

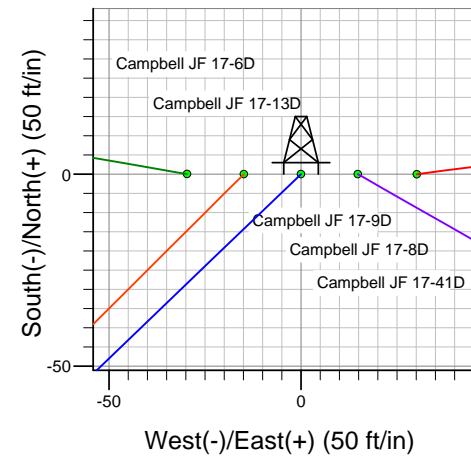
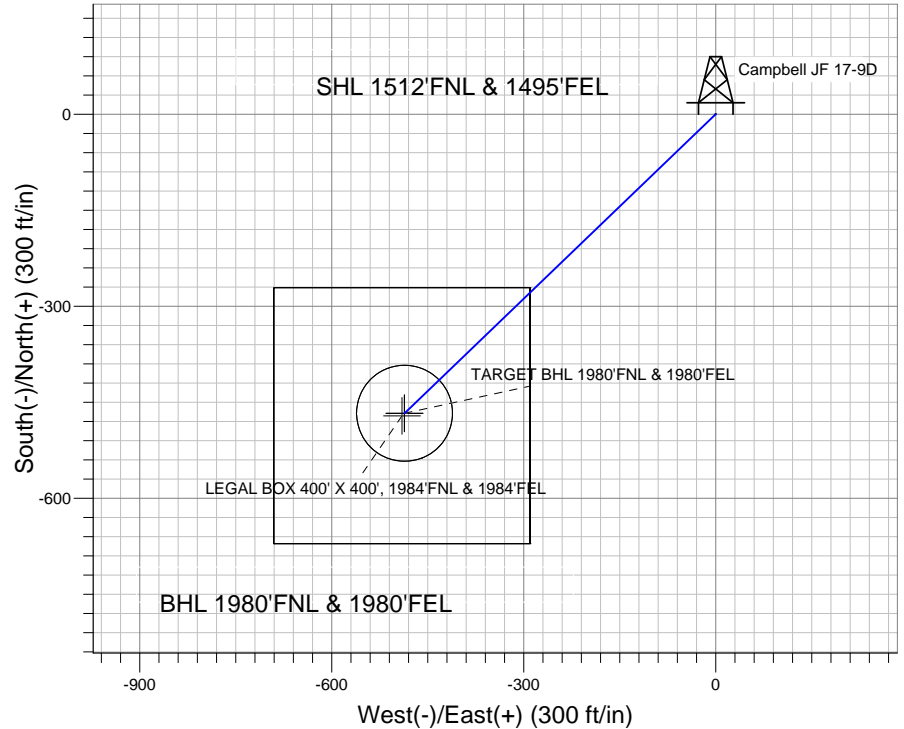
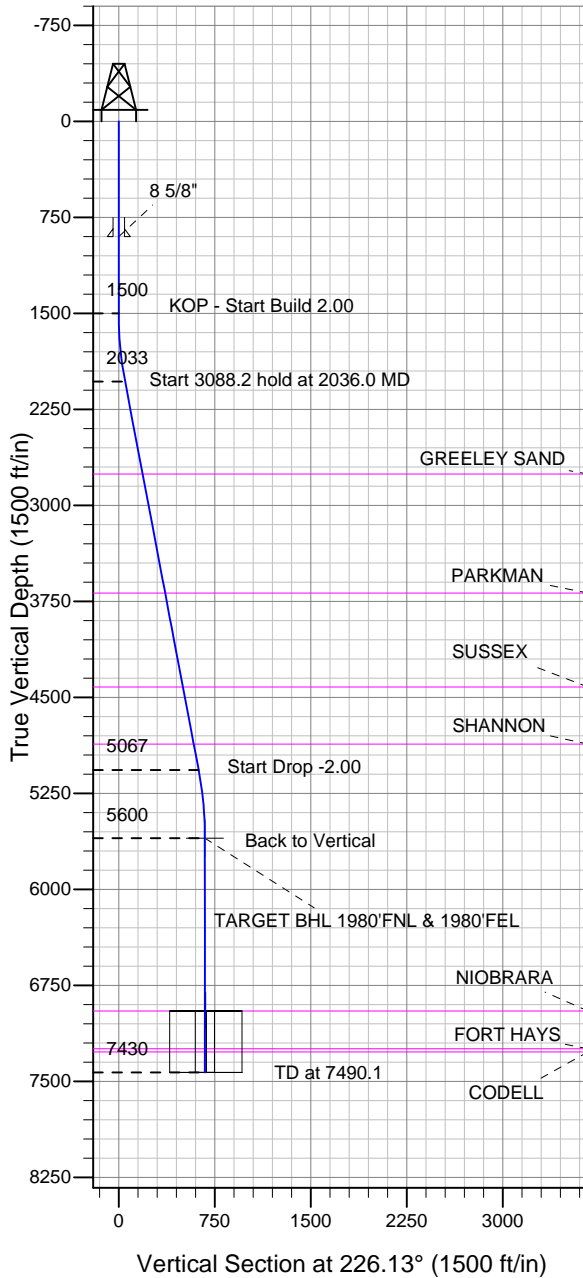
ENSIGN

Directional

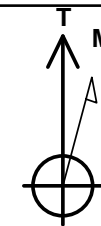
Well Name: Campbell JF 17-9D

Surface Location: Campbell JF 17-6D Pad Sec.17-T2N-R65W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4916.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1295554.43 3228197.48 40.141808 -104.683747
 Original Well Elev WELL @ 4930.0ft (Original Well Elev)

Great Western



Campbell JF 17-6D Pad Sec.17-T2N-R65W
 Campbell JF 17-9D
 Plan #1 (10-04-12)



Azimuths to True North
 Magnetic North: 8.62°

Magnetic Field
 Strength: 52865.8snT
 Dip Angle: 66.81°
 Date: 10/5/2012
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1980'FNL & 1980'FEL	5600.0	-467.3	-486.2	40.140525	-104.685486	Point
LEGAL BOX 400' X 400', 1984'FNL & 1984'FEL	6950.0	-471.3	-490.2	40.140514	-104.685500	Rectangle (Sides: L400.0 W400.0)
TARGET CIRCLE 1980'FNL & 1980'FEL	6950.0	-467.3	-486.2	40.140525	-104.685486	Circle (Radius: 75.0)

