

30-025-42070

HOBBS OCD

NOV 02 2015

RECEIVED



PRODIRECTIONAL

P.O. Box 750 | Conroe, TX 77305 | Phone: 936-441-7266
www.prodirectional.com


ConocoPhillips

Vacuum ABO Unit No. 687 (OH)
Lea County, NM

January 07, 2014

Job No. LNM 5115214

Survey Completion Report

NOV 10 2015

jm



PRODIRECTIONAL

Professional Directional Ltd.

P.O. Box 750 | Conroe, TX 77305 | (936) 441-7266

January 07, 2014



ConocoPhillips

Vacuum ABO Unit No. 687 (OH)

Lea County, NM

Job No. LNM 5115214

Survey Certification Form:

This is to certify surveys from **1,739'MD** to a depth of **9,165'MD** are true and correct MWD Surveys.
These surveys were taken from **12/21/2014** through **12/31/2014**.

Sincerely,

John Jordan | Well Planning

PRODIRECTIONAL



Conoco Phillips

Lea County, NM
Vacuum ABO Unit No. 687
OH

Survey: ProDirectional

Survey Report

07 January, 2015



Company: Conoco Phillips Project: Lea County, N.M. Site: Vacuum ABO Unit Well: No. 687 Wellbore: OH Design: OH		Local Co-ordinate Reference: Well No. 687 WELL @ 3926.00usft (Original Well Elev) WELL @ 3926.00usft (Original Well Elev) Grid Minimum Curvature Well_Planner1	
Project: Lea County, N.M. Map System: US State Plane 1927 (Exact solution) Geo Datum: NAD 1927 (NADCON CONUS) Map Zone: New Mexico East 3001		System Datum: Mean Sea Level	
Site: Vacuum ABO Unit			
Site Position: Northing: 657,758.66 usft Easting: 778,438.28 usft Slot Radius: 13-3/16 "		Latitude: 32° 48' 17.957 N Longitude: 103° 25' 37.702 W Grid Convergence: 0.49 °	
Position Uncertainty: Map 0.00 usft			
Well: No. 687			
Well Position: +N/-S 0.00 usft +E/-W 0.00 usft 0.00 usft		Latitude: 32° 48' 24.148 N Longitude: 103° 25' 41.178 W Ground Level: 3,913.00 usft	
Wellbore: OH			
Magnetics: Model Name IGRF2010 Sample Date 1/7/2015		Dip Angle (°) 60.66 Field Strength (nT) 48,620	
Design: OH			
Audit Notes: Version: 1.0		Phase: ACTUAL Tie On Depth: 0.00	
Vertical Section: Depth From (TVD) (usft) 0.00		+N/-S (usft) 0.00 +E/-W (usft) 0.00 Direction (°) 155.97	

Company:

Conoco Phillips

Project:

Lea County, N.M.

Site:

Vacuum ABO Unit

Well:

No. 687

Wellbore:

OH

Design:

OH

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Database:

Well No. 687

WELL @ 3926.00usft (Original Well Elev)

WELL @ 3926.00usft (Original Well Elev)

Grid

Minimum Curvature

Well_Planner1

Survey Program

Date

1/7/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
160.00	1,640.00	Survey #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
1,739.00	9,165.00	Survey #2 (OH)	MWD	MWD - Standard

