

HOBBS OCD

JUL 18 2012

RECEIVED

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

WELL API NO.

30-025- 40414

5. Indicate Type of Lease

STATE ☒ FEE ☐

6. State Oil & Gas Lease No.

State Lease 3620

7. Lease Name or Unit Agreement Name

Red Hills West 16 State

8. Well Number # 5H

9. OGRID Number 217817

10. Pool name or Wildcat

Red Hills, Bone Spring

WC-025-6-05 4263208P

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐

2. Name of Operator

ConocoPhillips Company

3. Address of Operator

P.O. Box 51810 Midland, Tx 79710

4. Well Location

Unit Letter D : 180 feet from the North line and 690 feet from the West line
Section 16 Township 26S Range 32E NMPM County Lea

11. Elevation (Show whether DR, RKB, RT, GR, etc.)

3199

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐

OTHER ☒ Revise Drill Plan

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

ConocoPhillips Company respectfully request to amend the drill plan information as it pertains to the above approved Permit to Drill. There are no other changes to the conditions of the permit.

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE

TITLE

Sr. Regulatory Advisor

DATE

7/16/12

Type or print name

Donna Williams

E-mail address:

Donna.J.Williams@

ConocoPhillips.com

PHONE:

432-688-6943

For State Use Only

APPROVED BY:

TITLE

PETROLEUM ENGINEER

DATE

JUL 19 2012

Conditions of Approval (if any):

JUL 19 2012

DRILLING PLAN

PROSPECT/FIELD	Bonespring/Red Hills	COUNTY/STATE		Lea County, NM	
OWNERS	ConocoPhillips	LEASE			
WELL NO	Red Hills West 16 State 5H	FNL	FSL	FEL	FWL
LOCATION		Surface Location	180		690
		Bottom Hole Location	330		940
EST. T.D.	Leg #1 13,891' MD	GROUND ELEV.		3,200' (est)	
		RKB		3,216' (est)	

PROGNOSIS				Based on 3,216' KB(est)	
MARKER		S.S. DEPTH			TVD
Quaternary					Surface
Rustler		2,469			747
Delaware Top		-1,183			4,399
Bone Spring		-8,256			8,256
Bone Spring 1st Carbonate Top		-5,255			8,471
Bone Spring 1st Carbonate Base		-5,562			8,778
KOP					8,541
Avalon A Shale Top		-5,562			8,778
Avalon A Shale Base		-5,795			9,011
Avalon B Zone Top		-5,795	9,111		9,011
Avalon B Zone Base		-5,932	9,292		9,148
Avalon C Shale Top		-5,930	9,375		9,146
Avalon C Shale Horizontal Target		-6,091			9,307
Avalon C Shale Base		-6,182			9,398

LOGS:	Type	Interval
Open Hole		
GR-MWD		KOP-TD

DEVIATION:	
Surf	3" max, svy every 50'
Int #1/2	3" max, svy every 90'
Interm #2 Curve	90" svy every 30'
Prod Lateral	90" svy every 30'

DST'S	
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CORES	No core
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SAMPLES			
Mudlogging	Start	End	Vertical and Horizontal sections
Two-Man	780	TD	

BOP	COP Category 3 Well Control Requirements
Precision 827 BOPE	13-5/8" 5Mpsi Annular
(With Rotating Head)	13-3/8" 5Mpsi Blind Ram
	13-3/8" 5Mpsi Cross / Choke & Kill Lines
	13-3/8" 5M psi Pipe Ram
	13-3/8" 5Mpsi Spacer Spool

Dip Rate (See inclination prediction)

Max. Anticipated BHP: 10,650 psi (See inclination prediction)

MUD:	Interval	Type	Max. MW	Vis	WL	Remarks
Surface	0'-780'	Aquagel Spud Mud	8.9	32-36	NC	
Intermediate 1	780'-4425'	Brine	10	28-30	S-8	
Intermediate 2	4425'-9766'	Brine	9.3	28-30	S-8	
Production	9766'-13891'	Cut Brine	9.3	30-40	<5	

CASING	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks
Surface	13-3/8"	54.5	17-1/2"	780'	To Surface	18hrs	
Intermediate 1	9-5/8"	40	12-1/4"	4,425'	To Surface	18hrs	
Intermediate 2	7"	29	8 3/4"	9,766'	500' into the 9-5/8"	18hrs	
Production Lat #1	4 1/2"	11.6	6"	13,891'	Packers and Sleeves	N/A	Liner

