



Denver Division- Colorado

DJ - Hereford Ranch

Windmill 04-22H

Windmill 04-22H

Original Wellbore

Plan: APD Directional Plan

Standard Planning Report

10 December, 2010

Database:	EDM	Local Co-ordinate Reference:	Site Windmill 04-22H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 4686.00ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 4686.00ft (TBD)
Site:	Windmill 04-22H	North Reference:	True
Well:	Windmill 04-22H	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		Windmill 04-22H			
Site Position:		Northing:	383,354.37 ft	Latitude:	40° 22' 46.319 N
From:	Lat/Long	Easting:	2,333,928.11 ft	Longitude:	104° 18' 4.961 W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.77 deg

Well	Windmill 04-22H					
Well Position	+N-S	0.00 ft	Northing:	383,354.37 ft	Latitude:	40° 22' 46.319 N
	+E-W	0.00 ft	Easting:	2,333,928.11 ft	Longitude:	104° 18' 4.961 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,664.00 ft

Wellbore	Original Wellbore				
Magnetics	Model Name	Sample Date	Declination (deg)	Dip Angle (deg)	Field Strength (nT)
	IGRF200510	12/10/2010	8.64	67.14	53,245

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	334.07

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	
5,778.53	0.00	0.00	5,778.53	0.00	0.00	0.00	0.00	0.00	0.00	
6,528.54	90.00	334.07	6,256.00	429.38	-208.81	12.00	12.00	0.00	334.07	
10,691.79	90.00	334.07	6,256.00	4,173.39	-2,029.55	0.00	0.00	0.00	0.00	Windmill 4-22H (BH)

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Site:	Windmill 04-22H	North Reference:	True
Well:	Windmill 04-22H	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
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
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00

