

Great Western

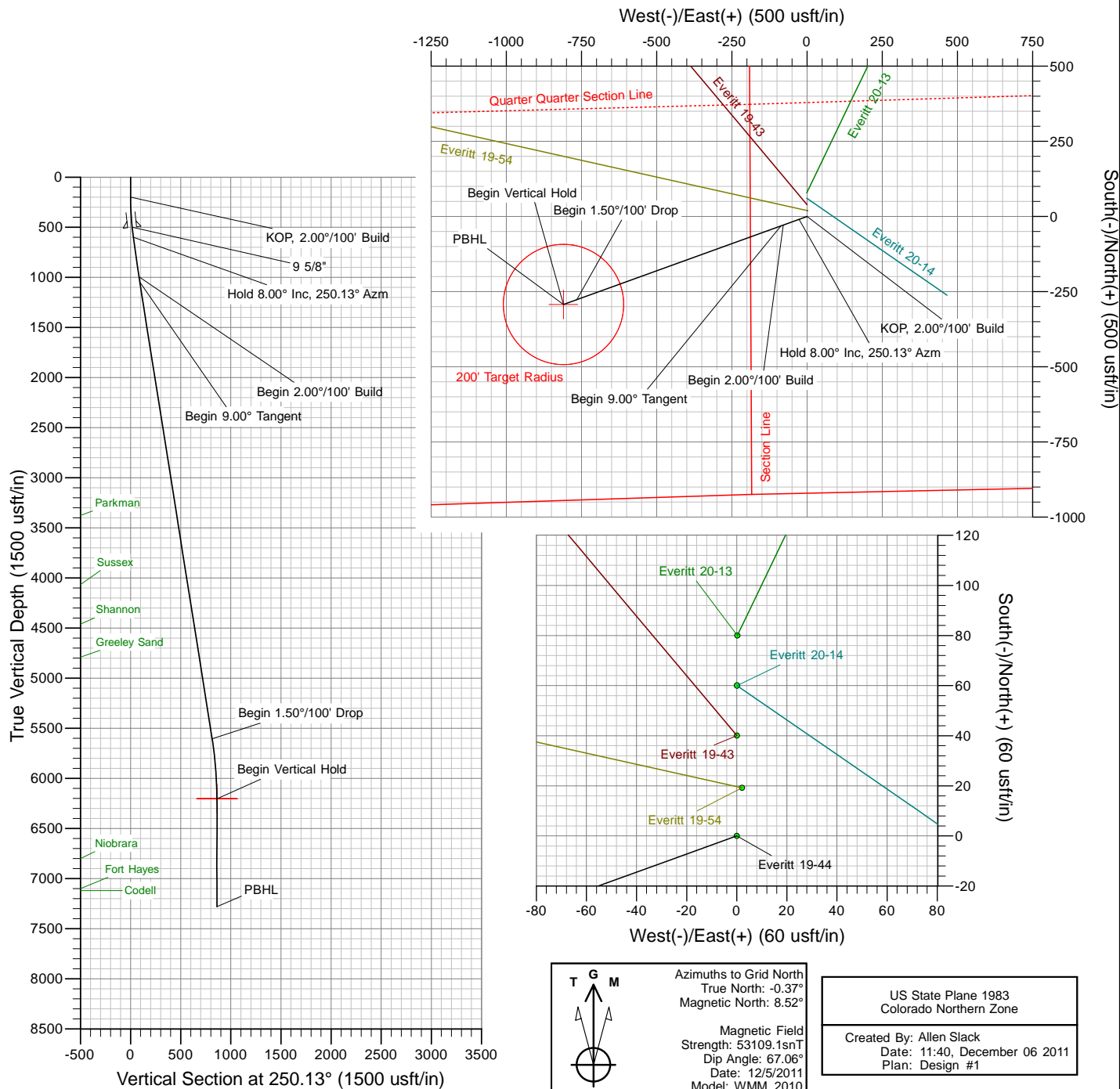
Company: Great Western
Site: Everitt
Well: 19-44
Project: Weld County, Colorado (NAD 83)
Rig Name: Cade 22



