

Great Western

Company: Great Western
Site: Everitt
Well: 20-14
Project: Weld County, Colorado (NAD 83)
Rig Name: Cade 22

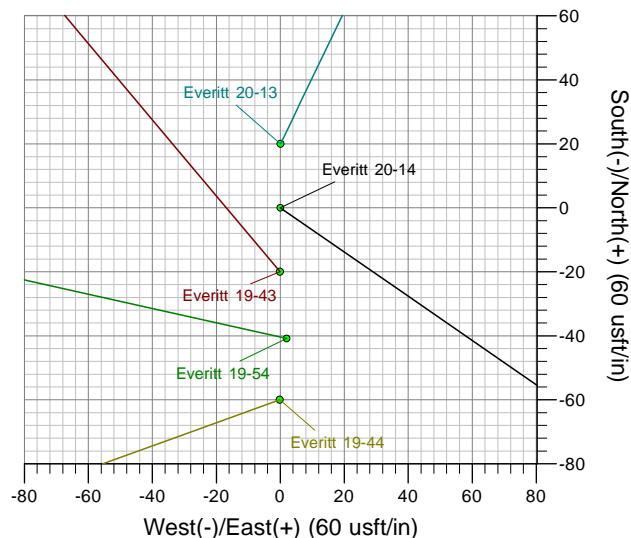
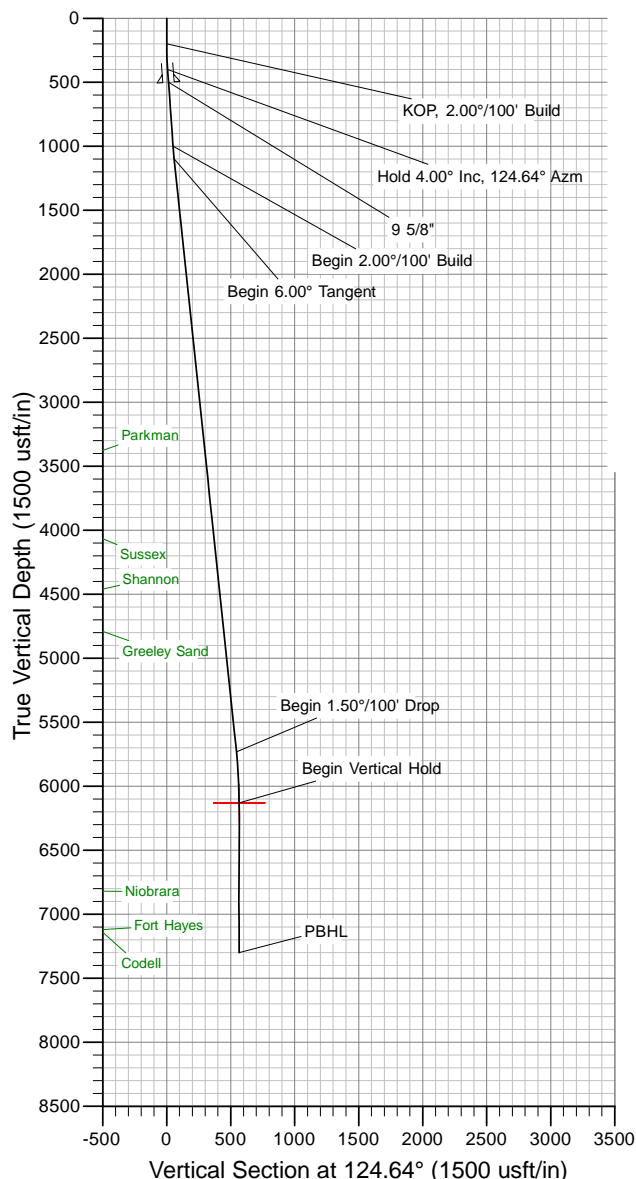
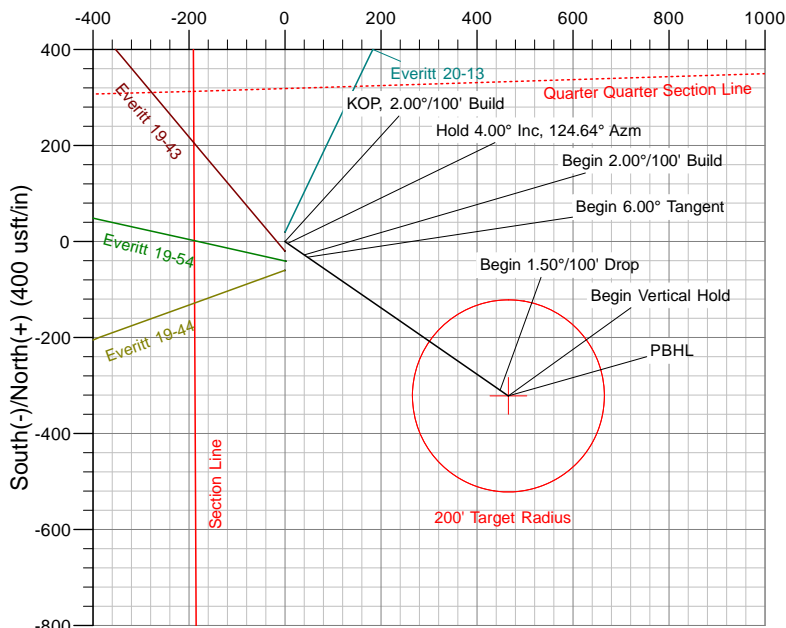