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Site:	Windmill 04-22H	North Reference:	True
Well:	Windmill 04-22H	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)
5,200.00	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
5,778.53	0.00	0.00	5,778.53	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	2.58	334.07	5,799.99	0.43	-0.21	0.48	12.00	12.00	0.00
5,900.00	14.58	334.07	5,898.69	13.82	-6.72	15.37	12.00	12.00	0.00
6,000.00	26.58	334.07	5,992.14	45.37	-22.06	50.45	12.00	12.00	0.00
6,100.00	38.58	334.07	6,076.26	93.70	-45.57	104.19	12.00	12.00	0.00
6,200.00	50.58	334.07	6,147.36	156.70	-76.20	174.25	12.00	12.00	0.00
6,300.00	62.58	334.07	6,202.34	231.62	-112.64	257.56	12.00	12.00	0.00
6,400.00	74.58	334.07	6,238.80	315.18	-153.28	350.48	12.00	12.00	0.00
6,500.00	86.58	334.07	6,255.15	403.74	-196.34	448.95	12.00	12.00	0.00
6,528.54	90.00	334.07	6,256.00	429.39	-208.81	477.47	12.00	12.00	0.00
7"									
6,600.00	90.00	334.07	6,256.00	493.65	-240.07	548.93	0.00	0.00	0.00
6,700.00	90.00	334.07	6,256.00	583.58	-283.80	648.93	0.00	0.00	0.00
6,800.00	90.00	334.07	6,256.00	673.51	-327.53	748.93	0.00	0.00	0.00
6,900.00	90.00	334.07	6,256.00	763.44	-371.27	848.93	0.00	0.00	0.00
7,000.00	90.00	334.07	6,256.00	853.37	-415.00	948.93	0.00	0.00	0.00
7,100.00	90.00	334.07	6,256.00	943.30	-458.73	1,048.93	0.00	0.00	0.00
7,200.00	90.00	334.07	6,256.00	1,033.23	-502.47	1,148.93	0.00	0.00	0.00
7,300.00	90.00	334.07	6,256.00	1,123.16	-546.20	1,248.93	0.00	0.00	0.00
7,400.00	90.00	334.07	6,256.00	1,213.09	-589.94	1,348.93	0.00	0.00	0.00
7,500.00	90.00	334.07	6,256.00	1,303.02	-633.67	1,448.93	0.00	0.00	0.00
7,600.00	90.00	334.07	6,256.00	1,392.95	-677.40	1,548.93	0.00	0.00	0.00
7,700.00	90.00	334.07	6,256.00	1,482.88	-721.14	1,648.93	0.00	0.00	0.00
7,800.00	90.00	334.07	6,256.00	1,572.81	-764.87	1,748.93	0.00	0.00	0.00
7,900.00	90.00	334.07	6,256.00	1,662.74	-808.60	1,848.93	0.00	0.00	0.00
8,000.00	90.00	334.07	6,256.00	1,752.67	-852.34	1,948.93	0.00	0.00	0.00
8,100.00	90.00	334.07	6,256.00	1,842.60	-896.07	2,048.93	0.00	0.00	0.00
8,200.00	90.00	334.07	6,256.00	1,932.53	-939.80	2,148.93	0.00	0.00	0.00
8,300.00	90.00	334.07	6,256.00	2,022.46	-983.54	2,248.93	0.00	0.00	0.00
8,400.00	90.00	334.07	6,256.00	2,112.39	-1,027.27	2,348.93	0.00	0.00	0.00
8,500.00	90.00	334.07	6,256.00	2,202.32	-1,071.01	2,448.93	0.00	0.00	0.00
8,600.00	90.00	334.07	6,256.00	2,292.25	-1,114.74	2,548.93	0.00	0.00	0.00
8,700.00	90.00	334.07	6,256.00	2,382.18	-1,158.47	2,648.93	0.00	0.00	0.00
8,800.00	90.00	334.07	6,256.00	2,472.11	-1,202.21	2,748.93	0.00	0.00	0.00
8,900.00	90.00	334.07	6,256.00	2,562.04	-1,245.94	2,848.93	0.00	0.00	0.00
9,000.00	90.00	334.07	6,256.00	2,651.97	-1,289.67	2,948.93	0.00	0.00	0.00
9,100.00	90.00	334.07	6,256.00	2,741.90	-1,333.41	3,048.93	0.00	0.00	0.00
9,200.00	90.00	334.07	6,256.00	2,831.83	-1,377.14	3,148.93	0.00	0.00	0.00
9,300.00	90.00	334.07	6,256.00	2,921.76	-1,420.87	3,248.93	0.00	0.00	0.00
9,400.00	90.00	334.07	6,256.00	3,011.69	-1,464.61	3,348.93	0.00	0.00	0.00
9,500.00	90.00	334.07	6,256.00	3,101.62	-1,508.34	3,448.93	0.00	0.00	0.00
9,600.00	90.00	334.07	6,256.00	3,191.55	-1,552.07	3,548.93	0.00	0.00	0.00
9,700.00	90.00	334.07	6,256.00	3,281.48	-1,595.81	3,648.93	0.00	0.00	0.00
9,800.00	90.00	334.07	6,256.00	3,371.41	-1,639.54	3,748.93	0.00	0.00	0.00
9,900.00	90.00	334.07	6,256.00	3,461.34	-1,683.28	3,848.93	0.00	0.00	0.00
10,000.00	90.00	334.07	6,256.00	3,551.27	-1,727.01	3,948.93	0.00	0.00	0.00
10,100.00	90.00	334.07	6,256.00	3,641.20	-1,770.74	4,048.93	0.00	0.00	0.00

Database:	EDM	Local Co-ordinate Reference:	Site Windmill 04-22H
Company:	Denver Division- Colorado	TVD Reference:	Rig @ 4686.00ft (TBD)
Project:	DJ - Hereford Ranch	MD Reference:	Rig @ 4686.00ft (TBD)
Site:	Windmill 04-22H	North Reference:	True
Well:	Windmill 04-22H	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)
10,200.00	90.00	334.07	6,256.00	3,731.13	-1,814.48	4,148.93	0.00	0.00	0.00
10,300.00	90.00	334.07	6,256.00	3,821.06	-1,858.21	4,248.93	0.00	0.00	0.00
10,400.00	90.00	334.07	6,256.00	3,910.99	-1,901.94	4,348.93	0.00	0.00	0.00
10,500.00	90.00	334.07	6,256.00	4,000.91	-1,945.68	4,448.93	0.00	0.00	0.00
10,600.00	90.00	334.07	6,256.00	4,090.84	-1,989.41	4,548.93	0.00	0.00	0.00
10,691.79	90.00	334.07	6,256.00	4,173.39	-2,029.55	4,640.72	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									
Windmill 4-22H (BHL)	0.00	0.00	6,256.00	4,173.39	-2,029.55	387,499.94	2,331,842.33	40° 23' 27.560 N	104° 18' 31.190 W
- plan hits target center									
- Point									

