Results of Directional Survey

DD

API number:	30-025-40521		
OGRID:		Operator:	CONOCOPHILLIPS COMPANY
		Property:	RUBY FEDERAL # 8

surface	ULSTR:	P	18	T	17S	R	32E
				1000	FSL	620	FEL

BH Loc	ULSTR:	P	18	T	17S	R	32E
7221	MD	7199.2	TVD	990	FSL	1099	FEL

Top Perf/OH	ULSTR:	P	18	T	17S	R	32E
5375	MD	5361.1	TVD	989	FSL	929	FEL

Bot Perf/OH	ULSTR:	P	18	T	17S	R	32E
6570	MD	6551.1	TVD	989	FSL	1037	FEL

	MD	N/S	E/W	VD
	5272	-10.40	-300.30	5258.5
TOP PERFS/OH	**5375**	-10.74	-309.28	5361.10
	5452	-11.00	-316.00	5437.80
	6535	-11.30	-413.80	6516.30
BOT PERFS/OH	**6570**	-11.05	-417.49	6551.11
	6716	-10.00	-432.90	6696.30

NEXT TO LAST	7173	-9.60	-474.40	7151.40
LAST READING	7221	-9.60	-478.50	7199.20
TD	**7221**	-9.60	-478.50	7199.20

Surface Location	1000	FS	620	FE
Projected BHL	990	FS	1099	FE
Location of				
Top Perfs/OH	989	FS	929	FE
Bottom Perfs/OH	989	FS	1037	FE

SUMMARY of Subsurface Locations

Surface Location	P-18-17S-32E	1000	FS	620	FE	Vert. Depth
Top Perfs/OH	P-18-17S-32E	989	FS	929	FE	5361.10
Bottom Perfs/OH	P-18-17S-32E	989	FS	1037	FE	6551.11
Projected TD	P-18-17S-32E	990	FS	1099	FE	7199.20

AUG 27 2013

The DIRECTIONAL DRILLING COMPANY

Survey Certification Sheet

Conoco Phillips.	GC-12481	5/9/13
Company	Job Number	Date

Sec18, T17S, R32E	Ruby Federal # 8	Lea, NM
Lease	Well Name	County & State

API: 30-025-40521

Surveyed from a depth of: 757 feet to 7221 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: Douglas Feilder

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore Coordinates are calculated using minimum curvature.

Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The Directional Drilling Company, ou=GM of Guidance Services, email=larryw@directionaldrillers.com, c=US
Date: 2013.05.09 10:49:31 -05'00'

Larry Wright
MWD General Manager

o 11390 FM 830 o Willis, Texas 77318 o
o PH 936-856-4332 o FAX 936-856-8678 o

ConocoPhillips

DDC
Survey Report

Company:	Conoco Phillips	**Local Co-ordinate Reference:**	Well Ruby Federal #8
Project:	Lea County, New Mexico	**TVD Reference:**	WELL @ 3994.0usft (Original Well Elev)
Site:	Sec 18, 17S, 32E	**MD Reference:**	WELL @ 3994.0usft (Original Well Elev)
Well:	Ruby Federal #8	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Project Lea County, New Mexico

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

HOBBS OCD
JUL 05 2013
RECEIVED

Site Sec 18, 17S, 32E

Site Position:		**Northing:**	666,096.12 usft	**Latitude:**	32° 49' 48.155 N
From:	Map	**Easting:**	664,218.49 usft	**Longitude:**	103° 47' 55.386 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.29 °

Well Ruby Federal #8

Well Position	**+N/-S**	0.0 usft	**Northing:**	666,096.12 usft	**Latitude:**	32° 49' 48.155 N
	+E/-W	0.0 usft	**Easting:**	664,218.49 usft	**Longitude:**	103° 47' 55.386 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,980.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	6/29/2012	7.61	60.68	48,848

Design Wellbore #1

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	268.25

Survey Program **Date** 7/11/2012

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
922.0	7,221.0	MWD (Wellbore #1)	MWD default	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)**
TIE IN @ 757' MD / 757' TVD									
757.0	0.30	199.00	757.0	0.0	0.0	0.0	0.00	0.00	0.00
922.0	0.40	253.70	922.0	-0.6	-0.7	0.7	0.20	0.06	33.15
1,119.0	0.80	257.70	1,119.0	-1.1	-2.7	2.7	0.20	0.20	2.03
1,300.0	0.60	280.90	1,300.0	-1.1	-4.9	4.9	0.19	-0.11	12.82
1,480.0	0.40	285.50	1,480.0	-0.8	-6.4	6.4	0.11	-0.11	2.56
1,661.0	0.40	350.00	1,661.0	0.0	-7.1	7.1	0.24	0.00	35.64
1,842.0	0.70	22.90	1,842.0	1.6	-6.8	6.7	0.23	0.17	18.18
2,022.0	2.20	276.00	2,021.9	3.0	-9.8	9.7	1.39	0.83	-59.39
2,203.0	4.50	253.20	2,202.6	1.3	-20.1	20.0	1.44	1.27	-12.60
2,383.0	4.00	251.80	2,382.1	-2.7	-32.8	32.8	0.28	-0.28	-0.78

