

Well Name: Raindance FD 20-33D

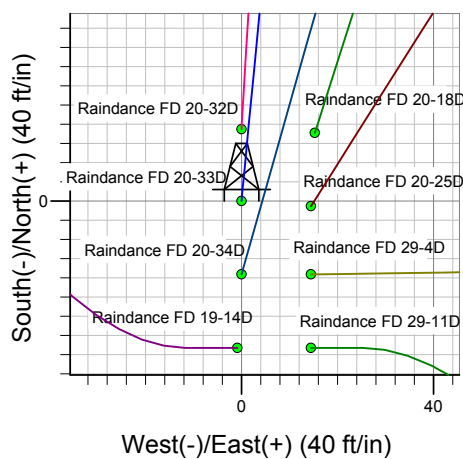
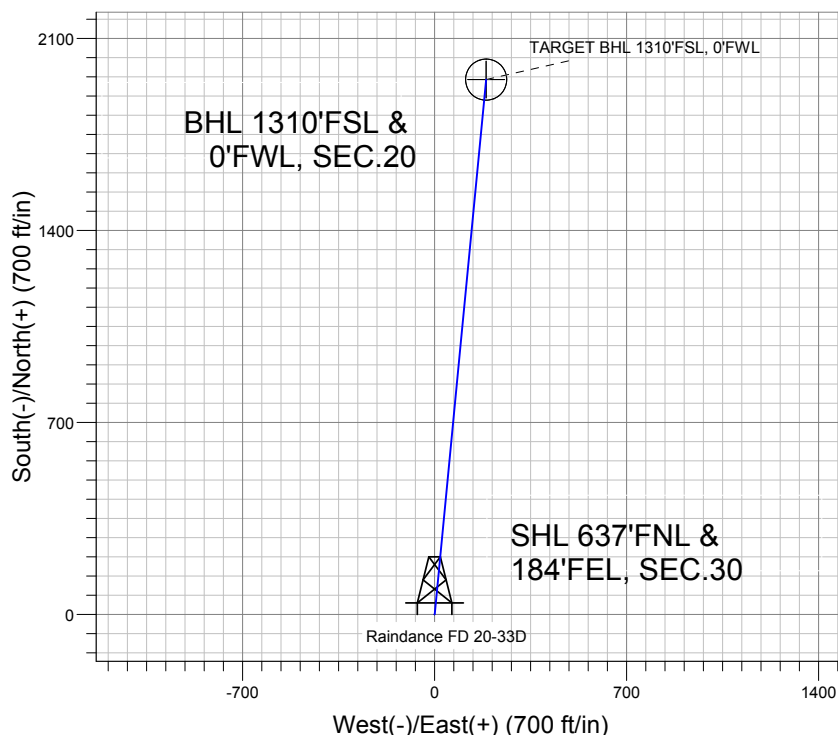
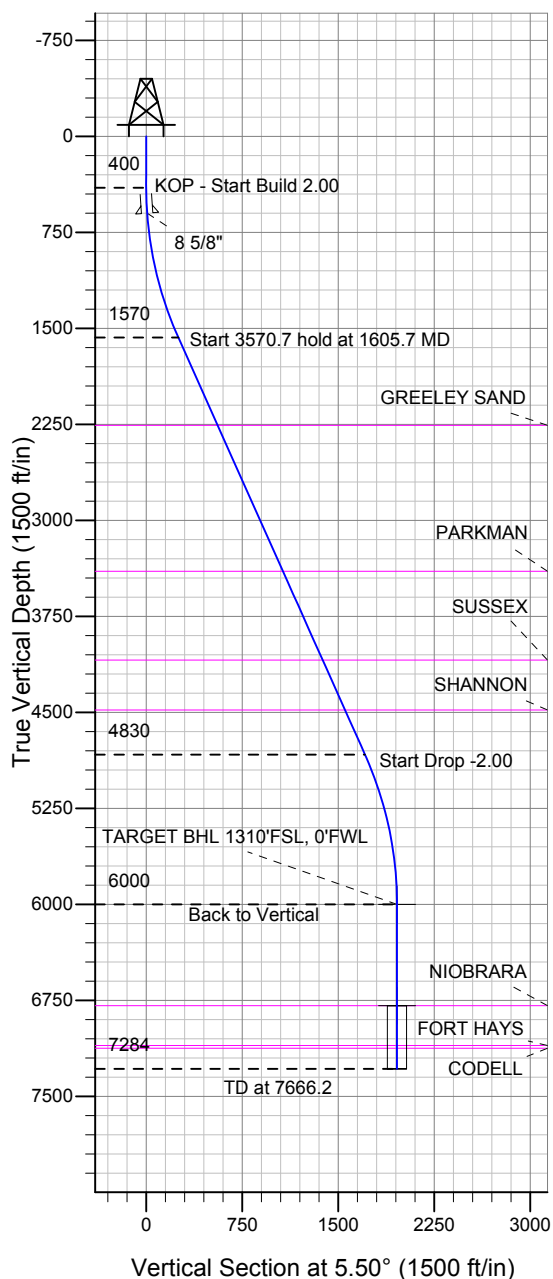
Surface Location: Raindance FD West Row Pad Sec.30-T6N-R67W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4781.9

