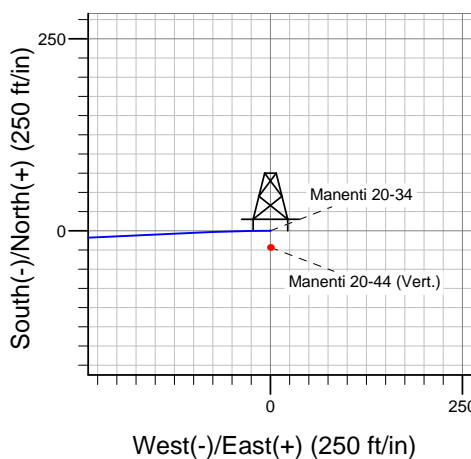
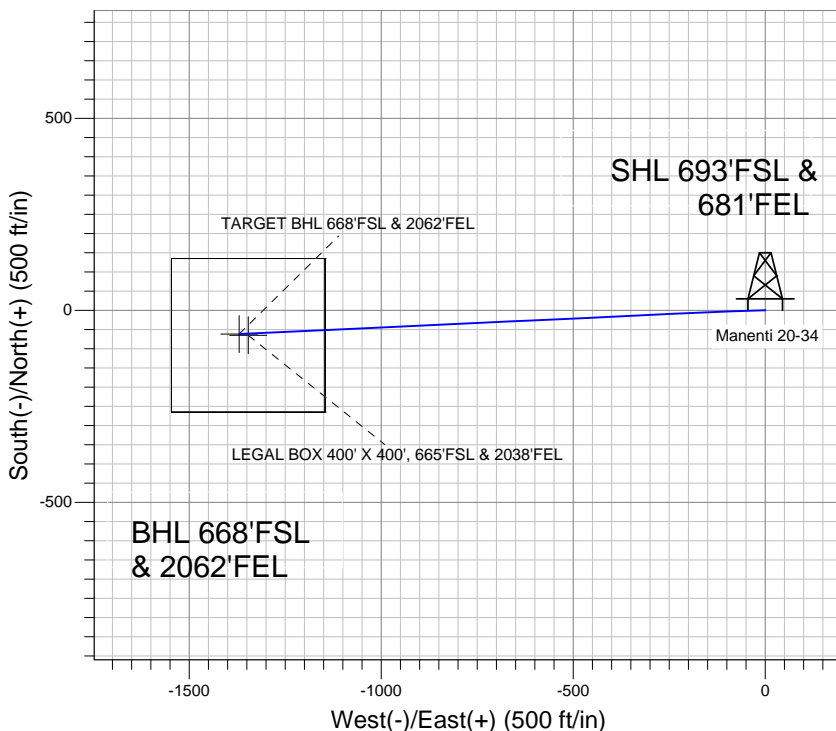
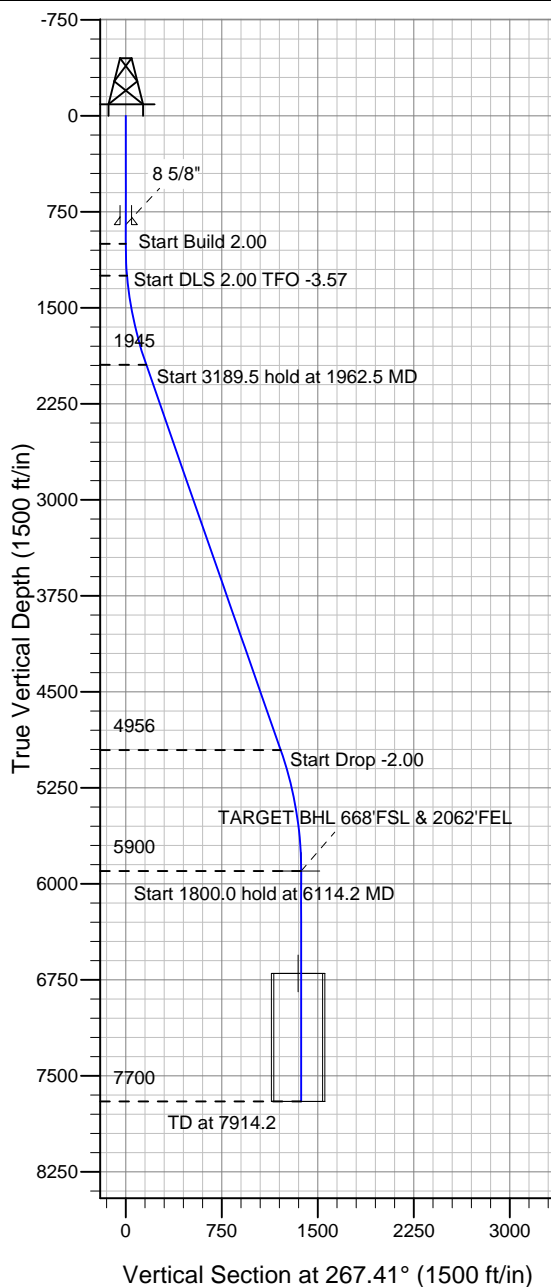


Well Name: Manenti 20-34

Surface Location: Manenti 20-34 Pad Sec.20-T7N-R66W
 North American Datum 1983, US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4939.0
 +N/-S 0.0 +E/-W 0.0 Northing 1445824.27 Easting 3195884.76 Latitude 40.555050 Longitude -104.795050 Slot
 Original Well EleWELL @ 4952.0ft (Original Well Elev)

Great Western



Manenti 20-34 Pad Sec.20-T7N-R66W
 Manenti 20-34
 Plan #1 (9-30-11)
 12:48, October 03 2011



Azimuths to True North
 Magnetic North: 8.86°
 Magnetic Field
 Strength: 53177.5snT
 Dip Angle: 67.16°
 Date: 9/30/2011
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 668'FSL & 2062'FEL	5900.0	-61.9	-1370.0	40.554880	-104.799980	Point
LEGAL BOX 400' X 400', 665'FSL & 2038'FEL	6700.0	-64.9	-1346.0	40.554872	-104.799894	Rectangle (Sides: L400.0 W400.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1250.0	5.00	270.00	1249.7	0.0	-10.9	2.00	270.00	10.9	
4	1962.5	19.24	267.33	1944.5	-5.5	-160.0	2.00	-3.57	160.1	
5	5152.0	19.24	267.33	4955.8	-54.4	-1210.1	0.00	0.00	1211.3	
6	6114.2	0.00	0.00	5900.0	-61.9	-1370.0	2.00	180.00	1371.4	TARGET BHL 668'FSL & 2062'FEL
7	7914.2	0.00	0.00	7700.0	-61.9	-1370.0	0.00	0.00	1371.4	



Directional

Great Western

SEC.20-T7N-R66W

Manenti 20-34 Pad Sec.20-T7N-R66W

Manenti 20-34

Wellbore #1

Plan: Plan #1 (9-30-11)

Standard Planning Report

03 October, 2011

Database:	Landmark	Local Co-ordinate Reference:	Well Manenti 20-34
Company:	Great Western	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Project:	SEC.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	North Reference:	True
Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-30-11)		

Project	SEC.20-T7N-R66W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site						Manenti 20-34 Pad Sec.20-T7N-R66W											
Site Position:						Northing:			1,445,824.28 ft			Latitude:			40.555050		
From:			Lat/Long			Easting:			3,195,884.76 ft			Longitude:			-104.795050		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.46 °		

Well	Manenti 20-34					
Well Position	+N/-S	0.0 ft	Northing:	1,445,824.27 ft	Latitude:	40.555050
	+E/-W	0.0 ft	Easting:	3,195,884.76 ft	Longitude:	-104.795050
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,939.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/30/2011	8.86	67.16	53,177

Design	Plan #1 (9-30-11)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	267.41

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,250.0	5.00	270.00	1,249.7	0.0	-10.9	2.00	2.00	0.00	270.00	
1,962.5	19.24	267.33	1,944.5	-5.5	-160.0	2.00	2.00	-0.37	-3.57	
5,152.0	19.24	267.33	4,955.8	-54.4	-1,210.1	0.00	0.00	0.00	0.00	
6,114.2	0.00	0.00	5,900.0	-61.9	-1,370.0	2.00	-2.00	0.00	180.00	TARGET BHL 668'
7,914.2	0.00	0.00	7,700.0	-61.9	-1,370.0	0.00	0.00	0.00	0.00	

