



Survey Certification Form

HOBBS OCD
OCT 01 2018
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State of New Mexico
Lea County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Services, that I did on the day(s) of 06/29/2018 through 07/14/2018, conduct or supervise the taking of MWD Survey from a depth of 445' MD to 9,616' 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 V-F Petroleum, Inc. for the DMT 7 Fee #2 in Lea 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 be 'Randy W. Rakowitz', is written over a horizontal line.

Randy W. Rakowitz
MWD Operations Coordinator



September 11, 2018

V-F Petroleum, Inc.
Well: DMT 7 Fee #2
County/Parish: Lea County, NM

LEAM MWD: (OH) from 445' MD – 9,566' MD
Projection; 9,616' MD

This Borehole Survey taken between 06/29/18 and 07/14/18 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: September 11, 2018

LEAM Drilling Services

Survey Report

Company:	VF Petroleum	Local Co-ordinate Reference:	Well #2
Project:	Lea County, NM (NAD 27 NME)	TVD Reference:	GE 3773' + KB 13' @ 3786.0usft (Capstar 117)
Site:	DMT 7 Fee	MD Reference:	GE 3773' + KB 13' @ 3786.0usft (Capstar 117)
Well:	#2	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Project	Lea County, NM (NAD 27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	DMT 7 Fee		
Site Position:		Northing:	742,599.20 usft
From:	Map	Easting:	868,323.50 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	33° 2' 8.442 N
		Longitude:	103° 7' 53.414 W
		Grid Convergence:	0.66 °

Well	#2		
Well Position	+N/-S	0.0 usft	Northing: 742,599.20 usft
	+E/-W	0.0 usft	Easting: 868,323.50 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	33° 2' 8.442 N
		Longitude:	103° 7' 53.414 W
		Ground Level:	3,773.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	6/5/2018	6.75	60.87	48,244

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	90.00	

Survey Program	Date 9/11/2018				
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
445.0	9,566.0	Survey #1 (OH)	MWD+HRGM	OWSG MWD + HRGM	
9,616.0	9,616.0	Survey #2 (OH)	Projection	OWSG Zero Error	

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
445.0	0.40	22.60	445.0	1.4	0.6	0.6	0.09	0.09	0.00
474.0	0.60	97.00	474.0	1.5	0.8	0.8	2.16	0.69	256.55
501.0	0.40	95.20	501.0	1.5	1.0	1.0	0.74	-0.74	-6.67
531.0	0.50	93.30	531.0	1.5	1.3	1.3	0.34	0.33	-6.33
561.0	0.30	51.40	561.0	1.5	1.4	1.4	1.14	-0.67	-139.67
590.0	0.50	80.80	590.0	1.6	1.6	1.6	0.97	0.69	101.38
620.0	0.60	93.30	620.0	1.6	1.9	1.9	0.52	0.33	41.67
648.0	0.10	79.70	648.0	1.6	2.1	2.1	1.80	-1.79	-48.57
678.0	0.40	139.20	678.0	1.5	2.2	2.2	1.20	1.00	198.33

