

Results of Directional Survey

API number:	30-025-41017		DD
OGRID:		Operator:	CONOCOPHILLIPS COMPANY
		Property:	RUBY FEDERAL # 25

surface	ULSTR:	H	17	T 17S	R 32E
				2210 FNL	1120 FEL

BH Loc	ULSTR:	G	17	T 17S	R 32E
7101	MD	7055.0	TVD	2485 FNL ✓	1582 FEL ✓

Top Perf/OH	ULSTR:	H	17	T 17S	R 32E
5547	MD	5501.2	TVD	2494 FNL	1557 FEL

Bot Perf/OH	ULSTR:	G	17	T 17S	R 32E
6604	MD	6558.0	TVD	2487 FNL	1575 FEL

	MD	N/S	E/W	VD
	5546	-284.12	-436.82	5500.23
TOP PERFS/OH	5547	-284.11	-436.85	5501.23
	5636	-282.96	-439.74	5590.17
	6530	-277.10	-453.73	6484.03
BOT PERFS/OH	6604	-276.87	-454.87	6558.02
	6619	-276.82	-455.10	6573.02

NEXT TO LAST	7051	-275.16	-461.69	7004.96
LAST READING	7101	-275.13	-462.39	7054.96
TD	7101	-275.13	-462.39	7054.96

Surface Location	2210	FN	1120	FE
Projected BHL	2485	FN	1582	FE
Location of				
Top Perfs/OH	2494	FN	1557	FE
Bottom Perfs/OH	2487	FN	1575	FE

SUMMARY of Subsurface Locations

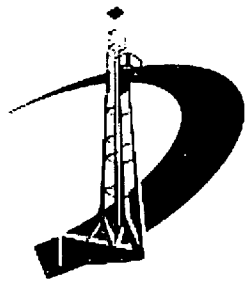
Surface Location	H-17-17S-32E	2210	FN	1120	FE	Vert. Depth
Top Perfs/OH	H-17-17S-32E	2494	FN	1557	FE	5501.23
Bottom Perfs/OH	G-17-17S-32E	2487	FN	1575	FE	6558.02
Projected TD	G-17-17S-32E	2485	FN	1582	FE	7054.96

JUL 28 2014

HOBBS OCD

JUL 22 2014

RECEIVED



PRODIRECTIONAL

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


ConocoPhillips

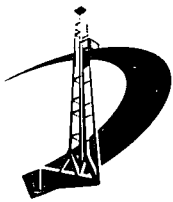
Ruby Federal No. 25
Lea County, NM

March 31, 2014

Job No. LNM 5109114

Survey Completion Report

ORIGINAL



PRODIRECTIONAL

Professional Directional Ltd.

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

March 31, 2014

ConocoPhillips

ConocoPhillips

Ruby Federal No. 25

Lea County, NM

Job No. LNM 5109114

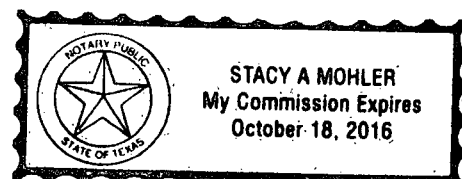
Survey Certification Form:

This is to certify surveys from **830'MD** to a depth of **7,101'MD** are true and correct MWD Surveys. These surveys were taken from **03/22/2014** through **03/26/2014**.

Sincerely,

John Jordan | Well Planning

PRODIRECTIONAL





ConocoPhillips

**Lea County, NM
Ruby Federal No. 25
OH**

Survey: ProDirectional

Survey Report

31 March, 2014





Professional Directional
Survey Report (NM)



Company: Conoco Phillips
Project: Lea County, N.M.
Site: Ruby Federal
Well: No. 25
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well No. 25
TVD Reference: WELL @ 4035.00usft (Original Well Elev)
MD Reference: WELL @ 4035.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: 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 Ruby Federal

Site Position:	Northing:	665,418.70 usft	Latitude:	32° 49' 41.553 N
From: Map	Easting:	662,182.70 usft	Longitude:	103° 48' 19.284 W
Position Uncertainty: 3.30 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.29 °

Well No. 25

Well Position	+N/-S	0.00 usft	Northing:	668,285.85 usft	Latitude:	32° 50' 9.580 N
	+E/-W	0.00 usft	Easting:	668,979.22 usft	Longitude:	103° 46' 59.460 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,022.00 usft	

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/31/2014	7.39	60.65	48,677

Design OH

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	237.89

Survey Program Date 3/31/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
830.00	7,101.00	Survey #1 (OH)	MWD	MWD - Standard



Professional Directional
Survey Report (NM)