Database: Landmark
Company: Great Western
Project: SEC.20-T7N-R66W
Site: Manenti 20-34 Pad Sec.20-T7N-R66W
Well: Manenti 20-34
Wellbore: Wellbore #1
Design: Plan #1 (9-30-11)

Local Co-ordinate Reference: Well Manenti 20-34
TVD Reference: WELL @ 4952.0ft (Original Well Elev)
MD Reference: WELL @ 4952.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
850.0	0.00	0.00	850.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.80	270.00	1,040.0	0.0	-0.3	0.3	2.00	2.00	0.00
1,080.0	1.60	270.00	1,080.0	0.0	-1.1	1.1	2.00	2.00	0.00
1,120.0	2.40	270.00	1,120.0	0.0	-2.5	2.5	2.00	2.00	0.00
1,160.0	3.20	270.00	1,159.9	0.0	-4.5	4.5	2.00	2.00	0.00
1,200.0	4.00	270.00	1,199.8	0.0	-7.0	7.0	2.00	2.00	0.00
1,240.0	4.80	270.00	1,239.7	0.0	-10.0	10.0	2.00	2.00	0.00
1,250.0	5.00	270.00	1,249.7	0.0	-10.9	10.9	2.00	2.00	0.00
1,280.0	5.60	269.62	1,279.6	0.0	-13.7	13.7	2.00	2.00	-1.28
1,320.0	6.40	269.22	1,319.3	-0.1	-17.9	17.8	2.00	2.00	-1.00
1,360.0	7.20	268.91	1,359.1	-0.1	-22.6	22.6	2.00	2.00	-0.78
1,400.0	8.00	268.66	1,398.7	-0.2	-27.9	27.9	2.00	2.00	-0.62
1,440.0	8.80	268.45	1,438.3	-0.4	-33.7	33.7	2.00	2.00	-0.51
1,480.0	9.60	268.28	1,477.8	-0.6	-40.1	40.1	2.00	2.00	-0.43
1,520.0	10.39	268.14	1,517.2	-0.8	-47.0	47.0	2.00	2.00	-0.36
1,560.0	11.19	268.01	1,556.4	-1.0	-54.5	54.5	2.00	2.00	-0.31
1,600.0	11.99	267.91	1,595.6	-1.3	-62.6	62.6	2.00	2.00	-0.27
1,640.0	12.79	267.81	1,634.7	-1.7	-71.1	71.1	2.00	2.00	-0.24
1,680.0	13.59	267.73	1,673.6	-2.0	-80.3	80.3	2.00	2.00	-0.21
1,720.0	14.39	267.65	1,712.5	-2.4	-89.9	89.9	2.00	2.00	-0.19
1,760.0	15.19	267.59	1,751.1	-2.8	-100.1	100.2	2.00	2.00	-0.17
1,800.0	15.99	267.53	1,789.7	-3.3	-110.9	110.9	2.00	2.00	-0.15
1,840.0	16.79	267.47	1,828.0	-3.8	-122.2	122.2	2.00	2.00	-0.14
1,880.0	17.59	267.42	1,866.2	-4.3	-134.0	134.0	2.00	2.00	-0.12
1,920.0	18.39	267.38	1,904.3	-4.9	-146.3	146.4	2.00	2.00	-0.11
1,960.0	19.19	267.33	1,942.1	-5.5	-159.2	159.3	2.00	2.00	-0.10
1,962.5	19.24	267.33	1,944.5	-5.5	-160.0	160.1	2.00	2.00	-0.10

