

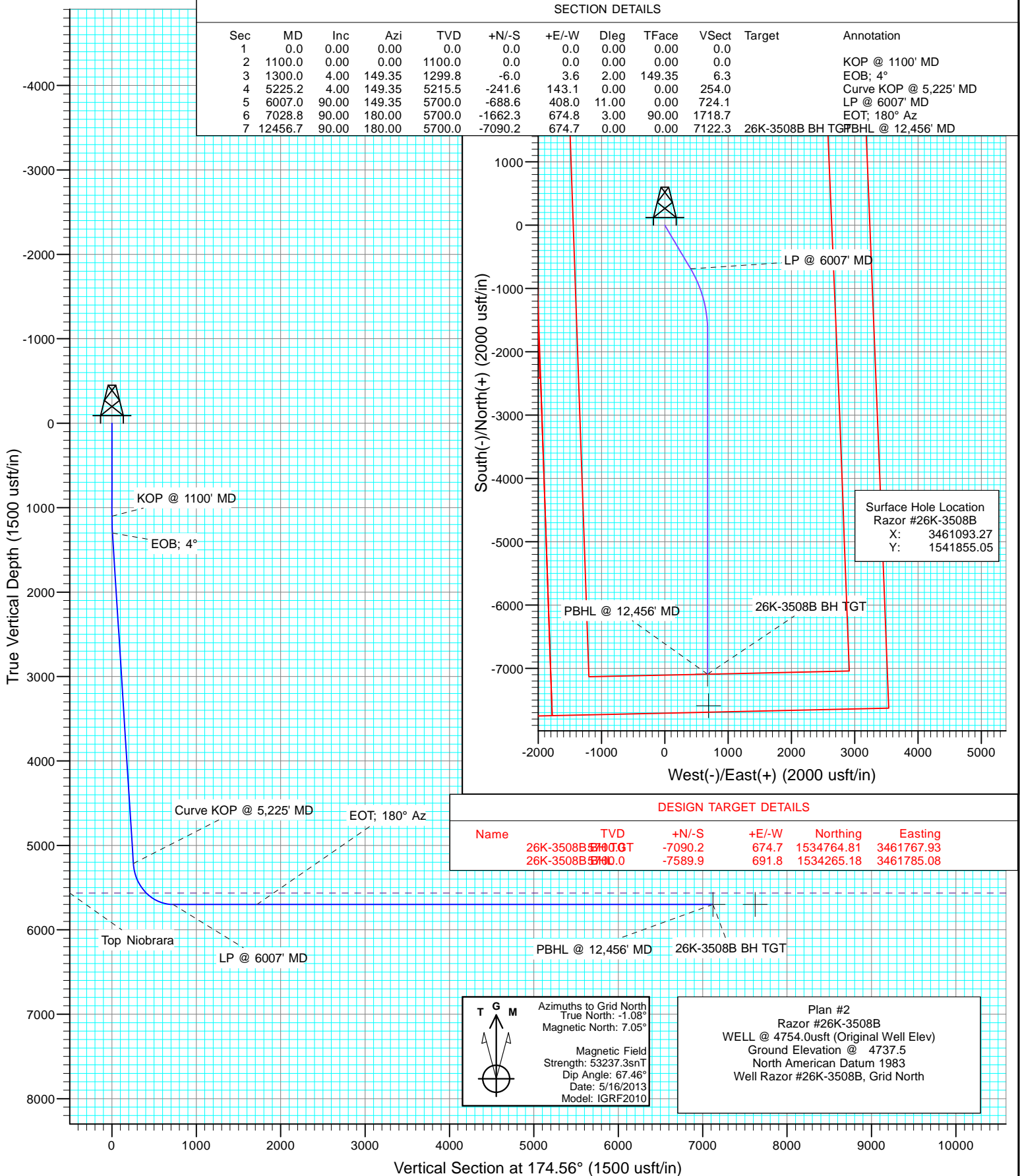


Project: Weld County, CO
Site: S26-T10N-R58W
Well: Razor #26K-3508B
Wellbore: HZ
Design: Plan #2