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	250.13	598.70	-9.47	-26.22	27.88	27.88	Hold 8.00° Inc, 250.13° Azm
1000.00	8.00	250.13	994.81	-28.39	-78.58	83.55	83.55	Begin 2.00°/100' Build
1050.22	9.00	250.13	1044.48	-30.92	-85.56	90.97	90.97	Begin 9.00° Tangent
5667.82	9.00	250.13	5605.17	-276.51	-765.26	813.68	813.68	Begin 1.50°/100' Drop
6268.12	0.00	0.00	6203.00	-292.50	-809.53	860.75	860.75	Begin Vertical Hold
7345.12	0.00	0.00	7280.00	-292.50	-809.53	860.75	860.75	PBHL



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
19-44**

Wellbore #1

Plan: Design #1

Standard Planning Report

06 December, 2011

Database:	Southern Region	Local Co-ordinate Reference:	Well 19-44
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:	19-44	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	19-44			
Well Position	+N/-S	1,413,704.29 usft	Northing:	1,413,704.29 usft
	+E/-W	3,159,768.52 usft	Easting:	3,159,768.52 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	
			Latitude:	40° 28' 3.3592 N
			Longitude:	104° 55' 32.771 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	250.13

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	
600.00	8.00	250.13	598.70	-9.47	-26.22	2.00	2.00	0.00	250.13	Vert. v1 - Everitt 19
1,000.00	8.00	250.13	994.81	-28.39	-78.58	0.00	0.00	0.00	0.00	
1,050.22	9.00	250.13	1,044.48	-30.92	-85.56	2.00	2.00	0.00	0.00	
5,667.82	9.00	250.13	5,605.17	-276.51	-765.26	0.00	0.00	0.00	0.00	
6,268.12	0.00	0.01	6,203.00	-292.50	-809.53	1.50	-1.50	0.00	180.00	Vert. v1 - Everitt 19
7,345.12	0.00	0.01	7,280.00	-292.50	-809.53	0.00	0.00	0.00	0.01	

Database:	Southern Region	Local Co-ordinate Reference:	Well 19-44
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:	19-44	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	250.13	299.98	-0.59	-1.64	1.75	2.00	2.00	0.00
400.00	4.00	250.13	399.84	-2.37	-6.56	6.98	2.00	2.00	0.00
500.00	6.00	250.13	499.45	-5.33	-14.76	15.69	2.00	2.00	0.00
500.55	6.01	250.13	500.00	-5.35	-14.81	15.75	2.00	2.00	0.00
9 5/8"									
600.00	8.00	250.13	598.70	-9.47	-26.22	27.88	2.00	2.00	0.00
Hold 8.00° Inc, 250.13° Azm									
700.00	8.00	250.13	697.73	-14.20	-39.31	41.80	0.00	0.00	0.00
800.00	8.00	250.13	796.76	-18.93	-52.40	55.71	0.00	0.00	0.00
900.00	8.00	250.13	895.78	-23.66	-65.49	69.63	0.00	0.00	0.00
1,000.00	8.00	250.13	994.81	-28.39	-78.58	83.55	0.00	0.00	0.00