Planning: 936.442.2510 Fax: 936.442.2515
Operations: 936.442.2500 Fax: 936.442.2599

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
400.00	4.00	124.64	399.84	-3.97	5.74	6.98	6.98	Hold 4.00° Inc, 124.64° Azm
1000.00	4.00	124.64	998.38	-27.76	40.18	48.83	48.83	Begin 2.00°/100' Build
1100.18	6.00	124.64	1098.17	-32.72	47.36	57.57	57.57	Begin 6.00° Tangent
5758.05	6.00	124.64	5730.50	-309.61	448.19	544.73	544.73	Begin 1.50°/100' Drop
6158.29	0.00	0.00	6130.00	-321.52	465.42	565.68	565.68	Begin Vertical Hold
7328.29	0.00	0.00	7300.00	-321.52	465.42	565.68	565.68	PBHL

West(-)/East(+) (400 usft/in)



Azimuths to Grid North
True North: -0.37°
Magnetic North: 8.52°

Magnetic Field
Strength: 53109.2snT
Dip Angle: 67.06°
Date: 12/5/2011
Model: WMM_2010

US State Plane 1983
Colorado Northern Zone

Created By: Allen Slack
Date: 14:23, December 06 2011
Plan: Design #1

The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by MS Energy are at the sole risk and responsibility of the customer. MS Energy is not responsible for the accuracy of this schematic or the information contained herein.

Great Western

**Weld County, Colorado (NAD 83)
Everitt
20-14**

Wellbore #1

Plan: Design #1

Standard Planning Report

06 December, 2011

Database:	Southern Region	Local Co-ordinate Reference:	Well 20-14
Company:	Great Western	TVD Reference:	WELL @ 4790.00usft (Cade 22)
Project:	Weld County, Colorado (NAD 83)	MD Reference:	WELL @ 4790.00usft (Cade 22)
Site:	Everitt	North Reference:	Grid
Well:	20-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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

Well	20-14			
Well Position	+N/-S	1,413,764.29 usft	Northing:	1,413,764.29 usft
	+E/-W	3,159,768.67 usft	Easting:	3,159,768.67 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	
			Latitude:	40° 28' 3.9522 N
			Longitude:	104° 55' 32.764 W
			Ground Level:	4,776.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM_2010	12/5/2011	8.89	67.06	53,109

