

SURVEY DATA CERTIFICATION



Job #: 10366449
 Client: ConocoPhillips
 County & State: Lea County, NM
 Well: Red Hills West 16 State W1 11H
 API No: 3002541707
 Proposed Direction: 179.83

TIE-IN DATA

MD	TVD	INC	AZM	N/-S	E/-W	DATA SOURCE
933.00 ft	932.91 ft	1.6	158.8	-7.84	5.15	Gyro
Data Source Company:						Gyro Data

SURVEY DATA

First Survey Date	First Survey Depth	INC	AZM
15-Nov-14	1,001 ft	1.58°	172.44°

Last Survey Date	Last Survey Depth	INC	AZM
16-Dec-14	16,640 ft	90.56°	181.92°

Survey Instrument Type
 Positive Pulse MWD

Projected TD Survey Date	Projected TD Survey Depth	INC	AZM
16-Dec-14	16,702 ft	90.56°	181.92°

CORRECTION INFORMATION

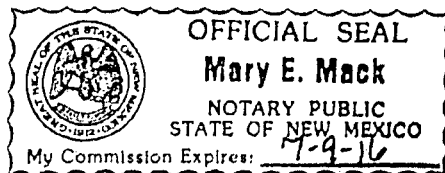
Magnetic Declination Used	7.37 degrees
Grid Convergence Used	0.35 degrees
Total Correction	7.02 degrees

Corrected to True/Grid North
 Grid North

TO THE BEST OF MY KNOWLEDGE, I CERTIFY THIS SURVEY DATA TO BE TRUE AND CORRECT.

Mary E. Mack
 Signature
 1/15/15
 Date

Mary E. Mack





Survey Report

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well Red Hills West 16 St W1 Well 11H
Project:	Lea County, New Mexico	TVD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Site:	Red Hills West 16 State	MD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Well:	Red Hills West 16 St W1 Well 11H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Project:	Lea County, New Mexico		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Red Hills West 16 State				
Site Position:		Northing:	382,247.67 usft	Latitude:	32° 2' 57.078179 N
From:	Map	Easting:	704,921.73 usft	Longitude:	103° 40' 18.974250 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.35 °

Well:	Red Hills West 16 St W1 Well 11H, Surf Loc: 316 FNL 330 FEL Sect 16					
Well Position	+N-S	0.00 usft	Northing:	382,280.67 usft	Latitude:	32° 2' 57.404760 N
	+E-W	0.00 usft	Easting:	704,921.52 usft	Longitude:	103° 40' 18.974341 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,223.00 usft

Wellbore:	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	9/25/2014	7.38	59.92	48,180
	User Defined	11/12/2014	7.37	59.91	48,164

Design:	Surveys Original Hole				
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		179.83

Survey Program:	Date: 12/17/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
20.00	989.00	MWD RKB=27 ft (Original Hole)	MWD	MWD - Standard	
1,001.00	16,702.00	MWD TIP=933 MD (Original Hole)	MWD	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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	
139.00	0.50	359.10	139.00	0.52	-0.01	-0.52	0.42	0.42	0.00	
MWD surveys										
202.00	0.10	315.70	202.00	0.83	-0.05	-0.83	0.69	-0.63	-68.89	
263.00	0.20	123.60	263.00	0.81	0.00	-0.81	0.49	0.16	275.25	
326.00	0.70	114.90	326.00	0.59	0.44	-0.59	0.80	0.79	-13.81	
388.00	0.90	155.00	387.99	-0.01	0.99	0.01	0.94	0.32	64.68	

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Site:	Red Hills West 16 State	MD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Well:	Red Hills West 16 St W1 Well 11H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

