



Denver Division- Colorado

**DJ - Hereford Ranch
Fiscus Mesa #17-19H
Fiscus Mesa #17-19H**

Original Wellbore

Plan: APD Directional Plan

Standard Planning Report (Field)

06 January, 2011



Database:	Local	Local Co-ordinate Reference:	Well Fiscus Mesa #17-19H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 4851.0ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 4851.0ft (TBD)
Site:	Fiscus Mesa #17-19H	North Reference:	True
Well:	Fiscus Mesa #17-19H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	APD Directional Plan		

Project	DJ - Hereford Ranch, Weld County		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Colorado North 501		

Site		Fiscus Mesa #17-19H			
Site Position: From:	Lat/Long	Northing:	513,009.05 ft	Latitude:	40° 43' 50.260 N
		Easting:	2,443,726.59 ft	Longitude:	103° 53' 56.160 W
		Position Uncertainty:	0.0 ft	Slot Radius:	

Well	Fiscus Mesa #17-19H					
Well Position	+N/-S	0.0 ft	Northing:	513,009.05 ft	Latitude:	40° 43' 50.260 N
	+E/-W	0.0 ft	Easting:	2,443,726.59 ft	Longitude:	103° 53' 56.160 W
Position Uncertainty		0.0 ft	Wellhead Elevation:		Ground Level:	4,829.0 ft

Wellbore	Original Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/09	8.57	67.52	53,565

Design	APD Directional Plan			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	332.94

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	0.0	0.0	0.00	0.00	0.00	0.00	
5,435.5	0.00	0.00	5,435.5	0.0	0.0	0.00	0.00	0.00	0.00	
6,185.5	90.00	332.94	5,913.0	425.2	-217.2	12.00	12.00	0.00	332.94	
10,418.7	90.00	332.94	5,913.0	4,194.9	-2,143.0	0.00	0.00	0.00	0.00	Fiscus Mesa #17-19H