Company: Conoco Phillips
Project: Lea County, N.M.
Site: Ruby Federal
Well: No. 25
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well No. 25
TVD Reference: WELL @ 4035.00usft (Original Well Elev)
MD Reference: WELL @ 4035.00usft (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)	DLeg (°/100usft)	Closure Azimuth (°)	Closure Distance (usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	668,285.85	668,979.22
830.00	0.20	81.20	830.00	0.22	1.43	0.02	81.20	1.45	668,286.07	668,980.65	
ProDirectional First MWD Survey											
990.00	0.30	59.30	990.00	0.48	2.07	0.09	76.98	2.12	668,286.33	668,981.29	
1,168.00	0.50	68.60	1,167.99	1.00	3.19	0.12	72.61	3.34	668,286.85	668,982.41	
1,347.00	0.90	83.80	1,346.98	1.44	5.32	0.24	74.88	5.51	668,287.29	668,984.54	
1,526.00	1.50	76.20	1,525.94	2.15	8.99	0.35	76.57	9.24	668,288.00	668,988.21	
1,704.00	1.60	80.00	1,703.87	3.13	13.70	0.08	77.11	14.05	668,288.98	668,992.92	
1,883.00	0.60	99.90	1,882.84	3.41	17.08	0.59	78.72	17.42	668,289.26	668,996.30	
1,972.00	2.10	249.10	1,971.82	2.75	16.02	2.96	80.28	16.25	668,288.60	668,995.24	
2,062.00	3.60	246.60	2,061.71	1.03	11.88	1.67	85.02	11.93	668,286.88	668,991.10	
2,151.00	3.50	247.40	2,150.54	-1.12	6.81	0.13	99.33	6.90	668,284.73	668,986.03	
2,240.00	4.80	240.90	2,239.30	-3.97	1.05	1.55	165.19	4.11	668,281.88	668,980.27	
2,329.00	5.60	239.20	2,327.94	-8.01	-5.93	0.92	216.53	9.97	668,277.84	668,973.29	
2,419.00	7.10	240.70	2,417.38	-12.98	-14.56	1.68	228.28	19.50	668,272.87	668,964.66	
2,508.00	8.30	238.70	2,505.58	-19.01	-24.84	1.38	232.58	31.28	668,266.84	668,954.38	
2,597.00	9.90	233.50	2,593.46	-26.90	-36.48	2.02	233.60	45.33	668,258.95	668,942.74	
2,687.00	10.60	238.70	2,682.02	-35.80	-49.77	1.29	234.27	61.31	668,250.05	668,929.45	
2,776.00	9.50	235.70	2,769.65	-44.19	-62.84	1.37	234.88	76.82	668,241.66	668,916.38	
2,865.00	10.10	240.30	2,857.36	-52.20	-75.68	1.11	235.41	91.94	668,233.65	668,903.54	
2,955.00	10.90	238.90	2,945.85	-60.50	-89.82	0.93	236.04	108.30	668,225.35	668,889.40	
3,044.00	9.40	237.90	3,033.45	-68.71	-103.19	1.70	236.34	123.97	668,217.14	668,876.03	
3,133.00	11.00	236.10	3,121.04	-77.31	-116.39	1.83	236.41	139.73	668,208.54	668,862.83	
3,223.00	11.50	233.60	3,209.32	-87.42	-130.74	0.78	236.23	157.28	668,198.43	668,848.48	
3,312.00	10.30	231.70	3,296.71	-97.62	-144.13	1.41	235.89	174.08	668,188.23	668,835.09	
3,402.00	10.40	231.70	3,385.24	-107.64	-156.82	0.11	235.53	190.21	668,178.21	668,822.40	
3,491.00	12.30	238.90	3,472.50	-117.52	-171.24	2.66	235.54	207.69	668,168.33	668,807.98	



Professional Directional
Survey Report (NM)