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1412114.32	3159403.34	40.463242	-104.927119	

Original Well Elev WELL @ 4795.9ft (Original Well Elev)

Great Western



Raindance FD West Row Pad Sec.30-T6N-R67W
 Raindance FD 20-33D
 Plan #1 (10-18-12)
 10:10, October 22 2012



Azimuths to True North
 Magnetic North: 8.78°
 Magnetic Field
 Strength: 53005.9snT
 Dip Angle: 67.03°
 Date: 10/18/2012
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1310'FSL, 0'FWL	6000.0	1949.8	187.8	40.468594	-104.926444	Point
TARGET CIRCLE 1310'FSL & 0'FWL	6791.0	1949.8	187.8	40.468594	-104.926444	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	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1605.7	24.11	5.50	1570.4	248.8	24.0	2.00	5.50	250.0	
4	5176.5	24.11	5.50	4829.6	1701.0	163.8	0.00	0.00	1708.9	
5	6382.2	0.00	0.00	6000.0	1949.8	187.8	2.00	180.00	1958.9	TARGET BHL 1310'FSL, 0'FWL
6	7666.2	0.00	0.00	7284.0	1949.8	187.8	0.00	0.00	1958.9	



Great Western

SEC.30-T6N-R67W

Raindance FD West Row Pad Sec.30-T6N-R67W

Raindance FD 20-33D

Wellbore #1

Plan: Plan #1 (10-18-12)

Standard Planning Report

22 October, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well Raindance FD 20-33D
Company:	Great Western	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Project:	SEC.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	North Reference:	True
Well:	Raindance FD 20-33D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-18-12)		

Project	SEC.30-T6N-R67W, Weld County, Colorado		
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						Raindance FD West Row Pad Sec.30-T6N-R67W											
Site Position:						Northing:			1,412,129.27 ft			Latitude:			40.463283		
From:			Lat/Long			Easting:			3,159,403.24 ft			Longitude:			-104.927119		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.37 °		

Well	Raindance FD 20-33D					
Well Position	+N/-S	-14.9 ft	Northing:	1,412,114.32 ft	Latitude:	40.463242
	+E/-W	0.0 ft	Easting:	3,159,403.34 ft	Longitude:	-104.927119
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,781.9 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/18/2012	8.78	67.03	53,006

Design	Plan #1 (10-18-12)			
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	5.50

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,605.7	24.11	5.50	1,570.4	248.8	24.0	2.00	2.00	0.00	5.50	
5,176.5	24.11	5.50	4,829.6	1,701.0	163.8	0.00	0.00	0.00	0.00	
6,382.2	0.00	0.00	6,000.0	1,949.8	187.8	2.00	-2.00	0.00	180.00	TARGET BHL 131C
7,666.2	0.00	0.00	7,284.0	1,949.8	187.8	0.00	0.00	0.00	0.00	