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	124.64

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
0.00	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	
400.00	4.00	124.64	399.84	-3.97	5.74	2.00	2.00	0.00	124.64	Vert. v1 - Everitt 20
1,000.00	4.00	124.64	998.38	-27.76	40.18	0.00	0.00	0.00	0.00	
1,100.18	6.00	124.64	1,098.17	-32.72	47.36	2.00	2.00	0.00	0.00	
5,758.05	6.00	124.64	5,730.50	-309.61	448.19	0.00	0.00	0.00	0.00	
6,158.29	0.00	0.00	6,130.00	-321.52	465.42	1.50	-1.50	0.00	180.00	Vert. v1 - Everitt 20
7,328.29	0.00	0.00	7,300.00	-321.52	465.42	0.00	0.00	0.00	0.00	

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Site:	Everitt	North Reference:	Grid
Well:	20-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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
KOP, 2.00°/100' Build									
300.00	2.00	124.64	299.98	-0.99	1.44	1.75	2.00	2.00	0.00
400.00	4.00	124.64	399.84	-3.97	5.74	6.98	2.00	2.00	0.00
Hold 4.00° Inc, 124.64° Azm									
500.00	4.00	124.64	499.59	-7.93	11.48	13.95	0.00	0.00	0.00
500.41	4.00	124.64	500.00	-7.95	11.50	13.98	0.00	0.00	0.00
9 5/8"									
600.00	4.00	124.64	599.35	-11.90	17.22	20.93	0.00	0.00	0.00
700.00	4.00	124.64	699.11	-15.86	22.96	27.91	0.00	0.00	0.00
800.00	4.00	124.64	798.86	-19.83	28.70	34.88	0.00	0.00	0.00
900.00	4.00	124.64	898.62	-23.79	34.44	41.86	0.00	0.00	0.00
1,000.00	4.00	124.64	998.38	-27.76	40.18	48.83	0.00	0.00	0.00
Begin 2.00°/100' Build									
1,100.00	6.00	124.64	1,097.99	-32.71	47.35	57.55	2.00	2.00	0.00
1,100.18	6.00	124.64	1,098.17	-32.72	47.36	57.57	2.00	2.00	0.00
Begin 6.00° Tangent									
1,200.00	6.00	124.64	1,197.44	-38.65	55.95	68.01	0.00	0.00	0.00
1,300.00	6.00	124.64	1,296.89	-44.60	64.56	78.47	0.00	0.00	0.00
1,400.00	6.00	124.64	1,396.35	-50.54	73.16	88.92	0.00	0.00	0.00
1,500.00	6.00	124.64	1,495.80	-56.49	81.77	99.38	0.00	0.00	0.00
1,600.00	6.00	124.64	1,595.25	-62.43	90.37	109.84	0.00	0.00	0.00
1,700.00	6.00	124.64	1,694.70	-68.38	98.98	120.30	0.00	0.00	0.00
1,800.00	6.00	124.64	1,794.15	-74.32	107.59	130.76	0.00	0.00	0.00
1,900.00	6.00	124.64	1,893.60	-80.27	116.19	141.22	0.00	0.00	0.00
2,000.00	6.00	124.64	1,993.05	-86.21	124.80	151.68	0.00	0.00	0.00
2,100.00	6.00	124.64	2,092.51	-92.16	133.40	162.14	0.00	0.00	0.00
2,200.00	6.00	124.64	2,191.96	-98.10	142.01	172.60	0.00	0.00	0.00
2,300.00	6.00	124.64	2,291.41	-104.04	150.61	183.06	0.00	0.00	0.00
2,400.00	6.00	124.64	2,390.86	-109.99	159.22	193.51	0.00	0.00	0.00
2,500.00	6.00	124.64	2,490.31	-115.93	167.82	203.97	0.00	0.00	0.00
2,600.00	6.00	124.64	2,589.76	-121.88	176.43	214.43	0.00	0.00	0.00
2,700.00	6.00	124.64	2,689.22	-127.82	185.03	224.89	0.00	0.00	0.00
2,800.00	6.00	124.64	2,788.67	-133.77	193.64	235.35	0.00	0.00	0.00
2,900.00	6.00	124.64	2,888.12	-139.71	202.24	245.81	0.00	0.00	0.00
3,000.00	6.00	124.64	2,987.57	-145.66	210.85	256.27	0.00	0.00	0.00
3,100.00	6.00	124.64	3,087.02	-151.60	219.45	266.73	0.00	0.00	0.00
3,200.00	6.00	124.64	3,186.47	-157.55	228.06	277.19	0.00	0.00	0.00
3,300.00	6.00	124.64	3,285.92	-163.49	236.66	287.65	0.00	0.00	0.00
3,389.57	6.00	124.64	3,375.00	-168.82	244.37	297.01	0.00	0.00	0.00
Parkman									
3,400.00	6.00	124.64	3,385.38	-169.44	245.27	298.10	0.00	0.00	0.00
3,500.00	6.00	124.64	3,484.83	-175.38	253.88	308.56	0.00	0.00	0.00
3,600.00	6.00	124.64	3,584.28	-181.33	262.48	319.02	0.00	0.00	0.00
3,700.00	6.00	124.64	3,683.73	-187.27	271.09	329.48	0.00	0.00	0.00
3,800.00	6.00	124.64	3,783.18	-193.21	279.69	339.94	0.00	0.00	0.00
3,900.00	6.00	124.64	3,882.63	-199.16	288.30	350.40	0.00	0.00	0.00
4,000.00	6.00	124.64	3,982.09	-205.10	296.90	360.86	0.00	0.00	0.00
4,083.37	6.00	124.64	4,065.00	-210.06	304.08	369.58	0.00	0.00	0.00
Sussex									
4,100.00	6.00	124.64	4,081.54	-211.05	305.51	371.32	0.00	0.00	0.00

