

Submit 1 Copy To Appropriate District Office
District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Form C-103
Revised August 1, 2011

HOBBS OCO
OCT 17 2012

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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.)		WELL API NO. 30-025- 40417
1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐		5. Indicate Type of Lease STATE ☐ FEE ☐
2. Name of Operator ConocoPhillips Company		6. State Oil & Gas Lease No.
3. Address of Operator P.O. Box 51810 Midland, Tx 79710		7. Lease Name or Unit Agreement Name Red Hills West 16 State
4. Well Location Unit Letter <u>A</u> : <u>180</u> feet from the <u>N</u> line and <u>640</u> feet from the <u>E</u> line Section <u>16</u> Township <u>26S</u> Range <u>32E</u> NMPM <u>1</u> ea County <u></u>		8. Well Number <u>8H</u>
11. Elevation (Show whether DR, RKB, RT, GR, etc.)		9. OGRID Number <u>217817</u>
		10. Pool name or Wildcat Red Hills

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 ☐

SUBSEQUENT REPORT OF:

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

OTHER: Revised Drill Plan ☐

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 for the above well. Please see attached drill plan information.

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

10/16/12

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

DIST. MGR

DATE

10-22-2012

Conditions of Approval (if any):

OCT 22 2012

DRILLING PLAN

PROSPECT/FIELD	Bonespring/Red Hills	COUNTY/STATE	Lea County, NM
OWNERS	ConocoPhillips	LEASE	
WELL NO.	Red Hills West 16 State 8H	FNL	FSL
LOCATION	Surface Location	180	640
	Bottom Hole Location	330	380
EST T.D.	Leg #1 13,399' MD	GROUND ELEV.	3,227' (est)
		RKB	3,243' (est)

PROGNOSIS:	Based on 3,243' KB(est)	LOGS:	Type	Interval
MARKER	S.S. DEPTH	TVD	Open Hole	KOP-TD
Quaternary		Surface	GR-MWD	
Rustler	2,469	774		
Delaware Top	-1,183	4,426		
Ford Shale	-1,293	4,536		
Bone Spring	-5,155	8,398		
Bone Spring 1st Carbonate Top	-5,305	8,548		
Bone Spring 1st Carbonate Base	-5,620	8,863		
KOP		8,767		
Avalon A Shale Top	-5,620	8,863		
Avalon A Shale Base	-5,825	9,068		
Avalon B Zone Top	-5,825	9,068		
Avalon B Zone Base	-6,015	9,258		
Avalon C Shale Top	-6,015	9,258		
Avalon C Shale Horizontal Target	-6,170	9,413		
Avalon C Shale Base	-6,245	9,488		

DEVIATION:	Surf	3" max. svy every 200' with MWD
	Int #1/2	7" max. svy every 30' with MWD (Nudge)
	Interm #2 Curve	90° svy every 30'
	Prod Lateral	90° svy every 30'
DST'S	None	
CORES:	No core	
SAMPLES:	Mudlogging	Start
	Two-Man	810' TD
		Vertical and Horizontal sections
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	~0.65 psi/ft			Surface Formation		
MUD:	Interval	Type	Max. MW	Vis	WL	Remarks
Surface	0'-810'	Acquagel - Spud Mud	9.3	32-36	INC	
Intermediate 1	810'-4550'	Brme	10.5	28-30	5-8	
Intermediate 2	4550'-9825'	Brme	9.5	28-30	5-8	
Production	9825'-13399'	Cut Brme	9.5	30-40	<5	

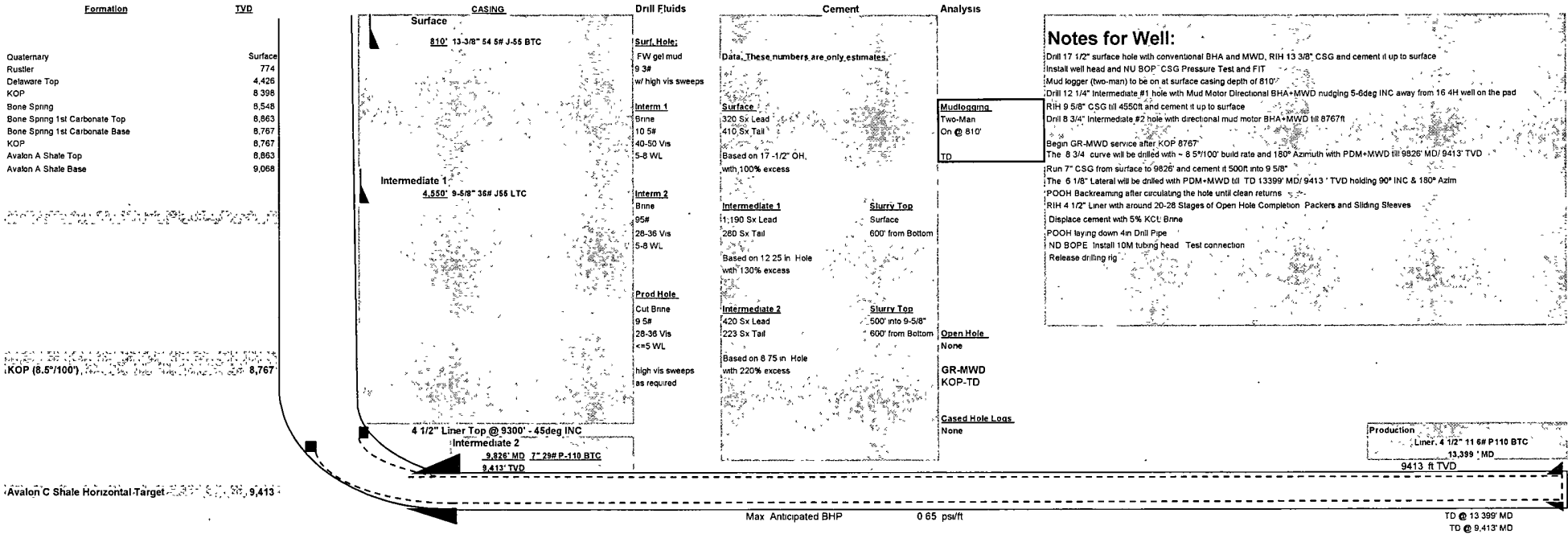
CASING:	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks
Surface	13-3/8"	54.5	17-1/2"	810'	To Surface	18hrs	
Intermediate 1	9-5/8"	36	12-1/4"	4,550'	To Surface	18hrs	
Intermediate 2	7"	29	8 3/4"	9,825'	500' into the 9-5/8"	18hrs	
Production Lat #1	4 1/2"	11.6	6 1/8"	13,399'	Packers and Sleeves	N/A	Liner

