

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

Form C-103
Revised August 1, 2011

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- 40413
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>690</u> feet from the <u>E</u> line. Section <u>16</u> Township <u>26S</u> Range <u>32E</u> NMPM <u>Lea</u> County		8. Well Number 4H
11. Elevation (Show whether DR, RKB, RT, GR, etc.)		9. OGRID Number 217817
		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@

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 4H	FNL	FSL
LOCATION	Surface Location	180	FEL
	Bottom Hole Location	330	FWL
EST. T.D.	Leg #1 13,574' MD	GROUND ELEV.	3,227' (est)
		RKB	3,243' (est)

PROGNOSIS:	Based on 3,243' KB(est)	LOGS:	Type	Interval
MARKER			Open Hole	
Quaternary			GR-MWD	KOP-TD
Rustler	2,468			
Delaware Top	-1,220			
Ford Shale	-1,354			
Bone Spring	-5,151			
Bone Spring 1st Carbonate Top	-5,286			
Bone Spring 1st Carbonate Base	-5,623			
KOP				
Avalon A Shale Top	-5,623			
Avalon A Shale Base	-5,841			
Avalon A Shale Horizontal Target	-5,744			

DEVIATION:	Surf	3" max, svy every 500'
	Int #1/2	3" max, svy every 90'
	Intern #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:	Precision 827 BOPE (With Rotating Head)	COP Category 3 Well Control Requirements
		13-5/8"-5Mpsi Annular
		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)	0.65 psi/ft	Surface Formation:	
Max Anticipated BHP:				
MUD:	Interval	Type	Max MW	Vis
Surface	0'-810'	Aquagel - Spud Mud	9.3	32-36
Intermediate 1	810'-4610'	Bme	10.5	28-30
Intermediate 2	4610'-9426'	Bme	9.5	28-30
Production	9426'-13574'	Cut Bme	9.5	30-40

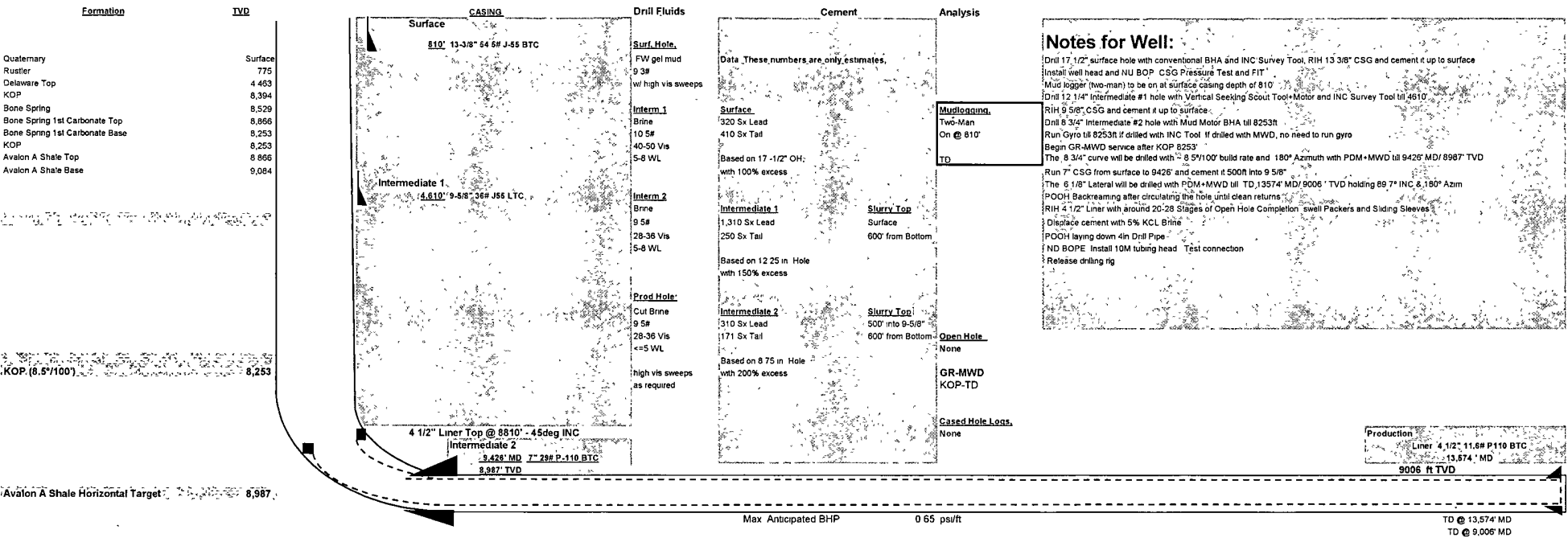
CASING	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks
Surface	13-3/8"	54.5	17-1/2"	810'	To Surface	18hrs	
Intermediate 1	9-5/8"	36	12-1/4"	4,610'	To Surface	18hrs	
Intermediate 2	7"	29	8 3/4"	9,426'	500' into the 9-5/8"	18hrs	
Production Lat #1	4 1/2"	11.6	6 1/8"	13,574'	Packers and Sleeves	N/A	Liner