Database:	Landmark	Local Co-ordinate Reference:	Well Manenti 20-34
Company:	Great Western	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Project:	SEC.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	North Reference:	True
Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-30-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,000.0	19.24	267.33	1,979.9	-6.1	-172.3	172.4	0.00	0.00	0.00
2,040.0	19.24	267.33	2,017.7	-6.7	-185.5	185.6	0.00	0.00	0.00
2,080.0	19.24	267.33	2,055.4	-7.3	-198.7	198.8	0.00	0.00	0.00
2,120.0	19.24	267.33	2,093.2	-7.9	-211.9	212.0	0.00	0.00	0.00
2,160.0	19.24	267.33	2,131.0	-8.5	-225.0	225.2	0.00	0.00	0.00
2,200.0	19.24	267.33	2,168.7	-9.1	-238.2	238.4	0.00	0.00	0.00
2,240.0	19.24	267.33	2,206.5	-9.8	-251.4	251.5	0.00	0.00	0.00
2,280.0	19.24	267.33	2,244.3	-10.4	-264.5	264.7	0.00	0.00	0.00
2,320.0	19.24	267.33	2,282.0	-11.0	-277.7	277.9	0.00	0.00	0.00
2,360.0	19.24	267.33	2,319.8	-11.6	-290.9	291.1	0.00	0.00	0.00
2,400.0	19.24	267.33	2,357.6	-12.2	-304.0	304.3	0.00	0.00	0.00
2,440.0	19.24	267.33	2,395.3	-12.8	-317.2	317.5	0.00	0.00	0.00
2,480.0	19.24	267.33	2,433.1	-13.4	-330.4	330.6	0.00	0.00	0.00
2,520.0	19.24	267.33	2,470.9	-14.0	-343.5	343.8	0.00	0.00	0.00
2,560.0	19.24	267.33	2,508.6	-14.7	-356.7	357.0	0.00	0.00	0.00
2,600.0	19.24	267.33	2,546.4	-15.3	-369.9	370.2	0.00	0.00	0.00
2,640.0	19.24	267.33	2,584.2	-15.9	-383.1	383.4	0.00	0.00	0.00
2,680.0	19.24	267.33	2,621.9	-16.5	-396.2	396.6	0.00	0.00	0.00
2,720.0	19.24	267.33	2,659.7	-17.1	-409.4	409.7	0.00	0.00	0.00
2,760.0	19.24	267.33	2,697.5	-17.7	-422.6	422.9	0.00	0.00	0.00
2,800.0	19.24	267.33	2,735.2	-18.3	-435.7	436.1	0.00	0.00	0.00
2,840.0	19.24	267.33	2,773.0	-19.0	-448.9	449.3	0.00	0.00	0.00
2,880.0	19.24	267.33	2,810.7	-19.6	-462.1	462.5	0.00	0.00	0.00
2,920.0	19.24	267.33	2,848.5	-20.2	-475.2	475.7	0.00	0.00	0.00
2,960.0	19.24	267.33	2,886.3	-20.8	-488.4	488.8	0.00	0.00	0.00
3,000.0	19.24	267.33	2,924.0	-21.4	-501.6	502.0	0.00	0.00	0.00
3,040.0	19.24	267.33	2,961.8	-22.0	-514.7	515.2	0.00	0.00	0.00
3,080.0	19.24	267.33	2,999.6	-22.6	-527.9	528.4	0.00	0.00	0.00
3,120.0	19.24	267.33	3,037.3	-23.3	-541.1	541.6	0.00	0.00	0.00
3,160.0	19.24	267.33	3,075.1	-23.9	-554.2	554.8	0.00	0.00	0.00
3,200.0	19.24	267.33	3,112.9	-24.5	-567.4	567.9	0.00	0.00	0.00
3,240.0	19.24	267.33	3,150.6	-25.1	-580.6	581.1	0.00	0.00	0.00
3,280.0	19.24	267.33	3,188.4	-25.7	-593.8	594.3	0.00	0.00	0.00
3,320.0	19.24	267.33	3,226.2	-26.3	-606.9	607.5	0.00	0.00	0.00
3,360.0	19.24	267.33	3,263.9	-26.9	-620.1	620.7	0.00	0.00	0.00
3,400.0	19.24	267.33	3,301.7	-27.6	-633.3	633.9	0.00	0.00	0.00
3,440.0	19.24	267.33	3,339.5	-28.2	-646.4	647.0	0.00	0.00	0.00
3,480.0	19.24	267.33	3,377.2	-28.8	-659.6	660.2	0.00	0.00	0.00
3,520.0	19.24	267.33	3,415.0	-29.4	-672.8	673.4	0.00	0.00	0.00
3,560.0	19.24	267.33	3,452.8	-30.0	-685.9	686.6	0.00	0.00	0.00
3,600.0	19.24	267.33	3,490.5	-30.6	-699.1	699.8	0.00	0.00	0.00
3,640.0	19.24	267.33	3,528.3	-31.2	-712.3	713.0	0.00	0.00	0.00
3,680.0	19.24	267.33	3,566.0	-31.8	-725.4	726.1	0.00	0.00	0.00
3,720.0	19.24	267.33	3,603.8	-32.5	-738.6	739.3	0.00	0.00	0.00
3,760.0	19.24	267.33	3,641.6	-33.1	-751.8	752.5	0.00	0.00	0.00
3,800.0	19.24	267.33	3,679.3	-33.7	-765.0	765.7	0.00	0.00	0.00
3,840.0	19.24	267.33	3,717.1	-34.3	-778.1	778.9	0.00	0.00	0.00
3,880.0	19.24	267.33	3,754.9	-34.9	-791.3	792.1	0.00	0.00	0.00
3,920.0	19.24	267.33	3,792.6	-35.5	-804.5	805.2	0.00	0.00	0.00
3,960.0	19.24	267.33	3,830.4	-36.1	-817.6	818.4	0.00	0.00	0.00
4,000.0	19.24	267.33	3,868.2	-36.8	-830.8	831.6	0.00	0.00	0.00
4,040.0	19.24	267.33	3,905.9	-37.4	-844.0	844.8	0.00	0.00	0.00
4,080.0	19.24	267.33	3,943.7	-38.0	-857.1	858.0	0.00	0.00	0.00
4,120.0	19.24	267.33	3,981.5	-38.6	-870.3	871.2	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Manenti 20-34
Company:	Great Western	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Project:	SEC.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	North Reference:	True
Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-30-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,160.0	19.24	267.33	4,019.2	-39.2	-883.5	884.3	0.00	0.00	0.00
4,200.0	19.24	267.33	4,057.0	-39.8	-896.6	897.5	0.00	0.00	0.00
4,240.0	19.24	267.33	4,094.8	-40.4	-909.8	910.7	0.00	0.00	0.00
4,280.0	19.24	267.33	4,132.5	-41.1	-923.0	923.9	0.00	0.00	0.00
4,320.0	19.24	267.33	4,170.3	-41.7	-936.2	937.1	0.00	0.00	0.00
4,360.0	19.24	267.33	4,208.1	-42.3	-949.3	950.3	0.00	0.00	0.00
4,400.0	19.24	267.33	4,245.8	-42.9	-962.5	963.4	0.00	0.00	0.00
4,440.0	19.24	267.33	4,283.6	-43.5	-975.7	976.6	0.00	0.00	0.00
4,480.0	19.24	267.33	4,321.3	-44.1	-988.8	989.8	0.00	0.00	0.00
4,520.0	19.24	267.33	4,359.1	-44.7	-1,002.0	1,003.0	0.00	0.00	0.00
4,560.0	19.24	267.33	4,396.9	-45.4	-1,015.2	1,016.2	0.00	0.00	0.00
4,600.0	19.24	267.33	4,434.6	-46.0	-1,028.3	1,029.4	0.00	0.00	0.00
4,640.0	19.24	267.33	4,472.4	-46.6	-1,041.5	1,042.5	0.00	0.00	0.00
4,680.0	19.24	267.33	4,510.2	-47.2	-1,054.7	1,055.7	0.00	0.00	0.00
4,720.0	19.24	267.33	4,547.9	-47.8	-1,067.8	1,068.9	0.00	0.00	0.00
4,760.0	19.24	267.33	4,585.7	-48.4	-1,081.0	1,082.1	0.00	0.00	0.00
4,800.0	19.24	267.33	4,623.5	-49.0	-1,094.2	1,095.3	0.00	0.00	0.00
4,840.0	19.24	267.33	4,661.2	-49.6	-1,107.3	1,108.5	0.00	0.00	0.00
4,880.0	19.24	267.33	4,699.0	-50.3	-1,120.5	1,121.6	0.00	0.00	0.00
4,920.0	19.24	267.33	4,736.8	-50.9	-1,133.7	1,134.8	0.00	0.00	0.00
4,960.0	19.24	267.33	4,774.5	-51.5	-1,146.9	1,148.0	0.00	0.00	0.00
5,000.0	19.24	267.33	4,812.3	-52.1	-1,160.0	1,161.2	0.00	0.00	0.00
5,040.0	19.24	267.33	4,850.1	-52.7	-1,173.2	1,174.4	0.00	0.00	0.00
5,080.0	19.24	267.33	4,887.8	-53.3	-1,186.4	1,187.6	0.00	0.00	0.00
5,120.0	19.24	267.33	4,925.6	-53.9	-1,199.5	1,200.7	0.00	0.00	0.00
5,152.0	19.24	267.33	4,955.8	-54.4	-1,210.1	1,211.3	0.00	0.00	0.00
5,160.0	19.08	267.33	4,963.4	-54.6	-1,212.7	1,213.9	2.00	-2.00	0.00
5,200.0	18.28	267.33	5,001.2	-55.2	-1,225.5	1,226.7	2.00	-2.00	0.00
5,240.0	17.48	267.33	5,039.3	-55.7	-1,237.8	1,239.0	2.00	-2.00	0.00
5,280.0	16.68	267.33	5,077.6	-56.3	-1,249.5	1,250.8	2.00	-2.00	0.00
5,320.0	15.88	267.33	5,115.9	-56.8	-1,260.7	1,262.0	2.00	-2.00	0.00