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)	
450.00	1.10	136.20	449.98	-0.88	1.61	0.89	0.62	0.32	-30.32	
534.00	0.70	127.80	533.97	-1.78	2.57	1.79	0.50	-0.48	-10.00	
619.00	1.20	144.80	618.96	-2.82	3.50	2.83	0.67	0.59	20.00	
703.00	0.50	178.80	702.95	-3.91	4.01	3.92	0.99	-0.83	40.48	
788.00	1.10	160.60	787.94	-5.05	4.29	5.06	0.76	0.71	-21.41	
872.00	1.00	167.00	871.93	-6.52	4.72	6.54	0.18	-0.12	7.62	
933.00	1.60	158.80	932.91	-7.84	5.15	7.85	1.03	0.98	-13.44	
989.00	1.58	170.02	988.89	-9.32	5.57	9.34	0.56	-0.04	20.04	
Survey projected to 989.00 MD										
1,001.00	1.58	172.44	1,000.88	-9.65	5.62	9.67	0.56	0.03	20.17	
MWD surveys										
1,064.00	1.24	164.35	1,063.87	-11.17	5.91	11.19	0.62	-0.54	-12.84	
1,158.00	0.51	132.15	1,157.85	-12.43	6.50	12.45	0.91	-0.78	-34.26	
1,253.00	0.34	115.97	1,252.85	-12.84	7.07	12.86	0.22	-0.18	-17.03	
1,347.00	0.24	119.28	1,346.85	-13.05	7.49	13.08	0.11	-0.11	3.52	
1,442.00	0.26	113.56	1,441.85	-13.24	7.86	13.26	0.03	0.02	-6.02	
1,536.00	0.31	129.59	1,535.85	-13.49	8.25	13.51	0.10	0.05	17.05	
1,631.00	0.34	150.86	1,630.85	-13.90	8.59	13.92	0.13	0.03	22.39	
1,725.00	0.39	146.08	1,724.84	-14.40	8.90	14.43	0.06	0.05	-5.09	
1,819.00	0.42	154.38	1,818.84	-14.98	9.23	15.01	0.07	0.03	8.83	
1,914.00	0.65	156.34	1,913.84	-15.79	9.59	15.82	0.24	0.24	2.06	
2,008.00	0.74	176.66	2,007.83	-16.88	9.84	16.91	0.28	0.10	21.62	
2,102.00	0.73	182.10	2,101.82	-18.09	9.86	18.12	0.07	-0.01	5.79	
2,197.00	0.80	167.48	2,196.82	-19.34	9.98	19.37	0.22	0.07	-15.39	
2,291.00	0.89	167.05	2,290.81	-20.69	10.28	20.72	0.10	0.10	-0.46	
2,386.00	0.26	150.33	2,385.80	-21.60	10.56	21.63	0.68	-0.66	-17.60	
2,480.00	1.62	330.73	2,479.79	-20.62	10.01	20.65	2.00	1.45	-191.06	
2,575.00	4.02	325.78	2,574.67	-16.70	7.48	16.72	2.54	2.53	-5.21	
2,669.00	4.79	325.40	2,668.39	-10.74	3.40	10.75	0.82	0.82	-0.40	
2,763.00	4.61	325.05	2,762.07	-4.42	-0.99	4.41	0.19	-0.19	-0.37	
2,858.00	4.45	325.61	2,856.78	1.75	-5.26	-1.77	0.17	-0.17	0.59	
2,952.00	4.42	326.60	2,950.49	7.79	-9.31	-7.82	0.09	-0.03	1.05	
3,047.00	4.39	326.81	3,045.21	13.89	-13.32	-13.93	0.04	-0.03	0.22	
3,141.00	4.25	330.03	3,138.95	19.91	-17.03	-19.97	0.30	-0.15	3.43	
3,235.00	4.28	323.81	3,232.69	25.76	-20.84	-25.82	0.49	0.03	-6.62	
3,329.00	4.55	307.12	3,326.41	30.84	-25.88	-30.92	1.39	0.29	-17.76	
3,424.00	4.49	303.73	3,421.12	35.18	-31.98	-35.28	0.29	-0.06	-3.57	
3,518.00	3.73	312.36	3,514.88	39.29	-37.30	-39.40	1.04	-0.81	9.18	
3,612.00	2.78	321.60	3,608.72	43.13	-40.98	-43.25	1.15	-1.01	9.83	
3,707.00	1.17	321.58	3,703.66	45.70	-43.01	-45.83	1.69	-1.69	-0.02	
3,801.00	0.03	318.66	3,797.66	46.47	-43.62	-46.60	1.21	-1.21	-3.11	
3,895.00	0.97	114.79	3,891.65	46.15	-42.92	-46.28	1.06	1.00	166.10	
3,990.00	1.55	116.91	3,986.63	45.24	-41.04	-45.36	0.61	0.61	2.23	
4,084.00	1.71	117.78	4,080.59	44.01	-38.67	-44.12	0.17	0.17	0.93	

