



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 phone number.

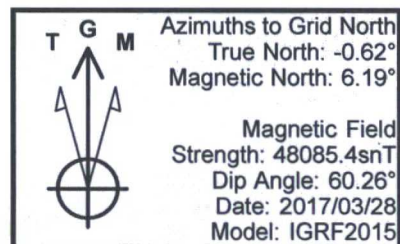
Sincerely,

A handwritten signature in blue ink, appearing to read "Chuck Ortego".

Chuck Ortego
MWD Manager

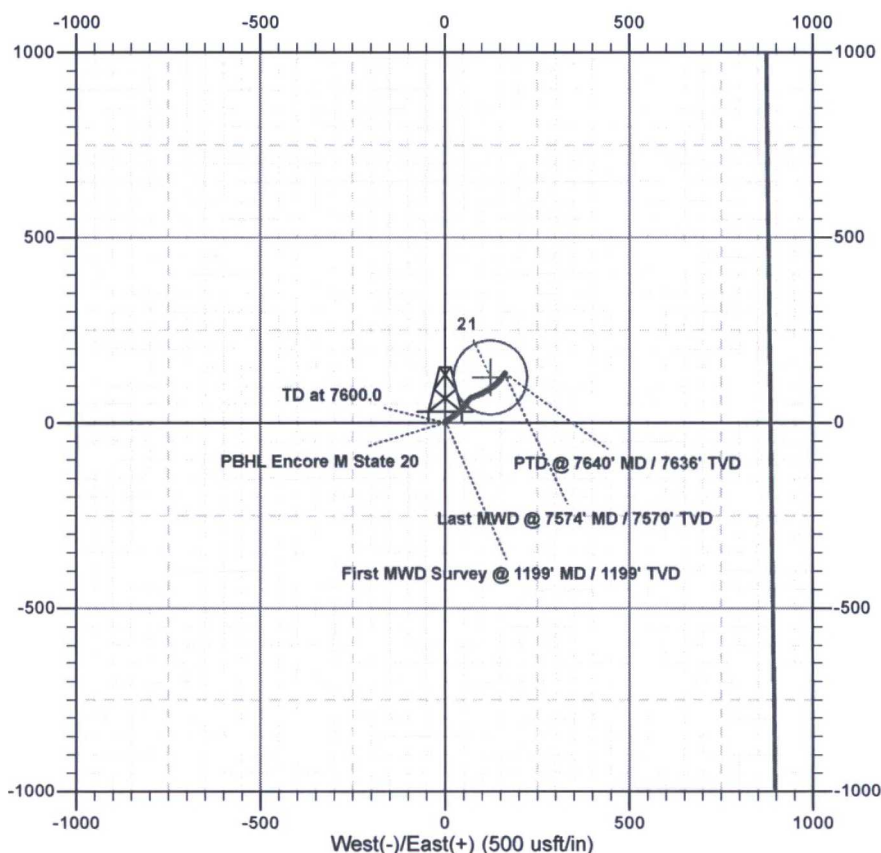
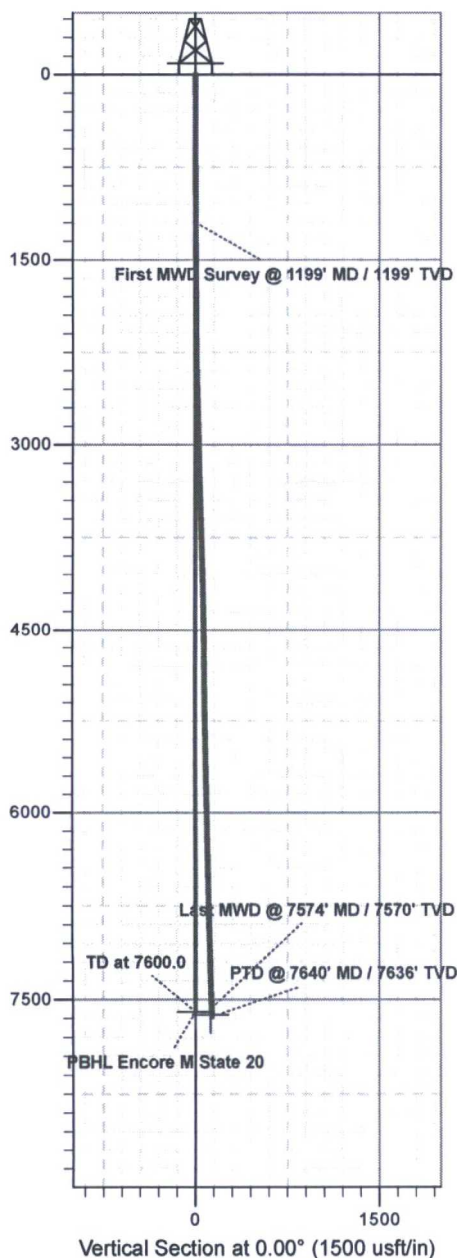


Breitburn Operating
Lea County, NM
Sec 29 T22S R37E
Encore M State 20
Wellbore #1
Nabors M55
Design #1



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





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
Project: Lea County, NM
Site: Sec 29 T2S R37E
Well: Encore M State 20
Wellbore: Wellbore #1
Design: OH

Local Co-ordinate Reference: Well Encore M State 20
TVD Reference: Well @ 3390.0usft (Nabors M55)
MD Reference: Well @ 3390.0usft (Nabors M55)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.14 Single User Db

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

Site Sec 29 T2S R37E
Site Position:
From: Map
Position Uncertainty: 0.0 usft
Northing: 498,181.00 usft
Easting: 896,310.00 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
+E/-W 0.0 usft
Position Uncertainty 0.0 usft
Northing: 498,181.00 usft
Easting: 896,310.00 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 IGRF2015
Sample Date 2017/03/28
Declination (°) 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) 0.0
+N/-S (usft) 0.0
+E/-W (usft) 0.0
Direction (°) 0.00

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

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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Survey Calculation Method: Minimum Curvature
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: _____