

Noble Energy

Garfield County, CO (NAD 83)

Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK

Double B Ranch 18-43D

Plan #2

Plan: Plan #2 Proposal

Standard Planning Report

01 June, 2011

Halliburton Company

Planning Report

Database:	Noble Database	Local Co-ordinate Reference:	Site Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK
Company:	Noble Energy	TVD Reference:	RKB 24' @ 7435.8ft (H&P 322)
Project:	Garfield County, CO (NAD 83)	MD Reference:	RKB 24' @ 7435.8ft (H&P 322)
Site:	Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK	North Reference:	Grid
Well:	Double B Ranch 18-43D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan #2		
Design:	Plan #2 Proposal		

Project	Garfield County, CO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site	Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK		
Site Position:		Northing:	485,195.93 m
From:	Map	Easting:	706,273.85 m
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in
		Latitude:	39° 26' 0.381 N
		Longitude:	107° 55' 4.119 W
		Grid Convergence:	-1.52 °

Well	Double B Ranch 18-43D		
Well Position	+N/-S	8.4 ft	Northing:
	+E/-W	-0.9 ft	Easting:
Position Uncertainty	0.0 ft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Plan #2				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/15/2010	10.40	65.72	52,290

Design	Plan #2 Proposal			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	8.4	-0.9	0.00

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	8.4	-0.9	0.00	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	8.4	-0.9	0.00	0.00	0.00	0.00	
1,510.6	13.66	309.65	1,502.0	77.3	-84.1	1.50	1.50	0.00	309.65	
6,161.4	13.66	309.65	6,021.3	778.1	-929.7	0.00	0.00	0.00	0.00	
7,072.0	0.00	0.00	6,923.3	847.1	-1,012.8	1.50	-1.50	0.00	180.00	Double B Ranch 18-4
8,640.7	2.04	243.44	8,491.7	834.6	-1,037.8	0.13	0.13	0.00	243.44	
10,213.4	0.00	0.00	10,064.0	822.1	-1,062.8	0.13	-0.13	0.00	180.00	Double B Ranch 18-4

Halliburton Company

Planning Report

Database:	Noble Database	Local Co-ordinate Reference:	Site Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK
Company:	Noble Energy	TVD Reference:	RKB 24' @ 7435.8ft (H&P 322)
Project:	Garfield County, CO (NAD 83)	MD Reference:	RKB 24' @ 7435.8ft (H&P 322)
Site:	Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK	North Reference:	Grid
Well:	Double B Ranch 18-43D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan #2		
Design:	Plan #2 Proposal		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	8.4	-0.9	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	8.4	-0.9	0.0	0.00	0.00	0.00
1,510.6	13.66	309.65	1,502.0	77.3	-84.1	68.9	1.50	1.50	0.00
6,161.4	13.66	309.65	6,021.3	778.1	-929.7	769.8	0.00	0.00	0.00
7,072.0	0.00	0.00	6,923.3	847.1	-1,012.8	838.7	1.50	-1.50	0.00
8,640.7	2.04	243.44	8,491.7	834.6	-1,037.8	826.2	0.13	0.13	0.00
10,213.4	0.00	0.00	10,064.0	822.1	-1,062.8	813.7	0.13	-0.13	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (m)	Easting (m)	Latitude	Longitude
- hit/miss target									
- Shape									
Double B Ranch 18-43D	0.00	0.00	0.0	722.1	-1,262.8	485,416.02	705,888.96	39° 26' 7.182 N	107° 55' 20.453 W
- plan misses target center by 1449.7ft at 0.0ft MD (0.0 TVD, 8.4 N, -0.9 E)									
- Polygon									
Point 1			0.0	0.0	0.0	485,416.02	705,888.96		
Point 2			0.0	0.0	400.0	485,416.02	706,010.88		
Double B Ranch 18-43D	0.00	0.00	6,923.3	847.1	-1,012.8	485,454.10	705,965.15	39° 26' 8.483 N	107° 55' 17.311 W
- plan hits target center									
- Rectangle (sides W25.0 H25.0 D0.0)									
Double B Ranch 18-43D	0.00	0.00	6,932.8	822.1	-1,062.8	485,446.48	705,949.91	39° 26' 8.223 N	107° 55' 17.939 W
- plan misses target center by 55.9ft at 7082.5ft MD (6933.8 TVD, 847.1 N, -1012.8 E)									
- Rectangle (sides W200.0 H100.0 D3,131.3)									
Double B Ranch 18-43D	0.00	0.00	10,064.0	822.1	-1,062.8	485,446.48	705,949.91	39° 26' 8.223 N	107° 55' 17.939 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,500.0	2,463.4	8 5/8" Casing Pt.	8.625	12.250	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,257.3	6,114.8	William Fork		0.00	
7,081.5	6,932.8	Top of Gas		0.00	
8,854.9	8,705.8	Cameo		0.00	
9,315.1	9,165.8	Rollins		0.00	
9,654.1	9,504.8	Cozzette		0.00	
9,933.2	9,783.8	Corcoran		0.00	
10,063.2	9,913.8	Mancos		0.00	