DIRECTIONAL PLAN	MD	TVL	AZ	
Surface	N/A	N/A	0	Directional Company DDC
Vertical KOP	8,253'	8,253'	220.0	Vertical Build Rate
End Build/ 7" Casing (90° curve)	9,426'	8,987'	180.0	Tan Leg Turn Rate
Tangent	N/A	N/A	180.0	
Turn	N/A	N/A	180.0	
TD	13,574'	9,006'	180.0	

Comments				
Surveys will be taken with INC Survey Tool below surface casing while drilling with PDC + Scout Vertical Seeking Tool + Straight Motor BHA. Continue with MWD surveys to TD				
Prep By:	Katia Filina	Date:	10/15/12	Doc
				REV 1

Red Hills West 16 State 4H			
Surface Location:		Bottom Hole Location:	
180FNL	690FEL	330FSL	940FEL

Directional:					
	MD	TVD	FNL/FSL	FEL/FWL	S-T-R
Vertical KOP	8253	8253	0	0	0
End Build/7" Casing (90° curve)	9,426'	8,987'	0	0	0
Tangent	N/A	N/A	0	0	0
Turn	N/A	N/A	0	0	0
TD	13,574	9,006'	0	0	0



Avalon A Shale Horizontal Target 8,987

David Sils
Geologist

Date
10/15/2012

Kata Filina
Drilling Engineer

Date
10/15/2012

Bonespring/Red Hills
 ConocoPhillips
 Red Hills West 16 State 4H

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 (%)	150%
cap 12-1/4 - 9-5/8"	0.0558
Calculated fill:	4,110
Yield Lead (Cu. Ft./Sx)	2.47
Calculated Total Lead (Cu. Ft.)	3,218
Calc. Lead Volume (Sx)	1310

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")	4,066
Yield Lead (Cu. Ft./Sx)	2.7
Calculated Total Lead (Cu. Ft.)	828
Calc. Lead Volume (Sx)	310

4110
 8,176'

Intermediate1 Casing (Tail):

Intermediate Casing O.D. (In.)	9.625
Production Casing ID (In)	8.921
Hole O.D. (In)	12.25
Excess (%)	200%
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.)	331
Required Tail Volume (Sx)	250