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	1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	
3	2036.0	10.72	226.13	2032.9	-34.6	-36.0	2.00	226.13	50.0	
4	5124.2	10.72	226.13	5067.1	-432.7	-450.2	0.00	0.00	624.4	
5	5660.1	0.00	0.00	5600.0	-467.3	-486.2	2.00	180.00	674.4	TARGET BHL 1980'FNL & 1980'FEL
6	7490.1	0.00	0.00	7430.0	-467.3	-486.2	0.00	0.00	674.4	



Directional

Great Western

SEC.17-T2N-R65W

Campbell JF 17-6D Pad Sec.17-T2N-R65W

Campbell JF 17-9D

Wellbore #1

Plan: Plan #1 (10-04-12)

Standard Planning Report

05 October, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Company:	Great Western	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Project:	SEC.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	North Reference:	True
Well:	Campbell JF 17-9D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-04-12)		

Project	SEC.17-T2N-R65W, 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						Campbell JF 17-6D Pad Sec.17-T2N-R65W											
Site Position:						Northing:			1,295,554.20ft			Latitude:			40.141808		
From:			Lat/Long			Easting:			3,228,167.85ft			Longitude:			-104.683853		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.53 °		

Well	Campbell JF 17-9D					
Well Position	+N/-S	0.0 ft	Northing:	1,295,554.43 ft	Latitude:	40.141808
	+E/-W	29.6 ft	Easting:	3,228,197.48 ft	Longitude:	-104.683747
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,916.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/5/2012	8.62	66.81	52,866

Design	Plan #1 (10-04-12)			
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	226.13

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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,036.0	10.72	226.13	2,032.9	-34.6	-36.0	2.00	2.00	0.00	226.13	
5,124.2	10.72	226.13	5,067.1	-432.7	-450.2	0.00	0.00	0.00	0.00	
5,660.1	0.00	0.00	5,600.0	-467.3	-486.2	2.00	-2.00	0.00	180.00	TARGET BHL 198C
7,490.1	0.00	0.00	7,430.0	-467.3	-486.2	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Company:	Great Western	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Project:	SEC.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	North Reference:	True
Well:	Campbell JF 17-9D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-04-12)		

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
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.00	0.00	1,080.0	0.0	0.0	0.0	0.00	0.00	0.00
1,120.0	0.00	0.00	1,120.0	0.0	0.0	0.0	0.00	0.00	0.00
1,160.0	0.00	0.00	1,160.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,240.0	0.00	0.00	1,240.0	0.0	0.0	0.0	0.00	0.00	0.00
1,280.0	0.00	0.00	1,280.0	0.0	0.0	0.0	0.00	0.00	0.00
1,320.0	0.00	0.00	1,320.0	0.0	0.0	0.0	0.00	0.00	0.00
1,360.0	0.00	0.00	1,360.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,440.0	0.00	0.00	1,440.0	0.0	0.0	0.0	0.00	0.00	0.00
1,480.0	0.00	0.00	1,480.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
1,520.0	0.40	226.13	1,520.0	0.0	-0.1	0.1	2.00	2.00	0.00
1,560.0	1.20	226.13	1,560.0	-0.4	-0.5	0.6	2.00	2.00	0.00
1,600.0	2.00	226.13	1,600.0	-1.2	-1.3	1.7	2.00	2.00	0.00
1,640.0	2.80	226.13	1,639.9	-2.4	-2.5	3.4	2.00	2.00	0.00
1,680.0	3.60	226.13	1,679.9	-3.9	-4.1	5.7	2.00	2.00	0.00
1,720.0	4.40	226.13	1,719.8	-5.9	-6.1	8.4	2.00	2.00	0.00
1,760.0	5.20	226.13	1,759.6	-8.2	-8.5	11.8	2.00	2.00	0.00
1,800.0	6.00	226.13	1,799.5	-10.9	-11.3	15.7	2.00	2.00	0.00
1,840.0	6.80	226.13	1,839.2	-14.0	-14.5	20.2	2.00	2.00	0.00
1,880.0	7.60	226.13	1,878.9	-17.4	-18.1	25.2	2.00	2.00	0.00
1,920.0	8.40	226.13	1,918.5	-21.3	-22.2	30.7	2.00	2.00	0.00
1,960.0	9.20	226.13	1,958.0	-25.5	-26.6	36.9	2.00	2.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Company:	Great Western	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Project:	SEC.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	North Reference:	True
Well:	Campbell JF 17-9D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-04-12)		