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Site:	Everitt	North Reference:	Grid
Well:	20-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	6.00	124.64	4,180.99	-216.99	314.11	381.78	0.00	0.00	0.00
4,300.00	6.00	124.64	4,280.44	-222.94	322.72	392.23	0.00	0.00	0.00
4,400.00	6.00	124.64	4,379.89	-228.88	331.32	402.69	0.00	0.00	0.00
4,480.55	6.00	124.64	4,460.00	-233.67	338.26	411.12	0.00	0.00	0.00
Shannon									
4,500.00	6.00	124.64	4,479.34	-234.83	339.93	413.15	0.00	0.00	0.00
4,600.00	6.00	124.64	4,578.79	-240.77	348.53	423.61	0.00	0.00	0.00
4,700.00	6.00	124.64	4,678.25	-246.72	357.14	434.07	0.00	0.00	0.00
4,800.00	6.00	124.64	4,777.70	-252.66	365.74	444.53	0.00	0.00	0.00
4,812.37	6.00	124.64	4,790.00	-253.40	366.81	445.82	0.00	0.00	0.00
Greeley Sand									
4,900.00	6.00	124.64	4,877.15	-258.61	374.35	454.99	0.00	0.00	0.00
5,000.00	6.00	124.64	4,976.60	-264.55	382.96	465.45	0.00	0.00	0.00
5,100.00	6.00	124.64	5,076.05	-270.50	391.56	475.91	0.00	0.00	0.00
5,200.00	6.00	124.64	5,175.50	-276.44	400.17	486.37	0.00	0.00	0.00
5,300.00	6.00	124.64	5,274.96	-282.38	408.77	496.82	0.00	0.00	0.00
5,400.00	6.00	124.64	5,374.41	-288.33	417.38	507.28	0.00	0.00	0.00
5,500.00	6.00	124.64	5,473.86	-294.27	425.98	517.74	0.00	0.00	0.00
5,600.00	6.00	124.64	5,573.31	-300.22	434.59	528.20	0.00	0.00	0.00
5,700.00	6.00	124.64	5,672.76	-306.16	443.19	538.66	0.00	0.00	0.00
5,758.05	6.00	124.64	5,730.50	-309.61	448.19	544.73	0.00	0.00	0.00
Begin 1.50°/100' Drop									
5,800.00	5.37	124.64	5,772.24	-311.98	451.61	548.89	1.50	-1.50	0.00
5,900.00	3.87	124.64	5,871.91	-316.56	458.24	556.95	1.50	-1.50	0.00
6,000.00	2.37	124.64	5,971.76	-319.66	462.73	562.40	1.50	-1.50	0.00
6,100.00	0.87	124.64	6,071.71	-321.27	465.06	565.24	1.50	-1.50	0.00
6,158.29	0.00	0.00	6,130.00	-321.52	465.42	565.68	1.50	-1.50	0.00
Begin Vertical Hold									
6,200.00	0.00	0.00	6,171.71	-321.52	465.42	565.68	0.00	0.00	0.00
6,300.00	0.00	0.00	6,271.71	-321.52	465.42	565.68	0.00	0.00	0.00
6,400.00	0.00	0.00	6,371.71	-321.52	465.42	565.68	0.00	0.00	0.00
6,500.00	0.00	0.00	6,471.71	-321.52	465.42	565.68	0.00	0.00	0.00
6,600.00	0.00	0.00	6,571.71	-321.52	465.42	565.68	0.00	0.00	0.00
6,700.00	0.00	0.00	6,671.71	-321.52	465.42	565.68	0.00	0.00	0.00
6,800.00	0.00	0.00	6,771.71	-321.52	465.42	565.68	0.00	0.00	0.00
6,848.29	0.00	0.00	6,820.00	-321.52	465.42	565.68	0.00	0.00	0.00
Niobrara									
6,900.00	0.00	0.00	6,871.71	-321.52	465.42	565.68	0.00	0.00	0.00
7,000.00	0.00	0.00	6,971.71	-321.52	465.42	565.68	0.00	0.00	0.00
7,100.00	0.00	0.00	7,071.71	-321.52	465.42	565.68	0.00	0.00	0.00
7,148.29	0.00	0.00	7,120.00	-321.52	465.42	565.68	0.00	0.00	0.00
Fort Hayes									
7,168.29	0.00	0.00	7,140.00	-321.52	465.42	565.68	0.00	0.00	0.00
Codell									
7,200.00	0.00	0.00	7,171.71	-321.52	465.42	565.68	0.00	0.00	0.00
7,300.00	0.00	0.00	7,271.71	-321.52	465.42	565.68	0.00	0.00	0.00
7,328.29	0.00	0.00	7,300.00	-321.52	465.42	565.68	0.00	0.00	0.00
PBHL									