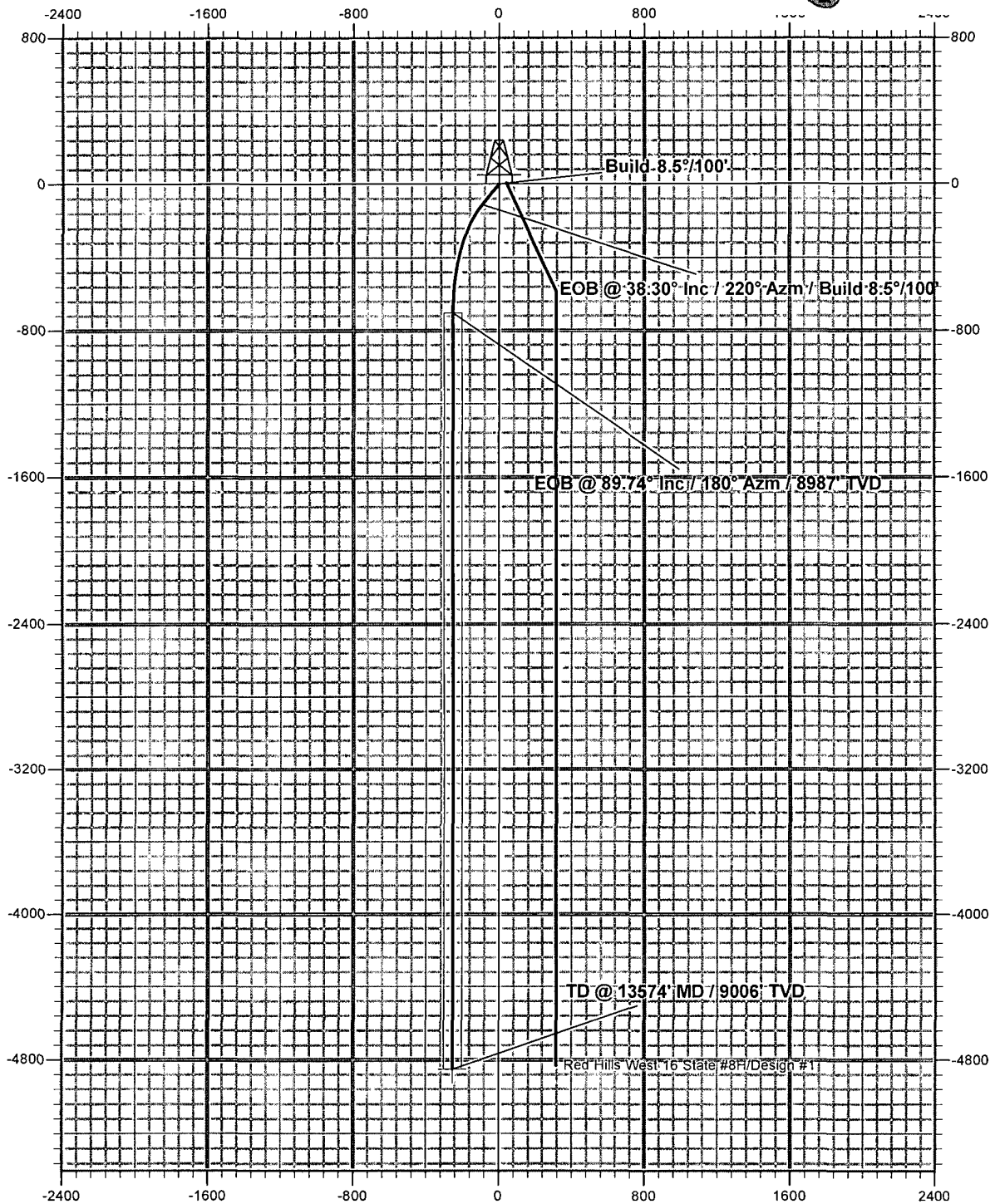
Intermediate2 Casing (Tail):

Intermediate Casing O.D. (In.)	7.000
Intermediate Casing ID (In)	6.184
Hole O.D. (In)	8.75
Excess (%)	120%
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)	1.39
Calculated Total Tail (Cu. Ft.)	238
Required Tail Volume (Sx)	171

