



12074 FM 3083 Rd., Conroe, TX 77304 | P: 936-756-2400 | F: 936-756-2401

April 26, 2017

State of New Mexico
Oil Conservation Division
1220 S Francis Dr.
Santa Fe, NM 87505

Attention: Randy Coulson

RE: Breitburn Operating
Well: Encore M State
20
Field: Encore Lea County, NM
API Number: 30-0025-4356

Dear Ms. Coulson,

Please find the attached surveys performed on the above referenced well by VON Directional Services, LLC. Other information required by your office is as follows:

Name of surveyor: Chuck Ortego

Original Hole:

Surveyed Depths: 1199' – 7640' MD
Date Performed: 4/13/17 – 4/22/17
Type of Survey: Directional Survey – MWD

A certified plat on which the bottom hole location is oriented both to the surface location and the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phonenumber.

Sincerely,

Chuck Ortego
MWD Manager



Breitburn Operating
Lea County, NM
Sec 29 T22S R37E
Encore M State 20
Wellbore #1
Nabors M55
Design #1

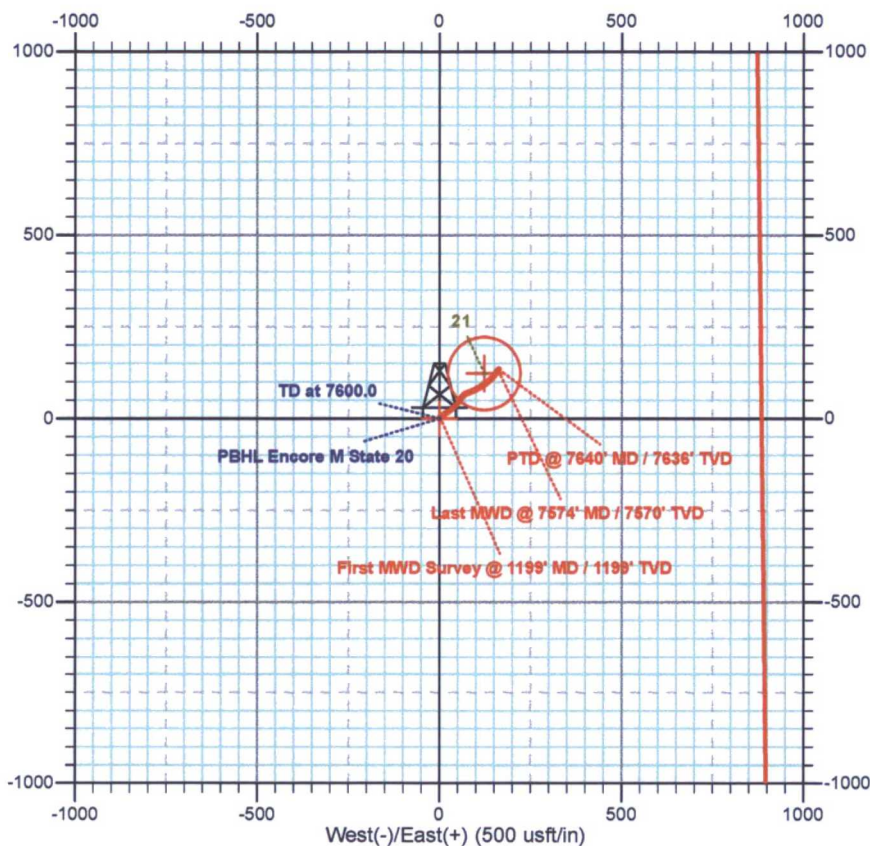
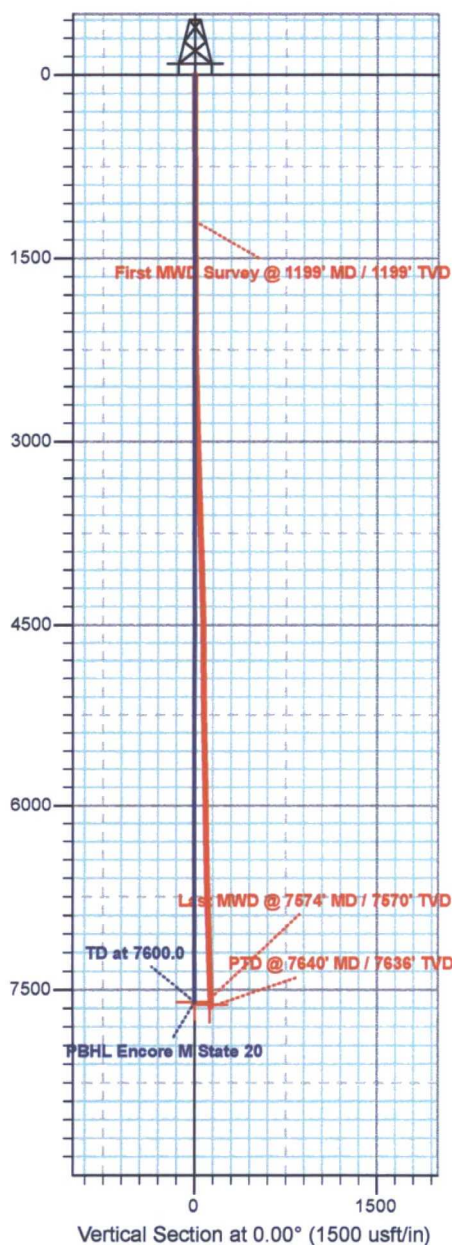