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Site:	Red Hills West 16 State	MD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Well:	Red Hills West 16 St W1 Well 11H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

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)
4,178.00	2.38	126.68	4,174.53	42.19	-35.86	-42.29	0.79	0.71	9.47
4,273.00	2.93	137.08	4,269.43	39.23	-32.62	-39.33	0.77	0.58	10.95
4,367.00	2.15	157.75	4,363.34	35.84	-30.32	-35.93	1.27	-0.83	21.99
4,461.00	1.17	205.12	4,457.30	33.34	-30.06	-33.43	1.71	-1.04	50.39
4,556.00	0.65	262.47	4,552.29	32.39	-31.01	-32.48	1.04	-0.55	60.37
4,591.00	0.76	271.92	4,587.29	32.37	-31.44	-32.46	0.46	0.31	27.00
4,689.00	0.79	275.39	4,685.28	32.46	-32.76	-32.55	0.06	0.03	3.54
4,752.00	0.68	274.36	4,748.27	32.53	-33.56	-32.62	0.18	-0.17	-1.63
4,846.00	0.65	276.56	4,842.27	32.63	-34.65	-32.73	0.04	-0.03	2.34
4,940.00	0.68	273.40	4,936.26	32.72	-35.74	-32.83	0.05	0.03	-3.36
5,035.00	0.73	280.16	5,031.25	32.86	-36.89	-32.97	0.10	0.05	7.12
5,129.00	0.87	273.47	5,125.24	33.01	-38.20	-33.12	0.18	0.15	-7.12
5,223.00	0.88	274.11	5,219.23	33.11	-39.63	-33.22	0.01	0.01	0.68
5,318.00	0.89	274.28	5,314.22	33.21	-41.09	-33.34	0.01	0.01	0.18
5,412.00	0.91	275.90	5,408.21	33.34	-42.56	-33.47	0.03	0.02	1.72
5,506.00	0.97	280.27	5,502.20	33.56	-44.09	-33.69	0.10	0.06	4.65
5,601.00	1.07	282.44	5,597.18	33.90	-45.74	-34.03	0.11	0.11	2.28
5,695.00	1.16	287.54	5,691.17	34.37	-47.51	-34.51	0.14	0.10	5.43
5,789.00	1.10	285.55	5,785.15	34.90	-49.29	-35.05	0.08	-0.06	-2.12
5,883.00	1.22	282.25	5,879.13	35.36	-51.13	-35.51	0.15	0.13	-3.51
5,977.00	1.30	292.76	5,973.11	35.98	-53.09	-36.14	0.26	0.09	11.18
6,072.00	1.48	292.71	6,068.08	36.87	-55.22	-37.04	0.19	0.19	-0.05
6,166.00	1.42	290.80	6,162.05	37.75	-57.43	-37.92	0.08	-0.06	-2.03
6,260.00	1.48	281.29	6,256.02	38.41	-59.71	-38.58	0.26	0.06	-10.12
6,355.00	1.45	282.02	6,350.99	38.90	-62.09	-39.08	0.04	-0.03	0.77
6,449.00	1.51	278.41	6,444.95	39.32	-64.47	-39.52	0.12	0.06	-3.84
6,544.00	2.26	320.49	6,539.91	40.95	-66.90	-41.15	1.60	0.79	44.29
6,639.00	0.94	357.46	6,634.87	43.18	-68.13	-43.38	1.70	-1.39	38.92
6,733.00	0.61	22.39	6,728.86	44.41	-67.97	-44.61	0.49	-0.35	26.52
6,827.00	0.50	18.72	6,822.86	45.26	-67.65	-45.46	0.12	-0.12	-3.90
6,922.00	0.36	357.61	6,917.85	45.95	-67.53	-46.15	0.22	-0.15	-22.22
7,016.00	0.34	12.81	7,011.85	46.52	-67.48	-46.72	0.10	-0.02	16.17
7,110.00	0.42	1.95	7,105.85	47.14	-67.41	-47.33	0.11	0.09	-11.55
7,205.00	0.28	30.23	7,200.85	47.68	-67.28	-47.88	0.23	-0.15	29.77
7,299.00	0.36	20.08	7,294.85	48.16	-67.06	-48.36	0.10	0.09	-10.80
7,393.00	0.34	20.83	7,388.85	48.70	-66.86	-48.90	0.02	-0.02	0.80
7,488.00	0.27	29.59	7,483.84	49.16	-66.65	-49.35	0.09	-0.07	9.22
7,582.00	0.14	23.35	7,577.84	49.45	-66.50	-49.65	0.14	-0.14	-6.64
7,676.00	0.09	296.88	7,671.84	49.59	-66.52	-49.79	0.17	-0.05	-91.99
7,771.00	0.24	332.75	7,766.84	49.80	-66.67	-50.00	0.18	0.16	37.76
7,865.00	0.18	7.62	7,860.84	50.12	-66.74	-50.32	0.15	-0.06	37.10
7,960.00	0.03	258.15	7,955.84	50.27	-66.75	-50.47	0.20	-0.16	-115.23
8,054.00	0.14	238.71	8,049.84	50.20	-66.87	-50.40	0.12	0.12	-20.68