Database:	Local	Local Co-ordinate Reference:	Well Fiscus Mesa #17-19H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 4851.0ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 4851.0ft (TBD)
Site:	Fiscus Mesa #17-19H	North Reference:	True
Well:	Fiscus Mesa #17-19H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	APD Directional Plan		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
FOX HILLS - Shoemaker #7-19(Existing Well) - Timmerman #43-19(Existing Well) - Best Chance #1-19(Existing Well)										
0.0	0.00	0.00	0.0	-4,851.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	-4,751.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	-4,651.0	0.0	0.0	0.0	0.00	0.00	0.00
PIERRE SHALE										
245.0	0.00	0.00	245.0	-4,606.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	-4,551.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	-4,451.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	-4,351.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	-4,251.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	-4,151.0	0.0	0.0	0.0	0.00	0.00	0.00
9 5/8"										
800.0	0.00	0.00	800.0	-4,051.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	-3,951.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	-3,851.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	-3,751.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	-3,651.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	-3,551.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	-3,451.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	-3,351.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	-3,251.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	-3,151.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	-3,051.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	-2,951.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	-2,851.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	-2,751.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	-2,651.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	-2,551.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	-2,451.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	-2,351.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	-2,251.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	-2,151.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	-2,051.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	-1,951.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	-1,851.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	-1,751.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	-1,651.0	0.0	0.0	0.0	0.00	0.00	0.00
RICHARD SAND										
3,208.0	0.00	0.00	3,208.0	-1,643.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	-1,551.0	0.0	0.0	0.0	0.00	0.00	0.00
HYGIENE										
3,325.0	0.00	0.00	3,325.0	-1,526.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	-1,451.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	-1,351.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	-1,251.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	-1,151.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	-1,051.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	-951.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	-851.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	-751.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	-651.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	-551.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	-451.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	-351.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	Local	Local Co-ordinate Reference:	Well Fiscus Mesa #17-19H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 4851.0ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 4851.0ft (TBD)
Site:	Fiscus Mesa #17-19H	North Reference:	True
Well:	Fiscus Mesa #17-19H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	APD Directional Plan		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,600.0	0.00	0.00	4,600.0	-251.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	-151.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	-51.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	49.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	149.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	249.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	349.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	449.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	549.0	0.0	0.0	0.0	0.00	0.00	0.00
5,435.5	0.00	0.00	5,435.5	584.5	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	7.74	332.94	5,499.8	648.8	3.9	-2.0	4.3	12.00	12.00	0.00
5,600.0	19.74	332.94	5,596.8	745.8	25.0	-12.8	28.0	12.00	12.00	0.00
5,700.0	31.74	332.94	5,686.7	835.7	63.6	-32.5	71.4	12.00	12.00	0.00
SHARON SPRINGS										
5,746.5	37.32	332.94	5,725.0	874.0	87.0	-44.5	97.8	12.00	12.00	0.00
5,800.0	43.74	332.94	5,765.6	914.6	118.0	-60.3	132.5	12.00	12.00	0.00
NIOBRARA										
5,858.0	50.70	332.94	5,805.0	954.0	155.9	-79.6	175.0	12.00	12.00	0.00
5,900.0	55.74	332.94	5,830.1	979.1	185.8	-94.9	208.6	12.00	12.00	0.00
B1 CHALK										
5,958.4	62.75	332.94	5,860.0	1,009.0	230.5	-117.7	258.8	12.00	12.00	0.00
6,000.0	67.74	332.94	5,877.4	1,026.4	264.1	-134.9	296.6	12.00	12.00	0.00
B-CHALK										
6,046.9	73.36	332.94	5,893.0	1,042.0	303.4	-155.0	340.7	12.00	12.00	0.00
6,100.0	79.74	332.94	5,905.4	1,054.4	349.4	-178.5	392.4	12.00	12.00	0.00
7"										
6,185.5	90.00	332.94	5,913.0	1,062.0	425.2	-217.2	477.4	12.00	12.00	0.00
6,200.0	90.00	332.94	5,913.0	1,062.0	438.1	-223.8	491.9	0.03	0.03	0.00
6,300.0	90.00	332.94	5,913.0	1,062.0	527.1	-269.3	591.9	0.00	0.00	0.00
6,400.0	90.00	332.94	5,913.0	1,062.0	616.2	-314.8	691.9	0.00	0.00	0.00
6,500.0	90.00	332.94	5,913.0	1,062.0	705.2	-360.3	791.9	0.00	0.00	0.00
6,600.0	90.00	332.94	5,913.0	1,062.0	794.3	-405.8	891.9	0.00	0.00	0.00
6,700.0	90.00	332.94	5,913.0	1,062.0	883.3	-451.3	991.9	0.00	0.00	0.00
6,800.0	90.00	332.94	5,913.0	1,062.0	972.4	-496.8	1,091.9	0.00	0.00	0.00
6,900.0	90.00	332.94	5,913.0	1,062.0	1,061.4	-542.2	1,191.9	0.00	0.00	0.00
7,000.0	90.00	332.94	5,913.0	1,062.0	1,150.5	-587.7	1,291.9	0.00	0.00	0.00
7,100.0	90.00	332.94	5,913.0	1,062.0	1,239.5	-633.2	1,391.9	0.00	0.00	0.00
7,200.0	90.00	332.94	5,913.0	1,062.0	1,328.6	-678.7	1,491.9	0.00	0.00	0.00
7,300.0	90.00	332.94	5,913.0	1,062.0	1,417.7	-724.2	1,591.9	0.00	0.00	0.00
7,400.0	90.00	332.94	5,913.0	1,062.0	1,506.7	-769.7	1,691.9	0.00	0.00	0.00
7,500.0	90.00	332.94	5,913.0	1,062.0	1,595.8	-815.2	1,791.9	0.00	0.00	0.00
7,600.0	90.00	332.94	5,913.0	1,062.0	1,684.8	-860.7	1,891.9	0.00	0.00	0.00
7,700.0	90.00	332.94	5,913.0	1,062.0	1,773.9	-906.2	1,991.9	0.00	0.00	0.00
7,800.0	90.00	332.94	5,913.0	1,062.0	1,862.9	-951.7	2,091.9	0.00	0.00	0.00
7,900.0	90.00	332.94	5,913.0	1,062.0	1,952.0	-997.2	2,191.9	0.00	0.00	0.00
8,000.0	90.00	332.94	5,913.0	1,062.0	2,041.0	-1,042.7	2,291.9	0.00	0.00	0.00
8,100.0	90.00	332.94	5,913.0	1,062.0	2,130.1	-1,088.2	2,391.9	0.00	0.00	0.00
8,200.0	90.00	332.94	5,913.0	1,062.0	2,219.1	-1,133.7	2,491.9	0.00	0.00	0.00
8,300.0	90.00	332.94	5,913.0	1,062.0	2,308.2	-1,179.2	2,591.9	0.00	0.00	0.00
8,400.0	90.00	332.94	5,913.0	1,062.0	2,397.2	-1,224.7	2,691.9	0.00	0.00	0.00
8,500.0	90.00	332.94	5,913.0	1,062.0	2,486.3	-1,270.1	2,791.9	0.00	0.00	0.00
8,600.0	90.00	332.94	5,913.0	1,062.0	2,575.3	-1,315.6	2,891.9	0.00	0.00	0.00
8,700.0	90.00	332.94	5,913.0	1,062.0	2,664.4	-1,361.1	2,991.9	0.00	0.00	0.00