DIRECTIONAL PLAN	MD	TVD	AZ	
Surface	N/A	N/A	0	Directional Company DDC
Vertical KOP	8,767	8,767	0.0	Vertical Build Rate
End Build / 7" Casing (90° curve)	9,826	9,413	155.0	Tan Leg Turn Rate
Tangent	N/A	N/A	179.6	8.5 '100'
Turn	N/A	N/A	179.6	0.0 '100'
TD	13,399	9,413	179.6	

Comments:				
Prep By:	Katia Filina	Date:	10/15/12	Doc
			REV 1	

Red Hills West 16 State 8H			
Surface Location:		Bottom Hole Location:	
180FNL	640FEL	330FSL	380FEL

Directional	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI
Vertical KOP	8767	8767	0	0	0	0
End Build/ 7" Casing (90° curve)	9,826	9,413	0	0	0	155.0
Tangent	N/A	N/A	0	0	0	179.6
Turn	N/A	N/A	0	0	0	179.6
TD	13,399	9,413	0	0	0	179.6



Avalon C Shale Horizontal-Target 9,413'

David Silts
Geologist

Date
10/15/2012

Katia Filina
Drilling Engineer

Date
10/15/2012

Bonespring/Red Hills
ConocoPhillips
Red Hills West 16 State 8H

Surface Casing:

Surface Casing Depth (Ft)	810
Surface Casing O.D. (In.)	13.375
Surface Casing ID (In)	12.715
Hole O.D. (In)	17.5
Excess (%)	100%
Volume Tail (Sx)	320
Yield Tail (Cu. Ft./Sx)	1.33
Yield Lead (Cu. Ft./Sx)	1.75
Shoe Joint (Ft)	40
Shoe Volume (Cu. Ft)	35.3
Tail feet of cement	300
Calculated Total Volume (Cu. Ft.)	1,161
Calc. Tail Volume (Cu. Ft.)	417
Calc. Lead Volume (Cu. Ft.)	708
Calc. Lead Volume (Sx)	410

Intermediate1 Casing (Lead):

Intermediate Casing O.D. (In.)	9.625
Intermediate Casing ID (In)	8.921
Hole O.D. (In)	12.25
Excess (%)	130%
cap 12-1/4 - 9-5/8"	0.0558
Calculated fill:	4,050'
Yield Lead (Cu. Ft./Sx)	2.47
Calculated Total Lead (Cu. Ft.)	2,918
Calc. Lead Volume (Sx)	1,190

Intermediate2 Casing (Lead):

Intermediate Casing O.D. (In.)	7.000
Intermediate Casing ID (In)	6.184
Hole O.D. (In)	8.75
Excess (%)	100%
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")	4,526'
Yield Lead (Cu. Ft./Sx)	2.0
Calculated Total Lead (Cu. Ft.)	828
Calc. Lead Volume (Sx)	420

4050
8,576'

Intermediate1 Casing (Tail):