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	10.00	226.13	1,997.5	-30.2	-31.4	43.5	2.00	2.00	0.00
2,036.0	10.72	226.13	2,032.9	-34.6	-36.0	50.0	2.00	2.00	0.00
Start 3088.2 hold at 2036.0 MD									
2,040.0	10.72	226.13	2,036.8	-35.2	-36.6	50.7	0.00	0.00	0.00
2,080.0	10.72	226.13	2,076.1	-40.3	-41.9	58.2	0.00	0.00	0.00
2,120.0	10.72	226.13	2,115.4	-45.5	-47.3	65.6	0.00	0.00	0.00
2,160.0	10.72	226.13	2,154.7	-50.6	-52.7	73.1	0.00	0.00	0.00
2,200.0	10.72	226.13	2,194.0	-55.8	-58.0	80.5	0.00	0.00	0.00
2,240.0	10.72	226.13	2,233.3	-60.9	-63.4	87.9	0.00	0.00	0.00
2,280.0	10.72	226.13	2,272.6	-66.1	-68.8	95.4	0.00	0.00	0.00
2,320.0	10.72	226.13	2,311.9	-71.3	-74.1	102.8	0.00	0.00	0.00
2,360.0	10.72	226.13	2,351.2	-76.4	-79.5	110.3	0.00	0.00	0.00
2,400.0	10.72	226.13	2,390.5	-81.6	-84.9	117.7	0.00	0.00	0.00
2,440.0	10.72	226.13	2,429.8	-86.7	-90.2	125.1	0.00	0.00	0.00
2,480.0	10.72	226.13	2,469.1	-91.9	-95.6	132.6	0.00	0.00	0.00
2,520.0	10.72	226.13	2,508.4	-97.0	-100.9	140.0	0.00	0.00	0.00
2,560.0	10.72	226.13	2,547.7	-102.2	-106.3	147.5	0.00	0.00	0.00
2,600.0	10.72	226.13	2,587.0	-107.3	-111.7	154.9	0.00	0.00	0.00
2,640.0	10.72	226.13	2,626.3	-112.5	-117.0	162.3	0.00	0.00	0.00
2,680.0	10.72	226.13	2,665.6	-117.7	-122.4	169.8	0.00	0.00	0.00
2,720.0	10.72	226.13	2,704.9	-122.8	-127.8	177.2	0.00	0.00	0.00
2,760.0	10.72	226.13	2,744.2	-128.0	-133.1	184.7	0.00	0.00	0.00
2,770.9	10.72	226.13	2,755.0	-129.4	-134.6	186.7	0.00	0.00	0.00
GREELEY SAND									
2,800.0	10.72	226.13	2,783.5	-133.1	-138.5	192.1	0.00	0.00	0.00
2,840.0	10.72	226.13	2,822.8	-138.3	-143.9	199.5	0.00	0.00	0.00
2,880.0	10.72	226.13	2,862.1	-143.4	-149.2	207.0	0.00	0.00	0.00
2,920.0	10.72	226.13	2,901.5	-148.6	-154.6	214.4	0.00	0.00	0.00
2,960.0	10.72	226.13	2,940.8	-153.7	-160.0	221.9	0.00	0.00	0.00
3,000.0	10.72	226.13	2,980.1	-158.9	-165.3	229.3	0.00	0.00	0.00
3,040.0	10.72	226.13	3,019.4	-164.1	-170.7	236.7	0.00	0.00	0.00
3,080.0	10.72	226.13	3,058.7	-169.2	-176.0	244.2	0.00	0.00	0.00
3,120.0	10.72	226.13	3,098.0	-174.4	-181.4	251.6	0.00	0.00	0.00
3,160.0	10.72	226.13	3,137.3	-179.5	-186.8	259.1	0.00	0.00	0.00
3,200.0	10.72	226.13	3,176.6	-184.7	-192.1	266.5	0.00	0.00	0.00
3,240.0	10.72	226.13	3,215.9	-189.8	-197.5	273.9	0.00	0.00	0.00
3,280.0	10.72	226.13	3,255.2	-195.0	-202.9	281.4	0.00	0.00	0.00
3,320.0	10.72	226.13	3,294.5	-200.2	-208.2	288.8	0.00	0.00	0.00
3,360.0	10.72	226.13	3,333.8	-205.3	-213.6	296.3	0.00	0.00	0.00
3,400.0	10.72	226.13	3,373.1	-210.5	-219.0	303.7	0.00	0.00	0.00
3,440.0	10.72	226.13	3,412.4	-215.6	-224.3	311.1	0.00	0.00	0.00
3,480.0	10.72	226.13	3,451.7	-220.8	-229.7	318.6	0.00	0.00	0.00
3,520.0	10.72	226.13	3,491.0	-225.9	-235.0	326.0	0.00	0.00	0.00
3,560.0	10.72	226.13	3,530.3	-231.1	-240.4	333.5	0.00	0.00	0.00
3,600.0	10.72	226.13	3,569.6	-236.2	-245.8	340.9	0.00	0.00	0.00
3,640.0	10.72	226.13	3,608.9	-241.4	-251.1	348.3	0.00	0.00	0.00
3,680.0	10.72	226.13	3,648.2	-246.6	-256.5	355.8	0.00	0.00	0.00
3,718.5	10.72	226.13	3,686.0	-251.5	-261.7	362.9	0.00	0.00	0.00
PARKMAN									
3,720.0	10.72	226.13	3,687.5	-251.7	-261.9	363.2	0.00	0.00	0.00
3,760.0	10.72	226.13	3,726.8	-256.9	-267.2	370.7	0.00	0.00	0.00
3,800.0	10.72	226.13	3,766.1	-262.0	-272.6	378.1	0.00	0.00	0.00
3,840.0	10.72	226.13	3,805.4	-267.2	-278.0	385.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Company:	Great Western	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Project:	SEC.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	North Reference:	True
Well:	Campbell JF 17-9D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-04-12)		