5,360.0	15.08	267.33	5,154.5	-57.3	-1,271.4	1,272.7	2.00	-2.00	0.00
5,400.0	14.28	267.33	5,193.2	-57.8	-1,281.5	1,282.8	2.00	-2.00	0.00
5,440.0	13.48	267.33	5,232.0	-58.2	-1,291.1	1,292.4	2.00	-2.00	0.00
5,480.0	12.68	267.33	5,271.0	-58.6	-1,300.1	1,301.4	2.00	-2.00	0.00
5,520.0	11.88	267.33	5,310.1	-59.0	-1,308.6	1,310.0	2.00	-2.00	0.00
5,560.0	11.08	267.33	5,349.3	-59.4	-1,316.6	1,317.9	2.00	-2.00	0.00
5,600.0	10.28	267.33	5,388.6	-59.7	-1,324.0	1,325.3	2.00	-2.00	0.00
5,640.0	9.48	267.33	5,428.0	-60.1	-1,330.8	1,332.2	2.00	-2.00	0.00
5,680.0	8.68	267.33	5,467.5	-60.4	-1,337.2	1,338.5	2.00	-2.00	0.00
5,720.0	7.88	267.33	5,507.1	-60.6	-1,342.9	1,344.3	2.00	-2.00	0.00
5,760.0	7.08	267.33	5,546.7	-60.9	-1,348.1	1,349.5	2.00	-2.00	0.00
5,800.0	6.28	267.33	5,586.4	-61.1	-1,352.8	1,354.1	2.00	-2.00	0.00
5,840.0	5.48	267.33	5,626.2	-61.3	-1,356.9	1,358.2	2.00	-2.00	0.00
5,880.0	4.68	267.33	5,666.1	-61.4	-1,360.4	1,361.8	2.00	-2.00	0.00
5,920.0	3.88	267.33	5,706.0	-61.6	-1,363.4	1,364.8	2.00	-2.00	0.00
5,960.0	3.08	267.33	5,745.9	-61.7	-1,365.8	1,367.2	2.00	-2.00	0.00
6,000.0	2.28	267.33	5,785.8	-61.8	-1,367.7	1,369.1	2.00	-2.00	0.00
6,040.0	1.48	267.33	5,825.8	-61.8	-1,369.0	1,370.4	2.00	-2.00	0.00
6,080.0	0.68	267.33	5,865.8	-61.9	-1,369.8	1,371.2	2.00	-2.00	0.00
6,114.2	0.00	0.00	5,900.0	-61.9	-1,370.0	1,371.4	2.00	-2.00	0.00
TARGET BHL 668'FSL & 2062'FEL									
6,120.0	0.00	0.00	5,905.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,160.0	0.00	0.00	5,945.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Manenti 20-34
Company:	Great Western	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Project:	SEC.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	North Reference:	True
Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-30-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,200.0	0.00	0.00	5,985.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,240.0	0.00	0.00	6,025.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,280.0	0.00	0.00	6,065.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,320.0	0.00	0.00	6,105.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,360.0	0.00	0.00	6,145.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,400.0	0.00	0.00	6,185.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,440.0	0.00	0.00	6,225.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,480.0	0.00	0.00	6,265.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,520.0	0.00	0.00	6,305.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,560.0	0.00	0.00	6,345.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,600.0	0.00	0.00	6,385.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,640.0	0.00	0.00	6,425.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,680.0	0.00	0.00	6,465.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,720.0	0.00	0.00	6,505.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,760.0	0.00	0.00	6,545.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,800.0	0.00	0.00	6,585.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,840.0	0.00	0.00	6,625.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,880.0	0.00	0.00	6,665.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,914.2	0.00	0.00	6,700.0	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
LEGAL BOX 400' X 400', 665'FSL & 2038'FEL									
6,920.0	0.00	0.00	6,705.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
6,960.0	0.00	0.00	6,745.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,000.0	0.00	0.00	6,785.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,040.0	0.00	0.00	6,825.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,080.0	0.00	0.00	6,865.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,120.0	0.00	0.00	6,905.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,160.0	0.00	0.00	6,945.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,200.0	0.00	0.00	6,985.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,240.0	0.00	0.00	7,025.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,280.0	0.00	0.00	7,065.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,320.0	0.00	0.00	7,105.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,360.0	0.00	0.00	7,145.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,400.0	0.00	0.00	7,185.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,440.0	0.00	0.00	7,225.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,480.0	0.00	0.00	7,265.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,520.0	0.00	0.00	7,305.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,560.0	0.00	0.00	7,345.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,600.0	0.00	0.00	7,385.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,640.0	0.00	0.00	7,425.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,680.0	0.00	0.00	7,465.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,720.0	0.00	0.00	7,505.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,760.0	0.00	0.00	7,545.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,800.0	0.00	0.00	7,585.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,840.0	0.00	0.00	7,625.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,880.0	0.00	0.00	7,665.8	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00
7,914.2	0.00	0.00	7,700.0	-61.9	-1,370.0	1,371.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Manenti 20-34
Company:	Great Western	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Project:	SEC.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	North Reference:	True
Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-30-11)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
TARGET BHL 668'FS	0.00	0.00	5,900.0	-61.9	-1,370.0	1,445,751.50	3,194,515.38	40.554880	-104.799980
- plan hits target center									
- Point									
LEGAL BOX 400' X 400'	0.00	0.00	6,700.0	-64.9	-1,346.0	1,445,748.68	3,194,539.36	40.554872	-104.799894
- plan misses target center by 24.1ft at 6914.2ft MD (6700.0 TVD, -61.9 N, -1370.0 E)									
- Rectangle (sides W400.0 H400.0 D1,000.0)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
850.0	850.0	8 5/8"	8-5/8	12-1/4	