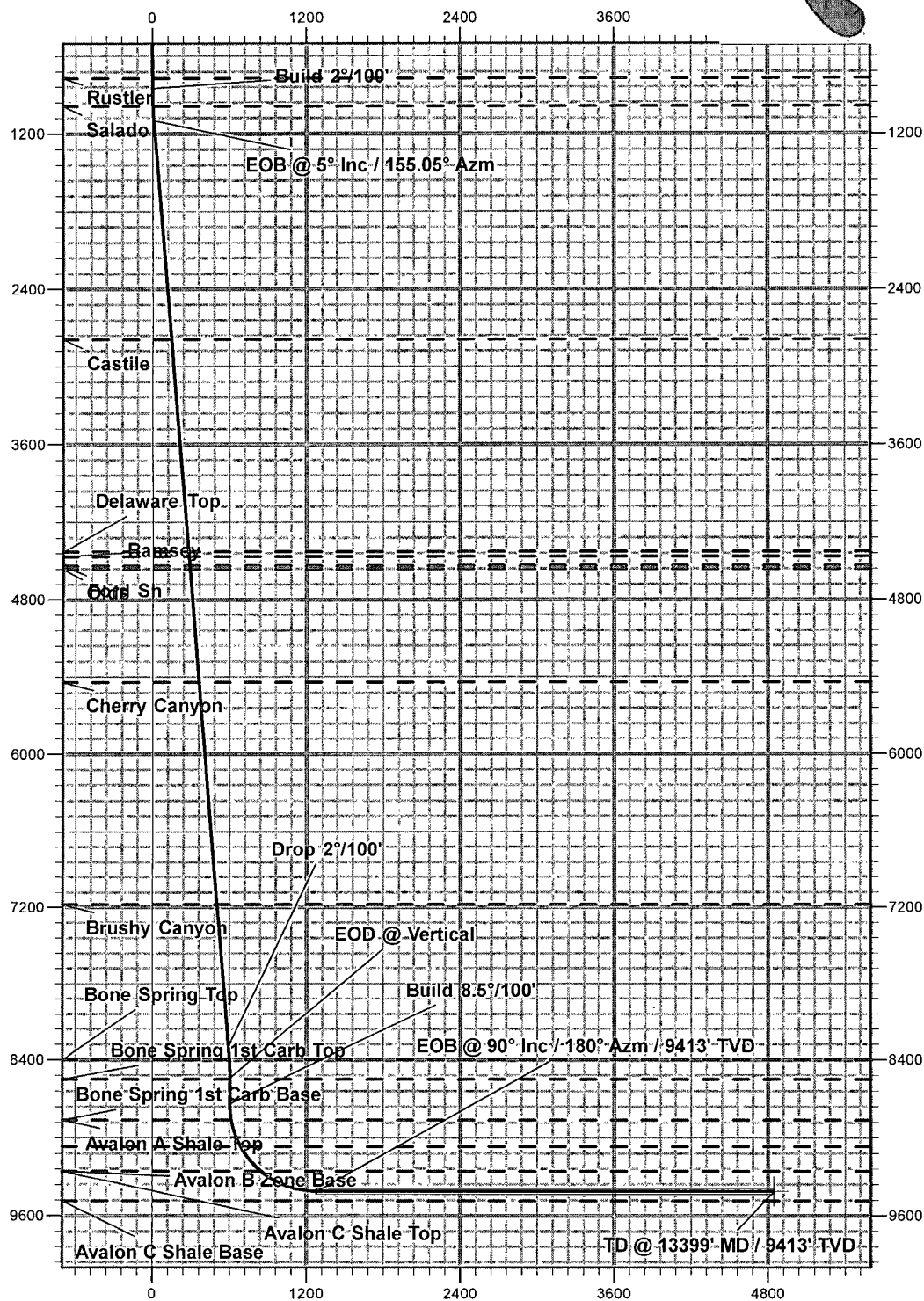
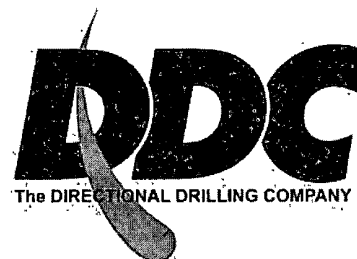
Intermediate Casing O.D. (In.)	9.625
Production Casing ID (In)	8.921
Hole O.D. (In)	12.25
Excess (%)	220%
cap 12-1/4 - 9-5/8"	0.0558
Calculated fill:	500'
Yield Tail (Cu. Ft./Sx)	1.33
Shoe Joint (Ft)	40
Shoe Volume (Cu. Ft)	17.4
Calc. Tail Volume (Cu. Ft.)	362
Required Tail Volume (Sx)	280

Intermediate2 Casing (Tail):

Intermediate Casing O.D. (In.)	7.000
Intermediate Casing ID (In)	6.184
Hole O.D. (In)	8.75
Excess (%)	135%
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.)	267
Required Tail Volume (Sx)	223

ConocoPhillips

Lea County, New Mexico
Red Hills West 16 State #8H
Design #1



Vertical Section at 176.75° (1200 usft/in)



Conoco Phillips

Lea County, New Mexico
Sec 16, T26S, R32E NMPM
Red Hills West 16 State #8H

HOBBS OCD

OCT 17 2012

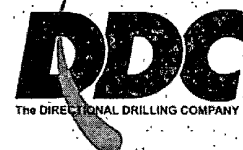
RECEIVED

Wellbore #1

Plan: Design #1

DDC Well Planning Report

09 October, 2012



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State #8H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3227.0usft (Original Well Elev)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3227.0usft (Original Well Elev)
Site:	Sec 16, T26S, R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #8H	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 #8H					
Well Position	+N/-S	32.4 usft	Northing:	382,414.90 usft	Latitude:	32° 2' 58.752 N
	+E/-W	4,066.9 usft	Easting:	704,611.70 usft	Longitude:	103° 40' 22.564 W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level:	3,227.0 usft	

Wellbore						Wellbore #1					
Magnetics		Model Name		Sample Date		Declination (°)		Dip Angle (°)		Field Strength (nT)	
		IGRF2010		10/9/2012		7.46		59.97		48,370	