DIRECTIONAL PLAN				
	MD	TVD	AZ	
Surface	N/A	N/A	0	Directional Company DDC
Vertical KOP	8,541	8,541	0.0	Vertical Build Rate 8.0 '/100'
End Build/7" Casing (90° curve)	9,766	9,307	144.0	Tan Leg Turn Rate 0.0 '/100'
Tangent	N/A	N/A	179.6	
Turn	N/A	N/A	179.6	
TD	13,891	9,301	179.6	

Comments: Surveys will be taken with INC Survey Tool below surface casing while drilling with PDC - Scout Vertical Seeking Tool - Straight Motor BHA

Prep By:	Katia Filina	Date:	7/1/12	Doc:	REV. 1
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Red Hills West 16 State 5H			
Surface Location		Bottom Hole Location	
180FNL	FEL	1330FSL	FEL

Directional:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	Azi
Vertical KOP	8541	8541	0	0	0	0
End Build/ 7" Casing (90° curve)	9,766	9,307	0	0	0	144.0
Tangent	N/A	N/A	0	0	0	179.6
Turn	N/A	N/A	0	0	0	179.6
TD	13,891	9,301	0	0	0	179.6

0.0	0.00	0.00	0.0	0.0
8,540.5	0.00	0.00	8,540.5	0.0
9,014.2	37.90	143.97	8,980.4	-122.7
9,765.9	90.08	179.62	9,307.0	-742.7
13,890.6	90.08	179.62	9,301.0	-4,867.3

Formation	TVD
Quaternary	Surface
Rustler	747
Delaware Top	4,399
KOP	8,256
Bone Spring	8,471
Bone Spring 1st Carbonate Top	8,778
Bone Spring 1st Carbonate Base	8,541
KOP	8,541
Avalon A Shale Top	8,778
Avalon A Shale Base	9,011

Avalon C Shale Horizontal Target 9,307

KOP (8°/100') 8,541

Avalon C Shale Horizontal Target 9,307

CASING	Drill Fluids
Surface 780' 13.3/8" 54.5# J-55 BTC	Surf. Hole FW gel mud 8.9# w/ high vis sweeps
Intermediate 1 4,425' 9.5/8" 40# L-80 BTC	Interm 1 Brine 10# 40-60 Vis 5-8 WL
Intermediate 2 9,766' MD 17" 29# P-110 BTC 9,307' TVD	Interm 2 Brine 9.3# 28-36 Vis 5-8 WL
4 1/2" Liner Top @ 9150' - 45deg INC	Prod Hole Cut Brine 9.3# 28-36 Vis ≤5 WL high vis sweeps as required

Cement	Slurry Top
Surface Data: These numbers are only estimates 230 Sx Lead 510 Sx Tail Based on 17.1/2" OH with 100% excess	Surface 600' from Bottom
Intermediate 1 1,000 Sx Lead 140 Sx Tail Based on 12.25 in Hole with 100% excess	600' from Bottom
Intermediate 2 520 Sx Lead 208 Sx Tail Based on 8.75 in Hole with 100% excess	600' from Bottom

Analysis
Mudlogging Two-Man On @ 780 TD

Open Hole
None
GR-MWD KOP-TD

Cased Hole Logs
None

Notes for Well:

Drill 17 1/2" surface hole with conventional BHA and INC Survey Tool. RIH 13 3/8" CSG and cement it up to surface.
Install well head and NU.BOP. CSG Pressure Test and FIT.
Mud logger (two-man) to be on at surface casing depth of 780'.
Drill 12 1/4" Intermediate #1 hole with Vertical Seeking Scout Tool+Motor and INC Survey Tool till 4425'.
RIH 9 5/8" CSG and cement it up to surface.
Drill 8 3/4" Intermediate #2 hole with Vertical Seeking Scout Tool+Motor till 8541ft.
Run Gyro till 8540ft.
Begin GR-MWD service after KOP 8541'.
The 8 3/4" curve will be drilled with ~ 8°/100' build rate and 179.6° Azimuth with PDM+MWD till 9766' MD/ 9307' TVD.
Run 7" CSG from surface to 9766' and cement it 500ft into 9 5/8".
The 6" Lateral will be drilled with PDM+MWD till TD 13539' MD/ 8828' TVD holding 90.6° INC & 179.6° Azim.
POOH Backreaming after circulating the hole until clean returns.
RIH 4 1/2" Liner with around 20 Stages of Open Hole Completion Packers and Sliding Sleeves.
Displace cement with 5% KCL Brine.
POOH laying down 4in Drill Pipe.
ND BOPE install 10M tubing head. Test connection.
Release drilling rig.