ConocoPhillips

DDC
Survey Report

Company:	Conoco Phillips	**Local Co-ordinate Reference:**	Well Ruby Federal #8
Project:	Lea County, New Mexico	**TVD Reference:**	WELL @ 3994.0usft (Original Well Elev)
Site:	Sec 18, 17S, 32E	**MD Reference:**	WELL @ 3994.0usft (Original Well Elev)
Well:	Ruby Federal #8	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 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)
2,563.0	5.00	259.90	2,561.5	-6.0	-46.5	46.6	0.66	0.56	4.50
2,745.0	5.30	262.00	2,742.8	-8.6	-62.6	62.8	0.19	0.16	1.15
2,925.0	4.00	272.50	2,922.2	-9.5	-77.1	77.4	0.86	-0.72	5.83
3,105.0	5.00	269.90	3,101.7	-9.2	-91.2	91.5	0.57	0.56	-1.44
3,286.0	5.60	265.80	3,281.9	-9.9	-107.9	108.2	0.39	0.33	-2.27
3,466.0	6.10	265.80	3,460.9	-11.2	-126.2	126.5	0.28	0.28	0.00
3,646.0	6.40	275.50	3,639.9	-10.9	-145.7	146.0	0.61	0.17	5.39
3,827.0	5.90	271.30	3,819.8	-9.8	-165.1	165.3	0.37	-0.28	-2.32
4,008.0	5.80	269.00	3,999.9	-9.7	-183.5	183.7	0.14	-0.06	-1.27
4,188.0	5.80	269.90	4,179.0	-9.9	-201.7	201.9	0.05	0.00	0.50
4,369.0	5.80	271.50	4,359.1	-9.7	-220.0	220.2	0.09	0.00	0.88
4,550.0	5.20	269.20	4,539.2	-9.5	-237.3	237.5	0.35	-0.33	-1.27
4,730.0	5.10	270.90	4,718.5	-9.5	-253.5	253.7	0.10	-0.06	0.94
4,911.0	4.70	273.00	4,898.8	-9.0	-268.9	269.1	0.24	-0.22	1.16
5,092.0	5.10	264.80	5,079.2	-9.4	-284.4	284.5	0.45	0.22	-4.53
5,272.0	5.10	267.90	5,258.5	-10.4	-300.3	300.5	0.15	0.00	1.72
5,452.0	4.90	267.20	5,437.8	-11.0	-316.0	316.2	0.12	-0.11	-0.39
5,633.0	5.20	265.50	5,618.1	-12.1	-331.9	332.1	0.19	0.17	-0.94
5,813.0	5.00	267.80	5,797.4	-13.0	-347.9	348.1	0.16	-0.11	1.28
5,994.0	4.80	270.20	5,977.7	-13.3	-363.3	363.6	0.16	-0.11	1.33
6,174.0	4.50	269.50	6,157.1	-13.3	-377.9	378.1	0.17	-0.17	-0.39
6,355.0	6.10	273.70	6,337.3	-12.8	-394.6	394.8	0.91	0.88	2.32
6,535.0	6.20	275.10	6,516.3	-11.3	-413.8	414.0	0.10	0.06	0.78
6,716.0	5.90	272.30	6,696.3	-10.0	-432.9	433.0	0.23	-0.17	-1.55
6,896.0	5.20	269.70	6,875.4	-9.7	-450.3	450.4	0.41	-0.39	-1.44
7,077.0	4.90	270.20	7,055.7	-9.7	-466.2	466.3	0.17	-0.17	0.28
7,173.0	4.90	271.10	7,151.4	-9.6	-474.4	474.5	0.08	0.00	0.94
TD @ 7221' MD / 7199' TVD									
7,221.0	4.90	271.10	7,199.2	-9.6	-478.5	478.6	0.00	0.00	0.00

5364 → -10.7

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
757.0	757.0	0.0	0.0	TIE IN @ 757' MD / 757' TVD
7,221.0	7,199.2	-9.6	-478.5	TD @ 7221' MD / 7199' TVD

Checked By: _____ Approved By: _____ Date: _____