud Muffin 31-30 332H	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)
TD Projection									



March 13, 2019

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

Attn: Alex Bernhard

**Re: Final Directional Report
Spud Muffin 31- 30 332H
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-190060 for the (OH) January 21, 2019;
Drilling start depth of 0' MD to 379' total MD.

LEAM Job #: MD-190060 for the (OH) from February 18, 2019 to March 10, 2019;
Drilling start depth of 379' MD to 19,942' 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 332H

Eddy County, NM

Prepared for Mr. Alex Bernhard



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SECTION 1

PROPOSED VS. ACTUAL PLOT

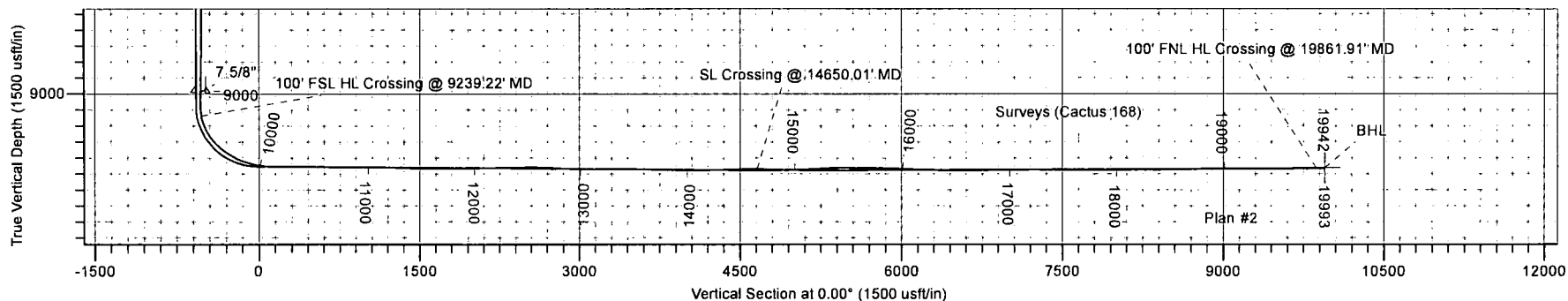
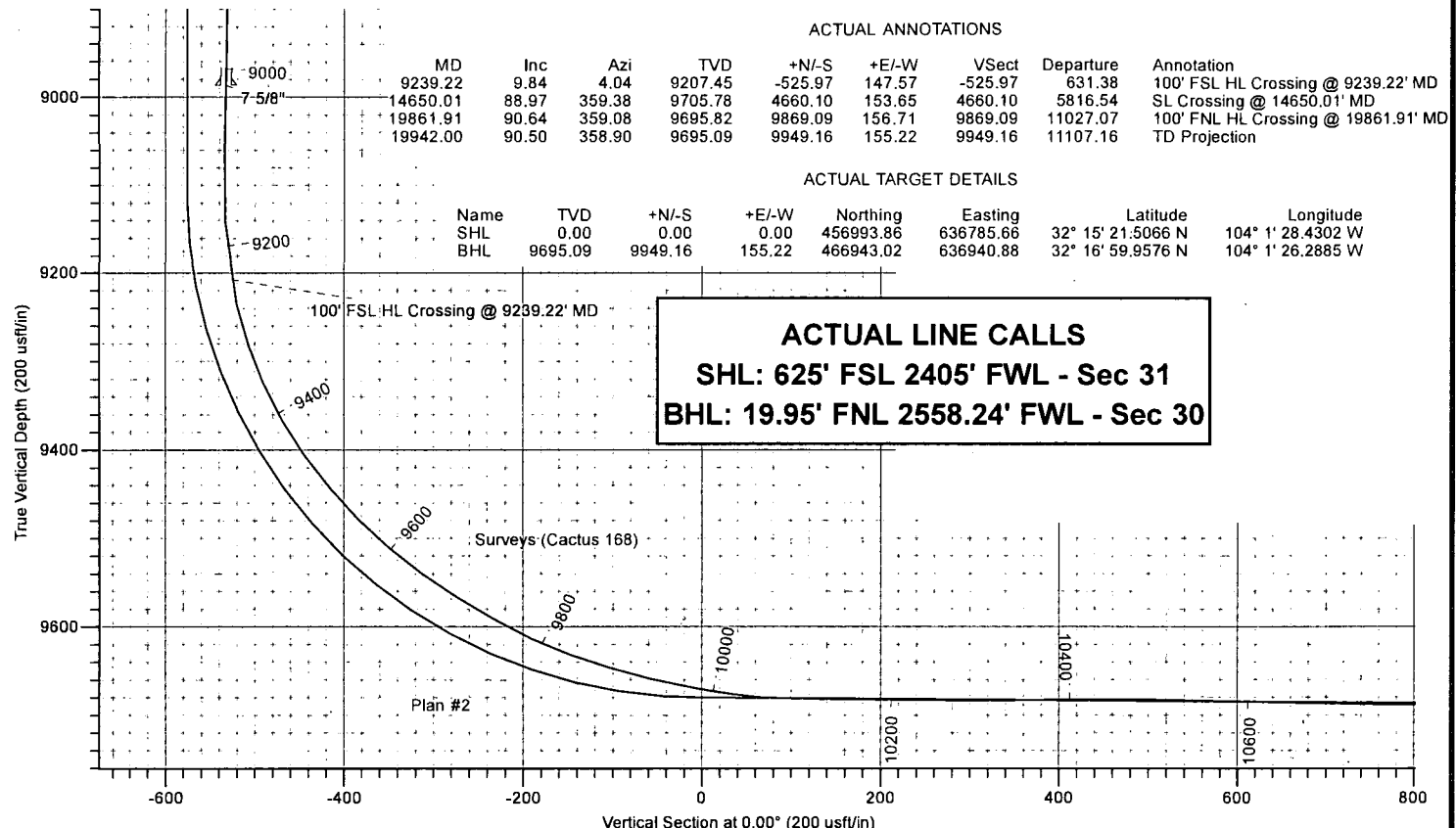
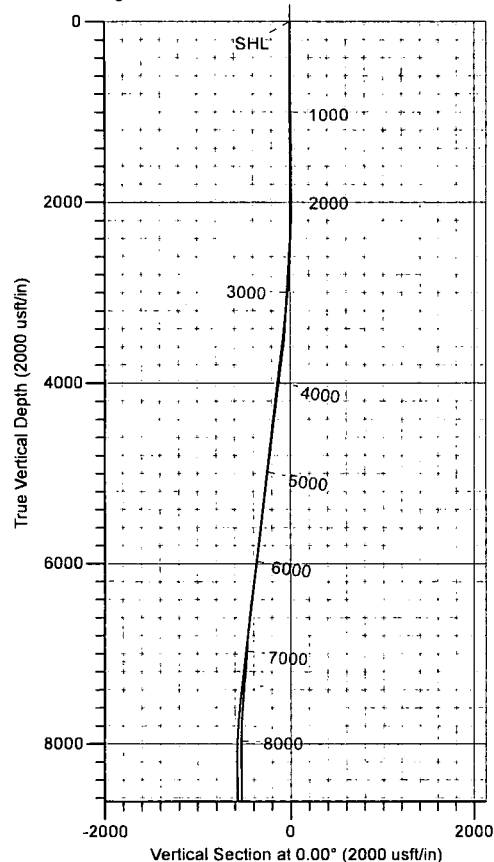
Devon Energy

Project: Eddy County, NM (NAD-83)
 Site: Spud Muffin 31-30 Com
 Well: Spud Muffin 31-30 332H
 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: 2959.4' GE + 23.5' KB @ 2982.90ustt



