



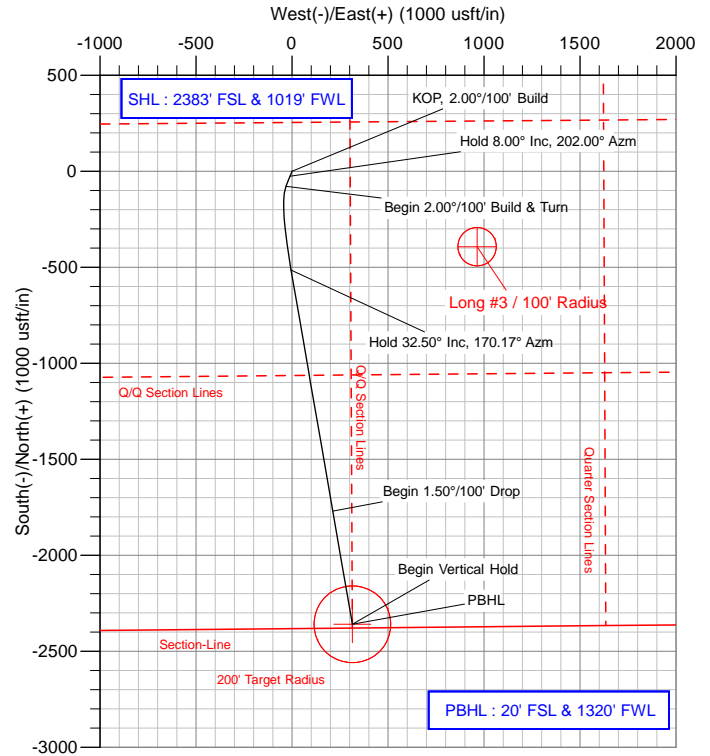
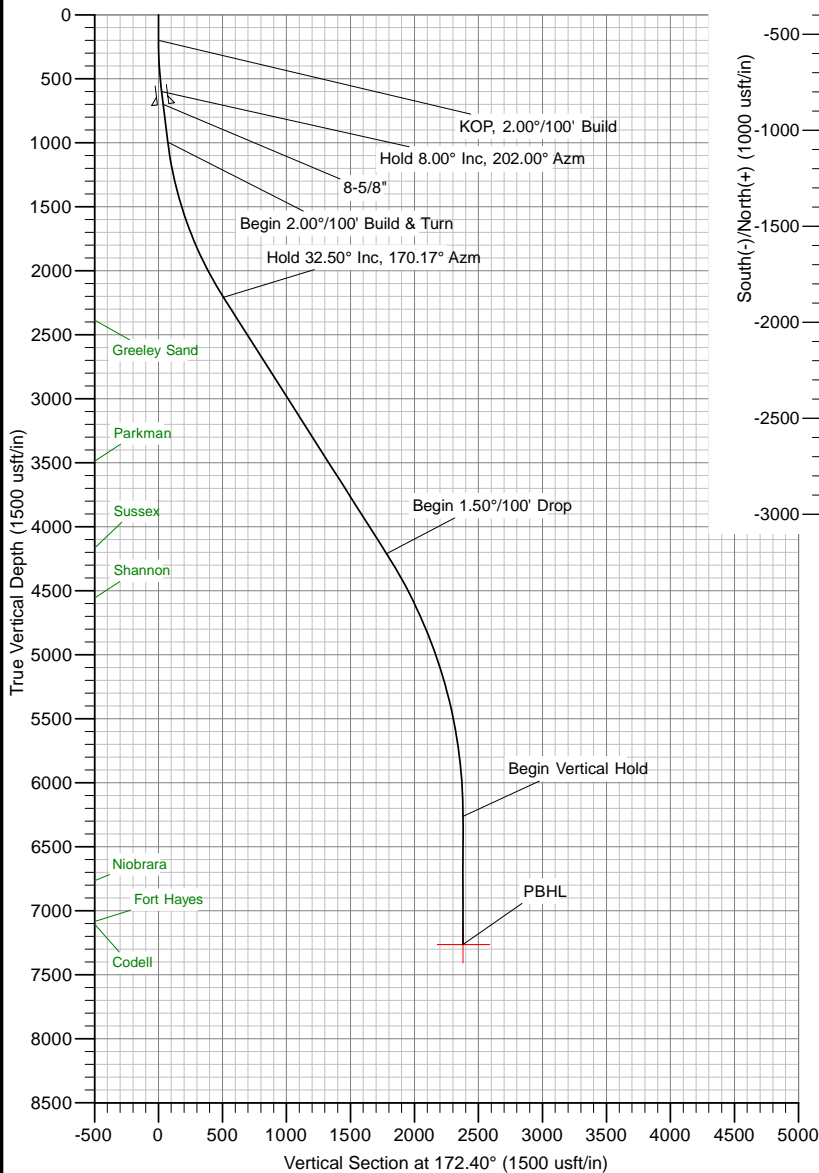
Company: Great Western  
 Site: Great Western  
 Well: 25-24-24  
 Project: Weld County, Colorado (NAD 83)  
 Rig Name: Cade 22