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Wellbore:	Original Hole.	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

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8,149.00	0.30	245.68	8,144.84	50.04	-67.20	-50.24	0.17	0.17	7.34
8,243.00	0.41	241.21	8,238.84	49.78	-67.72	-49.98	0.12	0.12	-4.76
8,337.00	0.45	249.25	8,332.84	49.48	-68.36	-49.69	0.08	0.04	8.55
8,432.00	0.48	262.94	8,427.83	49.30	-69.10	-49.51	0.12	0.03	14.41
8,526.00	0.59	247.18	8,521.83	49.07	-69.94	-49.27	0.19	0.12	-16.77
8,620.00	1.23	275.48	8,615.82	48.98	-71.39	-49.19	0.81	0.68	30.11
8,715.00	0.48	336.96	8,710.81	49.44	-72.56	-49.65	1.14	-0.79	64.72
8,809.00	0.17	337.50	8,804.81	49.93	-72.77	-50.15	0.33	-0.33	0.57
8,903.00	0.06	350.37	8,898.81	50.11	-72.83	-50.32	0.12	-0.12	13.69
8,998.00	0.40	278.26	8,993.81	50.20	-73.16	-50.42	0.41	0.36	-75.91
9,092.00	0.40	319.06	9,087.80	50.50	-73.70	-50.72	0.30	0.00	43.40
9,187.00	0.73	307.07	9,182.80	51.11	-74.40	-51.33	0.37	0.35	-12.62
9,281.00	0.73	286.40	9,276.79	51.64	-75.46	-51.87	0.28	0.00	-21.99
9,376.00	1.37	287.56	9,371.77	52.16	-77.12	-52.39	0.67	0.67	1.22
9,470.00	1.04	252.15	9,465.76	52.24	-79.00	-52.47	0.85	-0.35	-37.67
9,565.00	0.36	288.87	9,560.75	52.07	-80.11	-52.31	0.82	-0.72	38.65
9,659.00	0.76	41.25	9,654.75	52.63	-79.97	-52.87	1.02	0.43	119.55
9,754.00	0.88	70.16	9,749.74	53.35	-78.87	-53.59	0.45	0.13	30.43
9,848.00	0.94	51.82	9,843.72	54.07	-77.59	-54.30	0.31	0.06	-19.51
9,943.00	1.27	60.41	9,938.71	55.08	-76.06	-55.30	0.39	0.35	9.04
10,037.00	1.29	47.85	10,032.68	56.30	-74.37	-56.52	0.30	0.02	-13.36
10,131.00	1.26	25.73	10,126.66	57.94	-73.14	-58.16	0.52	-0.03	-23.53
10,225.00	1.03	71.64	10,220.64	59.14	-71.89	-59.35	0.98	-0.24	48.84
10,320.00	1.50	94.23	10,315.62	59.32	-69.83	-59.52	0.71	0.49	23.78
10,414.00	1.94	115.68	10,409.58	58.54	-67.17	-58.74	0.82	0.47	22.82
10,508.00	1.50	150.35	10,503.54	56.78	-65.13	-56.97	1.18	-0.47	36.88
10,602.00	1.06	213.60	10,597.52	54.98	-65.00	-55.18	1.48	-0.47	67.29
10,697.00	0.87	186.91	10,692.51	53.54	-65.58	-53.73	0.51	-0.20	-28.09
10,791.00	0.93	154.79	10,786.50	52.14	-65.34	-52.33	0.53	0.06	-34.17
10,885.00	1.40	154.43	10,880.48	50.41	-64.52	-50.60	0.50	0.50	-0.38
10,980.00	1.11	171.23	10,975.45	48.45	-63.88	-48.64	0.49	-0.31	17.68
11,074.00	0.76	207.34	11,069.44	47.00	-64.02	-47.19	0.71	-0.37	38.41
11,150.00	0.86	224.67	11,145.43	46.15	-64.66	-46.34	0.35	0.13	22.80
11,245.00	1.04	172.32	11,240.42	44.79	-65.04	-44.98	0.90	0.19	-55.11
11,339.00	1.13	163.22	11,334.41	43.05	-64.66	-43.25	0.21	0.10	-9.68
11,434.00	1.41	173.40	11,429.38	41.00	-64.26	-41.19	0.38	0.29	10.72
11,528.00	2.11	179.14	11,523.34	38.12	-64.10	-38.31	0.77	0.74	6.11
11,591.00	3.26	177.24	11,586.27	35.17	-63.99	-35.36	1.83	1.83	-3.02
11,622.00	5.57	173.66	11,617.17	32.79	-63.78	-32.98	7.50	7.45	-11.55
11,654.00	8.44	171.84	11,648.93	28.92	-63.28	-29.11	8.99	8.97	-5.69
11,685.00	11.18	171.45	11,679.47	23.70	-62.51	-23.88	8.84	8.84	-1.26
11,716.00	14.06	170.45	11,709.72	17.01	-61.44	-17.19	9.32	9.29	-3.23
11,748.00	17.07	169.81	11,740.55	8.55	-59.96	-8.73	9.42	9.41	-2.00