Directional

Great Western

SEC.20-T7N-R66W

Manenti 20-34 Pad Sec.20-T7N-R66W

Manenti 20-34

Wellbore #1

Plan #1 (9-30-11)

Anticollision Report

03 October, 2011

Company:	Great Western	Local Co-ordinate Reference:	Well Manenti 20-34
Project:	SEC.20-T7N-R66W	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Reference Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (9-30-11)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (9-30-11)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 10/3/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,914.2	Plan #1 (9-30-11) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Manenti 20-34 Pad Sec.20-T7N-R66W						
Manenti 20-44 (Vert.) - Wellbore #1 - Design #1	1,000.0	1,000.0	21.9	17.6	5.120	CC
Manenti 20-44 (Vert.) - Wellbore #1 - Design #1	1,100.0	1,100.0	21.9	17.2	4.659	ES
Manenti 20-44 (Vert.) - Wellbore #1 - Design #1	1,200.0	1,199.8	23.0	17.8	4.468	SF
Manenti 20-54 (Vert.) - Wellbore #1 - Design #1	2,414.2	2,368.9	472.0	458.7	35.567	CC, ES
Manenti 20-54 (Vert.) - Wellbore #1 - Design #1	3,300.0	3,205.3	555.0	535.2	28.079	SF

Offset Design Manenti 20-34 Pad Sec.20-T7N-R66W - Manenti 20-44 (Vert.) - Wellbore #1 - Design #1													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-21.9	0.0	21.9					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-21.9	0.0	21.9	21.6	0.22	97.272		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-21.9	0.0	21.9	21.2	0.67	32.424		
300.0	300.0	300.0	300.0	0.6	0.6	-180.00	-21.9	0.0	21.9	20.7	1.12	19.454		
400.0	400.0	400.0	400.0	0.8	0.8	-180.00	-21.9	0.0	21.9	20.3	1.57	13.896		
500.0	500.0	500.0	500.0	1.0	1.0	-180.00	-21.9	0.0	21.9	19.8	2.02	10.808		
600.0	600.0	600.0	600.0	1.2	1.2	-180.00	-21.9	0.0	21.9	19.4	2.47	8.843		
700.0	700.0	700.0	700.0	1.5	1.5	-180.00	-21.9	0.0	21.9	18.9	2.92	7.482		
800.0	800.0	800.0	800.0	1.7	1.7	-180.00	-21.9	0.0	21.9	18.5	3.37	6.485		
900.0	900.0	900.0	900.0	1.9	1.9	-180.00	-21.9	0.0	21.9	18.0	3.82	5.722		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-180.00	-21.9	0.0	21.9	17.6	4.27	5.120	CC	
1,027.7	1,027.7	1,027.7	1,027.7	2.2	2.2	-90.35	-21.9	0.0	21.9	17.5	4.39	4.979		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-94.56	-21.9	0.0	21.9	17.2	4.71	4.659	ES	
1,200.0	1,199.8	1,199.8	1,199.8	2.6	2.6	-107.66	-21.9	0.0	23.0	17.8	5.14	4.468	SF	
1,250.0	1,249.7	1,249.7	1,249.7	2.7	2.7	-116.41	-21.9	0.0	24.4	19.1	5.35	4.563		
1,300.0	1,299.5	1,299.5	1,299.5	2.8	2.8	-124.96	-21.9	0.0	26.9	21.3	5.57	4.828		
1,400.0	1,398.7	1,398.7	1,398.7	3.0	3.0	-140.58	-21.9	0.0	35.3	29.3	6.00	5.883		
1,500.0	1,497.5	1,497.5	1,497.5	3.3	3.3	-151.88	-21.9	0.0	48.4	42.0	6.41	7.545		
1,600.0	1,595.6	1,595.6	1,595.6	3.6	3.5	-159.32	-21.9	0.0	65.8	59.0	6.82	9.649		
1,700.0	1,693.1	1,693.1	1,693.1	4.0	3.7	-164.22	-21.9	0.0	87.3	80.0	7.23	12.070		
1,800.0	1,789.7	1,789.7	1,789.7	4.4	3.9	-167.54	-21.9	0.0	112.4	104.8	7.63	14.726		
1,900.0	1,885.3	1,885.3	1,885.3	4.9	4.1	-169.88	-21.9	0.0	141.1	133.1	8.04	17.563		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Great Western	Local Co-ordinate Reference:	Well Manenti 20-34
Project:	SEC.20-T7N-R66W	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Reference Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (9-30-11)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
1,962.5	1,944.5	1,944.5	1,944.5	5.2	4.3	-171.00	-21.9	0.0	160.8	152.6	8.29	19.413		
2,000.0	1,979.9	1,979.9	1,979.9	5.5	4.3	-171.63	-21.9	0.0	173.1	164.6	8.46	20.461		
2,100.0	2,074.3	2,074.3	2,074.3	6.1	4.5	-172.97	-21.9	0.0	205.8	196.8	8.93	23.051		
2,200.0	2,168.7	2,168.7	2,168.7	6.7	4.8	-173.94	-21.9	0.0	238.5	229.1	9.40	25.370		
2,300.0	2,263.2	2,263.2	2,263.2	7.3	5.0	-174.67	-21.9	0.0	271.3	261.5	9.88	27.454		
2,400.0	2,357.6	2,357.6	2,357.6	8.0	5.2	-175.25	-21.9	0.0	304.2	293.8	10.37	29.333		
2,500.0	2,452.0	2,452.0	2,452.0	8.6	5.4	-175.71	-21.9	0.0	337.1	326.2	10.86	31.033		
2,600.0	2,546.4	2,546.4	2,546.4	9.3	5.6	-176.09	-21.9	0.0	369.9	358.6	11.36	32.577		
2,700.0	2,640.8	2,640.8	2,640.8	10.0	5.8	-176.41	-21.9	0.0	402.8	391.0	11.85	33.984		
2,800.0	2,735.2	2,735.2	2,735.2	10.6	6.0	-176.68	-21.9	0.0	435.7	423.4	12.35	35.270		
2,900.0	2,829.6	2,829.6	2,829.6	11.3	6.2	-176.92	-21.9	0.0	468.7	455.8	12.86	36.450		
3,000.0	2,924.0	2,924.0	2,924.0	12.0	6.5	-177.12	-21.9	0.0	501.6	488.2	13.36	37.536		
3,100.0	3,018.5	3,018.5	3,018.5	12.7	6.7	-177.30	-21.9	0.0	534.5	520.6	13.87	38.538		
3,200.0	3,112.9	3,112.9	3,112.9	13.4	6.9	-177.45	-21.9	0.0	567.4	553.0	14.38	39.465		
3,300.0	3,207.3	3,207.3	3,207.3	14.1	7.1	-177.59	-21.9	0.0	600.4	585.5	14.89	40.325		
3,400.0	3,301.7	3,301.7	3,301.7	14.8	7.3	-177.72	-21.9	0.0	633.3	617.9	15.40	41.124		
3,500.0	3,396.1	3,396.1	3,396.1	15.5	7.5	-177.83	-21.9	0.0	666.2	650.3	15.91	41.869		
3,600.0	3,490.5	3,490.5	3,490.5	16.2	7.7	-177.93	-21.9	0.0	699.2	682.7	16.43	42.565		
3,700.0	3,584.9	3,584.9	3,584.9	16.9	7.9	-178.03	-21.9	0.0	732.1	715.2	16.94	43.217		
3,800.0	3,679.3	3,679.3	3,679.3	17.6	8.2	-178.11	-21.9	0.0	765.0	747.6	17.46	43.827		
3,900.0	3,773.8	3,773.8	3,773.8	18.3	8.4	-178.19	-21.9	0.0	798.0	780.0	17.97	44.401		
4,000.0	3,868.2	3,868.2	3,868.2	19.0	8.6	-178.26	-21.9	0.0	830.9	812.4	18.49	44.941		
4,100.0	3,962.6	3,962.6	3,962.6	19.7	8.8	-178.33	-21.9	0.0	863.9	844.9	19.01	45.450		
4,200.0	4,057.0	4,057.0	4,057.0	20.4	9.0	-178.39	-21.9	0.0	896.8	877.3	19.53	45.930		
4,300.0	4,151.4	4,151.4	4,151.4	21.1	9.2	-178.45	-21.9	0.0	929.8	909.7	20.04	46.384		
4,400.0	4,245.8	4,245.8	4,245.8	21.8	9.4	-178.50	-21.9	0.0	962.7	942.2	20.56	46.814		
4,500.0	4,340.2	4,340.2	4,340.2	22.5	9.6	-178.55	-21.9	0.0	995.7	974.6	21.08	47.222		
4,600.0	4,434.6	4,434.6	4,434.6	23.2	9.9	-178.60	-21.9	0.0	1,028.6	1,007.0	21.61	47.609		
4,700.0	4,529.1	4,529.1	4,529.1	23.9	10.1	-178.64	-21.9	0.0	1,061.6	1,039.4	22.13	47.976		
4,800.0	4,623.5	4,623.5	4,623.5	24.6	10.3	-178.68	-21.9	0.0	1,094.5	1,071.9	22.65	48.326		
4,900.0	4,717.9	4,717.9	4,717.9	25.3	10.5	-178.72	-21.9	0.0	1,127.5	1,104.3	23.17	48.659		
5,000.0	4,812.3	4,812.3	4,812.3	26.0	10.7	-178.76	-21.9	0.0	1,160.4	1,136.7	23.69	48.977		
5,100.0	4,906.7	4,906.7	4,906.7	26.7	10.9	-178.79	-21.9	0.0	1,193.4	1,169.2	24.22	49.280		
5,152.0	4,955.8	4,955.8	4,955.8	27.1	11.0	-178.81	-21.9	0.0	1,210.5	1,186.0	24.49	49.432		
5,200.0	5,001.2	5,001.2	5,001.2	27.4	11.1	-178.83	-21.9	0.0	1,225.9	1,201.2	24.79	49.455		
5,300.0	5,096.7	5,096.7	5,096.7	27.8	11.3	-178.87	-21.9	0.0	1,255.6	1,230.3	25.37	49.486		
5,400.0	5,193.2	5,193.2	5,193.2	28.3	11.6	-178.90	-21.9	0.0	1,282.0	1,256.1	25.92	49.452		
5,500.0	5,290.5	5,290.5	5,290.5	28.7	11.8	-178.93	-21.9	0.0	1,305.0	1,278.5	26.44	49.359		
5,600.0	5,388.6	5,388.6	5,388.6	29.0	12.0	-178.95	-21.9	0.0	1,324.5	1,297.6	26.91	49.212		
5,700.0	5,487.3	5,487.3	5,487.3	29.3	12.2	-178.97	-21.9	0.0	1,340.7	1,313.3	27.35	49.015		
5,800.0	5,586.4	5,586.4	5,586.4	29.6	12.4	-178.99	-21.9	0.0	1,353.3	1,325.6	27.75	48.770		
5,900.0	5,686.0	5,686.0	5,686.0	29.8	12.7	-179.00	-21.9	0.0	1,362.5	1,334.4	28.11	48.479		
6,000.0	5,785.8	5,785.8	5,785.8	29.9	12.9	-179.00	-21.9	0.0	1,368.3	1,339.9	28.42	48.144		
6,100.0	5,885.8	5,885.8	5,885.8	30.0	13.1	-179.00	-21.9	0.0	1,370.5	1,341.8	28.69	47.766		
6,114.2	5,900.0	5,900.0	5,900.0	30.0	13.1	88.33	-21.9	0.0	1,370.5	1,341.8	28.73	47.708		
6,200.0	5,985.8	5,985.8	5,985.8	30.1	13.3	88.33	-21.9	0.0	1,370.5	1,341.5	29.06	47.166		
6,300.0	6,085.8	6,085.8	6,085.8	30.2	13.6	88.33	-21.9	0.0	1,370.5	1,341.1	29.45	46.543		
6,400.0	6,185.8	6,185.8	6,185.8	30.3	13.8	88.33	-21.9	0.0	1,370.5	1,340.7	29.84	45.934		
6,500.0	6,285.8	6,285.8	6,285.8	30.4	14.0	88.33	-21.9	0.0	1,370.5	1,340.3	30.23	45.338		
6,600.0	6,385.8	6,385.8	6,385.8	30.5	14.2	88.33	-21.9	0.0	1,370.5	1,339.9	30.62	44.756		
6,700.0	6,485.8	6,485.8	6,485.8	30.6	14.5	88.33	-21.9	0.0	1,370.5	1,339.5	31.02	44.186		
6,800.0	6,585.8	6,585.8	6,585.8	30.7	14.7	88.33	-21.9	0.0	1,370.5	1,339.1	31.41	43.629		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Great Western	Local Co-ordinate Reference:	Well Manenti 20-34
Project:	SEC.20-T7N-R66W	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Reference Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (9-30-11)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Manenti 20-34 Pad Sec.20-T7N-R66W - Manenti 20-44 (Vert.) - Wellbore #1 - Design #1												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,900.0	6,685.8	6,685.8	6,685.8	30.8	14.9	88.33	-21.9	0.0	1,370.5	1,338.7	31.81	43.084	
7,000.0	6,785.8	6,785.8	6,785.8	30.9	15.1	88.33	-21.9	0.0	1,370.5	1,338.3	32.21	42.551	
7,100.0	6,885.8	6,885.8	6,885.8	31.0	15.4	88.33	-21.9	0.0	1,370.5	1,337.9	32.61	42.030	
7,200.0	6,985.8	6,985.8	6,985.8	31.1	15.6	88.33	-21.9	0.0	1,370.5	1,337.5	33.01	41.520	
7,300.0	7,085.8	7,085.8	7,085.8	31.2	15.8	88.33	-21.9	0.0	1,370.5	1,337.1	33.41	41.020	
7,400.0	7,185.8	7,185.8	7,185.8	31.3	16.0	88.33	-21.9	0.0	1,370.5	1,336.7	33.81	40.531	
7,500.0	7,285.8	7,285.8	7,285.8	31.4	16.3	88.33	-21.9	0.0	1,370.5	1,336.3	34.22	40.053	
7,600.0	7,385.8	7,385.8	7,385.8	31.5	16.5	88.33	-21.9	0.0	1,370.5	1,335.9	34.62	39.584	
7,700.0	7,485.8	7,485.8	7,485.8	31.7	16.7	88.33	-21.9	0.0	1,370.5	1,335.5	35.03	39.125	
7,800.0	7,585.8	7,585.8	7,585.8	31.8	16.9	88.33	-21.9	0.0	1,370.5	1,335.1	35.44	38.676	
7,900.0	7,685.8	7,685.8	7,685.8	31.9	17.2	88.33	-21.9	0.0	1,370.5	1,334.7	35.84	38.236	
7,914.2	7,700.0	7,700.0	7,700.0	31.9	17.2	88.33	-21.9	0.0	1,370.5	1,334.6	35.90	38.174	