Database:	Local	Local Co-ordinate Reference:	Well Fiscus Mesa #17-19H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 4851.0ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 4851.0ft (TBD)
Site:	Fiscus Mesa #17-19H	North Reference:	True
Well:	Fiscus Mesa #17-19H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	APD Directional Plan		

Planned Survey											
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,800.0	90.00	332.94	5,913.0	1,062.0	2,753.4	-1,406.6	3,091.9	0.00	0.00	0.00	
8,900.0	90.00	332.94	5,913.0	1,062.0	2,842.5	-1,452.1	3,191.9	0.00	0.00	0.00	
9,000.0	90.00	332.94	5,913.0	1,062.0	2,931.5	-1,497.6	3,291.9	0.00	0.00	0.00	
9,100.0	90.00	332.94	5,913.0	1,062.0	3,020.6	-1,543.1	3,391.9	0.00	0.00	0.00	
9,200.0	90.00	332.94	5,913.0	1,062.0	3,109.7	-1,588.6	3,491.9	0.00	0.00	0.00	
9,300.0	90.00	332.94	5,913.0	1,062.0	3,198.7	-1,634.1	3,591.9	0.00	0.00	0.00	
9,400.0	90.00	332.94	5,913.0	1,062.0	3,287.8	-1,679.6	3,691.9	0.00	0.00	0.00	
9,500.0	90.00	332.94	5,913.0	1,062.0	3,376.8	-1,725.1	3,791.9	0.00	0.00	0.00	
9,600.0	90.00	332.94	5,913.0	1,062.0	3,465.9	-1,770.6	3,891.9	0.00	0.00	0.00	
9,700.0	90.00	332.94	5,913.0	1,062.0	3,554.9	-1,816.1	3,991.9	0.00	0.00	0.00	
9,800.0	90.00	332.94	5,913.0	1,062.0	3,644.0	-1,861.6	4,091.9	0.00	0.00	0.00	
9,900.0	90.00	332.94	5,913.0	1,062.0	3,733.0	-1,907.1	4,191.9	0.00	0.00	0.00	
10,000.0	90.00	332.94	5,913.0	1,062.0	3,822.1	-1,952.5	4,291.9	0.00	0.00	0.00	
10,100.0	90.00	332.94	5,913.0	1,062.0	3,911.1	-1,998.0	4,391.9	0.00	0.00	0.00	
10,200.0	90.00	332.94	5,913.0	1,062.0	4,000.2	-2,043.5	4,491.9	0.00	0.00	0.00	
10,300.0	90.00	332.94	5,913.0	1,062.0	4,089.2	-2,089.0	4,591.9	0.00	0.00	0.00	
10,400.0	90.00	332.94	5,913.0	1,062.0	4,178.3	-2,134.5	4,691.9	0.00	0.00	0.00	
Fiscus Mesa #17-19H (BHL)											
10,418.7	90.00	332.94	5,913.0	1,062.0	4,194.9	-2,143.0	4,710.6	0.00	0.00	0.00	