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well Red Hills West 16 St W1 Well 11H
Project:	Lea County, New Mexico	TVD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Site:	Red Hills West 16 State	MD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Well:	Red Hills West 16 St W1 Well 11H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

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)
11,779.00	19.63	172.86	11,769.97	-1.09	-58.51	0.92	8.82	8.26	9.84
11,811.00	20.09	176.23	11,800.07	-11.91	-57.48	11.74	3.86	1.44	10.53
11,842.00	20.92	177.24	11,829.10	-22.75	-56.86	22.58	2.91	2.68	3.26
11,874.00	23.28	178.04	11,858.75	-34.78	-56.37	34.61	7.43	7.38	2.50
11,905.00	25.26	177.45	11,887.01	-47.51	-55.87	47.35	6.43	6.39	-1.90
11,932.00	26.56	174.03	11,911.29	-59.27	-54.98	59.11	7.33	4.81	-12.67
12,007.00	32.64	178.17	11,976.48	-96.20	-52.59	96.05	8.55	8.11	5.52
12,039.00	36.34	178.00	12,002.85	-114.31	-51.98	114.15	11.57	11.56	-0.53
12,071.00	39.83	177.53	12,028.04	-134.03	-51.21	133.88	10.94	10.91	-1.47
12,102.00	42.96	177.43	12,051.29	-154.51	-50.31	154.36	10.10	10.10	-0.32
12,134.00	46.06	178.05	12,074.11	-176.92	-49.43	176.77	9.78	9.69	1.94
12,165.00	49.89	177.65	12,094.85	-199.93	-48.56	199.78	12.39	12.35	-1.29
12,197.00	54.05	177.49	12,114.56	-225.10	-47.49	224.96	13.01	13.00	-0.50
12,228.00	58.38	178.61	12,131.80	-250.85	-46.62	250.71	14.29	13.97	3.61
12,260.00	62.23	179.87	12,147.65	-278.64	-46.26	278.50	12.51	12.03	3.94
12,292.00	65.54	181.14	12,161.73	-307.36	-46.52	307.22	10.94	10.34	3.97
12,323.00	68.55	181.67	12,173.82	-335.90	-47.22	335.76	9.84	9.71	1.71
12,355.00	69.49	181.03	12,185.28	-365.77	-47.92	365.62	3.48	2.94	-2.00
12,386.00	70.82	180.99	12,195.80	-394.92	-48.44	394.78	4.29	4.29	-0.13
12,418.00	72.77	180.63	12,205.80	-425.31	-48.87	425.17	6.19	6.09	-1.13
12,450.00	74.89	180.37	12,214.71	-456.05	-49.13	455.90	6.67	6.63	-0.81
12,481.00	76.46	180.99	12,222.38	-486.08	-49.49	485.93	5.42	5.06	2.00