Production
Liner 4 1/2" 11.6# P110 BTC 13,891' MD

Max Anticipated BHP 0.65 psi/ft

TD @ 13,891' MD
TD @ 9,301' MD

David Sillis
Geologist

Date
7/1/2012

Katia Filina
Drilling Engineer

Date
7/1/2012

Bonespring/Red Hills
ConocoPhillips
Red Hills West 16 State 5H

Surface Casing:

Surface Casing Depth (Ft)	780
Surface Casing O.D. (In.)	13.375
Surface Casing ID (In)	12.715
Hole O.D. (In)	17.5
Excess (%)	100%
Volume Tail (Sx)	230
Yield Tail (Cu. Ft./Sx)	1.85
Yield Lead (Cu. Ft./Sx)	1.33
Shoe Joint (Ft)	40
Shoe Volume (Cu. Ft)	35.3
Tail feet of cement	300
Calculated Total Volume (Cu. Ft.)	1,119
Calc. Tail Volume (Cu. Ft.)	417
Calc. Lead Volume (Cu. Ft.)	667
Calc. Lead Volume (Sx)	510

Intermediate1 Casing (Lead):

Intermediate Casing O.D. (In.)	9.625
Intermediate Casing ID (In)	8.835
Hole O.D. (In)	12.25
Excess (%)	100%
cap 12-1/4 - 9-5/8"	0.0558
Calculated fill:	3,925'
Yield Lead (Cu. Ft./Sx)	2.48
Calculated Total Lead (Cu. Ft.)	2,459
Calc. Lead Volume (Sx)	1,000

Intermediate2 Casing (Lead):

Intermediate Casing O.D. (In.)	7.000
Intermediate Casing ID (In)	6.184
Hole O.D. (In)	8.75
Excess (%)	125%
cap 7" - 8-3/4" bls/ft	0.0268
cap 7 - 9-5/8" bls/ft	0.02823
Calculated fill: (500' into 9-5/8")	4,591'
Yield Lead (Cu. Ft./Sx)	2.0
Calculated Total Lead (Cu. Ft.)	1,035
Calc. Lead Volume (Sx)	520

3925
8,516'

Intermediate1 Casing (Tail):

Intermediate Casing O.D. (In.)	9.625
Production Casing ID (In)	8.835
Hole O.D. (In)	12.25
Excess (%)	100%
cap 12-1/4 - 9-5/8"	0.0558
Calculated fill:	500'
Yield Tail (Cu. Ft./Sx)	1.33
Shoe Joint (Ft)	40
Shoe Volume (Cu. Ft)	17.0
Calc. Tail Volume (Cu. Ft.)	174
Required Tail Volume (Sx)	140

Intermediate2 Casing (Tail):

Intermediate Casing O.D. (In.)	7.000
Intermediate Casing ID (In)	6.184
Hole O.D. (In)	8.75
Excess (%)	125%
cap 7" - 8-3/4" bls/ft	0.0268
cap 7 - 9-5/8" bls/ft	0.02823
Calculated fill:	1,250'
Yield Lead (Cu. Ft./Sx)	1.2
Calculated Total Tail (Cu. Ft.)	248
Required Tail Volume (Sx)	206

RED HILLS WEST 16 STATE 5H

KB

3,216

(via survey plat)

Notes:

A pilot hole will not be drilled. This horizontal well will be drilled from N to S into the Avalon C Shale Zone. The well will be drilled relatively flat to slightly toe up with a ~ 4,500' long lateral.

Surface Location

Sec 16

26S

32E

Lea Co. TX, Surface
Location: 180' FNL & 690'
FWL

RED HILLS WEST STATE 16 5H BHL

Sec 16

26S

32E

Lea Co. TX, Terminus
Location: 330' FSL & 940'
FWL

Formation Name

Formation
Top
(TVD)

