



Denver Division- Colorado

**DJ - Hereford Ranch
Five Well Draw 05-13H
Five Well Draw 05-13H
Original Wellbore**

Plan: APD Directional Plan

Standard Planning Report

13 January, 2011

Database:	EDM	Local Co-ordinate Reference:	Site Five Well Draw 05-13H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 5042.00ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 5042.00ft (TBD)
Site:	Five Well Draw 05-13H	North Reference:	True
Well:	Five Well Draw 05-13H	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	Five Well Draw 05-13H		
Site Position:		Northing:	521,931.48ft
From:	Lat/Long	Easting:	2,402,232.02ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	40° 45' 25.470 N
		Longitude:	104° 2' 53.160 W
		Grid Convergence:	0.94 deg

Well	Five Well Draw 05-13H		
Well Position	+N/-S	0.00 ft	Northing: 521,931.48 ft
	+E/-W	0.00 ft	Easting: 2,402,232.02 ft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	40° 45' 25.470 N
		Longitude:	104° 2' 53.160 W
		Ground Level:	5,020.00ft

Wellbore	Original Wellbore				
Magnetics	Model Name	Sample Date	Declination (deg)	Dip Angle (deg)	Field Strength (nT)
	IGRF200510	1/13/2011	8.51	67.48	53,454

Design	APD Directional Plan				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (deg)	
	0.00	0.00	0.00	152.08	

Plan Sections										
Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (?/100ft)	Build Rate (?/100ft)	Turn Rate (?/100ft)	TFO (deg)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,916.53	0.00	0.00	5,916.53	0.00	0.00	0.00	0.00	0.00	0.00	
6,666.54	90.00	137.13	6,394.00	-349.94	324.83	12.00	12.00	0.00	137.13	
6,739.07	90.00	137.13	6,394.00	-403.10	374.18	0.00	0.00	0.00	0.00	Five Well Draw 5-1;
7,467.36	90.00	155.34	6,394.00	-1,006.00	777.26	2.50	0.00	2.50	90.00	Five Well Draw 5-1;
11,268.00	90.00	155.34	6,394.00	-4,459.97	2,363.12	0.00	0.00	0.00	0.00	Five Well Draw 5-1;

Database:	EDM	Local Co-ordinate Reference:	Site Five Well Draw 05-13H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 5042.00ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 5042.00ft (TBD)
Site:	Five Well Draw 05-13H	North Reference:	True
Well:	Five Well Draw 05-13H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	APD Directional Plan		

Planned Survey									
Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (?/100ft)	Build Rate (?/100ft)	Turn Rate (?/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
820.00	0.00	0.00	820.00	0.00	0.00	0.00	0.00	0.00	0.00
9-5/8"									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	EDM	Local Co-ordinate Reference:	Site Five Well Draw 05-13H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 5042.00ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 5042.00ft (TBD)
Site:	Five Well Draw 05-13H	North Reference:	True
Well:	Five Well Draw 05-13H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	APD Directional Plan		