Begin 2.00°/100' Build									
1,050.22	9.00	250.13	1,044.48	-30.92	-85.56	90.97	2.00	2.00	0.00
Begin 9.00° Tangent									
1,100.00	9.00	250.13	1,093.64	-33.56	-92.89	98.77	0.00	0.00	0.00
1,200.00	9.00	250.13	1,192.41	-38.88	-107.61	114.42	0.00	0.00	0.00
1,300.00	9.00	250.13	1,291.18	-44.20	-122.33	130.07	0.00	0.00	0.00
1,400.00	9.00	250.13	1,389.95	-49.52	-137.05	145.72	0.00	0.00	0.00
1,500.00	9.00	250.13	1,488.71	-54.84	-151.77	161.37	0.00	0.00	0.00
1,600.00	9.00	250.13	1,587.48	-60.16	-166.49	177.02	0.00	0.00	0.00
1,700.00	9.00	250.13	1,686.25	-65.47	-181.21	192.67	0.00	0.00	0.00
1,800.00	9.00	250.13	1,785.02	-70.79	-195.93	208.32	0.00	0.00	0.00
1,900.00	9.00	250.13	1,883.78	-76.11	-210.65	223.97	0.00	0.00	0.00
2,000.00	9.00	250.13	1,982.55	-81.43	-225.37	239.63	0.00	0.00	0.00
2,100.00	9.00	250.13	2,081.32	-86.75	-240.08	255.28	0.00	0.00	0.00
2,200.00	9.00	250.13	2,180.09	-92.07	-254.80	270.93	0.00	0.00	0.00
2,300.00	9.00	250.13	2,278.85	-97.39	-269.52	286.58	0.00	0.00	0.00
2,400.00	9.00	250.13	2,377.62	-102.70	-284.24	302.23	0.00	0.00	0.00
2,500.00	9.00	250.13	2,476.39	-108.02	-298.96	317.88	0.00	0.00	0.00
2,600.00	9.00	250.13	2,575.16	-113.34	-313.68	333.53	0.00	0.00	0.00
2,700.00	9.00	250.13	2,673.92	-118.66	-328.40	349.18	0.00	0.00	0.00
2,800.00	9.00	250.13	2,772.69	-123.98	-343.12	364.83	0.00	0.00	0.00
2,900.00	9.00	250.13	2,871.46	-129.30	-357.84	380.49	0.00	0.00	0.00
3,000.00	9.00	250.13	2,970.23	-134.62	-372.56	396.14	0.00	0.00	0.00
3,100.00	9.00	250.13	3,069.00	-139.94	-387.28	411.79	0.00	0.00	0.00
3,200.00	9.00	250.13	3,167.76	-145.25	-402.00	427.44	0.00	0.00	0.00
3,300.00	9.00	250.13	3,266.53	-150.57	-416.72	443.09	0.00	0.00	0.00
3,400.00	9.00	250.13	3,365.30	-155.89	-431.44	458.74	0.00	0.00	0.00
3,409.82	9.00	250.13	3,375.00	-156.41	-432.89	460.28	0.00	0.00	0.00
Parkman									
3,500.00	9.00	250.13	3,464.07	-161.21	-446.16	474.39	0.00	0.00	0.00
3,600.00	9.00	250.13	3,562.83	-166.53	-460.88	490.04	0.00	0.00	0.00
3,700.00	9.00	250.13	3,661.60	-171.85	-475.60	505.69	0.00	0.00	0.00
3,800.00	9.00	250.13	3,760.37	-177.17	-490.32	521.35	0.00	0.00	0.00
3,900.00	9.00	250.13	3,859.14	-182.48	-505.04	537.00	0.00	0.00	0.00
4,000.00	9.00	250.13	3,957.90	-187.80	-519.76	552.65	0.00	0.00	0.00
4,100.00	9.00	250.13	4,056.67	-193.12	-534.48	568.30	0.00	0.00	0.00
4,108.43	9.00	250.13	4,065.00	-193.57	-535.72	569.62	0.00	0.00	0.00
Sussex									