Subsea
Depth

Gross
Thickness

Gross
Thickness

Gross
Thickness

Comments

Quaternary	Surface					
Rustler	747	2,469				
Salado	962	2,254				
Castile	2,766	450				
Delaware Top	4,399	-1,183				
Ramsey	4,437	-1,221				
Ford Sh	4,509	-1,293				
Olds	4,536	-1,320				
Cherry Canyon	5,412	-2,196				
Brushy Canyon	7,151	-3,935	307			
Bone Spring Top	8,256	-5,040				
Bone Spring 1st Carbonate Top	8,471	-5,255				Not a formation top.
Bone Spring 1st Carbonate Base	8,778	-5,562	233			
KOP (est)	8,713	-5,391				
Avalon A Shale Top	8,778	-5,562	137			
Avalon A Shale Base	9,011	-5,795				
Avalon B Zone Top	9,011	-5,795				
Avalon B Zone Base	9,148	-5,932				
Avalon C Shale Top	9,146	-5,930	45		620	Not a formation top.
LANDING: Avalon C Shale Horizontal Upper Target Limit	9,282	-6,066				Not a formation top.
LANDING: Avalon C Shale Horizontal Target Center	9,307	-6,091				Not a formation top.
LANDING: Avalon C Shale Horizontal Lower Target Limit	9,327	-6,111	45			Not a formation top.
TERMINUS: Avalon C Shale Horizontal Upper Target Limit	9,276	-6,060				Not a formation top.
TERMINUS: Avalon C Shale Horizontal Target Center	9,301	-6,085				
TERMINUS: Avalon C Shale Horizontal Lower Target Limit	9,321	-6,105				
Avalon C Shale Base (Should not penetrate)	9,398	-6,182				



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Conoco Phillips

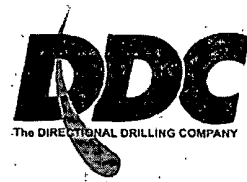
Lea County, New Mexico
Sec 16, T26S, R32E NMPM
Red Hills West 16 State 5H

Wellbore #1

Plan: Design #1

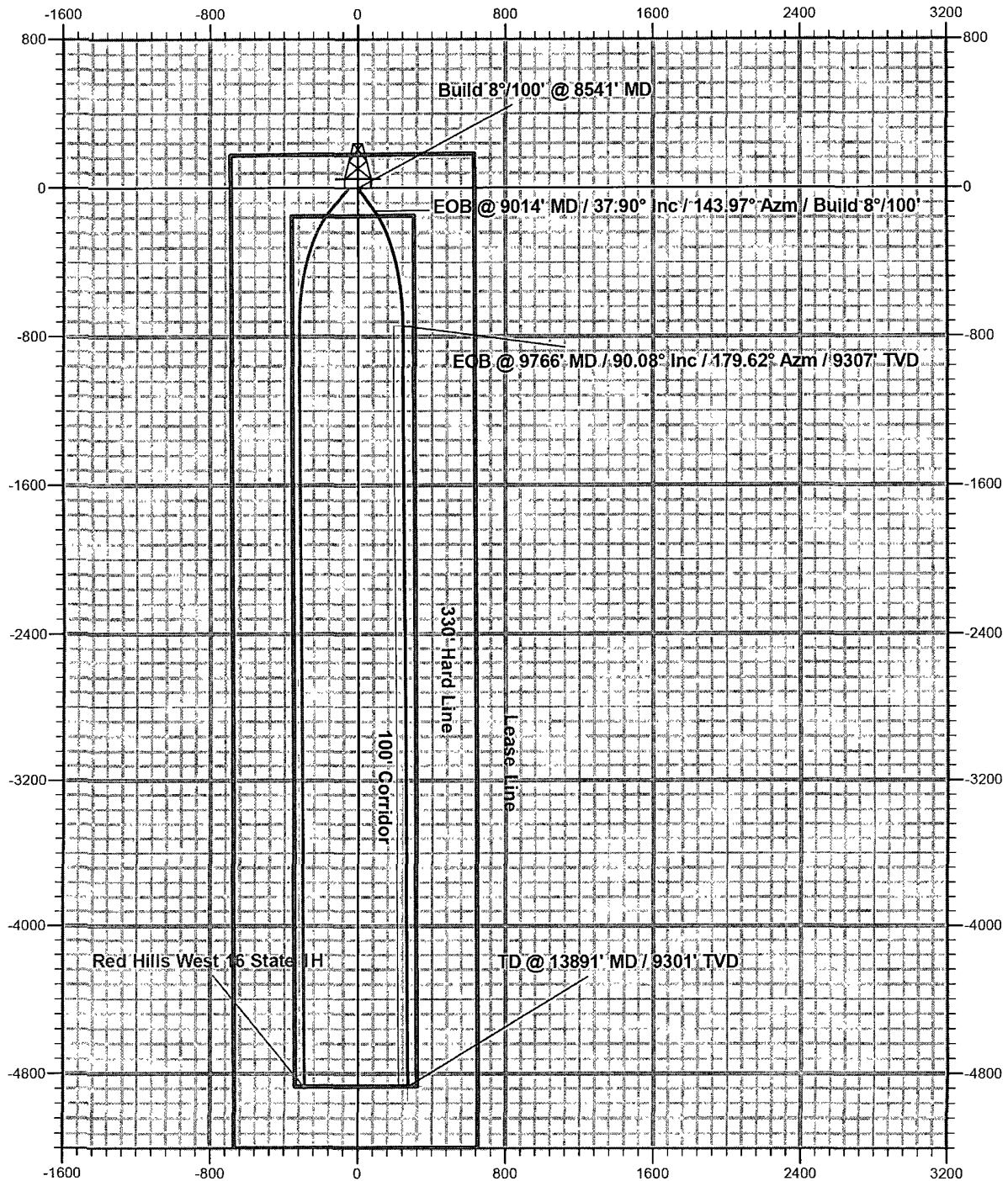
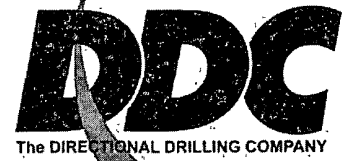
DDC Well Planning Report