Planning: 936.442.2510 Fax: 936.442.2515  
 Operations: 936.442.2500 Fax: 936.442.2599

#### ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	KOP, 2.00°/100' Build
600.00	8.00	202.00	598.70	-25.85	-10.44	24.24	27.88	Hold 8.00° Inc, 202.00° Azm
1000.00	8.00	202.00	994.81	-77.47	-31.30	72.65	83.55	Begin 2.00°/100' Build & Turn
2300.32	32.50	170.17	2207.90	-513.04	-5.13	507.85	530.15	Hold 32.50° Inc, 170.17° Azm
4673.94	32.50	170.17	4209.87	-1769.55	212.50	1782.11	1805.37	Begin 1.50°/100' Drop
6840.36	0.00	0.00	6262.00	-2358.84	314.57	2379.73	2403.44	Begin Vertical Hold
7842.36	0.00	0.00	7264.00	-2358.84	314.57	2379.73	2403.44	PBHL



Azimuths to Grid North  
 True North: -0.42°  
 Magnetic North: 8.39°  
 Magnetic Field  
 Strength: 53082.7nT  
 Dip Angle: 67.06°  
 Date: 3/15/2012  
 Model: WMM\_2010

US State Plane 1983  
 Colorado Northern Zone

Created By: Allen Slack  
 Date: 16:29, March 19 2012  
 Plan: Design #1

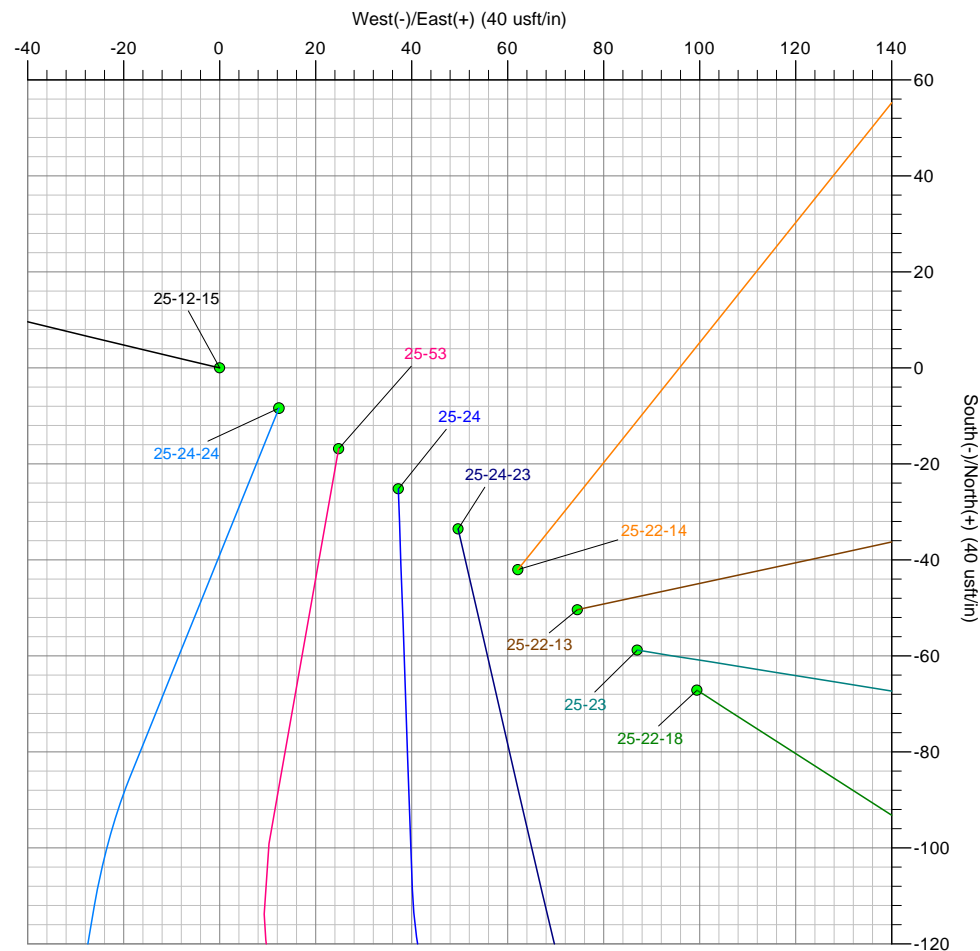
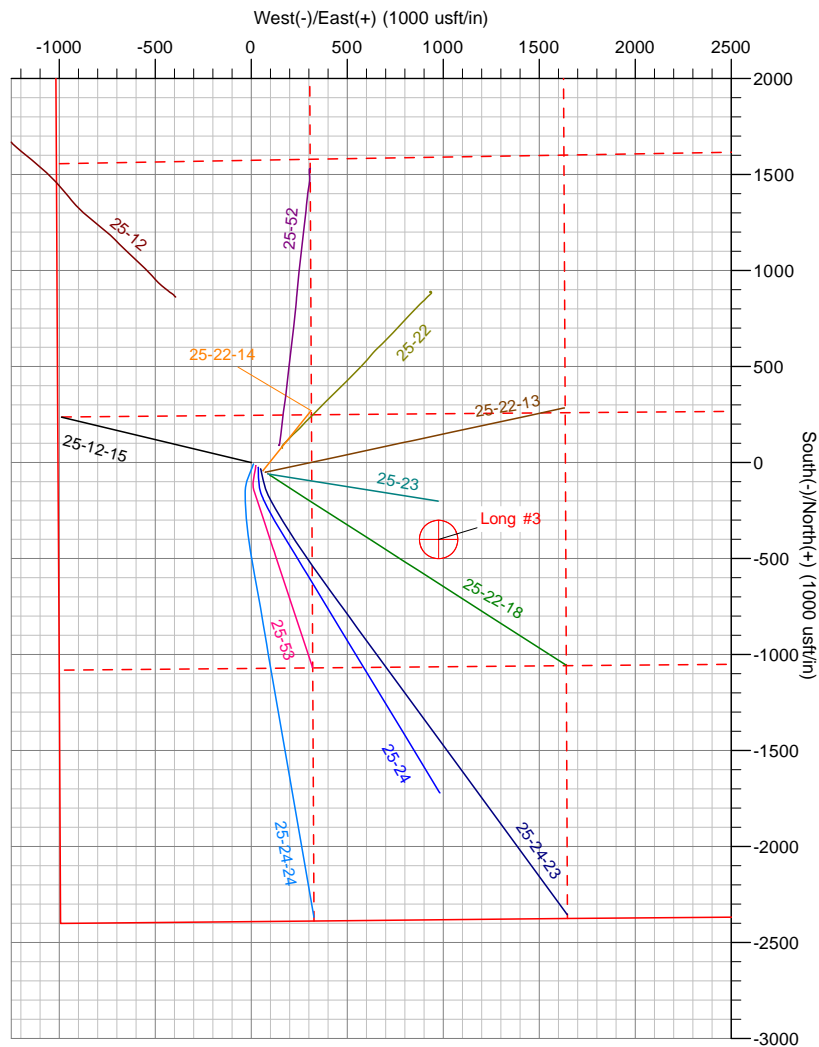
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Company: Great Western  
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# **Great Western**