Azimuths to Grid North
 True North: -0.62°
 Magnetic North: 6.19°

Magnetic Field
 Strength: 48085.4snT
 Dip Angle: 60.26°
 Date: 2017/03/28
 Model: IGRF2015

ANNOTATIONS							
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSecDeparture	Annotation
7600.0	0.00	0.00	7600.0	0.0	0.0	0.0	0.0 TD at 7600.0

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL Encore M State 20	7600.0	0.0	0.0	498181.00	896310.00	32° 21' 51.583 N	103° 11' 1.250 W
- plan hits target center							
21	7622.0	122.5	123.0	498303.54	896433.04	32° 21' 52.782 N	103° 10' 59.800 W
- plan misses target center by 175.0usft at 7600.0usft MD (7600.0 TVD, 0.0 N, 0.0 E)							



SITE DETAILS: Sec 29 T22S R37E	
Site Centre Northing:	498181.00
Easting:	896310.00
Positional Uncertainty:	0.0
Convergence:	0.62
Local North:	Grid





DIRECTIONAL SERVICES, LLC.

Breitburn Operating

Lea County, NM

Sec 29 T22S R37E

Encore M State 20

Wellbore #1

Design: OH

Standard Survey Report

26 April, 2017



Company:	Breitburn Operating	Local Co-ordinate Reference:	Well Encore M State 20
Project:	Lea County, NM	TVD Reference:	Well @ 3390.0usft (Nabors M55)
Site:	Sec 29 T22S R37E	MD Reference:	Well @ 3390.0usft (Nabors M55)
Well:	Encore M State 20	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14 Single User Db

Project	Lea County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Sec 29 T22S R37E		
Site Position:		Northing:	498,181.00 usft
From:	Map	Easting:	896,310.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 21' 51.583 N
		Longitude:	103° 11' 1.250 W
		Grid Convergence:	0.62 °

Well	Encore M State 20		
Well Position	+N/-S	0.0 usft	Northing: 498,181.00 usft
	+E/-W	0.0 usft	Easting: 896,310.00 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 21' 51.583 N
		Longitude:	103° 11' 1.250 W
		Ground Level:	3,368.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	2017/03/28	6.81
			Dip Angle (°)
			60.26
			Field Strength (nT)
			48,085.43153424

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			0.00

Survey Program	Date 2017/04/26		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
52.1	7,640.0	Survey #1 (Wellbore #1)	MWD
			Description
			OWSG MWD - Standard

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
52.1	0.27	272.94	52.1	0.0	-0.1	0.0	0.52	0.52	0.00	
93.6	0.06	323.92	93.6	0.0	-0.2	0.0	0.57	-0.51	122.90	
183.0	0.14	40.82	183.0	0.1	-0.2	0.1	0.16	0.09	85.98	
272.5	0.22	34.53	272.5	0.4	0.0	0.4	0.09	0.09	-7.03	
361.9	0.24	58.13	361.9	0.6	0.2	0.6	0.11	0.02	26.39	
451.4	0.30	57.34	451.4	0.8	0.6	0.8	0.07	0.07	-0.88	
540.8	0.38	45.30	540.8	1.2	1.0	1.2	0.12	0.09	-13.46	
630.3	0.26	51.88	630.3	1.5	1.4	1.5	0.14	-0.13	7.36	
728.6	0.24	16.91	728.6	1.8	1.6	1.8	0.15	-0.02	-35.56	