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	176.75

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
850.0	0.00	0.00	850.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,100.0	5.00	155.05	1,099.7	-9.9	4.6	2.00	2.00	0.00	155.05	
8,317.0	5.00	155.05	8,289.2	-580.2	269.9	0.00	0.00	0.00	0.00	
8,567.0	0.00	0.00	8,538.9	-590.1	274.5	2.00	-2.00	0.00	180.00	
8,767.0	0.00	0.00	8,738.9	-590.1	274.5	0.00	0.00	0.00	0.00	
9,825.8	90.00	180.00	9,413.0	-1,264.1	274.5	8.50	8.50	-17.00	180.00	
13,398.9	90.00	180.00	9,413.0	-4,837.2	274.5	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 #8H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3227.0usft (Original Well Elev)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3227.0usft (Original Well Elev)
Site:	Sec 16, T26S, R32E-NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #8H	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									
774.0	0.00	0.00	774.0	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
Build 2°/100'									
850.0	0.00	0.00	850.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	1.00	155.05	900.0	-0.4	0.2	0.4	2.00	2.00	0.00
Salado									
989.1	2.78	155.05	989.0	-3.1	1.4	3.1	2.00	2.00	0.00
1,000.0	3.00	155.05	999.9	-3.6	1.7	3.6	2.00	2.00	0.00
EOB @ 5° Inc / 155.05° Azm									
1,100.0	5.00	155.05	1,099.7	-9.9	4.6	10.1	2.00	2.00	0.00
1,200.0	5.00	155.05	1,199.3	-17.8	8.3	18.2	0.00	0.00	0.00
1,300.0	5.00	155.05	1,298.9	-25.7	12.0	26.3	0.00	0.00	0.00
1,400.0	5.00	155.05	1,398.5	-33.6	15.6	34.4	0.00	0.00	0.00
1,500.0	5.00	155.05	1,498.2	-41.5	19.3	42.5	0.00	0.00	0.00
1,600.0	5.00	155.05	1,597.8	-49.4	23.0	50.6	0.00	0.00	0.00
1,700.0	5.00	155.05	1,697.4	-57.3	26.7	58.7	0.00	0.00	0.00
1,800.0	5.00	155.05	1,797.0	-65.2	30.3	66.8	0.00	0.00	0.00
1,900.0	5.00	155.05	1,896.6	-73.1	34.0	74.9	0.00	0.00	0.00
2,000.0	5.00	155.05	1,996.3	-81.0	37.7	83.0	0.00	0.00	0.00
2,100.0	5.00	155.05	2,095.9	-88.9	41.4	91.1	0.00	0.00	0.00
2,200.0	5.00	155.05	2,195.5	-96.8	45.0	99.2	0.00	0.00	0.00
2,300.0	5.00	155.05	2,295.1	-104.7	48.7	107.3	0.00	0.00	0.00
2,400.0	5.00	155.05	2,394.7	-112.6	52.4	115.4	0.00	0.00	0.00
2,500.0	5.00	155.05	2,494.4	-120.5	56.1	123.5	0.00	0.00	0.00
2,600.0	5.00	155.05	2,594.0	-128.4	59.7	131.6	0.00	0.00	0.00
2,700.0	5.00	155.05	2,693.6	-136.3	63.4	139.7	0.00	0.00	0.00
Castile									
2,799.8	5.00	155.05	2,793.0	-144.2	67.1	147.8	0.00	0.00	0.00
2,800.0	5.00	155.05	2,793.2	-144.2	67.1	147.8	0.00	0.00	0.00
2,900.0	5.00	155.05	2,892.8	-152.1	70.8	155.9	0.00	0.00	0.00
3,000.0	5.00	155.05	2,992.5	-160.0	74.5	164.0	0.00	0.00	0.00
3,100.0	5.00	155.05	3,092.1	-167.9	78.1	172.1	0.00	0.00	0.00
3,200.0	5.00	155.05	3,191.7	-175.8	81.8	180.2	0.00	0.00	0.00
3,300.0	5.00	155.05	3,291.3	-183.7	85.5	188.3	0.00	0.00	0.00
3,400.0	5.00	155.05	3,390.9	-191.6	89.2	196.4	0.00	0.00	0.00
3,500.0	5.00	155.05	3,490.6	-199.5	92.8	204.5	0.00	0.00	0.00
3,600.0	5.00	155.05	3,590.2	-207.4	96.5	212.6	0.00	0.00	0.00
3,700.0	5.00	155.05	3,689.8	-215.3	100.2	220.7	0.00	0.00	0.00
3,800.0	5.00	155.05	3,789.4	-223.2	103.9	228.8	0.00	0.00	0.00
3,900.0	5.00	155.05	3,889.0	-231.1	107.5	236.9	0.00	0.00	0.00
4,000.0	5.00	155.05	3,988.6	-239.0	111.2	245.0	0.00	0.00	0.00
4,100.0	5.00	155.05	4,088.3	-247.0	114.9	253.1	0.00	0.00	0.00
4,200.0	5.00	155.05	4,187.9	-254.9	118.6	261.2	0.00	0.00	0.00
4,300.0	5.00	155.05	4,287.5	-262.8	122.2	269.3	0.00	0.00	0.00
4,400.0	5.00	155.05	4,387.1	-270.7	125.9	277.4	0.00	0.00	0.00