Planned Survey									
Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (?/100ft)	Build Rate (?/100ft)	Turn Rate (?/100ft)
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,916.53	0.00	0.00	5,916.53	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	10.02	137.13	5,999.58	-5.33	4.95	7.03	12.00	12.00	0.00
6,100.00	22.02	137.13	6,095.52	-25.52	23.69	33.64	12.00	12.00	0.00
6,200.00	34.02	137.13	6,183.64	-59.88	55.58	78.94	12.00	12.00	0.00
6,300.00	46.02	137.13	6,260.09	-106.92	99.25	140.95	12.00	12.00	0.00
6,400.00	58.02	137.13	6,321.52	-164.58	152.77	216.96	12.00	12.00	0.00
6,500.00	70.02	137.13	6,365.25	-230.34	213.82	303.65	12.00	12.00	0.00
6,600.00	82.02	137.13	6,389.37	-301.33	279.71	397.22	12.00	12.00	0.00
6,666.54	90.00	137.13	6,394.00	-349.94	324.83	461.30	12.00	12.00	0.00
7"									
6,700.00	90.00	137.13	6,394.00	-374.47	347.60	493.63	0.00	0.00	0.00
6,739.07	90.00	137.13	6,394.00	-403.10	374.18	531.38	0.00	0.00	0.00
6,800.00	90.00	138.65	6,394.00	-448.30	415.03	590.45	2.50	0.00	2.50
6,900.00	90.00	141.15	6,394.00	-524.79	479.43	688.19	2.50	0.00	2.50
7,000.00	90.00	143.65	6,394.00	-604.02	540.44	786.76	2.50	0.00	2.50
7,100.00	90.00	146.15	6,394.00	-685.83	597.93	885.97	2.50	0.00	2.50
7,200.00	90.00	148.65	6,394.00	-770.08	651.79	985.62	2.50	0.00	2.50
7,300.00	90.00	151.15	6,394.00	-856.59	701.94	1,085.54	2.50	0.00	2.50
7,400.00	90.00	153.65	6,394.00	-945.20	748.25	1,185.53	2.50	0.00	2.50
7,467.36	90.00	155.34	6,394.00	-1,006.00	777.26	1,252.83	2.50	0.00	2.50
7,500.00	90.00	155.34	6,394.00	-1,035.66	790.88	1,285.42	0.00	0.00	0.00
7,600.00	90.00	155.34	6,394.00	-1,126.54	832.60	1,385.26	0.00	0.00	0.00
7,700.00	90.00	155.34	6,394.00	-1,217.42	874.33	1,485.10	0.00	0.00	0.00
7,800.00	90.00	155.34	6,394.00	-1,308.30	916.06	1,584.94	0.00	0.00	0.00
7,900.00	90.00	155.34	6,394.00	-1,399.18	957.78	1,684.77	0.00	0.00	0.00
8,000.00	90.00	155.34	6,394.00	-1,490.05	999.51	1,784.61	0.00	0.00	0.00
8,100.00	90.00	155.34	6,394.00	-1,580.93	1,041.23	1,884.45	0.00	0.00	0.00
8,200.00	90.00	155.34	6,394.00	-1,671.81	1,082.96	1,984.29	0.00	0.00	0.00
8,300.00	90.00	155.34	6,394.00	-1,762.69	1,124.69	2,084.13	0.00	0.00	0.00
8,400.00	90.00	155.34	6,394.00	-1,853.57	1,166.41	2,183.97	0.00	0.00	0.00
8,500.00	90.00	155.34	6,394.00	-1,944.45	1,208.14	2,283.81	0.00	0.00	0.00
8,600.00	90.00	155.34	6,394.00	-2,035.33	1,249.87	2,383.65	0.00	0.00	0.00
8,700.00	90.00	155.34	6,394.00	-2,126.20	1,291.59	2,483.48	0.00	0.00	0.00
8,800.00	90.00	155.34	6,394.00	-2,217.08	1,333.32	2,583.32	0.00	0.00	0.00
8,900.00	90.00	155.34	6,394.00	-2,307.96	1,375.04	2,683.16	0.00	0.00	0.00
9,000.00	90.00	155.34	6,394.00	-2,398.84	1,416.77	2,783.00	0.00	0.00	0.00
9,100.00	90.00	155.34	6,394.00	-2,489.72	1,458.50	2,882.84	0.00	0.00	0.00
9,200.00	90.00	155.34	6,394.00	-2,580.60	1,500.22	2,982.68	0.00	0.00	0.00
9,300.00	90.00	155.34	6,394.00	-2,671.48	1,541.95	3,082.52	0.00	0.00	0.00
9,400.00	90.00	155.34	6,394.00	-2,762.36	1,583.67	3,182.35	0.00	0.00	0.00
9,500.00	90.00	155.34	6,394.00	-2,853.23	1,625.40	3,282.19	0.00	0.00	0.00
9,600.00	90.00	155.34	6,394.00	-2,944.11	1,667.13	3,382.03	0.00	0.00	0.00
9,700.00	90.00	155.34	6,394.00	-3,034.99	1,708.85	3,481.87	0.00	0.00	0.00
9,800.00	90.00	155.34	6,394.00	-3,125.87	1,750.58	3,581.71	0.00	0.00	0.00