ConocoPhillips

Lea County, New Mexico
Red Hills West 16 State #4H
Design #1

DDC
The DIRECTIONAL DRILLING COMPANY

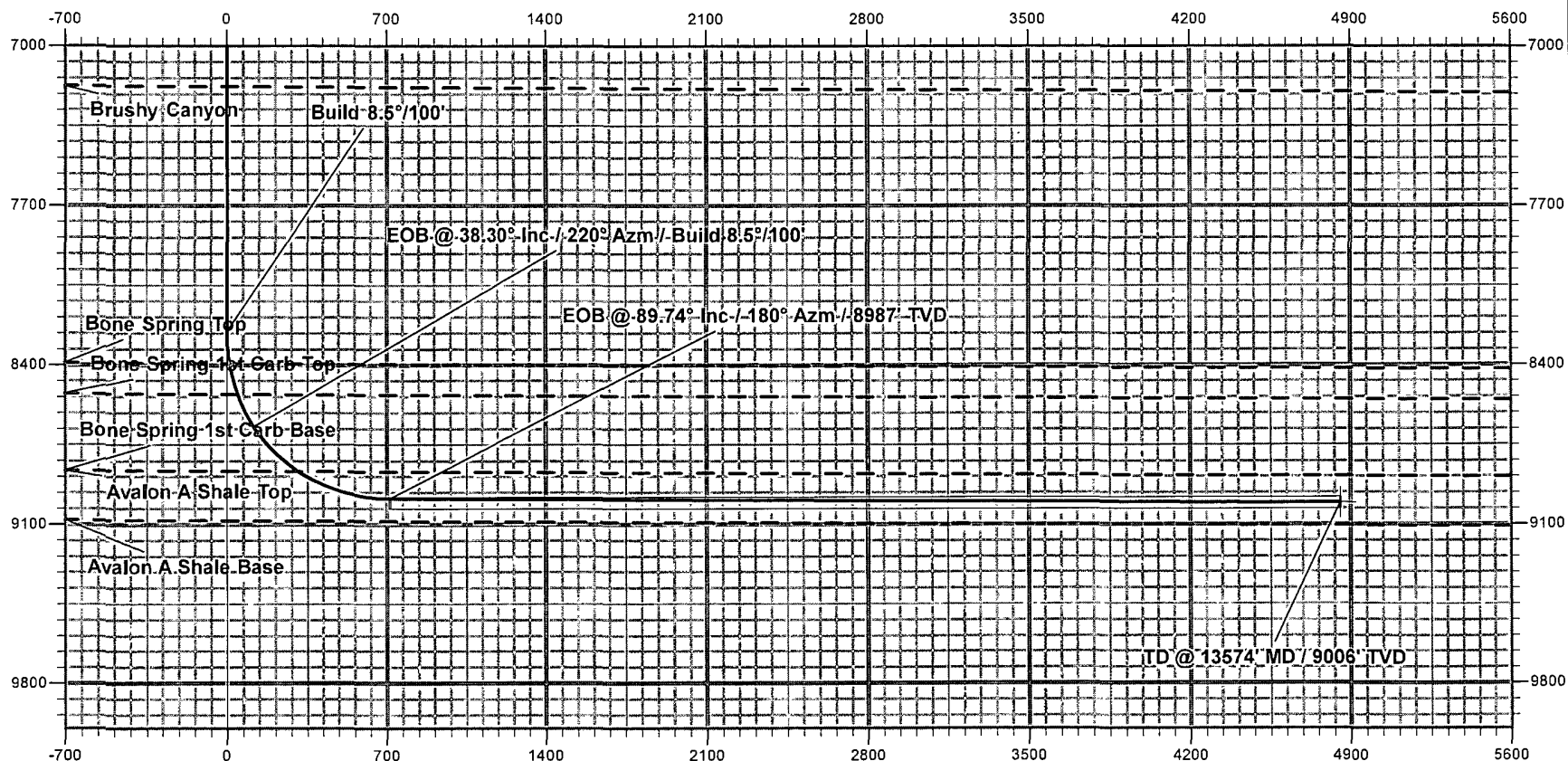




Lea County, New Mexico

Red Hills West 16 State #4H

Design #1



Vertical Section at 182.98° (700 usft/in)



Conoco Phillips

Lea County, New Mexico
Sec 16, T26S, R32E NMPM
Red Hills West 16 State #4H

Wellbore #1

Plan: Design #1

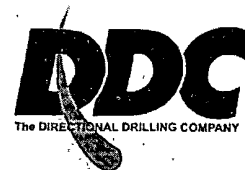
HOBBS OCD

OCT 17 2012

RECEIVED

DDC Well Planning Report

09 October, 2012



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State #4H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3228.0usft (Original Well Elev)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3228.0usft (Original Well Elev)
Site:	Sec 16, T26S, R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #4H	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 #4H					
Well Position	+N/-S	24.4 usft	Northing:	382,406.91 usft	Latitude:	32° 2' 58.675 N
	+E/-W	4,025.9 usft	Easting:	704,570.71 usft	Longitude:	103° 40' 23.041 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	3,228.0 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		182.98		

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	
8,253.2	0.00	0.00	8,253.2	0.0	0.0	0.00	0.00	0.00	0.00	
8,703.8	38.30	220.00	8,671.0	-111.1	-93.3	8.50	8.50	0.00	220.00	
9,426.4	89.74	180.00	8,987.0	-701.6	-252.8	8.50	7.12	-5.54	-47.05	
13,573.8	89.74	180.00	9,006.0	-4,849.0	-252.7	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 #4H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3228.0usft (Original Well Elev)
Project:	Lea County New Mexico	MD Reference:	WELL @ 3228.0usft (Original Well Elev)
Site:	Sec 16, T26S R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #4H	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										
775.0	0.00	0.00	775.0	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										
990.0	0.00	0.00	990.0	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										
2,794.0	0.00	0.00	2,794.0	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	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
Delaware Top										
4,463.0	0.00	0.00	4,463.0	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	