Company: Conoco Phillips
Project: Lea County, N.M.
Site: Ruby Federal
Well: No. 25
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well No. 25
TVD Reference: WELL @ 4035.00usft (Original Well Elev)
MD Reference: WELL @ 4035.00usft (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)	DLeg (°/100usft)	Closure Azimuth (°)	Closure Distance (usft)	Northing (usft)	Easting (usft)
3,580.00	11.80	237.50	3,559.54	-127.31	-187.03	0.65	235.76	226.25	668,158.54	668,792.19
3,669.00	11.40	236.60	3,646.72	-137.04	-202.05	0.49	235.85	244.14	668,148.81	668,777.17
3,759.00	11.20	235.60	3,734.98	-146.87	-216.69	0.31	235.87	261.77	668,138.98	668,762.53
3,848.00	10.90	233.60	3,822.33	-156.75	-230.59	0.55	235.79	278.82	668,129.10	668,748.63
3,938.00	10.50	231.80	3,910.77	-166.87	-243.89	0.58	235.62	295.51	668,118.98	668,735.33
4,027.00	11.00	236.40	3,998.21	-176.58	-257.33	1.12	235.54	312.09	668,109.27	668,721.89
4,116.00	10.70	235.40	4,085.61	-185.97	-271.21	0.40	235.56	328.84	668,099.88	668,708.01
4,206.00	10.40	235.70	4,174.09	-195.30	-284.79	0.34	235.56	345.32	668,090.55	668,694.43
4,295.00	10.40	236.00	4,261.63	-204.31	-298.09	0.06	235.57	361.39	668,081.54	668,681.13
4,385.00	10.30	235.80	4,350.17	-213.38	-311.48	0.12	235.59	377.56	668,072.47	668,667.74
4,474.00	10.20	235.30	4,437.75	-222.34	-324.54	0.15	235.59	393.39	668,063.51	668,654.68
4,564.00	10.10	236.70	4,526.34	-231.21	-337.69	0.30	235.60	409.25	668,054.64	668,641.53
4,653.00	10.10	237.90	4,613.96	-239.64	-350.82	0.24	235.66	424.85	668,046.21	668,628.40
4,742.00	9.90	237.40	4,701.61	-247.91	-363.88	0.24	235.73	440.30	668,037.94	668,615.34
4,832.00	9.70	237.90	4,790.29	-256.10	-376.82	0.24	235.80	455.61	668,029.75	668,602.40
4,921.00	9.70	237.90	4,878.02	-264.07	-389.52	0.00	235.86	470.60	668,021.78	668,589.70
5,010.00	7.90	239.10	4,965.97	-271.20	-401.12	2.03	235.94	484.20	668,014.65	668,578.10
5,099.00	6.80	243.80	5,054.24	-276.67	-411.10	1.41	236.06	495.52	668,009.18	668,568.12
5,189.00	5.00	243.50	5,143.76	-280.77	-419.39	2.00	236.20	504.70	668,005.08	668,559.83
5,278.00	3.50	239.10	5,232.51	-283.90	-425.19	1.72	236.27	511.26	668,001.95	668,554.03
5,367.00	2.40	259.20	5,321.39	-285.64	-429.35	1.68	236.36	515.69	668,000.21	668,549.87
5,457.00	2.50	287.20	5,411.31	-285.41	-433.08	1.32	236.61	518.67	668,000.44	668,546.14
5,546.00	2.60	290.70	5,500.23	-284.12	-436.82	0.21	236.96	521.09	668,001.73	668,542.40
5,636.00	1.40	293.60	5,590.17	-282.96	-439.74	1.34	237.24	522.91	668,002.89	668,539.48
5,725.00	1.40	296.70	5,679.14	-282.04	-441.70	0.09	237.44	524.07	668,003.81	668,537.52
5,815.00	1.60	295.80	5,769.11	-281.00	-443.82	0.22	237.66	525.30	668,004.85	668,535.40
5,904.00	0.60	295.30	5,858.09	-280.26	-445.36	1.12	237.82	526.20	668,005.59	668,533.86



Professional Directional Survey Report (NM)



Company: Conoco Phillips
Project: Lea County, N.M.
Site: Ruby Federal
Well: No. 25
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well No. 25
TVD Reference: WELL @ 4035.00usft (Original Well Elev)
MD Reference: WELL @ 4035.00usft (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)	DLeg (°/100usft)	Closure Azimuth (°)	Closure Distance (usft)	Northing (usft)	Easting (usft)
5,993.00	0.70	297.00	5,947.09	-279.81	-446.26	0.11	237.91	526.73	668,006.04	668,532.96
6,083.00	0.80	294.40	6,037.08	-279.30	-447.33	0.12	238.02	527.36	668,006.55	668,531.89
6,172.00	0.90	294.40	6,126.07	-278.76	-448.53	0.11	238.14	528.09	668,007.09	668,530.69
6,262.00	0.80	289.80	6,216.06	-278.25	-449.76	0.13	238.26	528.88	668,007.60	668,529.46
6,351.00	0.90	285.40	6,305.05	-277.86	-451.02	0.13	238.36	529.74	668,007.99	668,528.20
6,441.00	0.90	287.40	6,395.04	-277.46	-452.38	0.03	238.48	530.69	668,008.39	668,526.84
6,530.00	0.90	281.90	6,484.03	-277.10	-453.73	0.10	238.59	531.65	668,008.75	668,525.49
6,619.00	0.90	282.00	6,573.02	-276.82	-455.10	0.00	238.69	532.67	668,009.03	668,524.12
6,709.00	0.90	290.00	6,663.01	-276.43	-456.45	0.14	238.80	533.63	668,009.42	668,522.77
6,798.00	0.90	294.50	6,752.00	-275.90	-457.74	0.08	238.92	534.46	668,009.95	668,521.48
6,887.00	0.90	284.20	6,840.99	-275.44	-459.06	0.18	239.04	535.35	668,010.41	668,520.16
6,977.00	1.00	272.90	6,930.97	-275.22	-460.53	0.24	239.14	536.50	668,010.63	668,518.69
7,051.00	0.80	272.90	7,004.96	-275.16	-461.69	0.27	239.21	537.47	668,010.69	668,517.53
7,101.00	0.80	272.90	7,054.96	-275.13	-462.39	0.00	239.25	538.05	668,010.72	668,516.83

PTB @ 7,101' MD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
830.00	830.00	0.22	1.43	ProDirectional First MWD Survey
7,101.00	7,054.96	-275.13	-462.39	PTB @ 7,101' MD