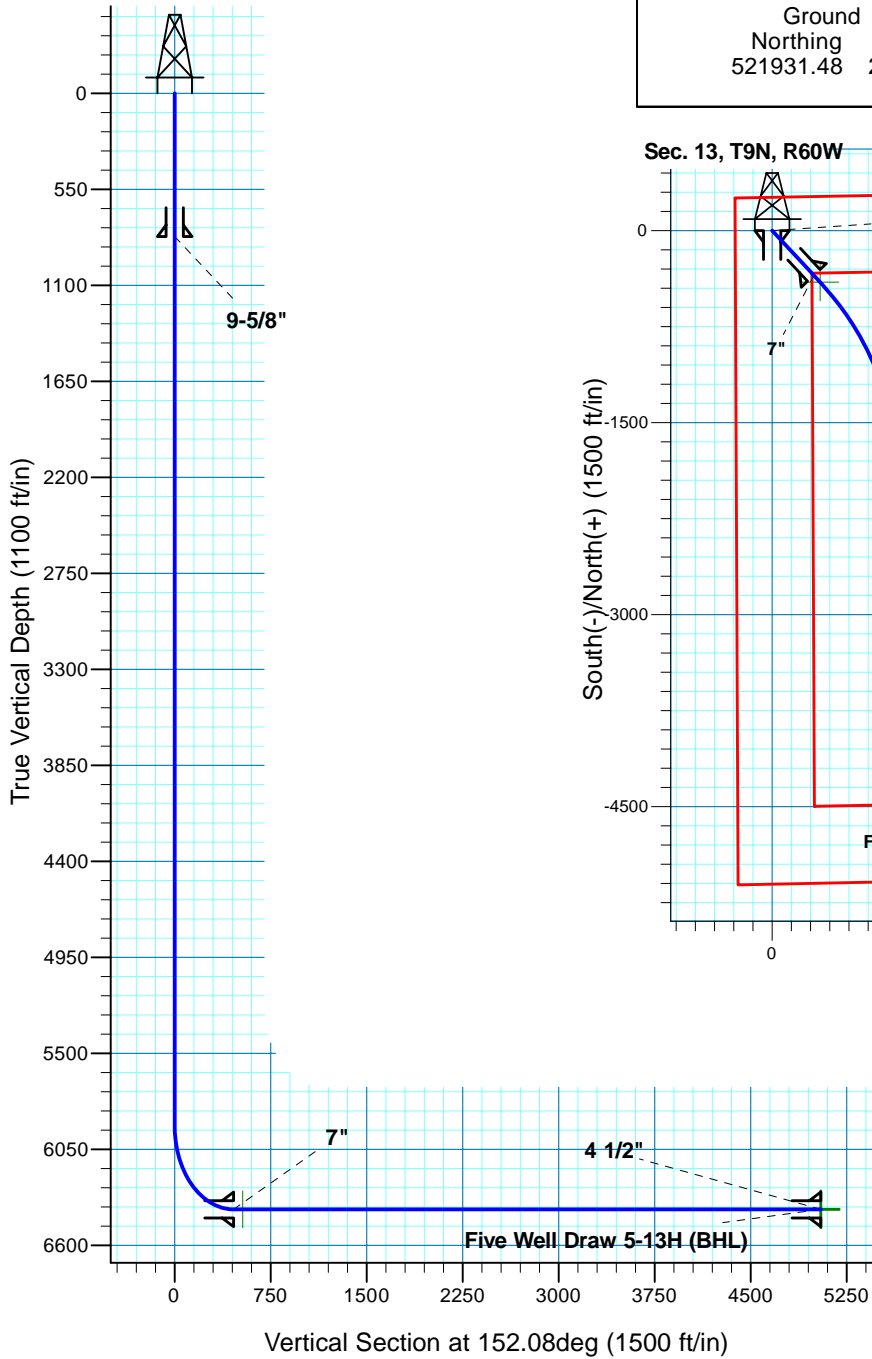
Database:	EDM	Local Co-ordinate Reference:	Site Five Well Draw 05-13H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 5042.00ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 5042.00ft (TBD)
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Well:	Five Well Draw 05-13H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	APD Directional Plan		