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)
3,880.0	10.72	226.13	3,844.7	-272.3	-283.3	393.0	0.00	0.00	0.00
3,920.0	10.72	226.13	3,884.0	-277.5	-288.7	400.4	0.00	0.00	0.00
3,960.0	10.72	226.13	3,923.3	-282.6	-294.1	407.9	0.00	0.00	0.00
4,000.0	10.72	226.13	3,962.6	-287.8	-299.4	415.3	0.00	0.00	0.00
4,040.0	10.72	226.13	4,001.9	-293.0	-304.8	422.7	0.00	0.00	0.00
4,080.0	10.72	226.13	4,041.2	-298.1	-310.1	430.2	0.00	0.00	0.00
4,120.0	10.72	226.13	4,080.5	-303.3	-315.5	437.6	0.00	0.00	0.00
4,160.0	10.72	226.13	4,119.8	-308.4	-320.9	445.1	0.00	0.00	0.00
4,200.0	10.72	226.13	4,159.1	-313.6	-326.2	452.5	0.00	0.00	0.00
4,240.0	10.72	226.13	4,198.4	-318.7	-331.6	459.9	0.00	0.00	0.00
4,280.0	10.72	226.13	4,237.7	-323.9	-337.0	467.4	0.00	0.00	0.00
4,320.0	10.72	226.13	4,277.0	-329.0	-342.3	474.8	0.00	0.00	0.00
4,360.0	10.72	226.13	4,316.3	-334.2	-347.7	482.3	0.00	0.00	0.00
4,400.0	10.72	226.13	4,355.6	-339.4	-353.1	489.7	0.00	0.00	0.00
4,440.0	10.72	226.13	4,394.9	-344.5	-358.4	497.1	0.00	0.00	0.00
4,464.5	10.72	226.13	4,419.0	-347.7	-361.7	501.7	0.00	0.00	0.00
SUSSEX									
4,480.0	10.72	226.13	4,434.2	-349.7	-363.8	504.6	0.00	0.00	0.00
4,520.0	10.72	226.13	4,473.5	-354.8	-369.1	512.0	0.00	0.00	0.00
4,560.0	10.72	226.13	4,512.8	-360.0	-374.5	519.5	0.00	0.00	0.00
4,600.0	10.72	226.13	4,552.1	-365.1	-379.9	526.9	0.00	0.00	0.00
4,640.0	10.72	226.13	4,591.4	-370.3	-385.2	534.3	0.00	0.00	0.00
4,680.0	10.72	226.13	4,630.7	-375.5	-390.6	541.8	0.00	0.00	0.00
4,720.0	10.72	226.13	4,670.0	-380.6	-396.0	549.2	0.00	0.00	0.00
4,760.0	10.72	226.13	4,709.3	-385.8	-401.3	556.7	0.00	0.00	0.00
4,800.0	10.72	226.13	4,748.6	-390.9	-406.7	564.1	0.00	0.00	0.00
4,840.0	10.72	226.13	4,787.9	-396.1	-412.1	571.5	0.00	0.00	0.00
4,880.0	10.72	226.13	4,827.2	-401.2	-417.4	579.0	0.00	0.00	0.00
4,918.4	10.72	226.13	4,865.0	-406.2	-422.6	586.1	0.00	0.00	0.00
SHANNON									
4,920.0	10.72	226.13	4,866.6	-406.4	-422.8	586.4	0.00	0.00	0.00
4,960.0	10.72	226.13	4,905.9	-411.5	-428.1	593.9	0.00	0.00	0.00
5,000.0	10.72	226.13	4,945.2	-416.7	-433.5	601.3	0.00	0.00	0.00
5,040.0	10.72	226.13	4,984.5	-421.9	-438.9	608.7	0.00	0.00	0.00
5,080.0	10.72	226.13	5,023.8	-427.0	-444.2	616.2	0.00	0.00	0.00
5,120.0	10.72	226.13	5,063.1	-432.2	-449.6	623.6	0.00	0.00	0.00
5,124.2	10.72	226.13	5,067.1	-432.7	-450.2	624.4	0.00	0.00	0.00
Start Drop -2.00									
5,160.0	10.00	226.13	5,102.4	-437.2	-454.8	630.8	2.00	-2.00	0.00
5,200.0	9.20	226.13	5,141.8	-441.8	-459.6	637.5	2.00	-2.00	0.00
5,240.0	8.40	226.13	5,181.4	-446.0	-464.0	643.6	2.00	-2.00	0.00
5,280.0	7.60	226.13	5,221.0	-449.9	-468.0	649.2	2.00	-2.00	0.00
5,320.0	6.80	226.13	5,260.7	-453.4	-471.7	654.2	2.00	-2.00	0.00
5,360.0	6.00	226.13	5,300.4	-456.5	-474.9	658.7	2.00	-2.00	0.00
5,400.0	5.20	226.13	5,340.2	-459.2	-477.7	662.6	2.00	-2.00	0.00
5,440.0	4.40	226.13	5,380.1	-461.5	-480.1	665.9	2.00	-2.00	0.00
5,480.0	3.60	226.13	5,420.0	-463.4	-482.1	668.7	2.00	-2.00	0.00
5,520.0	2.80	226.13	5,459.9	-465.0	-483.7	671.0	2.00	-2.00	0.00
5,560.0	2.00	226.13	5,499.9	-466.1	-484.9	672.6	2.00	-2.00	0.00
5,600.0	1.20	226.13	5,539.9	-466.9	-485.7	673.8	2.00	-2.00	0.00
5,640.0	0.40	226.13	5,579.9	-467.3	-486.2	674.3	2.00	-2.00	0.00
5,660.1	0.00	0.00	5,600.0	-467.3	-486.2	674.4	2.00	-2.00	0.00
Back to Vertical									

Database:	Landmark	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Company:	Great Western	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Project:	SEC.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	North Reference:	True
Well:	Campbell JF 17-9D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-04-12)		

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)
5,680.0	0.00	0.00	5,619.9	-467.3	-486.2	674.4	0.00	0.00	0.00
5,720.0	0.00	0.00	5,659.9	-467.3	-486.2	674.4	0.00	0.00	0.00
5,760.0	0.00	0.00	5,699.9	-467.3	-486.2	674.4	0.00	0.00	0.00
5,800.0	0.00	0.00	5,739.9	-467.3	-486.2	674.4	0.00	0.00	0.00
5,840.0	0.00	0.00	5,779.9	-467.3	-486.2	674.4	0.00	0.00	0.00
5,880.0	0.00	0.00	5,819.9	-467.3	-486.2	674.4	0.00	0.00	0.00
5,920.0	0.00	0.00	5,859.9	-467.3	-486.2	674.4	0.00	0.00	0.00
5,960.0	0.00	0.00	5,899.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,000.0	0.00	0.00	5,939.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,040.0	0.00	0.00	5,979.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,080.0	0.00	0.00	6,019.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,120.0	0.00	0.00	6,059.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,160.0	0.00	0.00	6,099.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,200.0	0.00	0.00	6,139.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,240.0	0.00	0.00	6,179.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,280.0	0.00	0.00	6,219.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,320.0	0.00	0.00	6,259.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,360.0	0.00	0.00	6,299.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,400.0	0.00	0.00	6,339.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,440.0	0.00	0.00	6,379.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,480.0	0.00	0.00	6,419.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,520.0	0.00	0.00	6,459.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,560.0	0.00	0.00	6,499.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,600.0	0.00	0.00	6,539.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,640.0	0.00	0.00	6,579.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,680.0	0.00	0.00	6,619.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,720.0	0.00	0.00	6,659.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,760.0	0.00	0.00	6,699.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,800.0	0.00	0.00	6,739.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,840.0	0.00	0.00	6,779.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,880.0	0.00	0.00	6,819.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,920.0	0.00	0.00	6,859.9	-467.3	-486.2	674.4	0.00	0.00	0.00
6,960.0	0.00	0.00	6,899.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,000.0	0.00	0.00	6,939.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,010.1	0.00	0.00	6,950.0	-467.3	-486.2	674.4	0.00	0.00	0.00
NIOBRARA									
7,040.0	0.00	0.00	6,979.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,080.0	0.00	0.00	7,019.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,120.0	0.00	0.00	7,059.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,160.0	0.00	0.00	7,099.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,200.0	0.00	0.00	7,139.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,240.0	0.00	0.00	7,179.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,280.0	0.00	0.00	7,219.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,305.1	0.00	0.00	7,245.0	-467.3	-486.2	674.4	0.00	0.00	0.00
FORT HAYS									
7,320.0	0.00	0.00	7,259.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,330.1	0.00	0.00	7,270.0	-467.3	-486.2	674.4	0.00	0.00	0.00
CODELL									
7,360.0	0.00	0.00	7,299.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,400.0	0.00	0.00	7,339.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,440.0	0.00	0.00	7,379.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,480.0	0.00	0.00	7,419.9	-467.3	-486.2	674.4	0.00	0.00	0.00
7,490.1	0.00	0.00	7,430.0	-467.3	-486.2	674.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Company:	Great Western	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Project:	SEC.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	North Reference:	True
Well:	Campbell JF 17-9D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-04-12)		