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Well:	Encore M State 20	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14 Single 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)
823.7	0.32	12.52	823.7	2.3	1.7	2.3	0.09	0.08	-4.61
918.8	0.44	8.28	918.8	2.9	1.8	2.9	0.13	0.13	-4.46
1,013.7	0.33	359.44	1,013.7	3.5	1.9	3.5	0.13	-0.12	-9.31
1,108.8	0.20	355.11	1,108.7	4.0	1.9	4.0	0.14	-0.14	-4.56
1,173.1	0.25	331.24	1,173.1	4.2	1.8	4.2	0.16	0.08	-37.10
1,199.0	0.07	292.62	1,199.0	4.3	1.7	4.3	0.77	-0.69	-149.12
First MWD Survey @ 1199' MD / 1199' TVD									
1,484.3	0.22	32.84	1,484.3	4.8	1.9	4.8	0.09	0.05	35.13
1,768.5	0.53	54.84	1,768.5	6.0	3.3	6.0	0.12	0.11	7.74
2,053.5	1.23	62.20	2,053.5	8.2	7.0	8.2	0.25	0.25	2.58
2,339.5	1.91	61.04	2,339.4	11.9	13.9	11.9	0.24	0.24	-0.41
2,621.1	2.37	54.08	2,620.8	17.6	22.7	17.6	0.19	0.16	-2.47
2,909.0	2.13	49.17	2,908.4	24.6	31.6	24.6	0.11	-0.08	-1.71
3,194.0	2.37	49.90	3,193.2	31.9	40.1	31.9	0.08	0.08	0.26
3,479.0	2.26	39.70	3,478.0	40.0	48.2	40.0	0.15	-0.04	-3.58
3,764.0	2.11	34.25	3,762.8	48.7	54.8	48.7	0.09	-0.05	-1.91
4,049.0	2.37	35.60	4,047.5	57.8	61.1	57.8	0.09	0.09	0.47
4,334.0	2.11	50.67	4,332.3	65.9	68.6	65.9	0.23	-0.09	5.29
4,470.0	1.91	67.91	4,468.2	68.3	72.7	68.3	0.47	-0.15	12.68
4,612.0	2.04	71.69	4,610.2	70.0	77.3	70.0	0.13	0.09	2.66
4,896.0	1.91	67.50	4,894.0	73.4	86.4	73.4	0.07	-0.05	-1.48
5,182.0	2.20	69.14	5,179.8	77.2	96.0	77.2	0.10	0.10	0.57
5,468.0	2.33	65.40	5,465.6	81.6	106.4	81.6	0.07	0.05	-1.31
5,754.0	2.48	55.24	5,751.3	87.5	116.8	87.5	0.16	0.05	-3.55
6,039.0	1.31	52.50	6,036.2	93.0	124.4	93.0	0.41	-0.41	-0.96
6,325.0	1.59	48.63	6,322.1	97.6	130.0	97.6	0.10	0.10	-1.35
6,610.0	1.91	52.21	6,606.9	103.2	136.7	103.2	0.12	0.11	1.26
6,894.0	2.11	42.56	6,890.8	109.9	144.0	109.9	0.14	0.07	-3.40
7,179.0	2.24	42.04	7,175.6	117.9	151.3	117.9	0.05	0.05	-0.18
7,465.0	2.51	33.78	7,461.3	127.3	158.5	127.3	0.15	0.09	-2.89
7,574.0	2.55	33.52	7,570.2	131.3	161.1	131.3	0.04	0.04	-0.24
Last MWD @ 7574' MD / 7570' TVD									
7,640.0	2.57	33.36	7,636.1	133.7	162.8	133.7	0.03	0.03	-0.24
PTD @ 7640' MD / 7636' TVD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,199.0	1,199.0	4.3	1.7	First MWD Survey @ 1199' MD / 1199' TVD
7,574.0	7,570.2	131.3	161.1	Last MWD @ 7574' MD / 7570' TVD
7,640.0	7,636.1	133.7	162.8	PTD @ 7640' MD / 7636' TVD



Survey Report



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Checked By: _____ Approved By: _____ Date: _____