Company:	Great Western	Local Co-ordinate Reference:	Well Manenti 20-34
Project:	SEC.20-T7N-R66W	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Reference Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (9-30-11)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0ft
Survey Program: 0-MWD												Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-35.77	459.0	-330.7	565.7				
100.0	100.0	98.0	98.0	0.1	0.1	-35.77	459.0	-330.7	565.7	565.5	0.22	2,542.414	
200.0	200.0	198.0	198.0	0.3	0.3	-35.77	459.0	-330.7	565.7	565.1	0.67	844.643	
300.0	300.0	298.0	298.0	0.6	0.6	-35.77	459.0	-330.7	565.7	564.6	1.12	505.429	
400.0	400.0	398.0	398.0	0.8	0.8	-35.77	459.0	-330.7	565.7	564.2	1.57	360.607	
500.0	500.0	498.0	498.0	1.0	1.0	-35.77	459.0	-330.7	565.7	563.7	2.02	280.293	
600.0	600.0	598.0	598.0	1.2	1.2	-35.77	459.0	-330.7	565.7	563.3	2.47	229.238	
700.0	700.0	698.0	698.0	1.5	1.5	-35.77	459.0	-330.7	565.7	562.8	2.92	193.916	
800.0	800.0	798.0	798.0	1.7	1.7	-35.77	459.0	-330.7	565.7	562.4	3.37	168.026	
900.0	900.0	898.0	898.0	1.9	1.9	-35.77	459.0	-330.7	565.7	561.9	3.82	148.235	
1,000.0	1,000.0	998.0	998.0	2.1	2.1	-35.77	459.0	-330.7	565.7	561.5	4.27	132.615	
1,100.0	1,100.0	1,098.0	1,098.0	2.3	2.4	54.39	459.0	-330.7	564.7	560.0	4.70	120.103	
1,200.0	1,199.8	1,197.8	1,197.8	2.6	2.6	54.88	459.0	-330.7	561.7	556.6	5.13	109.503	
1,250.0	1,249.7	1,247.7	1,247.7	2.7	2.7	55.24	459.0	-330.7	559.4	554.1	5.35	104.636	
1,300.0	1,299.5	1,297.5	1,297.5	2.8	2.8	56.29	459.0	-330.7	556.7	551.2	5.57	100.017	
1,400.0	1,398.7	1,396.7	1,396.7	3.0	3.0	58.20	459.0	-330.7	550.1	544.1	6.02	91.398	
1,500.0	1,497.5	1,495.5	1,495.5	3.3	3.2	60.18	459.0	-330.7	542.0	535.5	6.50	83.422	
1,600.0	1,595.6	1,593.6	1,593.6	3.6	3.5	62.40	459.0	-330.7	532.8	525.7	7.01	75.959	
1,700.0	1,693.1	1,691.1	1,691.1	4.0	3.7	64.94	459.0	-330.7	522.6	515.0	7.58	68.938	
1,800.0	1,789.7	1,787.7	1,787.7	4.4	3.9	67.85	459.0	-330.7	511.9	503.7	8.21	62.345	
1,900.0	1,885.3	1,883.3	1,883.3	4.9	4.1	71.15	459.0	-330.7	501.3	492.4	8.92	56.210	
1,962.5	1,944.5	1,942.5	1,942.5	5.2	4.3	73.42	459.0	-330.7	494.9	485.5	9.40	52.634	
2,000.0	1,979.9	1,977.9	1,977.9	5.5	4.3	74.73	459.0	-330.7	491.3	481.6	9.71	50.615	
2,100.0	2,074.3	2,072.3	2,072.3	6.1	4.5	78.30	459.0	-330.7	483.2	472.7	10.54	45.828	
2,200.0	2,168.7	2,166.7	2,166.7	6.7	4.8	81.96	459.0	-330.7	477.2	465.8	11.40	41.845	
2,300.0	2,263.2	2,261.2	2,261.2	7.3	5.0	85.70	459.0	-330.7	473.5	461.2	12.28	38.568	
2,400.0	2,357.6	2,355.6	2,355.6	8.0	5.2	89.47	459.0	-330.7	472.0	458.9	13.15	35.902	
2,414.2	2,370.9	2,368.9	2,368.9	8.1	5.2	90.00	459.0	-330.7	472.0	458.7	13.27	35.567	CC, ES
2,500.0	2,452.0	2,450.0	2,450.0	8.6	5.4	93.24	459.0	-330.7	472.8	458.8	14.01	33.759	
2,600.0	2,546.4	2,544.4	2,544.4	9.3	5.6	96.99	459.0	-330.7	475.9	461.1	14.84	32.062	
2,700.0	2,640.8	2,638.8	2,638.8	10.0	5.8	100.67	459.0	-330.7	481.3	465.6	15.65	30.745	
2,800.0	2,735.2	2,733.2	2,733.2	10.6	6.0	104.27	459.0	-330.7	488.8	472.4	16.43	29.750	
2,900.0	2,829.6	2,827.6	2,827.6	11.3	6.2	107.76	459.0	-330.7	498.4	481.2	17.17	29.026	
3,000.0	2,924.0	2,922.0	2,922.0	12.0	6.5	111.12	459.0	-330.7	509.9	492.1	17.87	28.531	
3,100.0	3,018.5	3,016.5	3,016.5	12.7	6.7	114.33	459.0	-330.7	523.3	504.8	18.54	28.229	
3,200.0	3,112.9	3,110.9	3,110.9	13.4	6.9	117.39	459.0	-330.7	538.4	519.2	19.17	28.087	
3,300.0	3,207.3	3,205.3	3,205.3	14.1	7.1	120.29	459.0	-330.7	555.0	535.2	19.77	28.079	SF
3,400.0	3,301.7	3,299.7	3,299.7	14.8	7.3	123.02	459.0	-330.7	573.0	552.7	20.33	28.182	
3,500.0	3,396.1	3,394.1	3,394.1	15.5	7.5	125.60	459.0	-330.7	592.3	571.4	20.87	28.377	
3,600.0	3,490.5	3,488.5	3,488.5	16.2	7.7	128.02	459.0	-330.7	612.8	591.4	21.39	28.646	
3,700.0	3,584.9	3,582.9	3,582.9	16.9	7.9	130.29	459.0	-330.7	634.3	612.4	21.89	28.976	
3,800.0	3,679.3	3,677.3	3,677.3	17.6	8.2	132.42	459.0	-330.7	656.8	634.4	22.37	29.355	
3,900.0	3,773.8	3,771.8	3,771.8	18.3	8.4	134.41	459.0	-330.7	680.1	657.3	22.84	29.772	
4,000.0	3,868.2	3,866.2	3,866.2	19.0	8.6	136.27	459.0	-330.7	704.2	680.9	23.30	30.219	
4,100.0	3,962.6	3,960.6	3,960.6	19.7	8.8	138.02	459.0	-330.7	729.0	705.3	23.76	30.689	
4,200.0	4,057.0	4,055.0	4,055.0	20.4	9.0	139.66	459.0	-330.7	754.5	730.2	24.20	31.175	
4,300.0	4,151.4	4,149.4	4,149.4	21.1	9.2	141.19	459.0	-330.7	780.4	755.8	24.64	31.673	
4,400.0	4,245.8	4,243.8	4,243.8	21.8	9.4	142.63	459.0	-330.7	806.9	781.9	25.08	32.178	
4,500.0	4,340.2	4,338.2	4,338.2	22.5	9.6	143.98	459.0	-330.7	833.9	808.4	25.51	32.686	
4,600.0	4,434.6	4,432.6	4,432.6	23.2	9.9	145.24	459.0	-330.7	861.3	835.3	25.95	33.195	
4,700.0	4,529.1	4,527.1	4,527.1	23.9	10.1	146.43	459.0	-330.7	889.0	862.6	26.38	33.703	
4,800.0	4,623.5	4,621.5	4,621.5	24.6	10.3	147.55	459.0	-330.7	917.1	890.3	26.81	34.206	