Planned Survey									
Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (?/100ft)	Build Rate (?/100ft)	Turn Rate (?/100ft)
9,900.00	90.00	155.34	6,394.00	-3,216.75	1,792.31	3,681.55	0.00	0.00	0.00
10,000.00	90.00	155.34	6,394.00	-3,307.63	1,834.03	3,781.39	0.00	0.00	0.00
10,100.00	90.00	155.34	6,394.00	-3,398.51	1,875.76	3,881.23	0.00	0.00	0.00
10,200.00	90.00	155.34	6,394.00	-3,489.38	1,917.48	3,981.06	0.00	0.00	0.00
10,300.00	90.00	155.34	6,394.00	-3,580.26	1,959.21	4,080.90	0.00	0.00	0.00
10,400.00	90.00	155.34	6,394.00	-3,671.14	2,000.94	4,180.74	0.00	0.00	0.00
10,500.00	90.00	155.34	6,394.00	-3,762.02	2,042.66	4,280.58	0.00	0.00	0.00
10,600.00	90.00	155.34	6,394.00	-3,852.90	2,084.39	4,380.42	0.00	0.00	0.00
10,700.00	90.00	155.34	6,394.00	-3,943.78	2,126.12	4,480.26	0.00	0.00	0.00
10,800.00	90.00	155.34	6,394.00	-4,034.66	2,167.84	4,580.10	0.00	0.00	0.00
10,900.00	90.00	155.34	6,394.00	-4,125.53	2,209.57	4,679.93	0.00	0.00	0.00
11,000.00	90.00	155.34	6,394.00	-4,216.41	2,251.29	4,779.77	0.00	0.00	0.00
11,100.00	90.00	155.34	6,394.00	-4,307.29	2,293.02	4,879.61	0.00	0.00	0.00
11,200.00	90.00	155.34	6,394.00	-4,398.17	2,334.75	4,979.45	0.00	0.00	0.00
11,268.00	90.00	155.34	6,394.00	-4,459.97	2,363.12	5,047.34	0.00	0.00	0.00
4 1/2"									