LEAM Drilling Services

Survey Report

Company: VF Petroleum
Project: Lea County, NM (NAD 27 NME)
Site: DMT 7 Fee
Well: #2
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #2
TVD Reference: GE 3773' + KB 13' @ 3786.0usft (Capstar 117)
MD Reference: GE 3773' + KB 13' @ 3786.0usft (Capstar 117)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 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)
720.0	0.20	268.00	720.0	1.4	2.2	2.2	1.30	-0.48	306.67
763.0	0.20	140.00	763.0	1.3	2.2	2.2	0.84	0.00	-297.67
805.0	0.30	66.70	805.0	1.3	2.3	2.3	0.74	0.24	-174.52
848.0	0.30	119.60	848.0	1.3	2.5	2.5	0.62	0.00	123.02
976.0	0.20	245.70	976.0	1.1	2.6	2.6	0.35	-0.08	98.52
1,103.0	0.30	256.90	1,103.0	0.9	2.1	2.1	0.09	0.08	8.82
1,230.0	1.00	83.80	1,230.0	0.9	2.9	2.9	1.02	0.55	-136.30
1,358.0	1.10	102.60	1,358.0	0.8	5.2	5.2	0.28	0.08	14.69
1,486.0	0.70	68.70	1,485.9	0.8	7.1	7.1	0.51	-0.31	-26.48
1,614.0	0.40	53.60	1,613.9	1.3	8.2	8.2	0.26	-0.23	-11.80
1,742.0	0.70	23.50	1,741.9	2.3	8.9	8.9	0.32	0.23	-23.52
1,870.0	0.20	18.40	1,869.9	3.3	9.2	9.2	0.39	-0.39	-3.98
1,998.0	0.60	81.10	1,997.9	3.6	10.0	10.0	0.42	0.31	48.98
2,125.0	0.40	27.70	2,124.9	4.1	10.8	10.8	0.38	-0.16	-42.05
2,253.0	0.60	63.20	2,252.9	4.8	11.6	11.6	0.28	0.16	27.73
2,381.0	0.70	168.20	2,380.9	4.3	12.4	12.4	0.81	0.08	82.03
2,551.0	1.60	210.90	2,550.9	1.3	11.4	11.4	0.70	0.53	25.12
2,722.0	1.00	193.30	2,721.8	-2.2	9.8	9.8	0.42	-0.35	-10.29
2,895.0	0.90	225.50	2,894.8	-4.7	8.5	8.5	0.31	-0.06	18.61
3,066.0	0.80	239.90	3,065.8	-6.2	6.5	6.5	0.14	-0.06	8.42
3,236.0	0.40	162.90	3,235.8	-7.4	5.7	5.7	0.48	-0.24	-45.29
3,407.0	0.50	235.30	3,406.8	-8.4	5.2	5.2	0.31	0.06	42.34
3,577.0	0.80	87.10	3,576.8	-8.7	5.8	5.8	0.74	0.18	-87.18
3,747.0	0.70	118.80	3,746.8	-9.2	7.9	7.9	0.25	-0.06	18.65
3,918.0	0.60	97.80	3,917.8	-9.8	9.7	9.7	0.15	-0.06	-12.28
4,003.0	0.40	5.00	4,002.8	-9.6	10.2	10.2	0.87	-0.24	-109.18
4,131.0	0.40	92.40	4,130.7	-9.1	10.7	10.7	0.43	0.00	68.28
4,302.0	0.40	89.20	4,301.7	-9.1	11.9	11.9	0.01	0.00	-1.87
4,472.0	0.20	70.10	4,471.7	-9.0	12.7	12.7	0.13	-0.12	-11.24
4,656.0	0.40	155.70	4,655.7	-9.5	13.3	13.3	0.24	0.11	46.52
4,728.0	0.30	86.60	4,727.7	-9.7	13.6	13.6	0.56	-0.14	-95.97
4,899.0	0.40	81.90	4,898.7	-9.6	14.6	14.6	0.06	0.06	-2.75
5,069.0	0.40	317.60	5,068.7	-9.1	14.8	14.8	0.42	0.00	-73.12
5,239.0	0.40	262.00	5,238.7	-8.7	13.8	13.8	0.22	0.00	-32.71
5,408.0	0.30	340.60	5,407.7	-8.4	13.1	13.1	0.27	-0.06	46.51
5,579.0	0.30	342.40	5,578.7	-7.6	12.8	12.8	0.01	0.00	1.05
5,750.0	0.40	9.30	5,749.7	-6.5	12.8	12.8	0.11	0.06	15.73
5,921.0	0.40	31.40	5,920.7	-5.4	13.2	13.2	0.09	0.00	12.92
6,090.0	0.50	304.70	6,089.7	-4.5	12.9	12.9	0.37	0.06	-51.30
6,261.0	0.40	274.20	6,260.7	-4.1	11.7	11.7	0.15	-0.06	-17.84
6,432.0	0.40	272.00	6,431.7	-4.0	10.5	10.5	0.01	0.00	-1.29
6,602.0	0.40	257.50	6,601.7	-4.1	9.3	9.3	0.06	0.00	-8.53
6,773.0	1.00	248.50	6,772.7	-4.8	7.3	7.3	0.36	0.35	-5.26

