

Results of Directional Survey

API number:	30-025-41652	DD	
OGRID:		Operator:	CONOCOPHILLIPS COMPANY
		Property:	RUBY FEDERAL # 27

surface	ULSTR:	G	17	T	17S	R	32E
				1480	FNL	2380	FEL

BH Loc	ULSTR:	F	17	T	17S	R	32E
7158	MD	7015.8	TVD	2401	FNL	2256	FWL
						3024	FEL

Top Perf/OH	ULSTR:	G	17	T	17S	R	32E
5580	MD	5454.1	TVD	2218	FNL	2385	FWL
						2895	FEL
Bot Perf/OH	ULSTR:	F	17	T	17S	R	32E
6610	MD	6472.1	TVD	2345	FNL	2295	FWL
						2985	FEL

	MD	N/S	E/W	VD
	5555	-734.20	-511.98	5429.6
TOP PERFS/OH	5580	-737.91	-515.04	5454.13
	5644	-747.41	-522.88	5516.94
	6539	-857.14	-600.11	6401.69
BOT PERFS/OH	6610	-864.95	-605.44	6472.06
	6628	-866.93	-606.79	6489.90

NEXT TO LAST	7106	-916.46	-640.46	6964.13
LAST READING	7158	-921.30	-643.65	7015.80
TD	7158	-921.30	-643.65	7015.80

Surface Location	1480	FN	2380	FE
Projected BHL	2401	FN	3024	FE
Location of				
Top Perfs/OH	2218	FN	2895	FE
Bottom Perfs/OH	2345	FN	2985	FE

SUMMARY of Subsurface Locations

Surface Location	G-17-17S-32E	1480	FN	2380	FE	Vert. Depth
Top Perfs/OH	G-17-17S-32E	2218	FN	2895	FE	5454.13
Bottom Perfs/OH	F-17-17S-32E	2345	FN	2985	FE	6472.06
Projected TD	F-17-17S-32E	2401	FN	3024	FE	7015.80

JUL 16 2014



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



Ruby Federal No. 27
Lea County, NM

March 24, 2014

Job No. LNM 5108814

Survey Completion Report

ORIGINAL



PRODIRECTIONAL

Professional Directional Ltd.

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

March 24, 2014

ConocoPhillips

ConocoPhillips

Ruby Federal No. 27

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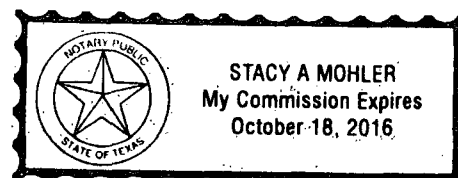
Survey Certification Form:

This is to certify surveys from **804'MD** to a depth of **7,158'MD** are true and correct MWD Surveys. These surveys were taken from **03/05/2014** through **03/10/2014**.

Sincerely,

John Jordan | Well Planning

PRODIRECTIONAL



Stacy A. Mohler
3/25/14



ConocoPhillips

Lea County, NM

Ruby Federal

No. 27

OH

Survey: ProDirectional

Survey Report

24 March, 2014





Professional Directional
Survey Report (NM)



Company: Conoco Phillips
Project: Lea County, N.M.
Site: Ruby Federal
Well: No. 27
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well No. 27
TVD Reference: WELL @ 4024.00usft (Original Well Elev)
MD Reference: WELL @ 4024.00usft (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:	From: Map	Northing:	665,418.70 usft	Latitude:	32° 49' 41.553 N
		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. 27

Well Position	+N/-S	0.00 usft	Northing:	668,910.92 usft	Latitude:	32° 50' 15.830 N
	+E/-W	0.00 usft	Easting:	667,714.91 usft	Longitude:	103° 47' 14.240 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,011.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/24/2014	7.39	60.65	48,680

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	214.82

Survey Program Date 3/24/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
804.00	7,158.00	Survey #1 (OH)	MWD	MWD - Standard