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)
TD at 7490.1									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
900.0	900.0	8 5/8"	8-5/8	12-1/4

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,770.9	2,755.0	GREELEY SAND		0.00	
3,718.5	3,686.0	PARKMAN		0.00	
4,464.5	4,419.0	SUSSEX		0.00	
4,918.4	4,865.0	SHANNON		0.00	
7,010.1	6,950.0	NIOBRARA		0.00	
7,305.1	7,245.0	FORT HAYS		0.00	
7,330.1	7,270.0	CODELL		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,500.0	1,500.0	0.0	0.0	KOP - Start Build 2.00
2,036.0	2,032.9	-34.6	-36.0	Start 3088.2 hold at 2036.0 MD
5,124.2	5,067.1	-432.7	-450.2	Start Drop -2.00
5,660.1	5,600.0	-467.3	-486.2	Back to Vertical
7,490.1	7,430.0	-467.3	-486.2	TD at 7490.1



Directional

Great Western

SEC.17-T2N-R65W

Campbell JF 17-6D Pad Sec.17-T2N-R65W

Campbell JF 17-9D

Wellbore #1

Plan #1 (10-04-12)

Anticollision Report

05 October, 2012

Company:	Great Western	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Project:	SEC.17-T2N-R65W	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Reference Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Campbell JF 17-9D	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 (10-04-12)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWID												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	
2,200.0	2,194.0	2,133.3	2,071.2	4.9	9.3	0.47	-294.3	-310.5	368.4	358.5	9.92	37.151	
2,300.0	2,292.3	2,232.1	2,164.4	5.2	10.0	0.37	-317.6	-333.9	383.6	373.2	10.44	36.750	
2,400.0	2,390.5	2,331.0	2,257.5	5.5	10.7	0.27	-340.8	-357.2	398.9	387.9	10.97	36.370	
2,500.0	2,488.8	2,429.8	2,350.7	5.8	11.4	0.18	-364.1	-380.6	414.1	402.6	11.50	36.009	
2,600.0	2,587.0	2,528.6	2,443.9	6.2	12.0	0.10	-387.3	-404.0	429.3	417.3	12.04	35.667	
2,700.0	2,685.3	2,627.5	2,537.1	6.5	12.7	0.02	-410.6	-427.3	444.5	432.0	12.58	35.344	
2,800.0	2,783.5	2,726.3	2,630.2	6.9	13.4	-0.06	-433.8	-450.7	459.8	446.6	13.12	35.039	
2,900.0	2,881.8	2,825.1	2,723.4	7.3	14.1	-0.12	-457.1	-474.0	475.0	461.3	13.67	34.752	
3,000.0	2,980.1	2,924.0	2,816.6	7.7	14.8	-0.19	-480.3	-497.4	490.2	476.0	14.22	34.480	
3,100.0	3,078.3	3,022.8	2,909.8	8.0	15.5	-0.25	-503.6	-520.8	505.4	490.7	14.77	34.222	
3,200.0	3,176.6	3,121.6	3,002.9	8.4	16.1	-0.31	-526.8	-544.1	520.7	505.4	15.32	33.979	
3,300.0	3,274.8	3,220.5	3,096.1	8.8	16.8	-0.36	-550.1	-567.5	535.9	520.0	15.88	33.749	
3,400.0	3,373.1	3,319.3	3,189.3	9.2	17.5	-0.41	-573.3	-590.8	551.1	534.7	16.44	33.531	
3,500.0	3,471.3	3,418.1	3,282.5	9.6	18.2	-0.46	-596.6	-614.2	566.4	549.4	17.00	33.325	
3,600.0	3,569.6	3,517.0	3,375.6	10.0	18.9	-0.50	-619.8	-637.6	581.6	564.0	17.56	33.129	
3,700.0	3,667.8	3,615.8	3,468.8	10.4	19.6	-0.55	-643.1	-660.9	596.8	578.7	18.12	32.943	
3,800.0	3,766.1	3,714.6	3,562.0	10.8	20.2	-0.59	-666.3	-684.3	612.1	593.4	18.68	32.766	
3,900.0	3,864.4	3,813.5	3,655.2	11.2	20.9	-0.63	-689.6	-707.7	627.3	608.1	19.24	32.598	
4,000.0	3,962.6	3,912.3	3,748.3	11.6	21.6	-0.66	-712.8	-731.0	642.5	622.7	19.81	32.438	
4,100.0	4,060.9	4,011.1	3,841.5	12.0	22.3	-0.70	-736.1	-754.4	657.8	637.4	20.37	32.285	
4,200.0	4,159.1	4,110.0	3,934.7	12.5	23.0	-0.73	-759.3	-777.7	673.0	652.1	20.94	32.139	
4,300.0	4,257.4	4,208.8	4,027.9	12.9	23.7	-0.76	-782.6	-801.1	688.2	666.7	21.51	32.000	
4,400.0	4,355.6	4,307.6	4,121.0	13.3	24.3	-0.79	-805.8	-824.5	703.5	681.4	22.08	31.867	
4,500.0	4,453.9	4,406.5	4,214.2	13.7	25.0	-0.82	-829.1	-847.8	718.7	696.1	22.64	31.740	
4,600.0	4,552.1	4,505.3	4,307.4	14.1	25.7	-0.85	-852.3	-871.2	733.9	710.7	23.21	31.618	
4,700.0	4,650.4	4,604.1	4,400.5	14.5	26.4	-0.88	-875.6	-894.5	749.2	725.4	23.78	31.501	
4,800.0	4,748.6	4,703.0	4,493.7	14.9	27.1	-0.91	-898.8	-917.9	764.4	740.0	24.35	31.389	
4,900.0	4,846.9	4,801.8	4,586.9	15.3	27.8	-0.93	-922.1	-941.3	779.6	754.7	24.92	31.282	
5,000.0	4,945.2	4,900.6	4,680.1	15.8	28.5	-0.95	-945.4	-964.6	794.9	769.4	25.49	31.179	
5,100.0	5,043.4	4,999.4	4,773.2	16.2	29.1	-0.98	-968.6	-988.0	810.1	784.0	26.07	31.079	
5,124.2	5,067.1	5,023.3	4,795.8	16.3	29.3	-0.98	-974.2	-993.6	813.8	787.6	26.20	31.056	
5,200.0	5,141.8	5,098.1	4,866.3	16.5	29.8	-1.00	-991.8	-1,011.3	826.3	799.7	26.59	31.079	
5,300.0	5,240.8	5,202.5	4,964.7	16.8	30.5	-1.03	-1,016.3	-1,035.9	845.8	818.8	27.06	31.258	
5,400.0	5,340.2	5,342.2	5,097.8	17.1	31.2	-1.05	-1,046.2	-1,066.0	865.7	838.2	27.54	31.434	
5,500.0	5,439.9	5,483.7	5,234.6	17.3	31.7	-1.07	-1,071.8	-1,091.6	884.2	856.2	27.96	31.625	
5,600.0	5,539.9	5,626.9	5,374.6	17.4	32.2	-1.08	-1,092.8	-1,112.7	901.2	872.9	28.31	31.835	
5,660.1	5,600.0	5,713.7	5,460.2	17.5	32.5	-134.95	-1,103.1	-1,123.1	910.7	882.2	28.49	31.964	
5,700.0	5,639.9	5,771.6	5,517.5	17.6	32.6	-134.95	-1,109.0	-1,129.0	916.4	887.7	28.68	31.950	
5,800.0	5,739.9	5,918.2	5,663.2	17.7	32.9	-134.95	-1,120.1	-1,140.2	927.2	898.1	29.14	31.818	
5,900.0	5,839.9	6,066.1	5,810.8	17.8	33.1	-134.95	-1,126.1	-1,146.2	932.9	903.4	29.57	31.550	
6,000.0	5,939.9	6,195.1	5,939.9	18.0	33.3	-134.95	-1,127.1	-1,147.2	933.9	903.9	29.95	31.176	
6,100.0	6,039.9	6,295.1	6,039.9	18.1	33.3	-134.95	-1,127.1	-1,147.2	933.9	903.6	30.29	30.833	
6,200.0	6,139.9	6,395.1	6,139.9	18.3	33.4	-134.95	-1,127.1	-1,147.2	933.9	903.2	30.62	30.495	
6,300.0	6,239.9	6,495.1	6,239.9	18.4	33.5	-134.95	-1,127.1	-1,147.2	933.9	902.9	30.96	30.162	
6,400.0	6,339.9	6,595.1	6,339.9	18.6	33.6	-134.95	-1,127.1	-1,147.2	933.9	902.6	31.30	29.833	
6,500.0	6,439.9	6,695.1	6,439.9	18.7	33.6	-134.95	-1,127.1	-1,147.2	933.9	902.2	31.65	29.509	
6,600.0	6,539.9	6,795.1	6,539.9	18.9	33.7	-134.95	-1,127.1	-1,147.2	933.9	901.9	31.99	29.190	
6,700.0	6,639.9	6,895.1	6,639.9	19.0	33.8	-134.95	-1,127.1	-1,147.2	933.9	901.5	32.34	28.876	
6,800.0	6,739.9	6,995.1	6,739.9	19.2	33.9	-134.95	-1,127.1	-1,147.2	933.9	901.2	32.69	28.566	
6,900.0	6,839.9	7,095.1	6,839.9	19.3	34.0	-134.95	-1,127.1	-1,147.2	933.9	900.8	33.04	28.261	
7,000.0	6,939.9	7,195.1	6,939.9	19.5	34.1	-134.95	-1,127.1	-1,147.2	933.9	900.5	33.40	27.960	
7,100.0	7,039.9	7,295.1	7,039.9	19.6	34.1	-134.95	-1,127.1	-1,147.2	933.9	900.1	33.76	27.664	