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State #4H
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Site:	Sec.16, T26S, R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #4H	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)
Ramsey									
4,540.0	0.00	0.00	4,540.0	0.0	0.0	0.0	0.00	0.00	0.00
Olds									
4,585.0	0.00	0.00	4,585.0	0.0	0.0	0.0	0.00	0.00	0.00
Ford Sh									
4,597.0	0.00	0.00	4,597.0	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									
5,440.0	0.00	0.00	5,440.0	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									
7,179.0	0.00	0.00	7,179.0	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
Build 8.5°/100'									
8,253.2	0.00	0.00	8,253.2	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	3.98	220.00	8,300.0	-1.2	-1.0	1.3	8.50	8.50	0.00
Bone Spring Top									
8,395.1	12.06	220.00	8,394.1	-11.4	-9.6	11.9	8.50	8.50	0.00
8,400.0	12.48	220.00	8,398.8	-12.2	-10.2	12.7	8.50	8.50	0.00

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State #4H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3228.0usft (Original Well Elev)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3228.0usft (Original Well Elev)
Site:	Sec 16, T26S, R32E NMPM	North Reference:	Grd
Well:	Red Hills West 16 State #4H	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	20.98	220.00	8,494.5	-34.2	-28.7	35.7	8.50	8.50	0.00
Bone Spring 1st Carb Top									
8,537.6	24.17	220.00	8,529.2	-45.3	-38.0	47.2	8.50	8.50	0.00
8,600.0	29.48	220.00	8,584.9	-66.8	-56.1	69.7	8.50	8.50	0.00
8,700.0	37.98	220.00	8,668.0	-109.3	-91.7	114.0	8.50	8.50	0.00
EOB @ 38.30° Inc / 220° Azm / Build 8.5°/100°									
8,703.8	38.30	220.00	8,671.0	-111.1	-93.3	115.8	8.50	8.50	0.00
8,800.0	44.22	211.41	8,743.3	-162.7	-130.0	169.2	8.50	6.15	-8.93
8,900.0	50.91	204.30	8,810.8	-227.9	-164.2	236.2	8.50	6.69	-7.12
Bone Spring 1st Carb Base - Avalon A Shale Top									
8,997.1	57.74	198.60	8,867.4	-301.3	-192.8	310.9	8.50	7.04	-5.86
9,000.0	57.96	198.45	8,869.0	-303.7	-193.6	313.3	8.50	7.18	-5.38
9,100.0	65.23	193.45	8,916.5	-388.2	-217.6	399.0	8.50	7.28	-5.00
9,200.0	72.66	189.01	8,952.5	-479.6	-235.7	491.2	8.50	7.43	-4.44
9,300.0	80.18	184.92	8,975.9	-576.0	-247.4	588.1	8.50	7.52	-4.09
9,400.0	87.74	181.02	8,986.5	-675.3	-252.5	687.5	8.50	7.56	-3.91
EOB @ 89.74° Inc / 180° Azm / 8987° TVD									
9,426.4	89.74	180.00	8,987.0	-701.6	-252.8	713.8	8.50	7.57	-3.86
9,500.0	89.74	180.00	8,987.4	-775.2	-252.8	787.3	0.00	0.00	0.00
9,600.0	89.74	180.00	8,987.8	-875.2	-252.8	887.2	0.00	0.00	0.00
9,700.0	89.74	180.00	8,988.3	-975.2	-252.8	987.1	0.00	0.00	0.00
9,800.0	89.74	180.00	8,988.7	-1,075.2	-252.8	1,086.9	0.00	0.00	0.00
9,900.0	89.74	180.00	8,989.2	-1,175.2	-252.8	1,186.8	0.00	0.00	0.00
10,000.0	89.74	180.00	8,989.7	-1,275.2	-252.7	1,286.7	0.00	0.00	0.00
10,100.0	89.74	180.00	8,990.1	-1,375.2	-252.7	1,386.5	0.00	0.00	0.00
10,200.0	89.74	180.00	8,990.6	-1,475.2	-252.7	1,486.4	0.00	0.00	0.00
10,300.0	89.74	180.00	8,991.0	-1,575.2	-252.7	1,586.2	0.00	0.00	0.00
10,400.0	89.74	180.00	8,991.5	-1,675.2	-252.7	1,686.1	0.00	0.00	0.00
10,500.0	89.74	180.00	8,991.9	-1,775.2	-252.7	1,786.0	0.00	0.00	0.00
10,600.0	89.74	180.00	8,992.4	-1,875.2	-252.7	1,885.8	0.00	0.00	0.00
10,700.0	89.74	180.00	8,992.9	-1,975.2	-252.7	1,985.7	0.00	0.00	0.00
10,800.0	89.74	180.00	8,993.3	-2,075.2	-252.7	2,085.6	0.00	0.00	0.00