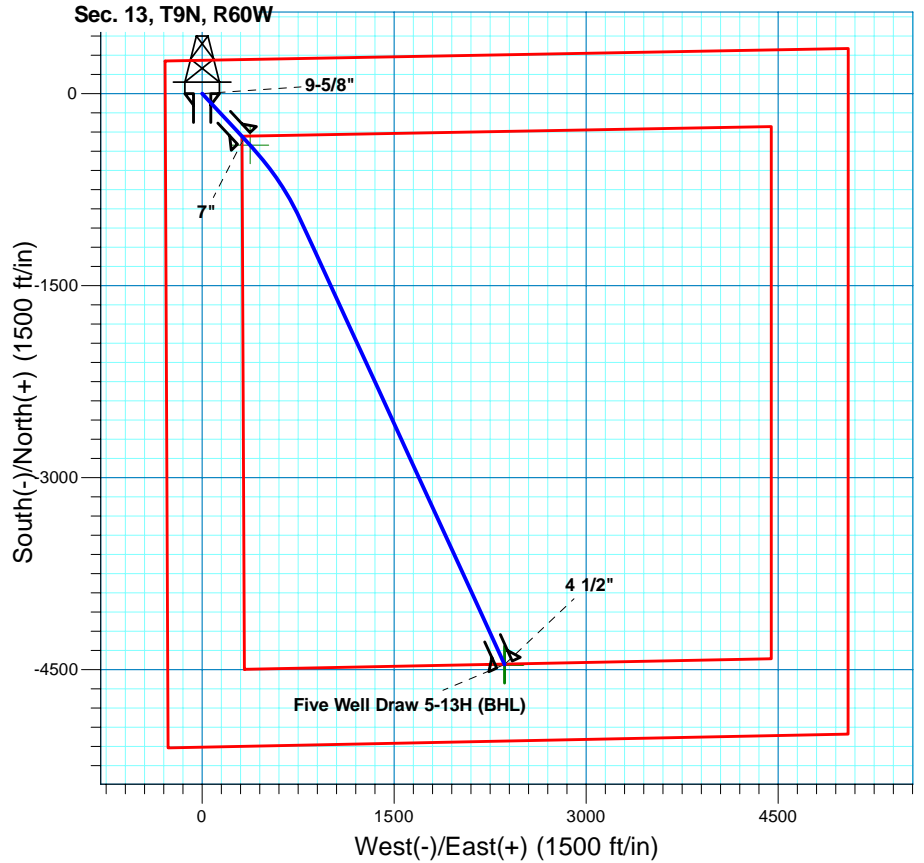
Targets									
Target Name	Dip Angle (deg)	Dip Dir. (deg)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Five Well Draw 5-13H	0.00	0.00	6,394.00	-403.10	374.18	521,534.56	2,402,612.75	40° 45' 21.487 N	104° 2' 48.298 W
- plan hits target center									
- Point									
Five Well Draw 5-13H	0.00	0.00	6,394.00	-4,459.97	2,363.12	517,510.81	2,404,667.84	40° 44' 41.399 N	104° 2' 22.459 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
820.00	820.00	9-5/8"	9-5/8	13-1/2	
6,666.54	6,394.00	7"	7	8-3/4	
11,268.00	6,394.00	4 1/2"	4-1/2	6-1/4	

Five Well Draw 05-13H
Section 13 T9N R60W
Weld County, CO



Surface Location					
NAD 1927 (NADCON CONUS) Colorado North 501					
Ground Elevation: 5020.00 Rig @ 5042.00ft (TBD)					
Northing	Easting	Latitude	Longitude		
521931.48	2402232.02	40° 45' 25.470 N	104° 2' 53.160 W		



T M
 Azimuths to True North
 Magnetic North: 8.51°
 Magnetic Field
 Strength: 53454.4snT
 Dip Angle: 67.48°
 Date: 1/13/2011
 Model: IGRF200510

Project: DJ - Hereford Ranch
 Site: Five Well Draw 05-13H
 Well: Five Well Draw 05-13H
 Plan: APD Directional Plan

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5916.53	0.00	0.00	5916.53	0.00	0.00	0.00	0.00	0.00	
3	6666.54	90.00	137.13	6394.00	-349.94	324.83	12.00	137.13	461.30	
4	6739.07	90.00	137.13	6394.00	-403.10	374.18	0.00	0.00	531.38	Five Well Draw 5-13H (Target 1)
5	7467.36	90.00	155.34	6394.00	-1006.00	777.26	2.50	90.00	1252.83	Five Well Draw 5-13H (BHL)
6	11268.00	90.00	155.34	6394.00	-4459.97	2363.12	0.00	0.00	5047.35	Five Well Draw 5-13H (BHL)
TARGET DETAILS										
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape		
Five Well Draw 5-13H (BHL)	6394.00	-4459.97	2363.12	517510.81	2404667.84	40° 44' 41.399 N	104° 2' 22.459 W	Point		
Five Well Draw 5-13H (Target 1)	6394.00	-403.10	374.18	521534.56	2402612.75	40° 45' 21.487 N	104° 2' 48.298 W	Point		