**Weld County, Colorado (NAD 83)**

**Great Western**

**25-24-24**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**19 March, 2012**

<b>Database:</b>	Southern Region	<b>Local Co-ordinate Reference:</b>	Well 25-24-24
<b>Company:</b>	Great Western	<b>TVD Reference:</b>	WELL @ 4766.00usft (Cade 22)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	WELL @ 4766.00usft (Cade 22)
<b>Site:</b>	Great Western	<b>North Reference:</b>	Grid
<b>Well:</b>	25-24-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

<b>Project</b>	Weld County, Colorado (NAD 83)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

<b>Well</b>	25-24-24			
<b>Well Position</b>	<b>+N/-S</b>	1,410,076.59 usft	<b>Northing:</b>	1,410,076.59 usft
	<b>+E/-W</b>	3,181,499.38 usft	<b>Easting:</b>	3,181,499.38 usft
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	
			<b>Latitude:</b>	40° 27' 26.0265 N
			<b>Longitude:</b>	104° 50' 51.952 W
			<b>Ground Level:</b>	4,752.00 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	WMM_2010	3/15/2012	8.81	67.06	53,083

<b>Design</b>	Design #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	172.40

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	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	
600.00	8.00	202.00	598.70	-25.85	-10.44	2.00	2.00	0.00	202.00	
1,000.00	8.00	202.00	994.81	-77.47	-31.30	0.00	0.00	0.00	0.00	
2,300.32	32.50	170.17	2,207.90	-513.04	-5.13	2.00	1.88	-2.45	-40.25	
4,673.94	32.50	170.17	4,209.87	-1,769.55	212.50	0.00	0.00	0.00	0.00	
6,840.36	0.00	0.00	6,262.00	-2,358.84	314.57	1.50	-1.50	0.00	180.00	
7,842.36	0.00	0.00	7,264.00	-2,358.84	314.57	0.00	0.00	0.00	0.00	0.00 PBHL v1 - Great W