10,900.0	89.74	180.00	8,993.8	-2,175.2	-252.7	2,185.4	0.00	0.00	0.00
11,000.0	89.74	180.00	8,994.2	-2,275.2	-252.7	2,285.3	0.00	0.00	0.00
11,100.0	89.74	180.00	8,994.7	-2,375.2	-252.7	2,385.2	0.00	0.00	0.00
11,200.0	89.74	180.00	8,995.1	-2,475.2	-252.7	2,485.0	0.00	0.00	0.00
11,300.0	89.74	180.00	8,995.6	-2,575.2	-252.7	2,584.9	0.00	0.00	0.00
11,400.0	89.74	180.00	8,996.1	-2,675.2	-252.7	2,684.7	0.00	0.00	0.00
11,500.0	89.74	180.00	8,996.5	-2,775.2	-252.7	2,784.6	0.00	0.00	0.00
11,600.0	89.74	180.00	8,997.0	-2,875.2	-252.7	2,884.5	0.00	0.00	0.00
11,700.0	89.74	180.00	8,997.4	-2,975.2	-252.7	2,984.3	0.00	0.00	0.00
11,800.0	89.74	180.00	8,997.9	-3,075.2	-252.7	3,084.2	0.00	0.00	0.00
11,900.0	89.74	180.00	8,998.3	-3,175.2	-252.7	3,184.1	0.00	0.00	0.00
12,000.0	89.74	180.00	8,998.8	-3,275.2	-252.7	3,283.9	0.00	0.00	0.00
12,100.0	89.74	180.00	8,999.3	-3,375.2	-252.7	3,383.8	0.00	0.00	0.00
12,200.0	89.74	180.00	8,999.7	-3,475.2	-252.7	3,483.7	0.00	0.00	0.00
12,300.0	89.74	180.00	9,000.2	-3,575.2	-252.7	3,583.5	0.00	0.00	0.00
12,400.0	89.74	180.00	9,000.6	-3,675.2	-252.7	3,683.4	0.00	0.00	0.00
12,500.0	89.74	180.00	9,001.1	-3,775.2	-252.7	3,783.2	0.00	0.00	0.00
12,600.0	89.74	180.00	9,001.5	-3,875.2	-252.7	3,883.1	0.00	0.00	0.00
12,700.0	89.74	180.00	9,002.0	-3,975.2	-252.7	3,983.0	0.00	0.00	0.00
12,800.0	89.74	180.00	9,002.5	-4,075.2	-252.7	4,082.8	0.00	0.00	0.00
12,900.0	89.74	180.00	9,002.9	-4,175.2	-252.7	4,182.7	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Red Hills West 16 State #4H
Company:	Conoco Phillips	TVD Reference:	WELL @ 3228.0usft (Original Well Elev)
Project:	Lea County, New Mexico	MD Reference:	WELL @ 3228.0usft (Original Well Elev)
Site:	Sec 16 T26S R32E NMPM	North Reference:	Grid
Well:	Red Hills West 16 State #4H	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)
13,000.0	89.74	180.00	9,003.4	-4,275.2	-252.7	4,282.6	0.00	0.00	0.00
13,100.0	89.74	180.00	9,003.8	-4,375.2	-252.7	4,382.4	0.00	0.00	0.00
13,200.0	89.74	180.00	9,004.3	-4,475.2	-252.7	4,482.3	0.00	0.00	0.00
13,300.0	89.74	180.00	9,004.7	-4,575.2	-252.7	4,582.2	0.00	0.00	0.00
13,400.0	89.74	180.00	9,005.2	-4,675.2	-252.7	4,682.0	0.00	0.00	0.00
13,500.0	89.74	180.00	9,005.7	-4,775.2	-252.7	4,781.9	0.00	0.00	0.00
13,573.8	89.74	180.00	9,006.0	-4,849.0	-252.7	4,855.5	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	90.26	180.00	9,006.0	-4,849.0	-252.7	377,557.95	704,318.04	32° 2' 10.705 N	103° 40' 26.321 W
- plan hits target center									
- Rectangle (sides W100.0 H50.0 D4,147.4)									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
775.0	775.0	Rustler		0.26	182.98	
990.0	990.0	Salado		0.26	182.98	
2,794.0	2,794.0	Castile		0.26	182.98	
4,463.0	4,463.0	Delaware Top		0.26	182.98	
4,540.0	4,540.0	Ramsey		0.26	182.98	
4,585.0	4,585.0	Olds		0.26	182.98	
4,597.0	4,597.0	Ford Sh		0.26	182.98	
5,440.0	5,440.0	Cherry Canyon		0.26	182.98	
7,179.0	7,179.0	Brushy Canyon		0.26	182.98	
8,395.1	8,394.1	Bone Spring Top		0.26	182.98	
8,537.6	8,529.2	Bone Spring 1st Carb Top		0.26	182.98	
8,997.1	8,867.4	Bone Spring 1st Carb Base		0.26	182.98	
8,997.1	8,867.4	Avalon A Shale Top		0.26	182.98	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,253.2	8,253.2	0.0	0.0	Build 8.5°/100'
8,703.8	8,671.0	-111.1	-93.3	EOB @ 38.30° Inc / 220° Azm / Build 8.5°/100'
9,426.4	8,987.0	-701.6	-252.8	EOB @ 89.74° Inc / 180° Azm / 8987' TVD
13,573.8	9,006.0	-4,849.0	-252.7	TD @ 13574' MD / 9006' TVD