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	TFace (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	658,381.80	778,136.20	0.00
160.00	0.10	134.00	160.00	-0.10	0.10	0.13	0.06	658,381.70	778,136.30	134.00
360.00	0.10	336.00	360.00	-0.06	0.15	0.12	0.10	658,381.74	778,136.35	-169.00
560.00	0.20	93.00	560.00	0.08	0.43	0.10	0.13	658,381.88	778,136.63	136.96
760.00	0.30	124.00	760.00	-0.23	1.22	0.70	0.08	658,381.57	778,137.42	69.70
960.00	0.60	209.00	959.99	-1.44	1.14	1.78	0.32	658,380.36	778,137.34	112.51
1,160.00	0.50	260.00	1,159.98	-2.50	-0.23	2.20	0.24	658,379.30	778,135.97	126.29
1,360.00	0.20	320.00	1,359.98	-2.39	-1.31	1.65	0.22	658,379.41	778,134.89	156.59
1,560.00	0.50	302.00	1,559.98	-1.66	-2.27	0.59	0.16	658,380.14	778,133.93	-29.28
1,640.00	0.30	346.00	1,639.98	-1.27	-2.62	0.09	0.44	658,380.53	778,133.58	143.75
Last Teledrift Survey: 1,640' MD										
1,739.00	0.50	253.10	1,738.97	-1.14	-3.10	-0.22	0.60	658,380.66	778,133.10	-123.08
Pro MWD First Survey: 1,739' MD										
1,918.00	0.80	279.10	1,917.96	-1.17	-5.08	-1.00	0.23	658,380.63	778,131.12	58.01
2,096.00	0.70	296.60	2,095.95	-0.49	-7.28	-2.51	0.14	658,381.31	778,128.92	122.17
2,275.00	0.30	276.20	2,274.94	0.05	-8.72	-3.60	0.24	658,381.85	778,127.48	-165.98
2,454.00	0.40	268.20	2,453.94	0.08	-9.81	-4.07	0.06	658,381.88	778,126.39	-30.08
2,677.00	0.20	6.40	2,676.93	0.44	-10.55	-4.70	0.21	658,382.24	778,125.65	155.21
2,856.00	0.70	39.00	2,855.93	1.60	-9.82	-5.46	0.30	658,383.40	778,126.38	44.06
3,035.00	0.70	32.10	3,034.92	3.38	-8.55	-6.57	0.05	658,385.18	778,127.65	-93.45
3,213.00	0.70	6.10	3,212.90	5.38	-7.86	-8.12	0.18	658,387.18	778,128.34	-103.00
3,392.00	0.80	344.30	3,391.89	7.67	-8.08	-10.30	0.17	658,389.47	778,128.12	-81.80