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	1100.0	0.00	0.00	1100.0	0.0	0.0	0.00	0.00	0.0		KOP @ 1100' MD
3	1300.0	4.00	149.35	1299.8	-6.0	3.6	2.00	149.35	6.3		EOB; 4°
4	5225.2	4.00	149.35	5215.5	-241.6	143.1	0.00	0.00	254.0		Curve KOP @ 5,225' MD
5	6007.0	90.00	149.35	5700.0	-688.6	408.0	11.00	0.00	724.1		LP @ 6007' MD
6	7028.8	90.00	180.00	5700.0	-1662.3	674.8	3.00	90.00	1718.7		EOT; 180° Az
7	12456.7	90.00	180.00	5700.0	-7090.2	674.7	0.00	0.00	7122.3	26K-3508B BH TGT	PBHL @ 12,456' MD



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #26K-3508B
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4754.0usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4754.0usft (Original Well Elev)
Site:	S26-T10N-R58W	North Reference:	Grid
Well:	Razor #26K-3508B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		S26-T10N-R58W			
Site Position:		Northing:	1,541,774.28 usft	Latitude:	40° 48' 31.46 N
From:	Lat/Long	Easting:	3,459,642.55 usft	Longitude:	103° 50' 22.31 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.07 °

Well	Razor #26K-3508B					
Well Position	+N/-S	0.0 usft	Northing:	1,541,855.05 usft	Latitude:	40° 48' 31.99 N
	+E/-W	0.0 usft	Easting:	3,461,093.27 usft	Longitude:	103° 50' 3.43 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,737.5 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/16/2013	8.13	67.46	53,237

Design	Plan #2				
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	174.56	

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	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,300.0	4.00	149.35	1,299.8	-6.0	3.6	2.00	2.00	0.00	149.35	
5,225.2	4.00	149.35	5,215.5	-241.6	143.1	0.00	0.00	0.00	0.00	
6,007.0	90.00	149.35	5,700.0	-688.6	408.0	11.00	11.00	0.00	0.00	
7,028.8	90.00	180.00	5,700.0	-1,662.3	674.8	3.00	0.00	3.00	90.00	
12,456.7	90.00	180.00	5,700.0	-7,090.2	674.7	0.00	0.00	0.00	0.00	26K-3508B BH TGT

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #26K-3508B
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4754.0usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4754.0usft (Original Well Elev)
Site:	S26-T10N-R58W	North Reference:	Grid
Well:	Razor #26K-3508B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1100' MD
1,300.0	4.00	149.35	1,299.8	-6.0	3.6	6.3	2.00	2.00	EOB; 4°
5,225.2	4.00	149.35	5,215.5	-241.6	143.1	254.0	0.00	0.00	Curve KOP @ 5,225' MD
5,621.9	47.64	149.35	5,564.0	-386.6	229.1	406.6	11.00	11.00	Top Niobrara
6,007.0	90.00	149.35	5,700.0	-688.6	408.0	724.1	11.00	11.00	LP @ 6007' MD
6,100.0	90.00	152.14	5,700.0	-769.7	453.5	809.2	3.00	0.00	7"
7,028.8	90.00	180.00	5,700.0	-1,662.3	674.8	1,718.8	3.00	0.00	EOT; 180° Az
12,456.7	90.00	180.00	5,700.0	-7,090.2	674.7	7,122.2	0.00	0.00	PBHL @ 12,456' MD

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
26K-3508B BH TGT - plan hits target center - Point	0.00	0.00	5,700.0	-7,090.2	674.7	1,534,764.81	3,461,767.93	40° 47' 21.82 N	103° 49' 56.39 W
26K-3508B BHL - plan misses target center by 499.9usft at 12456.7usft MD (5700.0 TVD, -7090.2 N, 674.7 E) - Point	0.00	0.00	5,700.0	-7,589.9	691.8	1,534,265.18	3,461,785.08	40° 47' 16.88 N	103° 49' 56.29 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,100.0	5,700.0	7"	0	0	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,621.9	5,564.0	Top Niobrara		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,100.0	1,100.0	0.0	0.0	KOP @ 1100' MD	
1,300.0	1,299.8	-6.0	3.6	EOB; 4°	
5,225.2	5,215.5	-241.6	143.1	Curve KOP @ 5,225' MD	
6,007.0	5,700.0	-688.6	408.0	LP @ 6007' MD	
7,028.8	5,700.0	-1,662.3	674.8	EOT; 180° Az	
12,456.7	5,700.0	-7,090.2	674.7	PBHL @ 12,456' MD	