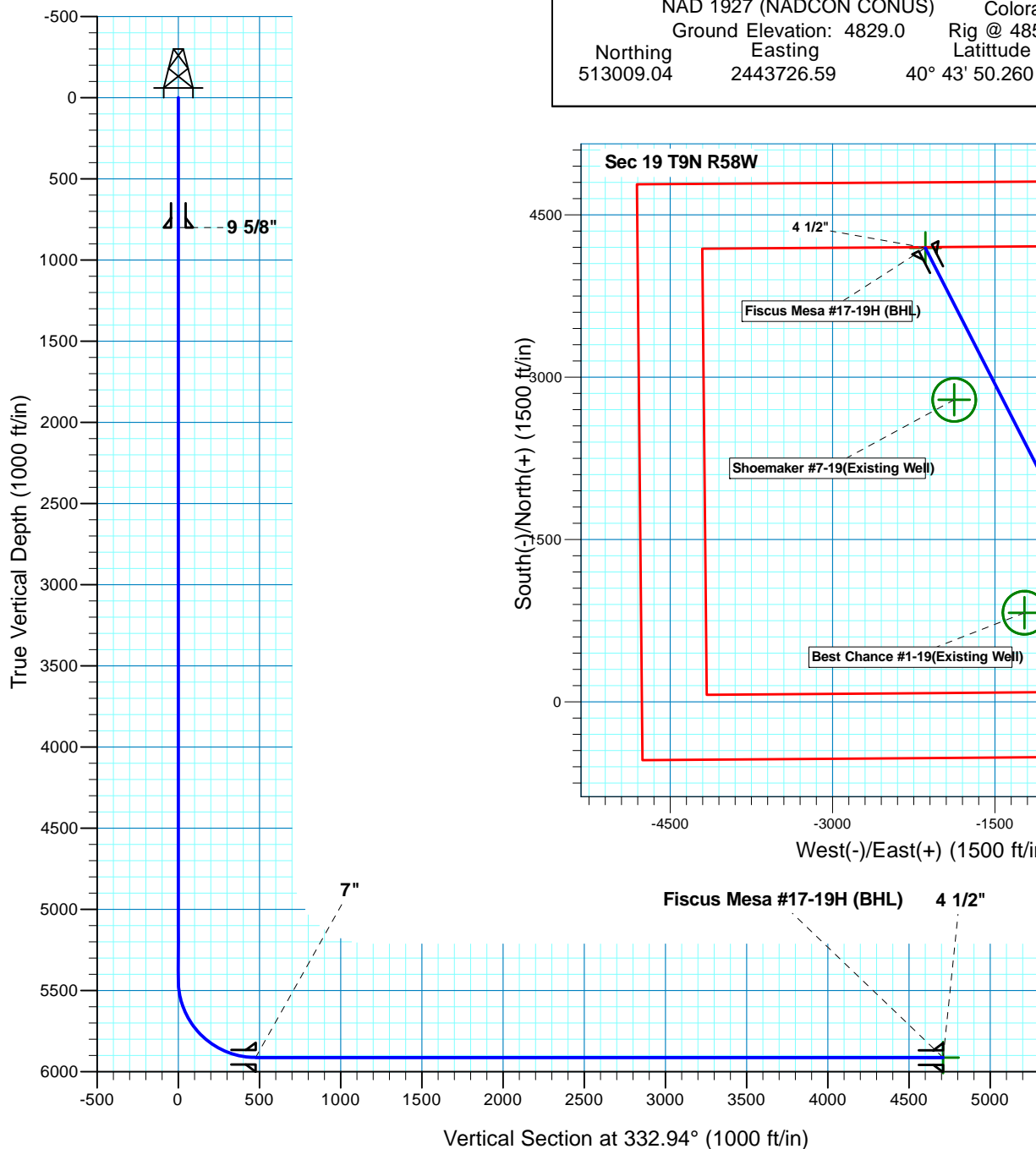
Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Fiscus Mesa #17-19H (E	0.00	0.00	5,913.0	4,194.9	-2,143.0	517,164.56	2,441,508.21	40° 44' 31.710 N	103° 54' 24.000 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
800.0	800.0	9 5/8"	9-5/8	13-1/2	
6,185.5	5,913.0	7"	7	8-3/4	
10,418.7	5,913.0	4 1/2"	4-1/2	6	

Database:	Local	Local Co-ordinate Reference:	Well Fiscus Mesa #17-19H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 4851.0ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 4851.0ft (TBD)
Site:	Fiscus Mesa #17-19H	North Reference:	True
Well:	Fiscus Mesa #17-19H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	APD Directional Plan		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
0.0	0.0	FOX HILLS		0.00		
245.0	245.0	PIERRE SHALE		0.00		
3,208.0	3,208.0	RICHARD SAND		0.00		
3,325.0	3,325.0	HYGIENE		0.00		
5,746.5	5,725.0	SHARON SPRINGS		0.00		
5,858.0	5,805.0	NIOBRARA		0.00		
5,958.4	5,860.0	B1 CHALK		0.00		
6,046.9	5,893.0	B-CHALK		0.00		

Fiscus Mesa #17-19H
Section 19 T9N R58W
Weld County, CO



SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target	
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	5435.5	0.00	0.00	5435.5	0.0	0.0	0.00	0.00	0.0		
3	6185.5	90.00	332.94	5913.0	425.2	-217.2	12.00	332.94	477.5		
4	10418.7	90.00	332.94	5913.0	4194.9	-2143.0	0.00	0.00	4710.6	Fiscus Mesa #17-19H (BHL)	
TARGET DETAILS											
Name		TVD		+N/-S	+E/-W	Northing	Easting	Latitude		Longitude	Shape
Fiscus Mesa #17-19H (BHL)		5913.0		4194.9	-2143.0	517164.55	2441508.20	40° 44' 31.710 N		103° 54' 24.000 W	Point