Azimuths to Grid North
 True North: -0.16°
 Magnetic North: 6.95°
 Magnetic Field
 Strength: 47955.0nT
 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 332H/OH)
 Spud Muffin 31-30 Com
 Created By: Jameson Shadid Date: 8:44, March 12 2019
 Date: _____
 Approved: _____ Date: _____

Devon Energy

Project: Eddy County, NM (NAD-83)
 Site: Spud Muffin 31-30 Com
 Well: Spud Muffin 31-30 332H
 Wellbore: OH
 Design: OH



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

Magnetic Field
 Strength: 47955.0nT
 Dip Angle: 60.03°
 Date: 12/3/2018
 Model: HDGM

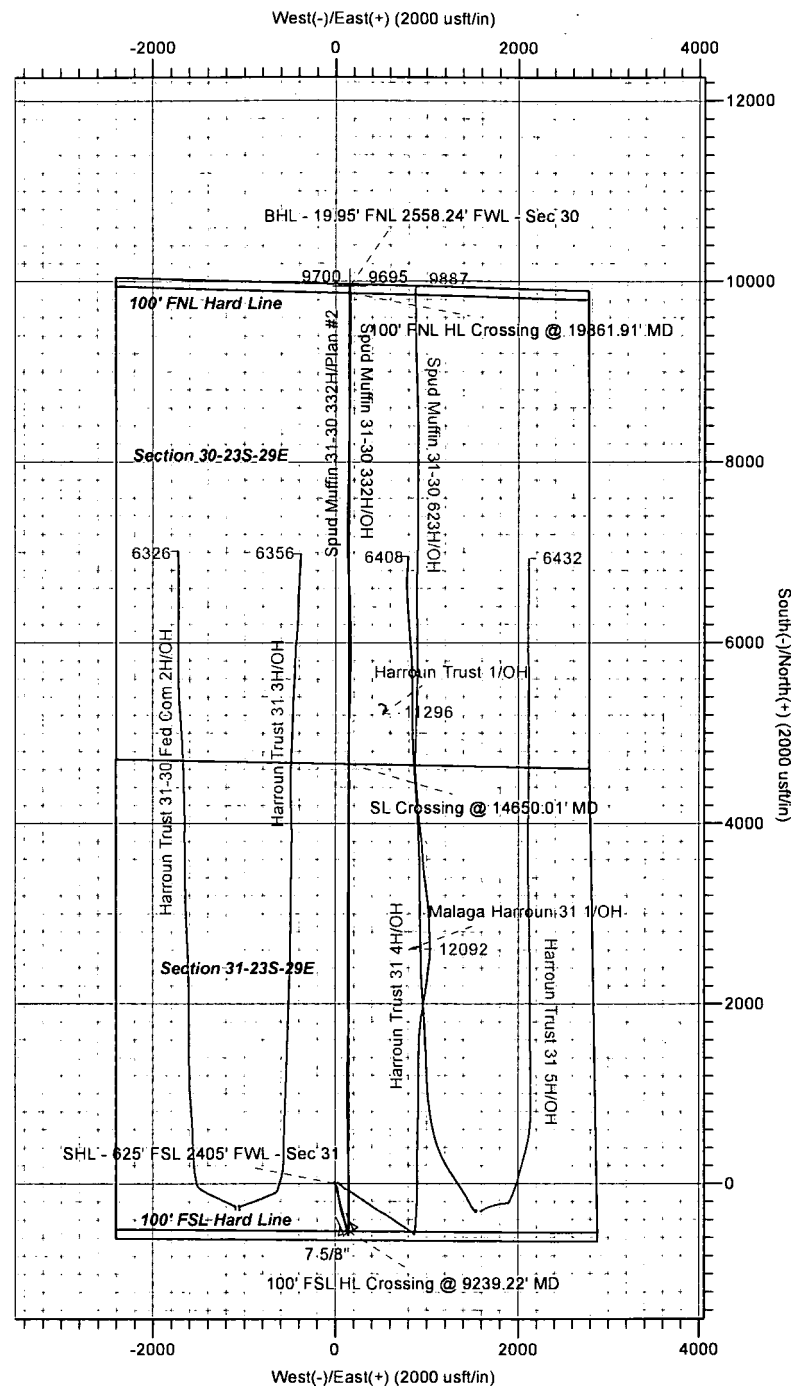
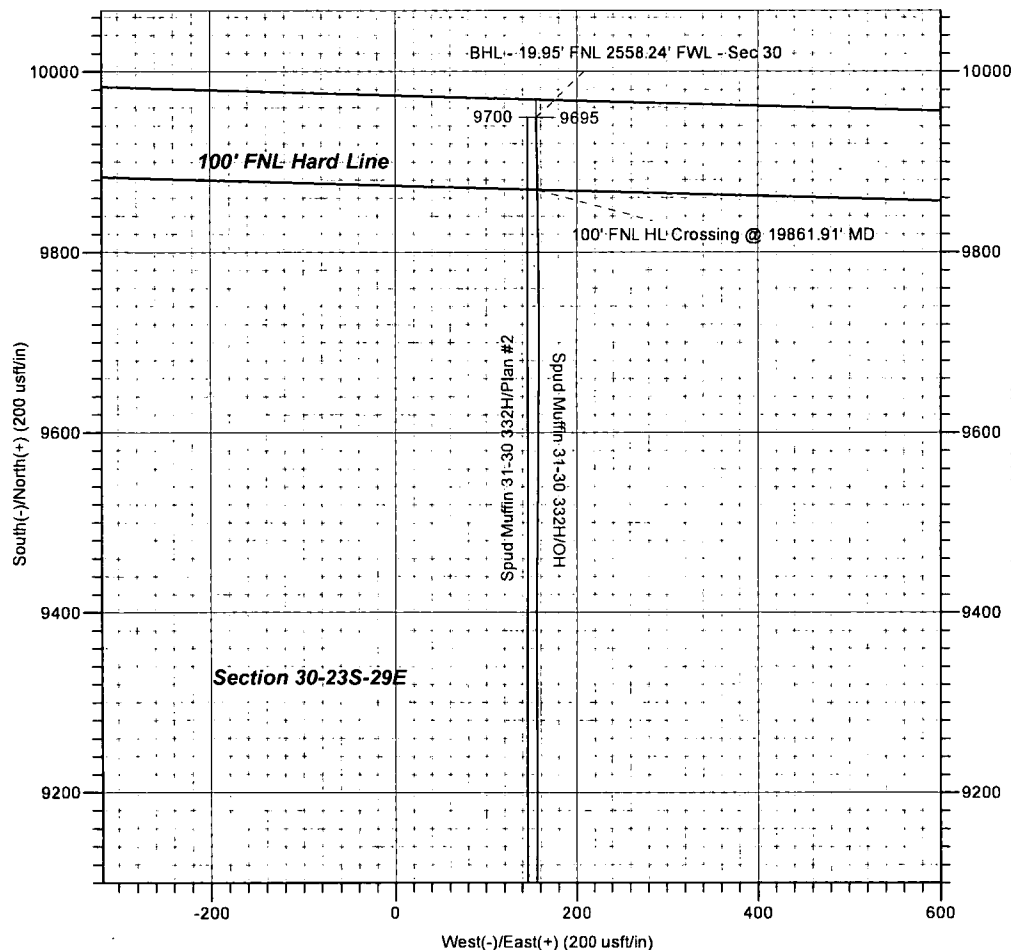
PROJECT DETAILS: Eddy County, NM (NAD-83)

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

ACTUAL CASING DETAILS

TVD	MD	Name
8986.74	9018.00	7 5/8"

Elevation: 2959.4' GE + 23.5' KB @ 2982.90usft



LEAM DRILLING SERVICES
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Design: OH (Spud Muffin 31-30 332H/OH)
 Spud Muffin 31-30 Com
 Created By: Jameson Shadid Date: 7:49, March 12 2019
 Date: _____
 Approved: _____ Date: _____