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State #8H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3227.0usft (Original Well Elev)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3227.0usft (Original Well Elev)
Site:	Sec 16, T26S, R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #8H	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)
Delaware Top									
4,439.0	5.00	155.05	4,426.0	-273.7	127.4	280.5	0.00	0.00	0.00
Ramsey									
4,477.2	5.00	155.05	4,464.0	-276.8	128.8	283.6	0.00	0.00	0.00
4,500.0	5.00	155.05	4,486.7	-278.6	129.6	285.5	0.00	0.00	0.00
Ford Sh									
4,549.4	5.00	155.05	4,536.0	-282.5	131.4	289.5	0.00	0.00	0.00
Olds									
4,576.5	5.00	155.05	4,563.0	-284.6	132.4	291.7	0.00	0.00	0.00
4,600.0	5.00	155.05	4,586.4	-286.5	133.3	293.6	0.00	0.00	0.00
4,700.0	5.00	155.05	4,686.0	-294.4	137.0	301.6	0.00	0.00	0.00
4,800.0	5.00	155.05	4,785.6	-302.3	140.6	309.7	0.00	0.00	0.00
4,900.0	5.00	155.05	4,885.2	-310.2	144.3	317.8	0.00	0.00	0.00
5,000.0	5.00	155.05	4,984.8	-318.1	148.0	325.9	0.00	0.00	0.00
5,100.0	5.00	155.05	5,084.5	-326.0	151.7	334.0	0.00	0.00	0.00
5,200.0	5.00	155.05	5,184.1	-333.9	155.3	342.1	0.00	0.00	0.00
5,300.0	5.00	155.05	5,283.7	-341.8	159.0	350.2	0.00	0.00	0.00
5,400.0	5.00	155.05	5,383.3	-349.7	162.7	358.3	0.00	0.00	0.00
Cherry Canyon									
5,455.9	5.00	155.05	5,439.0	-354.1	164.7	362.9	0.00	0.00	0.00
5,500.0	5.00	155.05	5,482.9	-357.6	166.4	366.4	0.00	0.00	0.00
5,600.0	5.00	155.05	5,582.6	-365.5	170.0	374.5	0.00	0.00	0.00
5,700.0	5.00	155.05	5,682.2	-373.4	173.7	382.6	0.00	0.00	0.00
5,800.0	5.00	155.05	5,781.8	-381.3	177.4	390.7	0.00	0.00	0.00
5,900.0	5.00	155.05	5,881.4	-389.2	181.1	398.8	0.00	0.00	0.00
6,000.0	5.00	155.05	5,981.0	-397.1	184.7	406.9	0.00	0.00	0.00
6,100.0	5.00	155.05	6,080.7	-405.0	188.4	415.0	0.00	0.00	0.00
6,200.0	5.00	155.05	6,180.3	-412.9	192.1	423.1	0.00	0.00	0.00
6,300.0	5.00	155.05	6,279.9	-420.8	195.8	431.2	0.00	0.00	0.00
6,400.0	5.00	155.05	6,379.5	-428.7	199.5	439.3	0.00	0.00	0.00
6,500.0	5.00	155.05	6,479.1	-436.6	203.1	447.4	0.00	0.00	0.00
6,600.0	5.00	155.05	6,578.8	-444.5	206.8	455.5	0.00	0.00	0.00
6,700.0	5.00	155.05	6,678.4	-452.4	210.5	463.6	0.00	0.00	0.00
6,800.0	5.00	155.05	6,778.0	-460.3	214.2	471.7	0.00	0.00	0.00
6,900.0	5.00	155.05	6,877.6	-468.2	217.8	479.8	0.00	0.00	0.00
7,000.0	5.00	155.05	6,977.2	-476.1	221.5	487.9	0.00	0.00	0.00
7,100.0	5.00	155.05	7,076.9	-484.0	225.2	496.0	0.00	0.00	0.00
7,200.0	5.00	155.05	7,176.5	-491.9	228.9	504.1	0.00	0.00	0.00
Brushy Canyon									
7,201.5	5.00	155.05	7,178.0	-492.0	228.9	504.2	0.00	0.00	0.00
7,300.0	5.00	155.05	7,276.1	-499.8	232.5	512.2	0.00	0.00	0.00
7,400.0	5.00	155.05	7,375.7	-507.7	236.2	520.3	0.00	0.00	0.00
7,500.0	5.00	155.05	7,475.3	-515.6	239.9	528.4	0.00	0.00	0.00
7,600.0	5.00	155.05	7,574.9	-523.5	243.6	536.5	0.00	0.00	0.00
7,700.0	5.00	155.05	7,674.6	-531.4	247.2	544.6	0.00	0.00	0.00
7,800.0	5.00	155.05	7,774.2	-539.3	250.9	552.7	0.00	0.00	0.00
7,900.0	5.00	155.05	7,873.8	-547.2	254.6	560.8	0.00	0.00	0.00
8,000.0	5.00	155.05	7,973.4	-555.1	258.3	568.9	0.00	0.00	0.00
8,100.0	5.00	155.05	8,073.0	-563.0	262.0	577.0	0.00	0.00	0.00
8,200.0	5.00	155.05	8,172.7	-570.9	265.6	585.1	0.00	0.00	0.00
8,300.0	5.00	155.05	8,272.3	-578.8	269.3	593.2	0.00	0.00	0.00
Drop 2°/100'									
8,317.0	5.00	155.05	8,289.2	-580.2	269.9	594.5	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State #8H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3227.0usft (Original Well Elev)
Project:	Lea County New Mexico	MD Reference:	WELL @ 3227.0usft (Original Well Elev)
Site:	Sec 16, T26S, R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #8H	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)
8,400.0	3.34	155.05	8,372.0	-585.7	272.5	600.2	2.00	-2.00	0.00
Bone Spring Top									
8,426.0	2.82	155.05	8,398.0	-586.9	273.1	601.5	2.00	-2.00	0.00
8,500.0	1.34	155.05	8,471.9	-589.4	274.2	603.9	2.00	-2.00	0.00
EOD @ Vertical									
8,567.0	0.00	0.00	8,538.9	-590.1	274.5	604.7	2.00	-2.00	0.00
Bone Spring 1st Carb Top									
8,576.1	0.00	0.00	8,548.0	-590.1	274.5	604.7	0.00	0.00	0.00
8,600.0	0.00	0.00	8,571.9	-590.1	274.5	604.7	0.00	0.00	0.00
8,700.0	0.00	0.00	8,671.9	-590.1	274.5	604.7	0.00	0.00	0.00
Build 8.5°/100'									
8,767.0	0.00	0.00	8,738.9	-590.1	274.5	604.7	0.00	0.00	0.00
8,800.0	2.80	180.00	8,771.9	-590.9	274.5	605.5	8.50	8.50	0.00
Bone Spring 1st Carb Base - Avalon A Shale Top									
8,891.8	10.61	180.00	8,863.0	-601.6	274.5	616.2	8.50	8.50	0.00
8,900.0	11.30	180.00	8,871.0	-603.1	274.5	617.7	8.50	8.50	0.00
9,000.0	19.80	180.00	8,967.3	-629.9	274.5	644.5	8.50	8.50	0.00
9,100.0	28.30	180.00	9,058.5	-670.7	274.5	685.1	8.50	8.50	0.00
Avalon A Shale Base - Avalon B Zone Top									
9,110.8	29.22	180.00	9,068.0	-675.9	274.5	690.3	8.50	8.50	0.00
9,200.0	36.80	180.00	9,142.7	-724.4	274.5	738.8	8.50	8.50	0.00
9,300.0	45.30	180.00	9,218.1	-790.0	274.5	804.3	8.50	8.50	0.00
Avalon B Zone Base - Avalon C Shale Top									
9,359.5	50.36	180.00	9,258.0	-834.1	274.5	848.3	8.50	8.50	0.00
9,400.0	53.80	180.00	9,282.9	-866.1	274.5	880.2	8.50	8.50	0.00
9,500.0	62.30	180.00	9,335.7	-950.9	274.5	964.9	8.50	8.50	0.00
9,600.0	70.80	180.00	9,375.5	-1,042.5	274.5	1,056.4	8.50	8.50	0.00
9,700.0	79.30	180.00	9,401.3	-1,139.0	274.5	1,152.8	8.50	8.50	0.00
9,800.0	87.80	180.00	9,412.5	-1,238.3	274.5	1,251.9	8.50	8.50	0.00
EOB @ 90° Inc / 180° Azm / 9413° TVD									
9,825.8	90.00	180.00	9,413.0	-1,264.1	274.5	1,277.7	8.50	8.50	0.00
9,900.0	90.00	180.00	9,413.0	-1,338.3	274.5	1,351.7	0.00	0.00	0.00
10,000.0	90.00	180.00	9,413.0	-1,438.3	274.5	1,451.6	0.00	0.00	0.00
10,100.0	90.00	180.00	9,413.0	-1,538.3	274.5	1,551.4	0.00	0.00	0.00
10,200.0	90.00	180.00	9,413.0	-1,638.3	274.5	1,651.2	0.00	0.00	0.00
10,300.0	90.00	180.00	9,413.0	-1,738.3	274.5	1,751.1	0.00	0.00	0.00
10,400.0	90.00	180.00	9,413.0	-1,838.3	274.5	1,850.9	0.00	0.00	0.00
10,500.0	90.00	180.00	9,413.0	-1,938.3	274.5	1,950.8	0.00	0.00	0.00
10,600.0	90.00	180.00	9,413.0	-2,038.3	274.5	2,050.6	0.00	0.00	0.00
10,700.0	90.00	180.00	9,413.0	-2,138.3	274.5	2,150.4	0.00	0.00	0.00
10,800.0	90.00	180.00	9,413.0	-2,238.3	274.5	2,250.3	0.00	0.00	0.00
10,900.0	90.00	180.00	9,413.0	-2,338.3	274.5	2,350.1	0.00	0.00	0.00
11,000.0	90.00	180.00	9,413.0	-2,438.3	274.5	2,449.9	0.00	0.00	0.00
11,100.0	90.00	180.00	9,413.0	-2,538.3	274.5	2,549.8	0.00	0.00	0.00
11,200.0	90.00	180.00	9,413.0	-2,638.3	274.5	2,649.6	0.00	0.00	0.00
11,300.0	90.00	180.00	9,413.0	-2,738.3	274.5	2,749.5	0.00	0.00	0.00
11,400.0	90.00	180.00	9,413.0	-2,838.3	274.5	2,849.3	0.00	0.00	0.00
11,500.0	90.00	180.00	9,413.0	-2,938.3	274.5	2,949.1	0.00	0.00	0.00
11,600.0	90.00	180.00	9,413.0	-3,038.3	274.5	3,049.0	0.00	0.00	0.00
11,700.0	90.00	180.00	9,413.0	-3,138.3	274.5	3,148.8	0.00	0.00	0.00
11,800.0	90.00	180.00	9,413.0	-3,238.3	274.5	3,248.7	0.00	0.00	0.00
11,900.0	90.00	180.00	9,413.0	-3,338.3	274.5	3,348.5	0.00	0.00	0.00
12,000.0	90.00	180.00	9,413.0	-3,438.3	274.5	3,448.3	0.00	0.00	0.00