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Company:	Great Western	TVD Reference:	WELL @ 4790.00usft (Cade 22)
Project:	Weld County, Colorado (NAD 83)	MD Reference:	WELL @ 4790.00usft (Cade 22)
Site:	Everitt	North Reference:	Grid
Well:	20-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
Vert. v1 - Everitt 20-14 - plan hits target center - Point	0.00	0.01	6,130.00	-321.52	465.42	1,413,442.77	3,160,234.09	40° 28' 0.7452 N	104° 55' 26.769 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
500.41	500.00	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,389.57	3,375.00	Parkman		0.00	
4,083.37	4,065.00	Sussex		0.00	
4,480.55	4,460.00	Shannon		0.00	
4,812.37	4,790.00	Greeley Sand		0.00	
6,848.29	6,820.00	Niobrara		0.00	
7,148.29	7,120.00	Fort Hayes		0.00	
7,168.29	7,140.00	Codell		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	KOP, 2.00°/100' Build
400.00	399.84	-3.97	5.74	Hold 4.00° Inc, 124.64° Azm
1,000.00	998.38	-27.76	40.18	Begin 2.00°/100' Build
1,100.18	1,098.17	-32.72	47.36	Begin 6.00° Tangent
5,758.05	5,730.50	-309.61	448.19	Begin 1.50°/100' Drop
6,158.29	6,130.00	-321.52	465.42	Begin Vertical Hold
7,328.29	7,300.00	-321.52	465.42	PBHL