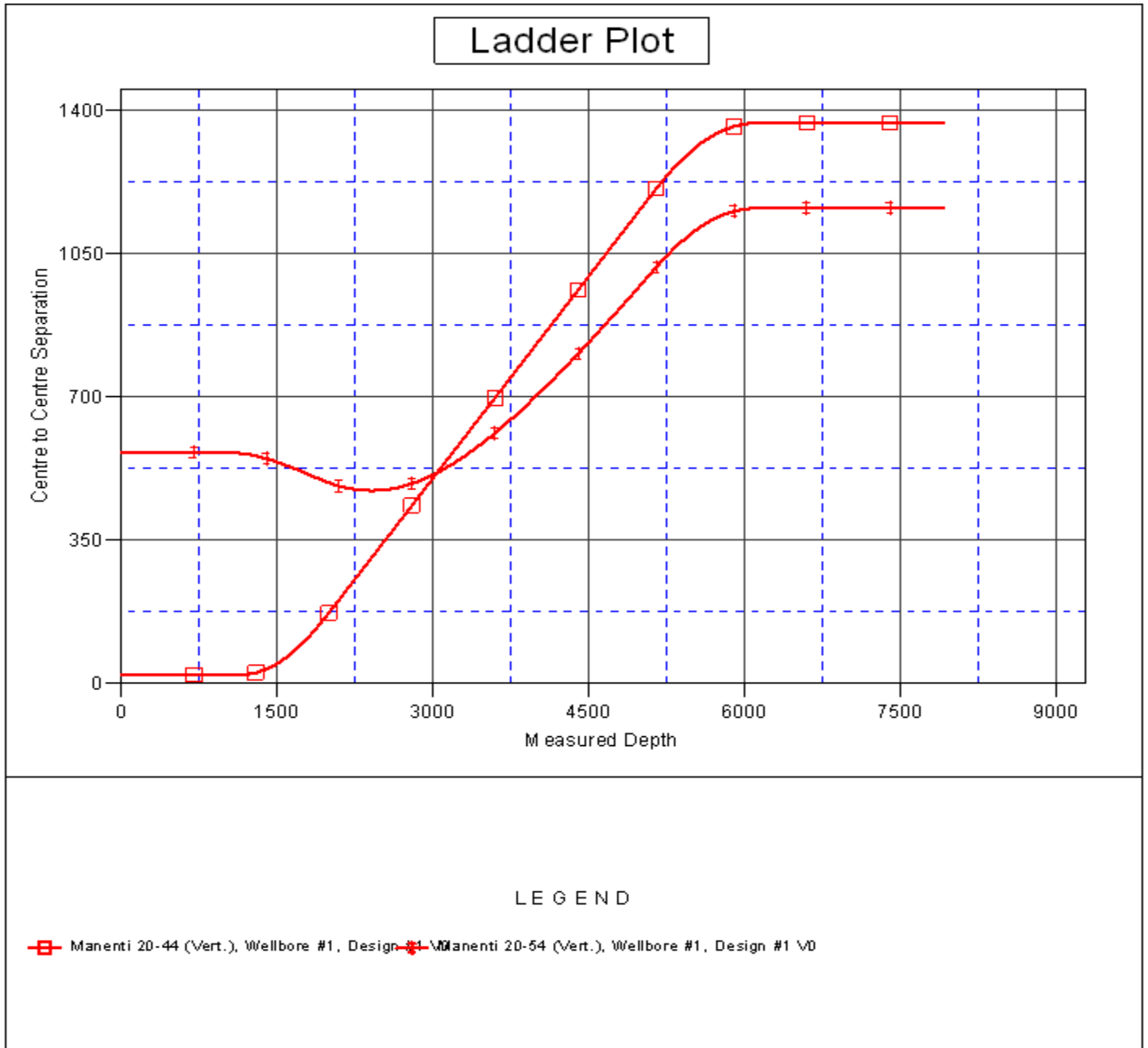
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Great Western	Local Co-ordinate Reference:	Well Manenti 20-34
Project:	SEC.20-T7N-R66W	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Reference Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (9-30-11)	Offset TVD Reference:	Offset Datum