<b>Database:</b>	Southern Region	<b>Local Co-ordinate Reference:</b>	Well 25-24-24
<b>Company:</b>	Great Western	<b>TVD Reference:</b>	WELL @ 4766.00usft (Cade 22)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	WELL @ 4766.00usft (Cade 22)
<b>Site:</b>	Great Western	<b>North Reference:</b>	Grid
<b>Well:</b>	25-24-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
<b>KOP, 2.00°/100' Build</b>									
300.00	2.00	202.00	299.98	-1.62	-0.65	1.52	2.00	2.00	0.00
400.00	4.00	202.00	399.84	-6.47	-2.61	6.07	2.00	2.00	0.00
500.00	6.00	202.00	499.45	-14.55	-5.88	13.65	2.00	2.00	0.00
600.00	8.00	202.00	598.70	-25.85	-10.44	24.24	2.00	2.00	0.00
<b>Hold 8.00° Inc, 202.00° Azm</b>									
700.00	8.00	202.00	697.73	-38.75	-15.66	36.34	0.00	0.00	0.00
702.29	8.00	202.00	700.00	-39.05	-15.78	36.62	0.00	0.00	0.00
<b>8-5/8"</b>									
800.00	8.00	202.00	796.76	-51.66	-20.87	48.45	0.00	0.00	0.00
900.00	8.00	202.00	895.78	-64.56	-26.08	60.55	0.00	0.00	0.00
1,000.00	8.00	202.00	994.81	-77.47	-31.30	72.65	0.00	0.00	0.00
<b>Begin 2.00°/100' Build &amp; Turn</b>									
1,100.00	9.61	194.24	1,093.63	-92.01	-35.96	86.45	2.00	1.61	-7.76
1,200.00	11.35	188.76	1,191.96	-109.83	-39.51	103.64	2.00	1.74	-5.48
1,300.00	13.16	184.74	1,289.68	-130.90	-41.95	124.21	2.00	1.81	-4.02
1,400.00	15.02	181.69	1,386.67	-155.20	-43.28	148.12	2.00	1.86	-3.05
1,500.00	16.91	179.31	1,482.81	-182.69	-43.48	175.34	2.00	1.89	-2.39
1,600.00	18.82	177.39	1,577.99	-213.35	-42.57	205.85	2.00	1.91	-1.92
1,700.00	20.75	175.81	1,672.08	-247.13	-40.54	239.60	2.00	1.93	-1.57
1,800.00	22.69	174.50	1,764.98	-283.99	-37.40	276.55	2.00	1.94	-1.32
1,900.00	24.64	173.38	1,856.57	-323.89	-33.15	316.67	2.00	1.95	-1.12
2,000.00	26.59	172.42	1,946.74	-366.79	-27.79	359.89	2.00	1.96	-0.96
2,100.00	28.55	171.58	2,035.38	-412.62	-21.33	406.18	2.00	1.96	-0.84
2,200.00	30.52	170.83	2,122.38	-461.33	-13.79	455.46	2.00	1.97	-0.74
2,300.00	32.49	170.18	2,207.63	-512.87	-5.16	507.69	2.00	1.97	-0.66
2,300.32	32.50	170.17	2,207.90	-513.04	-5.13	507.85	2.00	1.97	-0.62
<b>Hold 32.50° Inc, 170.17° Azm</b>									
2,400.00	32.50	170.17	2,291.97	-565.80	4.01	561.37	0.00	0.00	0.00
2,500.00	32.50	170.17	2,376.32	-618.74	13.18	615.05	0.00	0.00	0.00
2,511.48	32.50	170.17	2,386.00	-624.82	14.23	621.22	0.00	0.00	0.00
<b>Greeley Sand</b>									
2,600.00	32.50	170.17	2,460.66	-671.68	22.35	668.74	0.00	0.00	0.00
2,700.00	32.50	170.17	2,545.00	-724.61	31.52	722.42	0.00	0.00	0.00
2,800.00	32.50	170.17	2,629.34	-777.55	40.68	776.11	0.00	0.00	0.00
2,900.00	32.50	170.17	2,713.69	-830.49	49.85	829.79	0.00	0.00	0.00
3,000.00	32.50	170.17	2,798.03	-883.42	59.02	883.47	0.00	0.00	0.00
3,100.00	32.50	170.17	2,882.37	-936.36	68.19	937.16	0.00	0.00	0.00
3,200.00	32.50	170.17	2,966.71	-989.30	77.36	990.84	0.00	0.00	0.00
3,300.00	32.50	170.17	3,051.06	-1,042.23	86.53	1,044.52	0.00	0.00	0.00
3,400.00	32.50	170.17	3,135.40	-1,095.17	95.70	1,098.21	0.00	0.00	0.00
3,500.00	32.50	170.17	3,219.74	-1,148.11	104.87	1,151.89	0.00	0.00	0.00
3,600.00	32.50	170.17	3,304.08	-1,201.04	114.04	1,205.58	0.00	0.00	0.00
3,700.00	32.50	170.17	3,388.43	-1,253.98	123.20	1,259.26	0.00	0.00	0.00
3,800.00	32.50	170.17	3,472.77	-1,306.91	132.37	1,312.94	0.00	0.00	0.00
3,815.69	32.50	170.17	3,486.00	-1,315.22	133.81	1,321.37	0.00	0.00	0.00
<b>Parkman</b>									
3,900.00	32.50	170.17	3,557.11	-1,359.85	141.54	1,366.63	0.00	0.00	0.00
4,000.00	32.50	170.17	3,641.46	-1,412.79	150.71	1,420.31	0.00	0.00	0.00
4,100.00	32.50	170.17	3,725.80	-1,465.72	159.88	1,474.00	0.00	0.00	0.00