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 Campbell JF 17-9D
Project:	SEC.17-T2N-R65W	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Reference Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Campbell JF 17-9D	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 (10-04-12)	Offset TVD Reference:	Offset Datum

Offset Design										Campbell JF 17-6D Pad Sec.17-T2N-R65W - Campbell JF 17-13D - Wellbore #1 - Plan #1 (10-04-12)				Offset Site Error:		0.0 ft	
Survey Program: 0-MWD												Offset Well Error:		0.0 ft			
Reference		Offset		Semi Major Axis			Distance										
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
7,200.0	7,139.9	7,395.1	7,139.9	19.8	34.2	-134.95	-1,127.1	-1,147.2	933.9	899.8	34.12	27.373					
7,300.0	7,239.9	7,495.1	7,239.9	19.9	34.3	-134.95	-1,127.1	-1,147.2	933.9	899.4	34.48	27.086					
7,400.0	7,339.9	7,595.1	7,339.9	20.1	34.4	-134.95	-1,127.1	-1,147.2	933.9	899.0	34.84	26.803					
7,490.1	7,430.0	7,685.3	7,430.0	20.3	34.5	-134.95	-1,127.1	-1,147.2	933.9	898.7	35.17	26.552					

Company:	Great Western	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Project:	SEC.17-T2N-R65W	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Reference Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Campbell JF 17-9D	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 (10-04-12)	Offset TVD Reference:	Offset Datum