12,513.00	77.33	180.99	12,229.64	-517.24	-50.03	517.09	2.72	2.72	0.00
12,544.00	79.19	181.17	12,235.94	-547.58	-50.60	547.43	6.03	6.00	0.58
12,576.00	81.76	181.45	12,241.24	-579.13	-51.32	578.98	8.08	8.03	0.88
12,607.00	85.17	180.31	12,244.77	-609.92	-51.79	609.77	11.59	11.00	-3.68
12,639.00	88.35	179.89	12,246.57	-641.87	-51.85	641.71	10.02	9.94	-1.31
12,670.00	89.25	180.05	12,247.22	-672.86	-51.83	672.70	2.95	2.90	0.52
12,765.00	93.13	181.17	12,245.25	-767.81	-52.84	767.65	4.25	4.08	1.18
12,860.00	92.04	180.45	12,240.97	-862.71	-54.19	862.54	1.37	-1.15	-0.76
12,955.00	91.37	180.96	12,238.14	-957.66	-55.35	957.49	0.89	-0.71	0.54
13,049.00	90.14	179.27	12,236.90	-1,051.64	-55.54	1,051.47	2.22	-1.31	-1.80
13,144.00	89.39	179.30	12,237.29	-1,146.63	-54.36	1,146.47	0.79	-0.79	0.03
13,238.00	90.45	178.21	12,237.42	-1,240.61	-52.31	1,240.45	1.62	1.13	-1.16
13,333.00	88.04	179.66	12,238.67	-1,335.57	-50.55	1,335.42	2.96	-2.54	1.53
13,428.00	90.14	180.79	12,240.18	-1,430.56	-50.92	1,430.40	2.51	2.21	1.19
13,522.00	89.44	180.90	12,240.53	-1,524.54	-52.31	1,524.38	0.75	-0.74	0.12
13,617.00	89.41	179.69	12,241.48	-1,619.54	-52.80	1,619.37	1.27	-0.03	-1.27
13,711.00	90.00	178.94	12,241.96	-1,713.53	-51.67	1,713.37	1.02	0.63	-0.80
13,805.00	90.39	178.71	12,241.64	-1,807.51	-49.75	1,807.35	0.48	0.41	-0.24
13,899.00	90.06	179.94	12,241.28	-1,901.50	-48.64	1,901.34	1.35	-0.35	1.31
13,993.00	90.45	179.24	12,240.86	-1,995.49	-47.97	1,995.34	0.85	0.41	-0.74
14,087.00	88.01	177.49	12,242.12	-2,089.44	-45.29	2,089.29	3.19	-2.60	-1.86
14,181.00	88.13	178.17	12,245.29	-2,183.31	-41.73	2,183.18	0.73	0.13	0.72

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well Red Hills West 16 St W1 Well 11H
Project:	Lea County, New Mexico	TVD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Site:	Red Hills West 16 State	MD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Well:	Red Hills West 16 St W1 Well 11H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