29 June, 2012





Lea County, New Mexico
Red Hills West 16 State 5H
Design #1

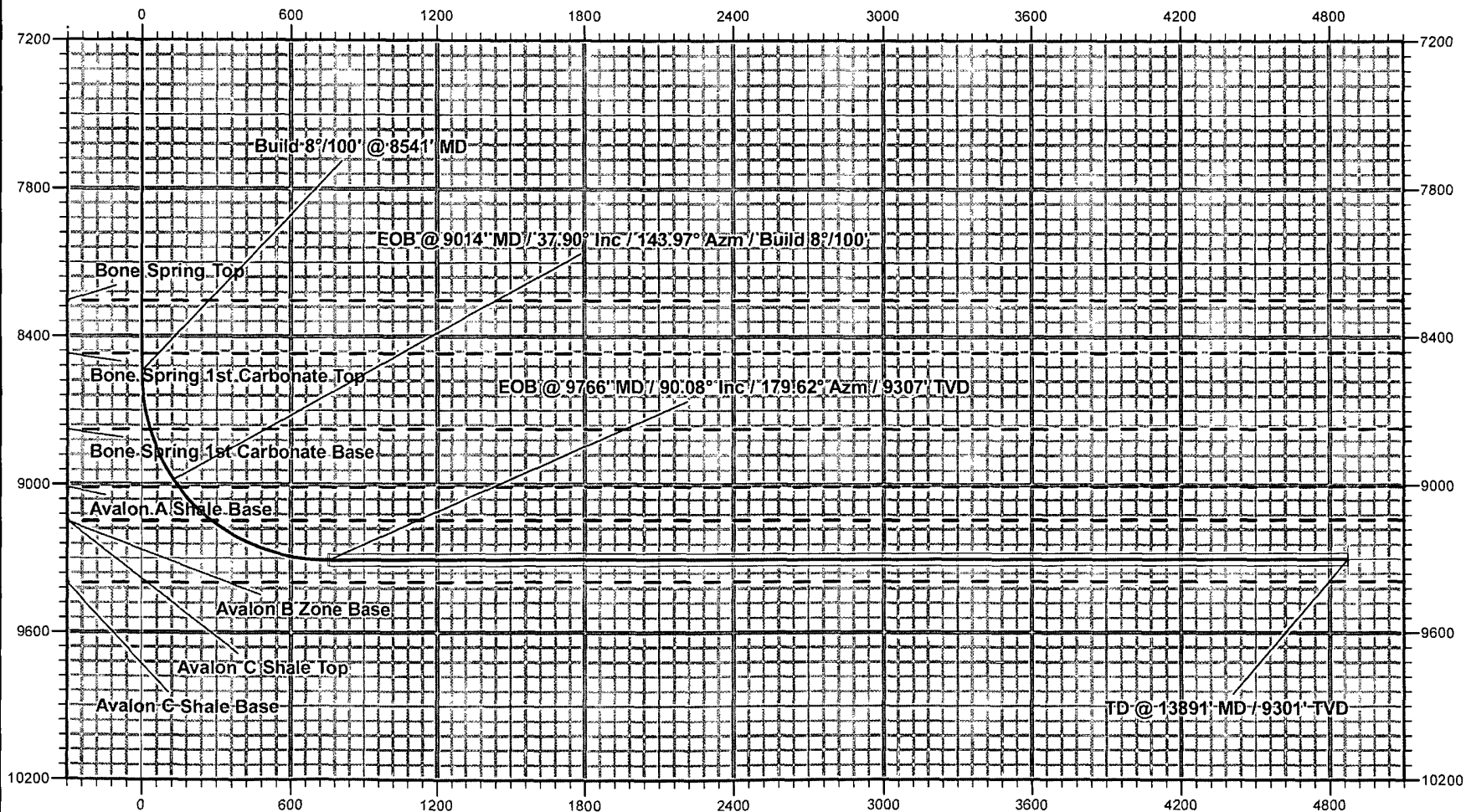
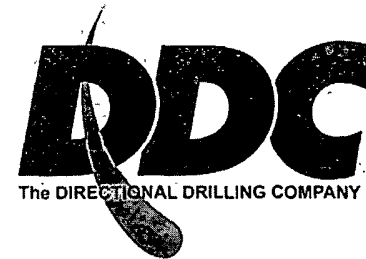