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Project:	Lea County, New Mexico	MD Reference:	WELL @ 3227 0usft (Original Well Elev)
Site:	Sec 16-T26S: R32E.NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #8H	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)
12,100.0	90.00	180.00	9,413.0	-3,538.3	274.5	3,548.2	0.00	0.00	0.00
12,200.0	90.00	180.00	9,413.0	-3,638.3	274.5	3,648.0	0.00	0.00	0.00
12,300.0	90.00	180.00	9,413.0	-3,738.3	274.5	3,747.9	0.00	0.00	0.00
12,400.0	90.00	180.00	9,413.0	-3,838.3	274.5	3,847.7	0.00	0.00	0.00
12,500.0	90.00	180.00	9,413.0	-3,938.3	274.5	3,947.5	0.00	0.00	0.00
12,600.0	90.00	180.00	9,413.0	-4,038.3	274.5	4,047.4	0.00	0.00	0.00
12,700.0	90.00	180.00	9,413.0	-4,138.3	274.5	4,147.2	0.00	0.00	0.00
12,800.0	90.00	180.00	9,413.0	-4,238.3	274.5	4,247.1	0.00	0.00	0.00
12,900.0	90.00	180.00	9,413.0	-4,338.3	274.5	4,346.9	0.00	0.00	0.00
13,000.0	90.00	180.00	9,413.0	-4,438.3	274.5	4,446.7	0.00	0.00	0.00
13,100.0	90.00	180.00	9,413.0	-4,538.3	274.5	4,546.6	0.00	0.00	0.00
13,200.0	90.00	180.00	9,413.0	-4,638.3	274.5	4,646.4	0.00	0.00	0.00
13,300.0	90.00	180.00	9,413.0	-4,738.3	274.5	4,746.3	0.00	0.00	0.00
TD @ 13399' MD / 9413' TVD									
13,398.9	90.00	180.00	9,413.0	-4,837.2	274.5	4,845.0	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	90.00	180.00	9,413.0	-4,837.2	274.5	377,577.70	704,886.16	32° 2' 10.866 N	103° 40' 19.720 W
- plan hits target center									
- Rectangle (sides W100.0 H45.0 D3,573.1)									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
774.0	774.0	Rustler		0.00	176.75
989.1	989.0	Salado		0.00	176.75
2,799.8	2,793.0	Castile		0.00	176.75
4,439.0	4,426.0	Delaware Top		0.00	176.75
4,477.2	4,464.0	Ramsey		0.00	176.75
4,549.4	4,536.0	Ford Sh		0.00	176.75
4,576.5	4,563.0	Olds		0.00	176.75
5,455.9	5,439.0	Cherry Canyon		0.00	176.75
7,201.5	7,178.0	Brushy Canyon		0.00	176.75
8,426.0	8,398.0	Bone Spring Top		0.00	176.75
8,576.1	8,548.0	Bone Spring 1st Carb Top		0.00	176.75
8,891.8	8,863.0	Bone Spring 1st Carb Base		0.00	176.75
8,891.8	8,863.0	Avalon A Shale Top		0.00	176.75
9,110.8	9,068.0	Avalon A Shale Base		0.00	176.75
9,110.8	9,068.0	Avalon B Zone Top		0.00	176.75
9,359.5	9,258.0	Avalon B Zone Base		0.00	176.75
9,359.5	9,258.0	Avalon C Shale Top		0.00	176.75