Offset Design													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	90.03	0.0	14.8	14.8	14.8	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	90.03	0.0	14.8	14.8	14.6	0.22	65.926		
200.0	200.0	200.0	200.0	0.3	0.3	90.03	0.0	14.8	14.8	14.1	0.67	21.975		
300.0	300.0	300.0	300.0	0.6	0.6	90.03	0.0	14.8	14.8	13.7	1.12	13.185		
400.0	400.0	400.0	400.0	0.8	0.8	90.03	0.0	14.8	14.8	13.2	1.57	9.418		
500.0	500.0	500.0	500.0	1.0	1.0	90.03	0.0	14.8	14.8	12.8	2.02	7.325		
600.0	600.0	600.0	600.0	1.2	1.2	90.03	0.0	14.8	14.8	12.3	2.47	5.993 CC, ES		
700.0	700.0	699.5	699.5	1.5	1.4	93.03	-0.9	16.3	16.3	13.4	2.90	5.635 SF		
800.0	800.0	798.8	798.6	1.7	1.6	99.35	-3.4	20.8	21.1	17.8	3.32	6.361		
900.0	900.0	897.6	897.0	1.9	1.9	105.18	-7.7	28.2	29.4	25.6	3.76	7.818		
1,000.0	1,000.0	995.7	994.4	2.1	2.1	109.35	-13.5	38.5	41.2	37.0	4.22	9.762		
1,100.0	1,100.0	1,092.8	1,090.4	2.4	2.4	112.13	-21.0	51.5	56.5	51.8	4.70	12.003		
1,200.0	1,200.0	1,188.9	1,184.7	2.6	2.7	113.98	-29.9	67.2	75.1	69.9	5.22	14.401		
1,300.0	1,300.0	1,286.2	1,279.9	2.8	3.1	115.22	-40.0	84.9	96.0	90.2	5.75	16.679		
1,400.0	1,400.0	1,384.0	1,375.5	3.0	3.5	116.03	-50.2	102.7	116.9	110.6	6.31	18.539		
1,500.0	1,500.0	1,481.7	1,471.1	3.3	3.9	116.58	-60.3	120.6	137.9	131.0	6.87	20.072		
1,600.0	1,600.0	1,579.4	1,566.6	3.5	4.3	-109.33	-70.5	138.4	159.4	152.5	6.89	23.155		
1,700.0	1,699.8	1,676.7	1,661.7	3.6	4.7	-110.10	-80.6	156.1	182.1	174.8	7.30	24.935		
1,800.0	1,799.5	1,773.6	1,756.4	3.8	5.2	-111.50	-90.7	173.8	206.1	198.4	7.74	26.648		
1,900.0	1,898.7	1,869.9	1,850.6	4.0	5.6	-113.31	-100.7	191.4	231.6	223.5	8.18	28.302		
2,000.0	1,997.5	1,965.5	1,944.1	4.3	6.0	-115.34	-110.7	208.8	258.9	250.2	8.66	29.900		
2,036.0	2,032.9	1,999.8	1,977.6	4.4	6.2	-116.11	-114.2	215.0	269.1	260.3	8.83	30.463		
2,100.0	2,095.8	2,060.6	2,037.0	4.6	6.4	-117.72	-120.6	226.1	287.7	278.6	9.17	31.373		
2,200.0	2,194.0	2,155.5	2,129.8	4.9	6.9	-119.85	-130.4	243.4	317.2	307.4	9.72	32.642		
2,300.0	2,292.3	2,250.5	2,222.7	5.2	7.3	-121.63	-140.3	260.8	346.9	336.6	10.28	33.748		
2,400.0	2,390.5	2,345.4	2,315.5	5.5	7.7	-123.13	-150.2	278.1	376.9	366.1	10.86	34.717		
2,500.0	2,488.8	2,440.4	2,408.4	5.8	8.2	-124.40	-160.1	295.4	407.1	395.7	11.45	35.569		
2,600.0	2,587.0	2,535.4	2,501.2	6.2	8.6	-125.51	-170.0	312.7	437.5	425.4	12.04	36.323		
2,700.0	2,685.3	2,630.3	2,594.1	6.5	9.0	-126.47	-179.8	330.0	468.0	455.3	12.65	36.993		
2,800.0	2,783.5	2,725.3	2,686.9	6.9	9.5	-127.31	-189.7	347.4	498.6	485.3	13.26	37.592		
2,900.0	2,881.8	2,820.2	2,779.7	7.3	9.9	-128.05	-199.6	364.7	529.3	515.4	13.88	38.129		
3,000.0	2,980.1	2,915.2	2,872.6	7.7	10.4	-128.72	-209.5	382.0	560.1	545.5	14.50	38.614		
3,100.0	3,078.3	3,010.2	2,965.4	8.0	10.8	-129.31	-219.4	399.3	590.9	575.7	15.13	39.053		
3,200.0	3,176.6	3,105.1	3,058.3	8.4	11.2	-129.85	-229.2	416.6	621.8	606.0	15.76	39.452		
3,300.0	3,274.8	3,200.1	3,151.1	8.8	11.7	-130.33	-239.1	433.9	652.7	636.3	16.39	39.817		
3,400.0	3,373.1	3,295.0	3,244.0	9.2	12.1	-130.78	-249.0	451.3	683.6	666.6	17.03	40.151		
3,500.0	3,471.3	3,390.0	3,336.8	9.6	12.6	-131.18	-258.9	468.6	714.6	697.0	17.66	40.457		
3,600.0	3,569.6	3,485.0	3,429.6	10.0	13.0	-131.55	-268.8	485.9	745.7	727.3	18.30	40.740		
3,700.0	3,667.8	3,579.9	3,522.5	10.4	13.4	-131.89	-278.6	503.2	776.7	757.8	18.94	41.002		
3,800.0	3,766.1	3,674.9	3,615.3	10.8	13.9	-132.20	-288.5	520.5	807.8	788.2	19.59	41.244		
3,900.0	3,864.4	3,769.8	3,708.2	11.2	14.3	-132.49	-298.4	537.9	838.9	818.6	20.23	41.469		
4,000.0	3,962.6	3,864.8	3,801.0	11.6	14.8	-132.76	-308.3	555.2	870.0	849.1	20.87	41.678		
4,100.0	4,060.9	3,959.8	3,893.9	12.0	15.2	-133.02	-318.1	572.5	901.1	879.6	21.52	41.874		
4,200.0	4,159.1	4,054.7	3,986.7	12.5	15.7	-133.25	-328.0	589.8	932.2	910.1	22.17	42.057		
4,300.0	4,257.4	4,149.7	4,079.5	12.9	16.1	-133.47	-337.9	607.1	963.4	940.6	22.81	42.228		
4,400.0	4,355.6	4,244.6	4,172.4	13.3	16.5	-133.68	-347.8	624.4	994.6	971.1	23.46	42.389		
4,500.0	4,453.9	4,339.6	4,265.2	13.7	17.0	-133.87	-357.7	641.8	1,025.7	1,001.6	24.11	42.541		
4,600.0	4,552.1	4,434.6	4,358.1	14.1	17.4	-134.05	-367.5	659.1	1,056.9	1,032.2	24.76	42.683		
4,700.0	4,650.4	4,529.5	4,450.9	14.5	17.9	-134.22	-377.4	676.4	1,088.1	1,062.7	25.41	42.818		
4,800.0	4,748.6	4,624.5	4,543.8	14.9	18.3	-134.39	-387.3	693.7	1,119.3	1,093.3	26.06	42.945		
4,900.0	4,846.9	4,719.4	4,636.6	15.3	18.8	-134.54	-397.2	711.0	1,150.5	1,123.8	26.72	43.065		
5,000.0	4,945.2	4,814.4	4,729.5	15.8	19.2	-134.68	-407.1	728.4	1,181.8	1,154.4	27.37	43.179		