Lea County, New Mexico

Red Hills West 16 State 5H

Design #1



Vertical Section at 176.84° (600 usft/in)

Database:	EDM 5000.1.Single User.Db	Local Co-ordinate Reference:	Well Red Hills West 16 State 5H
Company:	ConocoPhillips	TVD Reference:	WELL @ 3216.0usft (Precision #827)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3216.0usft (Precision #827)
Site:	Sec.16, T26S, R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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: Sec.16, T26S, R32E NMPM					
Site Position:		Northing:	382,382.50 usft	Latitude:	32° 2' 58.675 N
From:	Map	Easting:	700,544.80 usft	Longitude:	103° 41' 9.818 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.34

Well	Red Hills West 16 State 5H					
Well Position	+N/-S	0.4 usft	Northing:	382,382.90 usft	Latitude:	32° 2' 58.676 N
	+E/-W	50.0 usft	Easting:	700,594.80 usft	Longitude:	103° 41' 9.237 W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level:		3,200.0 usft

Wellbore		Wellbore #1			
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	6/29/2012	7 50	59.98	48,396

Design:	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0 0	0.0	176.84

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,540.5	0.00	0.00	8,540.5	0.0	0.0	0.00	0.00	0.00	0.00	
9,014.2	37.90	143.97	8,980.4	-122.2	88.9	8.00	8.00	0.00	143.97	
9,765.9	90.08	179.62	9,307.0	-742.7	241.4	8.00	6.94	4.74	42.23	
13,890.6	90.08	179.62	9,301.0	-4,867.3	268.8	0.00	0.00	0.00	0.00	PBHL Red Hills We

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State 5H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3216 0usft (Precision #827)
Project:	Lea County New Mexico	MD Reference:	WELL @ 3216 0usft (Precision #827)
Site:	Sec 16 T26S R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
747.0	0.00	0.00	747.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
Salado									
962.0	0.00	0.00	962.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
Castile									
2,766.0	0.00	0.00	2,766.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
Delaware Top									
4,399.0	0.00	0.00	4,399.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Ramsey									