Offset Design Manenti 20-34 Pad Sec.20-T7N-R66W - Manenti 20-54 (Vert.) - Wellbore #1 - Design #1												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,717.9	4,715.9	4,715.9	25.3	10.5	148.61	459.0	-330.7	945.5	918.3	27.24	34.704	
5,000.0	4,812.3	4,810.3	4,810.3	26.0	10.7	149.60	459.0	-330.7	974.2	946.5	27.68	35.196	
5,100.0	4,906.7	4,904.7	4,904.7	26.7	10.9	150.54	459.0	-330.7	1,003.2	975.1	28.12	35.680	
5,152.0	4,955.8	4,953.8	4,953.8	27.1	11.0	151.01	459.0	-330.7	1,018.3	990.0	28.34	35.928	
5,200.0	5,001.2	4,999.2	4,999.2	27.4	11.1	151.56	459.0	-330.7	1,032.0	1,003.5	28.55	36.146	
5,300.0	5,096.7	5,094.7	5,094.7	27.8	11.3	152.57	459.0	-330.7	1,058.5	1,029.6	28.95	36.558	
5,400.0	5,193.2	5,191.2	5,191.2	28.3	11.6	153.43	459.0	-330.7	1,082.2	1,052.8	29.35	36.869	
5,500.0	5,290.5	5,288.5	5,288.5	28.7	11.8	154.15	459.0	-330.7	1,102.9	1,073.2	29.74	37.084	
5,600.0	5,388.6	5,386.6	5,386.6	29.0	12.0	154.74	459.0	-330.7	1,120.6	1,090.5	30.12	37.209	
5,700.0	5,487.3	5,485.3	5,485.3	29.3	12.2	155.21	459.0	-330.7	1,135.3	1,104.8	30.48	37.251	
5,800.0	5,586.4	5,584.4	5,584.4	29.6	12.4	155.57	459.0	-330.7	1,146.8	1,116.0	30.82	37.213	
5,900.0	5,686.0	5,684.0	5,684.0	29.8	12.7	155.83	459.0	-330.7	1,155.2	1,124.1	31.14	37.098	
6,000.0	5,785.8	5,783.8	5,783.8	29.9	12.9	155.98	459.0	-330.7	1,160.5	1,129.0	31.44	36.910	
6,100.0	5,885.8	5,883.8	5,883.8	30.0	13.1	156.05	459.0	-330.7	1,162.5	1,130.8	31.72	36.651	
6,114.2	5,900.0	5,898.0	5,898.0	30.0	13.1	63.38	459.0	-330.7	1,162.5	1,130.8	31.76	36.608	
6,200.0	5,985.8	5,983.8	5,983.8	30.1	13.3	63.38	459.0	-330.7	1,162.5	1,130.5	32.06	36.256	
6,300.0	6,085.8	6,083.8	6,083.8	30.2	13.6	63.38	459.0	-330.7	1,162.5	1,130.1	32.43	35.847	
6,400.0	6,185.8	6,183.8	6,183.8	30.3	13.8	63.38	459.0	-330.7	1,162.5	1,129.7	32.80	35.445	
6,500.0	6,285.8	6,283.8	6,283.8	30.4	14.0	63.38	459.0	-330.7	1,162.5	1,129.4	33.17	35.050	
6,600.0	6,385.8	6,383.8	6,383.8	30.5	14.2	63.38	459.0	-330.7	1,162.5	1,129.0	33.54	34.663	
6,700.0	6,485.8	6,483.8	6,483.8	30.6	14.5	63.38	459.0	-330.7	1,162.5	1,128.6	33.91	34.282	
6,800.0	6,585.8	6,583.8	6,583.8	30.7	14.7	63.38	459.0	-330.7	1,162.5	1,128.3	34.28	33.908	
6,900.0	6,685.8	6,683.8	6,683.8	30.8	14.9	63.38	459.0	-330.7	1,162.5	1,127.9	34.66	33.541	
7,000.0	6,785.8	6,783.8	6,783.8	30.9	15.1	63.38	459.0	-330.7	1,162.5	1,127.5	35.04	33.181	
7,100.0	6,885.8	6,883.8	6,883.8	31.0	15.4	63.38	459.0	-330.7	1,162.5	1,127.1	35.41	32.826	
7,200.0	6,985.8	6,983.8	6,983.8	31.1	15.6	63.38	459.0	-330.7	1,162.5	1,126.7	35.79	32.479	
7,300.0	7,085.8	7,083.8	7,083.8	31.2	15.8	63.38	459.0	-330.7	1,162.5	1,126.4	36.17	32.137	
7,400.0	7,185.8	7,183.8	7,183.8	31.3	16.0	63.38	459.0	-330.7	1,162.5	1,126.0	36.56	31.801	
7,500.0	7,285.8	7,283.8	7,283.8	31.4	16.3	63.38	459.0	-330.7	1,162.5	1,125.6	36.94	31.471	
7,600.0	7,385.8	7,383.8	7,383.8	31.5	16.5	63.38	459.0	-330.7	1,162.5	1,125.2	37.32	31.147	
7,700.0	7,485.8	7,483.8	7,483.8	31.7	16.7	63.38	459.0	-330.7	1,162.5	1,124.8	37.71	30.829	
7,800.0	7,585.8	7,583.8	7,583.8	31.8	16.9	63.38	459.0	-330.7	1,162.5	1,124.4	38.10	30.516	
7,900.0	7,685.8	7,683.8	7,683.8	31.9	17.2	63.38	459.0	-330.7	1,162.5	1,124.1	38.48	30.208	
7,914.2	7,700.0	7,698.0	7,698.0	31.9	17.2	63.38	459.0	-330.7	1,162.5	1,124.0	38.54	30.165	

Company:	Great Western	Local Co-ordinate Reference:	Well Manenti 20-34
Project:	SEC.20-T7N-R66W	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Reference Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (9-30-11)	Offset TVD Reference:	Offset Datum

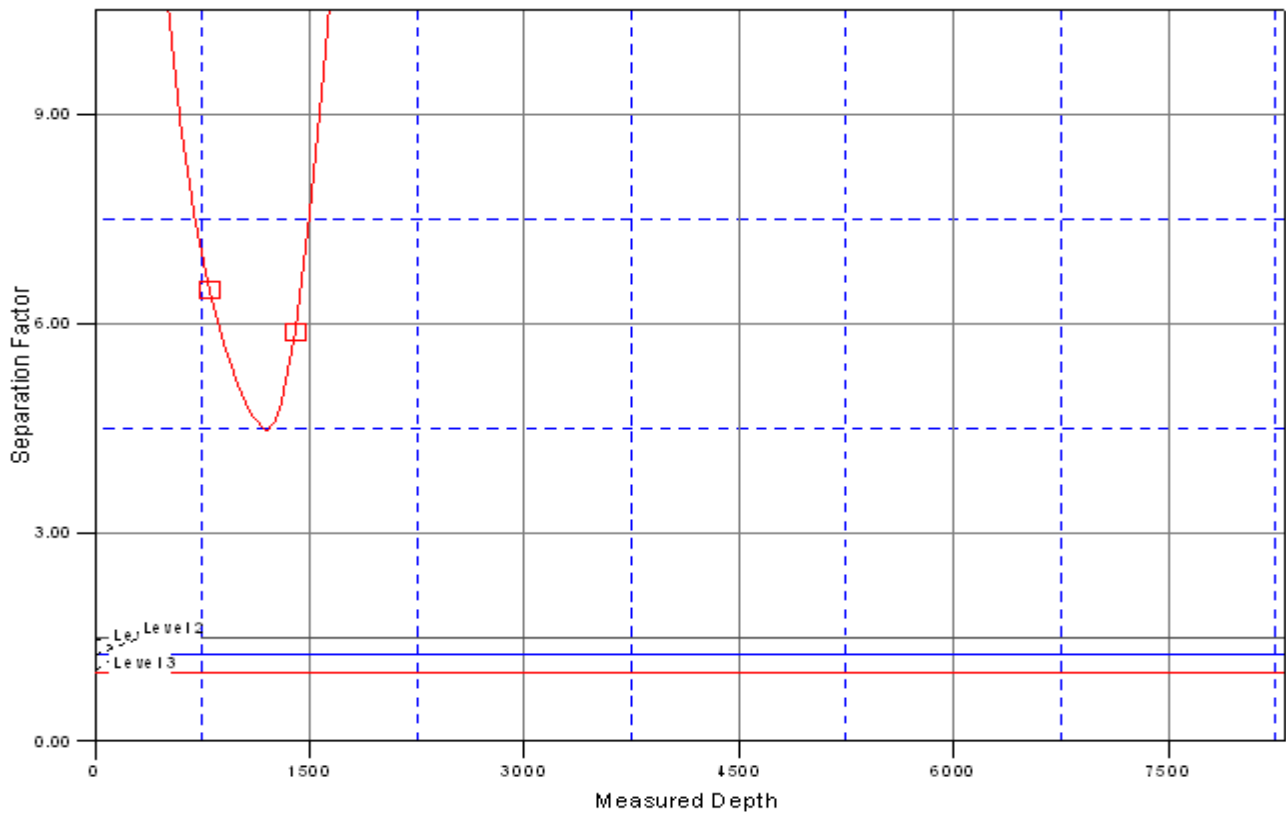
Reference Depths are relative to WELL @ 4952.0ft (Original Well Elev) Coordinates are relative to: Manenti 20-34
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.46°



Company:	Great Western	Local Co-ordinate Reference:	Well Manenti 20-34
Project:	SEC.20-T7N-R66W	TVD Reference:	WELL @ 4952.0ft (Original Well Elev)
Reference Site:	Manenti 20-34 Pad Sec.20-T7N-R66W	MD Reference:	WELL @ 4952.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Manenti 20-34	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (9-30-11)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4952.0ft (Original Well Elev) Coordinates are relative to: Manenti 20-34
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.46°

Separation Factor Plot



LEGEND

 Manenti 20-44 (Vert.), Wellbore #1, Design #1 \0
 Manenti 20-54 (Vert.), Wellbore #1, Design #1 \0