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 Campbell JF 17-9D
Project:	SEC.17-T2N-R65W	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Reference Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Campbell JF 17-9D	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 (10-04-12)	Offset TVD Reference:	Offset Datum

Offset Design													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		
5,100.0	5,043.4	4,909.4	4,822.3	16.2	19.6	-134.82	-416.9	745.7	1,213.0	1,185.0	28.02	43.287		
5,124.2	5,067.1	4,932.3	4,844.7	16.3	19.8	-134.85	-419.3	749.9	1,220.5	1,192.4	28.18	43.313		
5,200.0	5,141.8	5,004.5	4,915.4	16.5	20.1	-135.26	-426.8	763.0	1,243.5	1,214.8	28.73	43.282		
5,300.0	5,240.8	5,107.3	5,015.8	16.8	20.6	-135.65	-437.5	781.7	1,271.8	1,242.4	29.40	43.259		
5,400.0	5,340.2	5,266.5	5,172.5	17.1	21.0	-135.89	-451.4	806.2	1,294.8	1,264.7	30.06	43.068		
5,500.0	5,439.9	5,429.7	5,334.5	17.3	21.4	-136.04	-461.2	823.3	1,310.5	1,279.9	30.65	42.762		
5,600.0	5,539.9	5,595.4	5,499.8	17.4	21.7	-136.12	-466.5	832.5	1,318.8	1,287.7	31.14	42.353		
5,660.1	5,600.0	5,695.6	5,600.0	17.5	21.8	90.00	-467.3	834.0	1,320.2	1,288.8	31.41	42.038		
5,700.0	5,639.9	5,735.5	5,639.9	17.6	21.9	90.00	-467.3	834.0	1,320.2	1,288.7	31.53	41.877		
5,800.0	5,739.9	5,835.5	5,739.9	17.7	22.0	90.00	-467.3	834.0	1,320.2	1,288.4	31.82	41.486		
5,900.0	5,839.9	5,935.5	5,839.9	17.8	22.1	90.00	-467.3	834.0	1,320.2	1,288.1	32.12	41.097		
6,000.0	5,939.9	6,035.5	5,939.9	18.0	22.2	90.00	-467.3	834.0	1,320.2	1,287.8	32.43	40.711		
6,100.0	6,039.9	6,135.5	6,039.9	18.1	22.4	90.00	-467.3	834.0	1,320.2	1,287.5	32.74	40.329		
6,200.0	6,139.9	6,235.5	6,139.9	18.3	22.5	90.00	-467.3	834.0	1,320.2	1,287.2	33.05	39.949		
6,300.0	6,239.9	6,335.5	6,239.9	18.4	22.6	90.00	-467.3	834.0	1,320.2	1,286.9	33.36	39.573		
6,400.0	6,339.9	6,435.5	6,339.9	18.6	22.7	90.00	-467.3	834.0	1,320.2	1,286.5	33.68	39.200		
6,500.0	6,439.9	6,535.5	6,439.9	18.7	22.8	90.00	-467.3	834.0	1,320.2	1,286.2	34.00	38.831		
6,600.0	6,539.9	6,635.5	6,539.9	18.9	23.0	90.00	-467.3	834.0	1,320.2	1,285.9	34.32	38.465		
6,700.0	6,639.9	6,735.5	6,639.9	19.0	23.1	90.00	-467.3	834.0	1,320.2	1,285.6	34.65	38.103		
6,800.0	6,739.9	6,835.5	6,739.9	19.2	23.2	90.00	-467.3	834.0	1,320.2	1,285.2	34.98	37.745		
6,900.0	6,839.9	6,935.5	6,839.9	19.3	23.3	90.00	-467.3	834.0	1,320.2	1,284.9	35.31	37.391		
7,000.0	6,939.9	7,035.5	6,939.9	19.5	23.5	90.00	-467.3	834.0	1,320.2	1,284.6	35.64	37.041		
7,100.0	7,039.9	7,135.5	7,039.9	19.6	23.6	90.00	-467.3	834.0	1,320.2	1,284.2	35.98	36.695		
7,200.0	7,139.9	7,235.5	7,139.9	19.8	23.7	90.00	-467.3	834.0	1,320.2	1,283.9	36.32	36.352		
7,300.0	7,239.9	7,335.5	7,239.9	19.9	23.9	90.00	-467.3	834.0	1,320.2	1,283.6	36.66	36.014		
7,400.0	7,339.9	7,435.5	7,339.9	20.1	24.0	90.00	-467.3	834.0	1,320.2	1,283.2	37.00	35.679		
7,455.5	7,395.3	7,490.9	7,395.3	20.2	24.1	90.00	-467.3	834.0	1,320.2	1,283.0	37.19	35.496		
7,490.1	7,430.0	7,513.6	7,418.0	20.3	24.1	90.00	-467.3	834.0	1,320.3	1,283.0	37.29	35.402		

Company:	Great Western	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Project:	SEC.17-T2N-R65W	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Reference Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Campbell JF 17-9D	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 (10-04-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4930.0ft (Original Well Elev) Coordinates are relative to: Campbell JF 17-9D
 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: 0.53°



Company:	Great Western	Local Co-ordinate Reference:	Well Campbell JF 17-9D
Project:	SEC.17-T2N-R65W	TVD Reference:	WELL @ 4930.0ft (Original Well Elev)
Reference Site:	Campbell JF 17-6D Pad Sec.17-T2N-R65W	MD Reference:	WELL @ 4930.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Campbell JF 17-9D	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 (10-04-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4930.0ft (Original Well Elev) Coordinates are relative to: Campbell JF 17-9D
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: 0.53°