Database:	EDM 5000.1 Single User.Db	Local Co-ordinate Reference:	Well: Red Hills West 16 State 5H
Company:	ConocoPhillips	TVD Reference:	WELL @ 3216.0usft (Precision #827)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3216.0usft (Precision #827)
Site:	Sec 16 T26S R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned 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)
4,437.0	0.00	0.00	4,437.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Ford Sh									
4,509.0	0.00	0.00	4,509.0	0.0	0.0	0.0	0.00	0.00	0.00
Olds									
4,536.0	0.00	0.00	4,536.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Cherry Canyon									
5,412.0	0.00	0.00	5,412.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
Brushy Canyon									
7,151.0	0.00	0.00	7,151.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spring Top									
8,256.0	0.00	0.00	8,256.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Bone Spring 1st Carbonate Top									
8,471.0	0.00	0.00	8,471.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State 5H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3216.0usft (Precision #827)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3216.0usft (Precision #827)
Site:	Sec 16, T26S, R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned 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)
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 8°/100' @ 8541' MD									
8,540.5	0.00	0.00	8,540.5	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	4.76	143.97	8,599.9	-2.0	1.5	2.1	8.00	8.00	0.00
8,700.0	12.76	143.97	8,698.7	-14.3	10.4	14.9	8.00	8.00	0.00
Bone Spring 1st Carbonate Base - Avalon A Shale Top									
8,782.5	19.36	143.97	8,778.0	-32.8	23.8	34.0	8.00	8.00	0.00
8,800.0	20.76	143.97	8,794.4	-37.6	27.4	39.1	8.00	8.00	0.00
8,900.0	28.76	143.97	8,885.1	-71.4	52.0	74.2	8.00	8.00	0.00
9,000.0	36.76	143.97	8,969.1	-115.2	83.8	119.6	8.00	8.00	0.00
EOB @ 9014' MD / 37.90° Inc / 143.97° Azm / Build 8°/100'									
9,014.2	37.90	143.97	8,980.4	-122.1	88.8	126.8	8.00	8.00	0.00
Avalon A Shale Base - Avalon B Zone Top									
9,053.3	40.26	147.22	9,010.8	-142.5	102.8	147.9	8.00	6.05	8.31
9,100.0	43.19	150.71	9,045.6	-169.1	118.7	175.4	8.00	6.27	7.47
9,200.0	49.76	157.02	9,114.5	-234.2	150.4	242.1	8.00	6.57	6.31
Avalon C Shale Top									
9,249.9	53.15	159.72	9,145.6	-270.5	164.8	279.2	8.00	6.79	5.41
Avalon B Zone Base									
9,253.3	53.38	159.89	9,147.6	-273.0	165.7	281.7	8.00	6.86	5.14
9,300.0	56.61	162.19	9,174.4	-309.2	178.1	318.6	8.00	6.91	4.93
9,400.0	63.64	166.60	9,224.2	-392.7	201.3	403.2	8.00	7.03	4.41
9,500.0	70.79	170.49	9,262.9	-483.0	219.5	494.3	8.00	7.15	3.89
9,600.0	78.01	174.06	9,289.8	-578.3	232.4	590.3	8.00	7.23	3.57
9,700.0	85.28	177.44	9,304.3	-676.9	239.7	689.1	8.00	7.27	3.38
EOB @ 9766' MD / 90.08° Inc / 179.62° Azm / 9307' TVD									
9,765.9	90.08	179.62	9,307.0	-742.7	241.4	754.9	8.00	7.28	3.31
9,800.0	90.08	179.62	9,306.9	-776.8	241.6	789.0	0.00	0.00	0.00
9,900.0	90.08	179.62	9,306.8	-876.8	242.3	888.8	0.00	0.00	0.00
10,000.0	90.08	179.62	9,306.7	-976.8	243.0	988.7	0.00	0.00	0.00
10,100.0	90.08	179.62	9,306.5	-1,076.8	243.6	1,088.6	0.00	0.00	0.00
10,200.0	90.08	179.62	9,306.4	-1,176.8	244.3	1,188.5	0.00	0.00	0.00
10,300.0	90.08	179.62	9,306.2	-1,276.8	245.0	1,288.4	0.00	0.00	0.00
10,400.0	90.08	179.62	9,306.1	-1,376.8	245.6	1,388.2	0.00	0.00	0.00
10,500.0	90.08	179.62	9,305.9	-1,476.8	246.3	1,488.1	0.00	0.00	0.00
10,600.0	90.08	179.62	9,305.8	-1,576.8	247.0	1,588.0	0.00	0.00	0.00
10,700.0	90.08	179.62	9,305.6	-1,676.8	247.6	1,687.9	0.00	0.00	0.00
10,800.0	90.08	179.62	9,305.5	-1,776.8	248.3	1,787.8	0.00	0.00	0.00
10,900.0	90.08	179.62	9,305.3	-1,876.8	248.9	1,887.7	0.00	0.00	0.00
11,000.0	90.08	179.62	9,305.2	-1,976.8	249.6	1,987.5	0.00	0.00	0.00
11,100.0	90.08	179.62	9,305.1	-2,076.8	250.3	2,087.4	0.00	0.00	0.00
11,200.0	90.08	179.62	9,304.9	-2,176.8	250.9	2,187.3	0.00	0.00	0.00