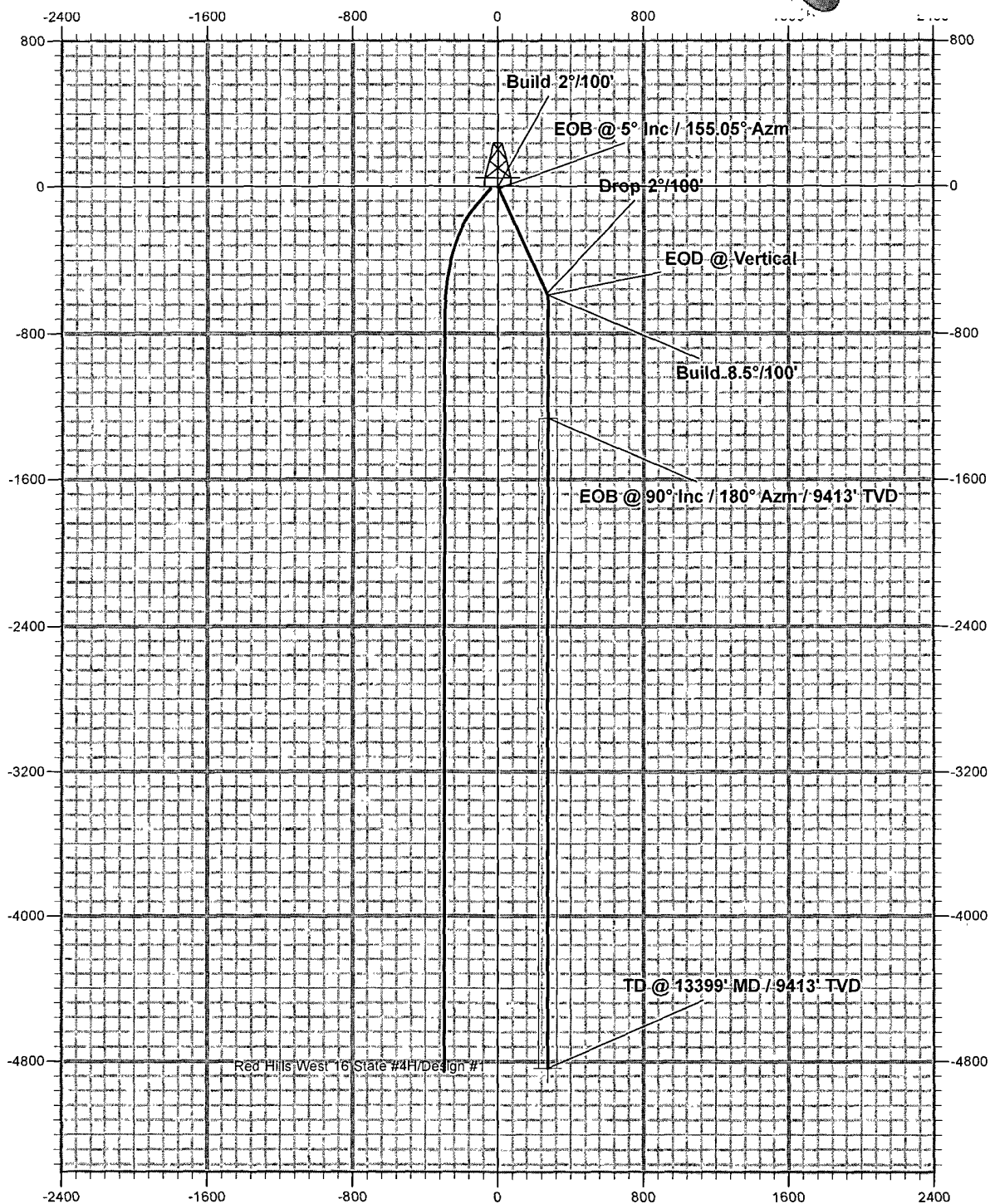
Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State #8H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3227.0usft (Original Well Elev)
Project:	Lea County New Mexico	MD Reference:	WELL @ 3227.0usft (Original Well Elev)
Site:	Sec 16; T26S R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #8H	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)	
850.0	850.0	0.0	0.0	Build 2°/100'
1,100.0	1,099.7	-9.9	4.6	EOB @ 5° Inc / 155.05° Azm
8,317.0	8,289.2	-580.2	269.9	Drop 2°/100'
8,567.0	8,538.9	-590.1	274.5	EOD @ Vertical
8,767.0	8,738.9	-590.1	274.5	Build 8.5°/100'
9,825.8	9,413.0	-1,264.1	274.5	EOB @ 90° Inc / 180° Azm / 9413' TVD
13,398.9	9,413.0	-4,837.2	274.5	TD @ 13399' MD / 9413' TVD