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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	668,910.92	667,714.91
804.00	0.40	292.20	803.99	1.06	-2.60	0.05	292.20	2.81	668,911.98	667,712.31
ProDirectional MWD										
819.00	0.40	281.70	818.99	1.09	-2.70	0.49	292.01	2.91	668,912.01	667,712.21
998.00	0.90	257.70	997.98	0.92	-4.68	0.31	281.09	4.77	668,911.84	667,710.23
1,177.00	0.70	238.70	1,176.96	0.05	-6.99	0.18	270.41	6.99	668,910.97	667,707.92
1,355.00	0.70	267.00	1,354.95	-0.57	-9.01	0.19	266.37	9.02	668,910.35	667,705.90
1,534.00	0.30	258.70	1,533.94	-0.72	-10.56	0.23	266.10	10.58	668,910.20	667,704.35
1,713.00	0.10	165.70	1,712.94	-0.96	-10.98	0.18	264.98	11.02	668,909.96	667,703.93
1,891.00	0.30	196.80	1,890.94	-1.56	-11.08	0.12	261.98	11.18	668,909.36	667,703.83
1,980.00	2.60	214.50	1,979.91	-3.45	-12.29	2.60	254.33	12.76	668,907.47	667,702.62
2,069.00	2.30	210.80	2,068.83	-6.64	-14.34	0.38	245.14	15.81	668,904.28	667,700.57
2,159.00	3.30	212.10	2,158.72	-10.39	-16.65	1.11	238.03	19.62	668,900.53	667,698.26
2,248.00	3.50	207.10	2,247.56	-14.98	-19.24	0.40	232.10	24.39	668,895.94	667,695.67
2,337.00	5.00	208.90	2,336.31	-20.79	-22.36	1.69	227.07	30.53	668,890.13	667,692.55
2,427.00	5.70	215.70	2,425.92	-27.86	-26.86	1.05	223.96	38.70	668,883.06	667,688.05
2,516.00	7.60	215.50	2,514.32	-36.24	-32.86	2.13	222.20	48.92	668,874.68	667,682.05
2,605.00	9.80	209.70	2,602.29	-47.61	-40.03	2.66	220.06	62.20	668,863.31	667,674.88
2,694.00	10.50	208.60	2,689.90	-61.31	-47.66	0.82	217.86	77.66	668,849.61	667,667.25
2,784.00	11.80	209.20	2,778.20	-76.54	-56.08	1.45	216.23	94.89	668,834.38	667,658.83
2,873.00	13.10	210.50	2,865.10	-93.18	-65.64	1.49	215.16	113.98	668,817.74	667,649.27
2,962.00	13.90	213.30	2,951.64	-110.80	-76.63	1.16	214.67	134.72	668,800.12	667,638.28
3,051.00	15.60	213.30	3,037.71	-129.74	-89.07	1.91	214.47	157.37	668,781.18	667,625.84
3,141.00	17.70	216.70	3,123.93	-150.83	-103.89	2.57	214.56	183.14	668,760.09	667,611.02
3,230.00	18.00	218.00	3,208.65	-172.51	-120.44	0.56	214.92	210.40	668,738.41	667,594.47
3,319.00	16.80	218.00	3,293.57	-193.48	-136.83	1.35	215.27	236.98	668,717.44	667,578.08
3,409.00	16.80	218.40	3,379.73	-213.93	-152.91	0.13	215.56	262.96	668,696.99	667,562.00