<b>Database:</b>	Southern Region	<b>Local Co-ordinate Reference:</b>	Well 25-24-24
<b>Company:</b>	Great Western	<b>TVD Reference:</b>	WELL @ 4766.00usft (Cade 22)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	WELL @ 4766.00usft (Cade 22)
<b>Site:</b>	Great Western	<b>North Reference:</b>	Grid
<b>Well:</b>	25-24-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,200.00	32.50	170.17	3,810.14	-1,518.66	169.05	1,527.68	0.00	0.00	0.00
4,300.00	32.50	170.17	3,894.48	-1,571.60	178.22	1,581.36	0.00	0.00	0.00
4,400.00	32.50	170.17	3,978.83	-1,624.53	187.39	1,635.05	0.00	0.00	0.00
4,500.00	32.50	170.17	4,063.17	-1,677.47	196.56	1,688.73	0.00	0.00	0.00
4,600.00	32.50	170.17	4,147.51	-1,730.41	205.73	1,742.42	0.00	0.00	0.00
4,621.92	32.50	170.17	4,166.00	-1,742.01	207.74	1,754.18	0.00	0.00	0.00
<b>Sussex</b>									
4,673.94	32.50	170.17	4,209.87	-1,769.55	212.50	1,782.11	0.00	0.00	0.00
<b>Begin 1.50°/100' Drop</b>									
4,700.00	32.11	170.17	4,231.90	-1,783.27	214.88	1,796.02	1.50	-1.50	0.00
4,800.00	30.61	170.17	4,317.29	-1,834.54	223.76	1,848.02	1.50	-1.50	0.00
4,900.00	29.11	170.17	4,404.02	-1,883.59	232.26	1,897.76	1.50	-1.50	0.00
5,000.00	27.61	170.17	4,492.02	-1,930.38	240.36	1,945.22	1.50	-1.50	0.00
5,071.85	26.53	170.17	4,556.00	-1,962.60	245.94	1,977.89	1.50	-1.50	0.00
<b>Shannon</b>									
5,100.00	26.11	170.17	4,581.23	-1,974.89	248.07	1,990.36	1.50	-1.50	0.00
5,200.00	24.61	170.17	4,671.60	-2,017.09	255.38	2,033.14	1.50	-1.50	0.00
5,300.00	23.11	170.17	4,763.05	-2,056.94	262.28	2,073.56	1.50	-1.50	0.00
5,400.00	21.61	170.17	4,855.53	-2,094.41	268.77	2,111.56	1.50	-1.50	0.00
5,500.00	20.11	170.17	4,948.98	-2,129.49	274.85	2,147.13	1.50	-1.50	0.00
5,600.00	18.61	170.17	5,043.32	-2,162.15	280.50	2,180.25	1.50	-1.50	0.00
5,700.00	17.11	170.17	5,138.50	-2,192.36	285.74	2,210.89	1.50	-1.50	0.00
5,800.00	15.61	170.17	5,234.45	-2,220.10	290.54	2,239.03	1.50	-1.50	0.00
5,900.00	14.11	170.17	5,331.11	-2,245.36	294.92	2,264.64	1.50	-1.50	0.00
6,000.00	12.61	170.17	5,428.40	-2,268.12	298.86	2,287.72	1.50	-1.50	0.00
6,100.00	11.11	170.17	5,526.27	-2,288.36	302.37	2,308.25	1.50	-1.50	0.00
6,200.00	9.61	170.17	5,624.63	-2,306.08	305.43	2,326.21	1.50	-1.50	0.00
6,300.00	8.11	170.17	5,723.44	-2,321.24	308.06	2,341.60	1.50	-1.50	0.00
6,400.00	6.61	170.17	5,822.61	-2,333.86	310.25	2,354.39	1.50	-1.50	0.00
6,500.00	5.11	170.17	5,922.09	-2,343.91	311.99	2,364.58	1.50	-1.50	0.00
6,600.00	3.61	170.17	6,021.80	-2,351.39	313.28	2,372.17	1.50	-1.50	0.00
6,700.00	2.11	170.17	6,121.67	-2,356.30	314.13	2,377.15	1.50	-1.50	0.00
6,800.00	0.61	170.17	6,221.64	-2,358.63	314.54	2,379.51	1.50	-1.50	0.00
6,840.36	0.00	0.00	6,262.00	-2,358.84	314.57	2,379.73	1.50	-1.50	0.00
<b>Begin Vertical Hold</b>									
6,900.00	0.00	0.00	6,321.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,000.00	0.00	0.00	6,421.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,100.00	0.00	0.00	6,521.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,200.00	0.00	0.00	6,621.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,300.00	0.00	0.00	6,721.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,342.36	0.00	0.00	6,764.00	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
<b>Niobrara</b>									
7,400.00	0.00	0.00	6,821.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,500.00	0.00	0.00	6,921.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,600.00	0.00	0.00	7,021.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,662.36	0.00	0.00	7,084.00	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
<b>Fort Hayes</b>									
7,682.36	0.00	0.00	7,104.00	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
<b>Codell</b>									
7,700.00	0.00	0.00	7,121.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,800.00	0.00	0.00	7,221.64	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
7,842.36	0.00	0.00	7,264.00	-2,358.84	314.57	2,379.73	0.00	0.00	0.00
<b>PBHL</b>									