Company: Conoco Phillips
Project: Lea County, N.M.
Site: Vacuum ABO Unit
Well: No. 687
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well No. 687
WELL @ 3926.00usft (Original Well Elev)
WELL @ 3926.00usft (Original Well Elev)
Grid
Minimum Curvature
Well_Planner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	TFace (°)
3,571.00	0.90	308.70	3,570.87	9.75	-9.52	-12.78	0.30	658,391.55	778,126.68	-97.42
3,749.00	1.00	291.50	3,748.85	11.20	-12.05	-15.13	0.17	658,393.00	778,124.15	-79.41
3,928.00	1.30	282.00	3,927.81	12.19	-15.49	-17.44	0.20	658,393.99	778,120.71	-37.25
4,107.00	0.80	240.40	4,106.78	12.00	-18.57	-18.52	0.49	658,393.80	778,117.63	-142.88
4,286.00	0.80	165.40	4,285.77	10.17	-19.34	-17.16	0.54	658,391.97	778,116.86	-127.50
4,465.00	1.00	184.50	4,464.75	7.40	-19.14	-14.56	0.20	658,389.20	778,117.06	66.11
4,643.00	0.80	200.50	4,642.72	4.69	-19.70	-12.31	0.18	658,386.49	778,116.50	136.33
4,822.00	0.90	194.70	4,821.70	2.16	-20.50	-10.32	0.07	658,383.96	778,115.70	-43.63
5,001.00	1.00	190.20	5,000.68	-0.74	-21.13	-7.93	0.07	658,381.06	778,115.07	-38.99
5,036.00	1.00	180.10	5,035.67	-1.34	-21.18	-7.40	0.50	658,380.46	778,115.02	-95.05
5,132.00	1.20	197.10	5,131.66	-3.14	-21.48	-5.88	0.40	658,378.66	778,114.72	67.19
5,322.00	3.30	142.30	5,321.52	-9.37	-18.72	0.94	1.47	658,372.43	778,117.48	-75.38
5,512.00	5.40	127.00	5,510.96	-19.08	-8.24	14.07	1.25	658,362.72	778,127.96	-36.70
5,702.00	9.50	144.30	5,699.34	-37.20	8.06	37.26	2.44	658,344.60	778,144.26	37.46
5,892.00	11.50	150.20	5,886.16	-66.38	26.63	71.47	1.19	658,315.42	778,162.83	31.19
6,082.00	12.00	150.90	6,072.17	-100.07	45.65	109.98	0.27	658,281.73	778,181.85	16.26
6,271.00	10.20	154.40	6,257.63	-132.33	62.43	146.29	1.02	658,249.47	778,198.63	161.19
6,459.00	10.70	156.50	6,442.52	-163.35	76.59	180.38	0.33	658,218.45	778,212.79	38.34
6,649.00	10.50	157.90	6,629.27	-195.56	90.13	215.32	0.17	658,186.24	778,226.33	128.52
6,839.00	9.70	159.30	6,816.33	-226.58	102.30	248.60	0.44	658,155.22	778,238.50	163.63
7,029.00	9.10	159.40	7,003.78	-255.62	113.25	279.58	0.32	658,126.18	778,249.45	178.49
7,219.00	10.50	153.80	7,191.00	-285.22	126.18	311.88	0.89	658,096.58	778,262.38	-37.03
7,410.00	11.90	151.40	7,378.36	-318.12	143.29	348.90	0.77	658,063.68	778,279.49	-19.60
7,599.00	12.40	154.70	7,563.13	-353.58	161.29	388.62	0.45	658,028.22	778,297.49	55.87
7,787.00	12.00	157.90	7,746.89	-389.94	177.27	428.33	0.42	657,991.86	778,313.47	122.16
7,976.00	10.90	159.00	7,932.12	-424.82	191.07	465.81	0.59	657,956.98	778,327.27	169.31
8,163.00	10.50	190.60	8,116.03	-458.11	194.27	497.51	3.11	657,923.69	778,330.47	109.34

Company: Conoco Phillips
Project: Lea County, N.M.
Site: Vacuum ABO Unit
Well: No. 687
Wellbore: OH
Design: OH

Local Coordinate Reference:
TVD Reference: WELL @ 3926.00usft (Original Well Elev)
MD Reference: WELL @ 3926.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Well_Planner1

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	TFace (°)
	8,352.00	10.60	198.50	8,301.84	-491.52	185.59	524.50	0.77	657,890.28	778,321.79	89.93
	8,541.00	11.80	170.30	8,487.38	-527.08	183.33	556.05	2.94	657,854.72	778,319.53	-91.73
	8,730.00	13.40	163.60	8,671.83	-567.15	192.77	596.49	1.15	657,814.65	778,328.97	-45.71
	8,919.00	11.80	151.70	8,856.30	-605.18	208.11	637.48	1.61	657,776.62	778,344.31	-127.36
	9,077.00	13.70	157.80	9,010.41	-636.73	222.84	672.29	1.47	657,745.07	778,359.04	38.32
Last Survey: 9,077' MD, 9,010.41' TVD											
	9,165.00	14.20	158.50	9,095.81	-656.42	230.74	693.49	0.60	657,725.38	778,366.94	18.99
PTB: 9,165' MD											

Design Annotations	Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
	1,640.00	1,639.98	-1.27	-2.62	Last Teledrift Survey: 1,640' MD
	1,739.00	1,738.97	-1.14	-3.10	Pro MWD First Survey: 1,739' MD
	9,077.00	9,010.41	-636.73	222.84	Last Survey: 9,077' MD, 9,010.41' TVD
	9,165.00	9,095.81	-656.42	230.74	PTB: 9,165' MD