11,300.0	90.08	179.62	9,304.8	-2,276.8	251.6	2,287.2	0.00	0.00	0.00
11,400.0	90.08	179.62	9,304.6	-2,376.8	252.3	2,387.1	0.00	0.00	0.00
11,500.0	90.08	179.62	9,304.5	-2,476.8	252.9	2,487.0	0.00	0.00	0.00
11,600.0	90.08	179.62	9,304.3	-2,576.8	253.6	2,586.8	0.00	0.00	0.00
11,700.0	90.08	179.62	9,304.2	-2,676.8	254.3	2,686.7	0.00	0.00	0.00
11,800.0	90.08	179.62	9,304.0	-2,776.8	254.9	2,786.6	0.00	0.00	0.00
11,900.0	90.08	179.62	9,303.9	-2,876.8	255.6	2,886.5	0.00	0.00	0.00
12,000.0	90.08	179.62	9,303.7	-2,976.8	256.3	2,986.4	0.00	0.00	0.00
12,100.0	90.08	179.62	9,303.6	-3,076.8	256.9	3,086.2	0.00	0.00	0.00
12,200.0	90.08	179.62	9,303.5	-3,176.8	257.6	3,186.1	0.00	0.00	0.00
12,300.0	90.08	179.62	9,303.3	-3,276.8	258.3	3,286.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State 5H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3216.0usft (Precision #827)
Project:	Lea County New Mexico	MD Reference:	WELL @ 3216.0usft (Precision #827)
Site:	Sec 16, T26S, R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned 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)
12,400.0	90.08	179.62	9,303.2	-3,376.8	258.9	3,385.9	0.00	0.00	0.00
12,500.0	90.08	179.62	9,303.0	-3,476.7	259.6	3,485.8	0.00	0.00	0.00
12,600.0	90.08	179.62	9,302.9	-3,576.7	260.2	3,585.7	0.00	0.00	0.00
12,700.0	90.08	179.62	9,302.7	-3,676.7	260.9	3,685.5	0.00	0.00	0.00
12,800.0	90.08	179.62	9,302.6	-3,776.7	261.6	3,785.4	0.00	0.00	0.00
12,900.0	90.08	179.62	9,302.4	-3,876.7	262.2	3,885.3	0.00	0.00	0.00
13,000.0	90.08	179.62	9,302.3	-3,976.7	262.9	3,985.2	0.00	0.00	0.00
13,100.0	90.08	179.62	9,302.1	-4,076.7	263.6	4,085.1	0.00	0.00	0.00
13,200.0	90.08	179.62	9,302.0	-4,176.7	264.2	4,184.9	0.00	0.00	0.00
13,300.0	90.08	179.62	9,301.9	-4,276.7	264.9	4,284.8	0.00	0.00	0.00
13,400.0	90.08	179.62	9,301.7	-4,376.7	265.6	4,384.7	0.00	0.00	0.00
13,500.0	90.08	179.62	9,301.6	-4,476.7	266.2	4,484.6	0.00	0.00	0.00
13,600.0	90.08	179.62	9,301.4	-4,576.7	266.9	4,584.5	0.00	0.00	0.00
13,700.0	90.08	179.62	9,301.3	-4,676.7	267.6	4,684.4	0.00	0.00	0.00
13,800.0	90.08	179.62	9,301.1	-4,776.7	268.2	4,784.2	0.00	0.00	0.00
TD @ 13891' MD / 9301' TVD									
13,890.6	90.08	179.62	9,301.0	-4,867.3	268.8	4,874.7	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL Red Hills West	89.92	179.62	9,301.0	-4,867.3	268.8	377,515.58	700,863.62	32° 2' 10.493 N	103° 41' 6.454 W
- plan hits target center									
- Rectangle (sides W100.0 H50.0 D4,124.7)									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
747.0	747.0	Rustler		-0.08	176.84	
962.0	962.0	Salado		-0.08	176.84	
2,766.0	2,766.0	Castile		-0.08	176.84	
4,399.0	4,399.0	Delaware Top		-0.08	176.84	
4,437.0	4,437.0	Ramsey		-0.08	176.84	
4,509.0	4,509.0	Ford Sh		-0.08	176.84	
4,536.0	4,536.0	Olds		-0.08	176.84	
5,412.0	5,412.0	Cherry Canyon		-0.08	176.84	
7,151.0	7,151.0	Brushy Canyon		-0.08	176.84	
8,256.0	8,256.0	Bone Spring Top		-0.08	176.84	
8,471.0	8,471.0	Bone Spring 1st Carbonate Top		-0.08	176.84	
8,782.5	8,778.0	Bone Spring 1st Carbonate Base		-0.08	176.84	
8,782.5	8,778.0	Avalon A Shale Top		-0.08	176.84	
9,053.3	9,010.8	Avalon A Shale Base		-0.08	176.84	
9,053.3	9,010.8	Avalon B Zone Top		-0.08	176.84	
9,249.9	9,145.6	Avalon C Shale Top		-0.08	176.84	
9,253.3	9,147.6	Avalon B Zone Base		-0.08	176.84	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State 5H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3216.0usft (Precision #827)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3216.0usft (Precision #827)
Site:	Sec 16, T26S, R32E, NMPM	North Reference:	Grid
Well:	Red Hills West 16 State 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,540.5	8,540.5	0.0	0.0	Build 8"/100' @ 8541' MD
9,014.2	8,980.4	-122.1	88.8	EOB @ 9014' MD / 37.90° Inc / 143.97° Azm / Build 8"/100'
9,765.9	9,307.0	-742.7	241.4	EOB @ 9766' MD / 90.08° Inc / 179.62° Azm / 9307' TVD
13,890.6	9,301.0	-4,867.3	268.8	TD @ 13891' MD / 9301' TVD