LEAM Drilling Services

Survey Report

Company: VF Petroleum
 Project: Lea County, NM (NAD 27 NME)
 Site: DMT 7 Fee
 Well: #2
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well #2
 TVD Reference: GE 3773' + KB 13' @ 3786.0usft (Capstar 117)
 MD Reference: GE 3773' + KB 13' @ 3786.0usft (Capstar 117)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 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)
6,943.0	1.10	268.90	6,942.7	-5.3	4.3	4.3	0.23	0.06	12.00
7,114.0	1.00	280.70	7,113.6	-5.1	1.2	1.2	0.14	-0.06	6.90
7,199.0	1.10	291.40	7,198.6	-4.7	-0.3	-0.3	0.26	0.12	12.59
7,242.0	1.10	297.40	7,241.6	-4.3	-1.0	-1.0	0.27	0.00	13.95
7,284.0	0.90	316.00	7,283.6	-3.9	-1.6	-1.6	0.90	-0.48	44.29
7,327.0	1.00	342.70	7,326.6	-3.3	-2.0	-2.0	1.04	0.23	62.09
7,453.0	1.00	357.10	7,452.6	-1.2	-2.3	-2.3	0.20	0.00	11.43
7,496.0	0.80	359.90	7,495.6	-0.5	-2.4	-2.4	0.48	-0.47	6.51
7,539.0	0.80	3.30	7,538.6	0.1	-2.3	-2.3	0.11	0.00	7.91
7,583.0	1.00	42.80	7,582.6	0.7	-2.1	-2.1	1.45	0.45	89.77
7,711.0	1.00	41.10	7,710.5	2.4	-0.6	-0.6	0.02	0.00	-1.33
7,796.0	1.30	77.30	7,795.5	3.1	0.9	0.9	0.91	0.35	42.59
7,882.0	1.30	90.80	7,881.5	3.3	2.8	2.8	0.36	0.00	15.70
8,010.0	1.20	80.10	8,009.5	3.6	5.6	5.6	0.20	-0.08	-8.36
8,180.0	1.20	79.20	8,179.4	4.2	9.1	9.1	0.01	0.00	-0.53
8,350.0	1.20	76.90	8,349.4	4.9	12.5	12.5	0.03	0.00	-1.35
8,521.0	1.10	65.00	8,520.4	6.0	15.8	15.8	0.15	-0.06	-6.96
8,692.0	0.40	20.50	8,691.4	7.3	17.5	17.5	0.50	-0.41	-26.02
8,777.0	0.40	273.30	8,776.4	7.6	17.3	17.3	0.76	0.00	-126.12
8,905.0	0.30	263.80	8,904.3	7.6	16.5	16.5	0.09	-0.08	-7.42
9,033.0	0.50	263.10	9,032.3	7.5	15.6	15.6	0.16	0.16	-0.55
9,161.0	0.40	287.10	9,160.3	7.5	14.6	14.6	0.16	-0.08	18.75
9,203.0	0.50	262.00	9,202.3	7.5	14.3	14.3	0.52	0.24	-59.76
9,288.0	0.70	270.30	9,287.3	7.5	13.4	13.4	0.26	0.24	9.76
9,416.0	0.80	264.10	9,415.3	7.4	11.7	11.7	0.10	0.08	-4.84
9,459.0	0.70	269.20	9,458.3	7.4	11.2	11.2	0.28	-0.23	11.86
9,566.0	0.80	264.30	9,565.3	7.3	9.8	9.8	0.11	0.09	-4.58
9,616.0	0.80	264.30	9,615.3	7.2	9.1	9.1	0.00	0.00	0.00
Projection									