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Design: OH

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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)
3,498.00	17.40	217.90	3,464.80	-234.51	-169.08	0.69	215.79	289.10	668,676.41	667,545.83
3,588.00	16.90	218.00	3,550.80	-255.43	-185.40	0.56	215.97	315.62	668,655.49	667,529.51
3,677.00	18.20	214.60	3,635.65	-277.07	-201.25	1.86	215.99	342.45	668,633.85	667,513.66
3,766.00	18.00	214.10	3,720.25	-299.90	-216.86	0.28	215.87	370.09	668,611.02	667,498.05
3,856.00	17.60	213.90	3,805.94	-322.71	-232.24	0.45	215.74	397.59	668,588.21	667,482.67
3,945.00	17.30	213.70	3,890.85	-344.88	-247.09	0.34	215.62	424.26	668,566.04	667,467.82
4,035.00	17.10	213.60	3,976.82	-367.04	-261.84	0.22	215.50	450.86	668,543.88	667,453.07
4,124.00	16.90	212.70	4,061.93	-388.82	-276.07	0.37	215.37	476.86	668,522.10	667,438.84
4,214.00	18.30	212.70	4,147.72	-411.72	-290.77	1.56	215.23	504.04	668,499.20	667,424.14
4,303.00	18.50	213.20	4,232.17	-435.30	-306.05	0.29	215.11	532.12	668,475.62	667,408.86
4,392.00	18.50	212.90	4,316.57	-458.97	-321.45	0.11	215.01	560.34	668,451.95	667,393.46
4,482.00	18.60	212.90	4,401.89	-483.01	-337.00	0.11	214.90	588.95	668,427.91	667,377.91
4,571.00	18.70	213.00	4,486.22	-506.89	-352.48	0.12	214.81	617.40	668,404.03	667,362.43
4,661.00	17.70	214.10	4,571.71	-530.32	-368.01	1.17	214.76	645.50	668,380.60	667,346.90
4,750.00	17.70	214.30	4,656.50	-552.70	-383.22	0.07	214.74	672.56	668,358.22	667,331.69
4,839.00	17.80	213.90	4,741.26	-575.17	-398.43	0.18	214.71	699.69	668,335.75	667,316.48
4,929.00	17.80	214.30	4,826.96	-597.95	-413.85	0.14	214.69	727.20	668,312.97	667,301.06
5,018.00	17.80	214.00	4,911.70	-620.46	-429.13	0.10	214.67	754.40	668,290.46	667,285.78
5,108.00	17.60	212.10	4,997.44	-643.40	-444.05	0.68	214.61	781.75	668,267.52	667,270.86
5,198.00	16.50	215.50	5,083.48	-665.33	-458.70	1.65	214.58	808.13	668,245.59	667,256.21
5,287.00	15.00	218.10	5,169.14	-684.68	-473.15	1.86	214.65	832.26	668,226.24	667,241.76
5,376.00	14.30	219.20	5,255.24	-702.26	-487.20	0.85	214.75	854.72	668,208.66	667,227.71
5,466.00	13.20	216.90	5,342.66	-719.10	-500.40	1.36	214.83	876.07	668,191.82	667,214.51
5,555.00	11.50	218.10	5,429.60	-734.20	-511.98	1.93	214.89	895.08	668,176.72	667,202.93
5,644.00	10.70	221.10	5,516.94	-747.41	-522.88	1.11	214.98	912.16	668,163.51	667,192.03
5,734.00	10.50	221.40	5,605.40	-759.86	-533.80	0.23	215.09	928.62	668,151.06	667,181.11
5,823.00	9.00	215.20	5,693.12	-771.63	-543.17	2.05	215.14	943.64	668,139.29	667,171.74



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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)
5,913.00	8.70	212.80	5,782.04	-783.11	-550.92	0.53	215.13	957.48	668,127.81	667,163.99
6,002.00	8.50	213.40	5,870.04	-794.26	-558.19	0.25	215.10	970.78	668,116.66	667,156.72
6,091.00	8.40	213.60	5,958.08	-805.16	-565.40	0.12	215.08	983.85	668,105.76	667,149.51
6,181.00	8.20	213.10	6,047.14	-816.01	-572.55	0.24	215.06	996.84	668,094.91	667,142.36
6,270.00	8.00	213.50	6,135.25	-826.49	-579.43	0.23	215.03	1,009.37	668,084.43	667,135.48
6,360.00	8.00	213.90	6,224.37	-836.92	-586.38	0.06	215.02	1,021.90	668,074.00	667,128.53
6,449.00	7.80	214.10	6,312.53	-847.06	-593.22	0.23	215.00	1,034.13	668,063.86	667,121.69
6,539.00	7.80	214.60	6,401.69	-857.14	-600.11	0.08	215.00	1,046.34	668,053.78	667,114.80
6,628.00	7.50	214.00	6,489.90	-866.93	-606.79	0.35	214.99	1,058.19	668,043.99	667,108.12
6,718.00	7.50	215.00	6,579.13	-876.61	-613.44	0.15	214.98	1,069.93	668,034.31	667,101.47
6,807.00	7.30	213.90	6,667.39	-886.06	-619.93	0.28	214.98	1,081.39	668,024.86	667,094.98
6,896.00	7.30	214.40	6,755.67	-895.42	-626.28	0.07	214.97	1,092.70	668,015.50	667,088.63
6,985.00	7.10	214.10	6,843.97	-904.64	-632.56	0.23	214.96	1,103.86	668,006.28	667,082.35
7,106.00	6.40	213.40	6,964.13	-916.46	-640.46	0.58	214.95	1,118.07	667,994.46	667,074.45
7,158.00	6.40	213.40	7,015.80	-921.30	-643.65	0.00	214.94	1,123.87	667,989.62	667,071.26

PTB @ 7,158' MD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
804.00	803.99	1.06	-2.60	ProDirectional MWD
7,158.00	7,015.80	-921.30	-643.65	PTB @ 7,158' MD