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)
14.275.00	89.33	180.31	12,247.37	-2,277.28	-40.48	2,277.15	2.61	1.28	2.28
14,369.00	90.28	180.88	12,247.69	-2,371.27	-41.46	2,371.14	1.18	1.01	0.61
14,464.00	90.28	181.84	12,247.23	-2,466.24	-43.71	2,466.10	1.01	0.00	1.01
14,558.00	91.09	179.73	12,246.10	-2,560.22	-45.00	2,560.07	2.40	0.86	-2.24
14,652.00	90.28	180.11	12,244.98	-2,654.21	-44.87	2,654.07	0.95	-0.86	0.40
14,746.00	90.06	178.96	12,244.70	-2,748.21	-44.11	2,748.06	1.25	-0.23	-1.22
14,840.00	90.61	178.84	12,244.15	-2,842.19	-42.30	2,842.05	0.60	0.59	-0.13
14,935.00	90.59	179.35	12,243.15	-2,937.17	-40.80	2,937.03	0.54	-0.02	0.54
15,030.00	91.28	178.91	12,241.60	-3,032.14	-39.36	3,032.01	0.86	0.73	-0.46
15,124.00	91.90	178.41	12,239.00	-3,126.08	-37.16	3,125.96	0.85	0.66	-0.53
15,219.00	89.19	178.03	12,238.09	-3,221.02	-34.21	3,220.91	2.88	-2.85	-0.40
15,314.00	92.12	179.50	12,237.01	-3,315.98	-32.16	3,315.87	3.45	3.08	1.55
15,408.00	88.88	179.08	12,236.19	-3,409.96	-31.00	3,409.85	3.48	-3.45	-0.45
15,504.00	88.60	179.28	12,238.30	-3,505.92	-29.63	3,505.82	0.36	-0.29	0.21
15,599.00	89.27	178.02	12,240.06	-3,600.88	-27.39	3,600.78	1.50	0.71	-1.33
15,694.00	90.89	179.78	12,239.93	-3,695.85	-25.56	3,695.76	2.52	1.71	1.85
15,788.00	90.67	180.50	12,238.65	-3,789.84	-25.79	3,789.75	0.80	-0.23	0.77
15,883.00	89.61	178.95	12,238.42	-3,884.84	-25.34	3,884.75	1.98	-1.12	-1.63
15,978.00	89.75	178.83	12,238.95	-3,979.82	-23.50	3,979.73	0.19	0.15	-0.13
16,073.00	93.52	182.70	12,236.24	-4,074.74	-24.76	4,074.65	5.69	3.97	4.07
16,167.00	91.06	180.61	12,232.48	-4,168.61	-27.47	4,168.51	3.43	-2.62	-2.22
16,262.00	90.73	182.39	12,231.00	-4,263.56	-29.96	4,263.46	1.91	-0.35	1.87
16,356.00	89.83	180.84	12,230.54	-4,357.52	-32.61	4,357.40	1.91	-0.96	-1.65
16,451.00	89.97	181.17	12,230.70	-4,452.51	-34.27	4,452.38	0.38	0.15	0.35
16,546.00	89.30	181.53	12,231.31	-4,547.48	-36.51	4,547.35	0.80	-0.71	0.38
16,640.00	90.56	181.92	12,231.42	-4,641.43	-39.34	4,641.29	1.40	1.34	0.41
16,702.00	90.56	181.92	12,230.82	-4,703.39	-41.42	4,703.25	0.00	0.00	0.00

Survey projected to 16702.00 MD

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
989.00	988.89	13 3/8" Csg @ 989 MD	13-3/8	17-1/2

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well Red Hills West 16 St W1 Well 11H
Project:	Lea County, New Mexico	TVD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Site:	Red Hills West 16 State	MD Reference:	RKB=3223+27 @ 3250.00usft (H&P 486)
Well:	Red Hills West 16 St W1 Well 11H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
139.00	139.00	0.52	-0.01	MWD surveys
989.00	988.89	-9.32	5.57	Survey projected to 989.00 MD
1,001.00	1,000.88	-9.65	5.62	MWD surveys
16,702.00	12,230.82	-4,703.39	-41.42	Survey projected to 16702.00 MD