Database:	Southern Region	Local Co-ordinate Reference:	Well 19-44
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:	19-44	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	9.00	250.13	4,155.44	-198.44	-549.20	583.95	0.00	0.00	0.00
4,300.00	9.00	250.13	4,254.21	-203.76	-563.92	599.60	0.00	0.00	0.00
4,400.00	9.00	250.13	4,352.97	-209.08	-578.64	615.25	0.00	0.00	0.00
4,500.00	9.00	250.13	4,451.74	-214.40	-593.36	630.90	0.00	0.00	0.00
4,508.36	9.00	250.13	4,460.00	-214.84	-594.59	632.21	0.00	0.00	0.00
Shannon									
4,600.00	9.00	250.13	4,550.51	-219.71	-608.08	646.55	0.00	0.00	0.00
4,700.00	9.00	250.13	4,649.28	-225.03	-622.80	662.21	0.00	0.00	0.00
4,800.00	9.00	250.13	4,748.04	-230.35	-637.52	677.86	0.00	0.00	0.00
4,842.48	9.00	250.13	4,790.00	-232.61	-643.77	684.51	0.00	0.00	0.00
Greeley Sand									
4,900.00	9.00	250.13	4,846.81	-235.67	-652.24	693.51	0.00	0.00	0.00
5,000.00	9.00	250.13	4,945.58	-240.99	-666.96	709.16	0.00	0.00	0.00
5,100.00	9.00	250.13	5,044.35	-246.31	-681.68	724.81	0.00	0.00	0.00
5,200.00	9.00	250.13	5,143.12	-251.63	-696.40	740.46	0.00	0.00	0.00
5,300.00	9.00	250.13	5,241.88	-256.94	-711.12	756.11	0.00	0.00	0.00
5,400.00	9.00	250.13	5,340.65	-262.26	-725.84	771.76	0.00	0.00	0.00
5,500.00	9.00	250.13	5,439.42	-267.58	-740.56	787.42	0.00	0.00	0.00
5,600.00	9.00	250.13	5,538.19	-272.90	-755.28	803.07	0.00	0.00	0.00
5,667.82	9.00	250.13	5,605.17	-276.51	-765.26	813.68	0.00	0.00	0.00
Begin 1.50°/100' Drop									
5,700.00	8.52	250.13	5,636.97	-278.17	-769.87	818.58	1.50	-1.50	0.00
5,800.00	7.02	250.13	5,736.05	-282.77	-782.59	832.11	1.50	-1.50	0.00
5,900.00	5.52	250.13	5,835.45	-286.48	-792.86	843.03	1.50	-1.50	0.00
6,000.00	4.02	250.13	5,935.10	-289.31	-800.68	851.35	1.50	-1.50	0.00
6,100.00	2.52	250.13	6,034.94	-291.25	-806.05	857.06	1.50	-1.50	0.00
6,200.00	1.02	250.13	6,134.89	-292.30	-808.96	860.15	1.50	-1.50	0.00
6,268.12	0.00	0.01	6,203.00	-292.50	-809.53	860.75	1.50	-1.50	0.00
Begin Vertical Hold									
6,300.00	0.00	0.01	6,234.88	-292.50	-809.53	860.75	0.00	0.00	0.00
6,400.00	0.00	0.01	6,334.88	-292.50	-809.53	860.75	0.00	0.00	0.00
6,500.00	0.00	0.01	6,434.88	-292.50	-809.53	860.75	0.00	0.00	0.00
6,600.00	0.00	0.01	6,534.88	-292.50	-809.53	860.75	0.00	0.00	0.00
6,700.00	0.00	0.01	6,634.88	-292.50	-809.53	860.75	0.00	0.00	0.00
6,800.00	0.00	0.01	6,734.88	-292.50	-809.53	860.75	0.00	0.00	0.00
6,865.12	0.00	0.01	6,800.00	-292.50	-809.53	860.75	0.00	0.00	0.00
Niobrara									
6,900.00	0.00	0.01	6,834.88	-292.50	-809.53	860.75	0.00	0.00	0.00
7,000.00	0.00	0.01	6,934.88	-292.50	-809.53	860.75	0.00	0.00	0.00
7,100.00	0.00	0.01	7,034.88	-292.50	-809.53	860.75	0.00	0.00	0.00
7,165.12	0.00	0.01	7,100.00	-292.50	-809.53	860.75	0.00	0.00	0.00
Fort Hayes									
7,185.12	0.00	0.01	7,120.00	-292.50	-809.53	860.75	0.00	0.00	0.00
Codell									
7,200.00	0.00	0.01	7,134.88	-292.50	-809.53	860.75	0.00	0.00	0.00
7,300.00	0.00	0.01	7,234.88	-292.50	-809.53	860.75	0.00	0.00	0.00
7,345.12	0.00	0.01	7,280.00	-292.50	-809.53	860.75	0.00	0.00	0.00
PBHL									

Database:	Southern Region	Local Co-ordinate Reference:	Well 19-44
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:	19-44	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design 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
Vert. v1 - Everitt 19-44 - plan hits target center - Circle (radius 200.00)	0.00	0.01	6,203.00	-292.50	-809.53	1,413,411.78	3,158,958.99	40° 28' 0.5205 N	104° 55' 43.269 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
500.55	500.00	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,409.82	3,375.00	Parkman		0.00	
4,108.43	4,065.00	Sussex		0.00	
4,508.36	4,460.00	Shannon		0.00	
4,842.48	4,790.00	Greeley Sand		0.00	
6,865.12	6,800.00	Niobrara		0.00	
7,165.12	7,100.00	Fort Hayes		0.00	
7,185.12	7,120.00	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
600.00	598.70	-9.47	-26.22	Hold 8.00° Inc, 250.13° Azm
1,000.00	994.81	-28.39	-78.58	Begin 2.00°/100' Build
1,050.22	1,044.48	-30.92	-85.56	Begin 9.00° Tangent
5,667.82	5,605.17	-276.51	-765.26	Begin 1.50°/100' Drop
6,268.12	6,203.00	-292.50	-809.53	Begin Vertical Hold
7,345.12	7,280.00	-292.50	-809.53	PBHL