Halliburton Company

Planning Report

Database:	Noble Database	Local Co-ordinate Reference:	Site Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK
Company:	Noble Energy	TVD Reference:	RKB 24' @ 7435.8ft (H&P 322)
Project:	Garfield County, CO (NAD 83)	MD Reference:	RKB 24' @ 7435.8ft (H&P 322)
Site:	Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK	North Reference:	Grid
Well:	Double B Ranch 18-43D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan #2		
Design:	Plan #2 Proposal		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.0	600.0	8.4	-0.9	Kickoff at 600.00ft
1,200.0	1,197.5	38.4	-37.1	Build Rate = 1.50"/100ft
1,794.7	1,778.1	120.1	-135.8	End Build at 1794.71ft
3,500.0	3,435.1	377.1	-445.8	13.66 Inclination
5,969.9	5,835.2	749.3	-894.9	Begin Drop at 5969.9ft
6,500.0	6,353.4	819.8	-979.9	Drop Rate = 1.50"/100ft
7,164.6	7,015.9	847.0	-1,012.9	End Drop at 7164.58ft
10,213.4	10,064.0	822.1	-1,062.8	Total Depth = 10306.00ft

Project: Garfield County, CO (NAD 83)
Site: Sec. 17-T7S-R94W (Rulison 17M PAD) NAD 83 OK
Well: Double B Ranch 18-43D
Wellbore: Plan #2
Design: Plan #2 Proposal

Noble Energy

HALLIBURTON

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSEct	Target
1	0.0	0.00	0.00	0.0	8.4	-0.9	0.00	0.00	0.0	
2	600.0	0.00	0.00	600.0	8.4	-0.9	0.00	0.00	0.0	
3	1510.6	13.66	309.65	1502.0	77.3	-84.1	1.50	309.65	68.9	
4	6161.4	13.66	309.65	6021.3	778.1	-929.7	0.00	0.00	769.8	
5	7072.0	0.00	0.00	6923.3	847.1	-1012.8	1.50	180.00	838.7	Double B Ranch 18-43D Plan #2 Driller's Tgt
6	8640.7	2.04	243.44	8491.7	834.6	-1037.8	0.13	243.44	826.2	
7	10213.4	0.00	0.00	10064.0	822.1	-1062.8	0.13	180.00	813.7	Double B Ranch 18-43D Plan #2 BH Tgt

WELL DETAILS: Double B Ranch 18-43D

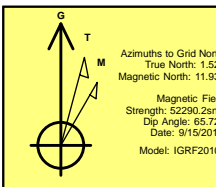
Ground Level: 7411.8	Latitude	Longitude
Northings	Eastings	
485198.48	706273.56	39° 26' 0.463 N 107° 55' 4.134 W