ConocoPhillips

Lea County, New Mexico
Red Hills West 16 State #8H
Design #1

DDC
The DIRECTIONAL DRILLING COMPANY



RED HILLS WEST 16 STATE 8H

KB

3,243

(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 with a ~ 4,500' long lateral.

Surface Location

Sec 16

26S

32E

Lea Co. TX, Surface
Location: 180' FNL & 640'
FEL

RED HILLS WEST STATE 16 8H BHL

Sec 16

26S

32E

Lea Co. TX, Terminus
Location: 330' FSL & 380'
FEL

Formation Name

Formation
Top
(TVD)

Subsea
Depth

Gross
Thickness

Gross
Thickness

Gross
Thickness

Comments

Quaternary	Surface					
Rustler	774	2,469				
Salado	989	2,254				
Castile	2,793	450				
Delaware Top	4,426	-1,183				
Ramsey	4,464	-1,221				
Ford Sh	4,536	-1,293				
Olds	4,563	-1,320				
Cherry Canyon	5,439	-2,196				
Brushy Canyon	7,178	-3,935	315			
Bone Spring Top	8,398	-5,155				
Bone Spring 1st Carbonate Top	8,548	-5,305				Not a formation top.
Bone Spring 1st Carbonate Base	8,863	-5,620	205			
KOP (est)	8,713	-5,470				
Avalon A Shale Top	8,863	-5,620	190			
Avalon A Shale Base	9,068	-5,825				
Avalon B Zone Top	9,068	-5,825				
Avalon B Zone Base	9,258	-6,015				
Avalon C Shale Top	9,258	-6,015	45		625	
LANDING: Avalon C Shale Horizontal Upper Target Limit	9,388	-6,145				
LANDING: Avalon C Shale Horizontal Target Center	9,413	-6,170				
LANDING: Avalon C Shale Horizontal Lower Target Limit	9,433	-6,190	45			
TERMINUS: Avalon C Shale Horizontal Upper Target Limit	9,388	-6,145				
TERMINUS: Avalon C Shale Horizontal Target Center	9,413	-6,170				
TERMINUS: Avalon C Shale Horizontal Lower Target Limit	9,433	-6,190				
Avalon C Shale Base (Should not penetrate)	9,488	-6,245				