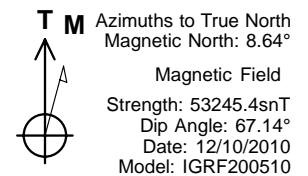
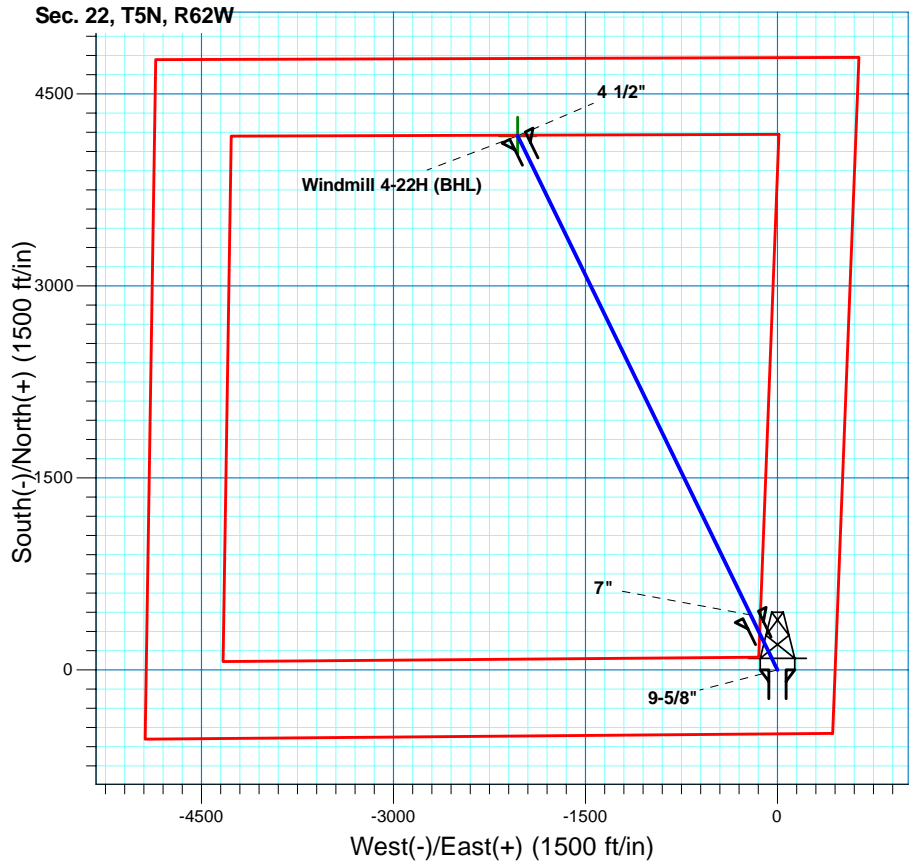
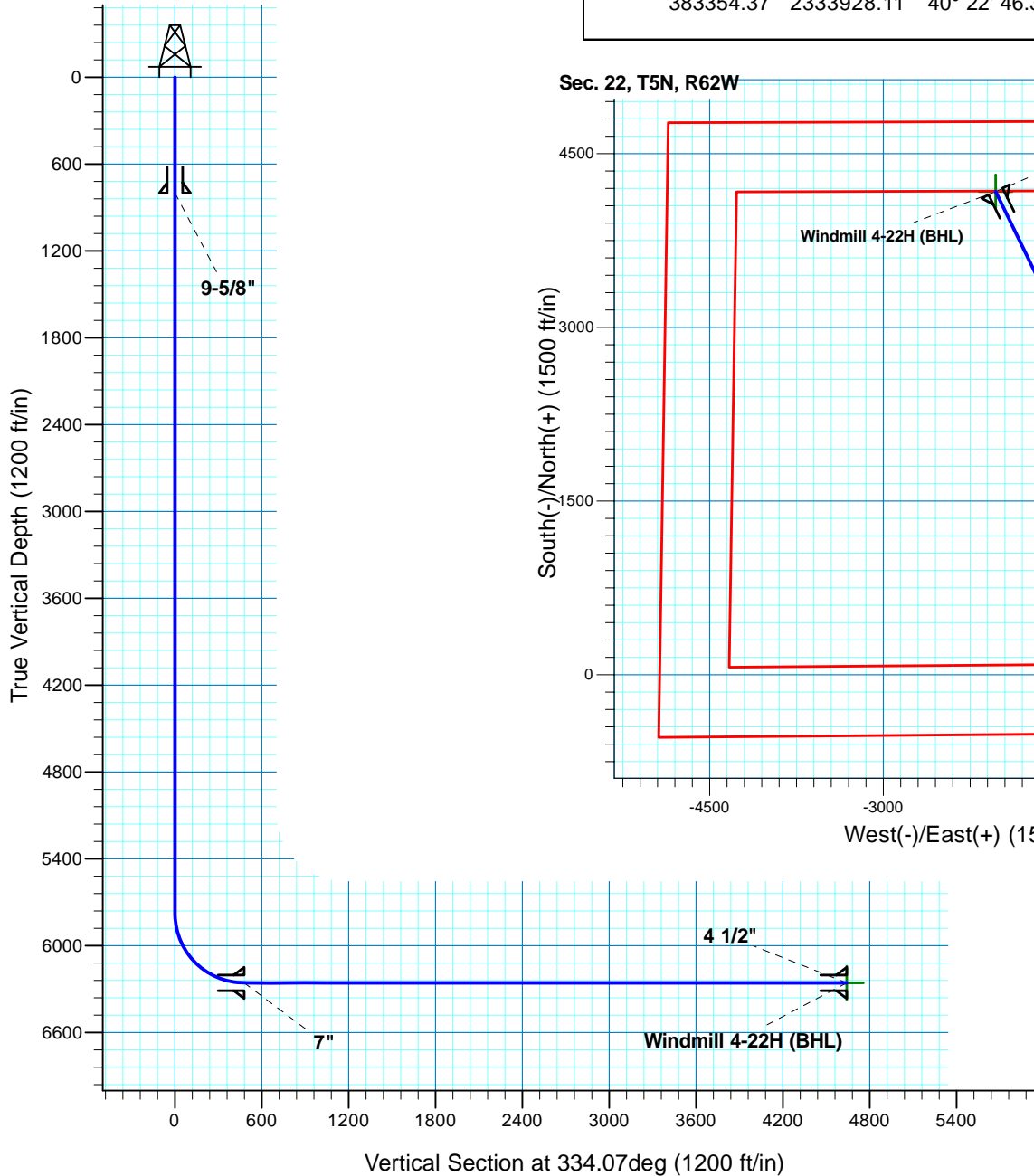
Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
800.00	800.00	9-5/8"	9-5/8	13-1/2	
6,528.54	6,256.00	7"	7	8-3/4	
10,691.79	6,256.00	4 1/2"	4-1/2	6	

Windmill 04-22H

Section 22 T5N R62W
Weld County, CO

Surface Location

NAD 1927 (NADCON CONUS) Colorado North 501
Ground Elevation: 4664.00 Rig @ 4686.00ft (TBD)
Northing Easting Latitude Longitude
383354.37 2333928.11 40° 22' 46.319 N 104° 18' 4.961 W



Project: DJ - Hereford Ranch
Site: Windmill 04-22H
Well: Windmill 04-22H
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	5778.53	0.00	0.00	5778.53	0.00	0.00	0.00	0.00	0.00	
3	6528.54	90.00	334.07	6256.00	429.38	-208.81	12.00	334.07	477.47	
4	10691.79	90.00	334.07	6256.00	4173.39	-2029.55	0.00	0.00	4640.72	Windmill 4-22H (BHL)

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
Windmill 4-22H (BHL)	6256.00	4173.39	-2029.55	387499.94	2331842.33	40° 23' 27.560 N	104° 18' 31.190 W	