FORMATION TOP DETAILS

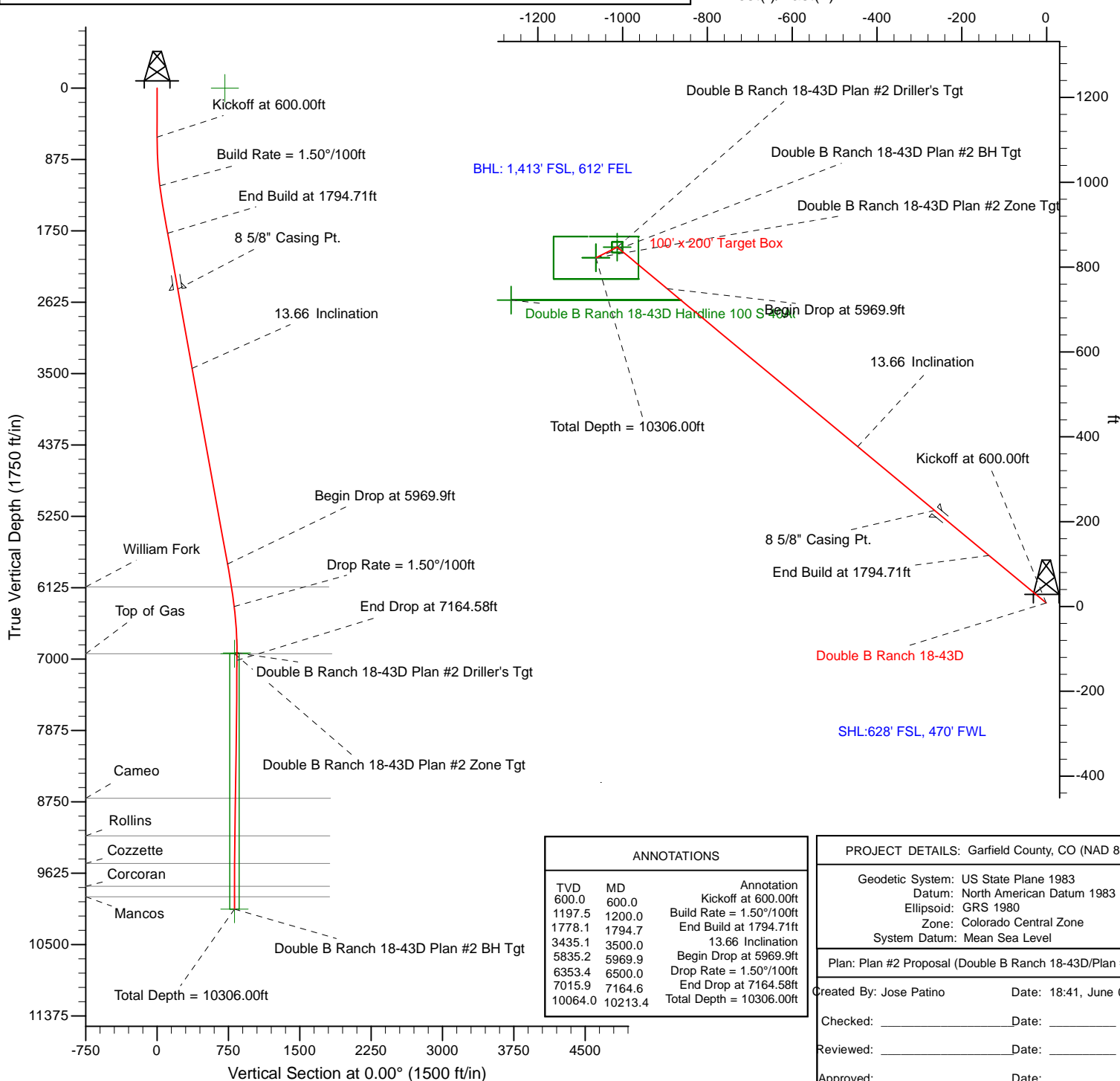
TVDPath	MDPath	Formation
6114.8	6257.3	William Fork
6932.8	7081.5	Top of Gas
8705.8	8854.9	Cameo
9165.8	9315.1	Rollins
9504.8	9654.1	Cozzette
9783.8	9933.2	Corcoran
9913.8	10063.2	Mancos

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Double B Ranch 18-43D Hardline 100 S 40Ac	0.0	722.1	-1262.8	Polygon
Double B Ranch 18-43D Plan #2 Driller's Tgt	6923.3	847.1	-1012.8	Rectangle (Sides: L25.0 W25.0)
Double B Ranch 18-43D Plan #2 Zone Tgt	6932.8	822.1	-1062.8	Rectangle (Sides: L100.0 W200.0)
Double B Ranch 18-43D Plan #2 BH Tgt	10064.0	822.1	-1062.8	Point



West(-)/East(+)



ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	Kickoff at 600.00ft
1197.5	1200.0	Build Rate = 1.50°/100ft
1778.1	1794.7	End Build at 1794.71ft
3435.1	3500.0	13.66 Inclination
5835.2	5969.9	Begin Drop at 5969.9ft
6353.4	6500.0	Drop Rate = 1.50°/100ft
7015.9	7164.6	End Drop at 7164.58ft
10064.0	10213.4	Total Depth = 10306.00ft

PROJECT DETAILS: Garfield County, CO (NAD 83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Central Zone
System Datum: Mean Sea Level

Plan: Plan #2 Proposal (Double B Ranch 18-43D/Plan #2)

Created By: Jose Patino Date: 18:41, June 01 2011

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____