<b>Database:</b>	Southern Region	<b>Local Co-ordinate Reference:</b>	Well 25-24-24
<b>Company:</b>	Great Western	<b>TVD Reference:</b>	WELL @ 4766.00usft (Cade 22)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	WELL @ 4766.00usft (Cade 22)
<b>Site:</b>	Great Western	<b>North Reference:</b>	Grid
<b>Well:</b>	25-24-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL v1 - Great Wes	0.00	0.00	7,264.00	-2,358.84	314.57	1,407,717.75	3,181,813.95	40° 27' 2.6943 N	104° 50' 48.107 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
702.29	700.00	8-5/8"	8-5/8	12-1/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,511.48	2,386.00	Greeley Sand		0.00		
3,815.69	3,486.00	Parkman		0.00		
4,621.92	4,166.00	Sussex		0.00		
5,071.85	4,556.00	Shannon		0.00		
7,342.36	6,764.00	Niobrara		0.00		
7,662.36	7,084.00	Fort Hayes		0.00		
7,682.36	7,104.00	Codell		0.00		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
200.00	200.00	0.00	0.00	KOP, 2.00°/100' Build
600.00	598.70	-25.85	-10.44	Hold 8.00° Inc, 202.00° Azm
1,000.00	994.81	-77.47	-31.30	Begin 2.00°/100' Build & Turn
2,300.32	2,207.90	-513.04	-5.13	Hold 32.50° Inc, 170.17° Azm
4,673.94	4,209.87	-1,769.55	212.50	Begin 1.50°/100' Drop
6,840.36	6,262.00	-2,358.84	314.57	Begin Vertical Hold
7,842.36	7,264.00	-2,358.84	314.57	PBHL