RED HILLS WEST 16 STATE 4H					KB (via survey plat)		3,244
Notes:		A pilot hole will not be drilled. This horizontal well will be drilled from N to S into the Avalon A Shale Zone. The well will be drilled relatively flat to slightly toe down with a ~ 4,500' long lateral.					
Surface Location		Sec 16	26S	32E		Lea Co. TX, Surface Location: 180' FNL & 690' FEL	
RED HILLS WEST STATE 16 4H BHL		Sec 16	26S	32E		Lea Co. TX, Terminus Location: 330' FSL & 940' FEL	
Formation Name	Formation Top (TVD)	Subsea Depth	Gross Thickness	Gross Thickness	Gross Thickness	Comments	
Quaternary	Surface						
Rustler	775	2,469					
Salado	990	2,254					
Castile	2,794	450					
Delaware Top	4,463	-1,219					
Olds	4,585	-1,341					
Ramsey	4,540	-1,296					
Ford Sh	4,597	-1,353					
Cherry Canyon	5,440	-2,196					
Brushy Canyon	7,179	-3,935					
KOP (est)	8,271	-5,027				Not a formation top.	
Bone Spring Top	8,394	-5,150					
Bone Spring 1st Carbonate Top	8,529	-5,285	337				
Bone Spring 1st Carbonate Base	8,866	-5,622					
Avalon A Shale Top	8,866	-5,622	218				
LANDING: Avalon A Shale Horizontal Upper Target Limit	8,962	-5,718				Not a formation top.	
LANDING: Avalon A Shale Horizontal Target Center	8,987	-5,743		50		Not a formation top.	
LANDING: Avalon A Shale Horizontal Lower Target Limit	9,012	-5,768				Not a formation top.	
TERMINUS: Avalon A Shale Horizontal Upper Target Limit	8,981	-5,737				Not a formation top.	
TERMINUS: Avalon A Shale Horizontal Target Center	9,006	-5,762		50		Not a formation top.	
TERMINUS: Avalon A Shale Horizontal Lower Target Limit	9,031	-5,787				Not a formation top.	
Avalon A Shale Base (Should not penetrate)	9,084	-5,840					
Proposed total MD of well 12,877'.							