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Project:	SEC.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	North Reference:	True
Well:	Raindance FD 20-33D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-18-12)		

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
KOP - Start Build 2.00									
440.0	0.80	5.50	440.0	0.3	0.0	0.3	2.00	2.00	0.00
480.0	1.60	5.50	480.0	1.1	0.1	1.1	2.00	2.00	0.00
520.0	2.40	5.50	520.0	2.5	0.2	2.5	2.00	2.00	0.00
560.0	3.20	5.50	559.9	4.4	0.4	4.5	2.00	2.00	0.00
600.0	4.00	5.50	599.8	6.9	0.7	7.0	2.00	2.00	0.00
600.2	4.00	5.50	600.0	7.0	0.7	7.0	0.00	0.00	0.00
8 5/8"									
640.0	4.80	5.50	639.7	10.0	1.0	10.0	2.01	2.01	0.00
680.0	5.60	5.50	679.6	13.6	1.3	13.7	2.00	2.00	0.00
720.0	6.40	5.50	719.3	17.8	1.7	17.9	2.00	2.00	0.00
760.0	7.20	5.50	759.1	22.5	2.2	22.6	2.00	2.00	0.00
800.0	8.00	5.50	798.7	27.8	2.7	27.9	2.00	2.00	0.00
840.0	8.80	5.50	838.3	33.6	3.2	33.7	2.00	2.00	0.00
880.0	9.60	5.50	877.8	39.9	3.8	40.1	2.00	2.00	0.00
920.0	10.40	5.50	917.1	46.8	4.5	47.1	2.00	2.00	0.00
960.0	11.20	5.50	956.4	54.3	5.2	54.6	2.00	2.00	0.00
1,000.0	12.00	5.50	995.6	62.3	6.0	62.6	2.00	2.00	0.00
1,040.0	12.80	5.50	1,034.7	70.9	6.8	71.2	2.00	2.00	0.00
1,080.0	13.60	5.50	1,073.6	80.0	7.7	80.3	2.00	2.00	0.00
1,120.0	14.40	5.50	1,112.4	89.6	8.6	90.0	2.00	2.00	0.00
1,160.0	15.20	5.50	1,151.1	99.8	9.6	100.2	2.00	2.00	0.00
1,200.0	16.00	5.50	1,189.6	110.5	10.6	111.0	2.00	2.00	0.00
1,240.0	16.80	5.50	1,228.0	121.7	11.7	122.3	2.00	2.00	0.00
1,280.0	17.60	5.50	1,266.2	133.5	12.9	134.1	2.00	2.00	0.00
1,320.0	18.40	5.50	1,304.3	145.8	14.0	146.5	2.00	2.00	0.00
1,360.0	19.20	5.50	1,342.1	158.6	15.3	159.3	2.00	2.00	0.00
1,400.0	20.00	5.50	1,379.8	172.0	16.6	172.8	2.00	2.00	0.00
1,440.0	20.80	5.50	1,417.3	185.9	17.9	186.7	2.00	2.00	0.00
1,480.0	21.60	5.50	1,454.6	200.2	19.3	201.2	2.00	2.00	0.00
1,520.0	22.40	5.50	1,491.7	215.2	20.7	216.2	2.00	2.00	0.00
1,560.0	23.20	5.50	1,528.6	230.6	22.2	231.7	2.00	2.00	0.00
1,600.0	24.00	5.50	1,565.2	246.5	23.7	247.7	2.00	2.00	0.00
1,605.7	24.11	5.50	1,570.4	248.8	24.0	250.0	2.00	2.00	0.00
Start 3570.7 hold at 1605.7 MD									
1,640.0	24.11	5.50	1,601.7	262.8	25.3	264.0	0.00	0.00	0.00
1,680.0	24.11	5.50	1,638.2	279.1	26.9	280.4	0.00	0.00	0.00
1,720.0	24.11	5.50	1,674.7	295.3	28.4	296.7	0.00	0.00	0.00
1,760.0	24.11	5.50	1,711.3	311.6	30.0	313.0	0.00	0.00	0.00
1,800.0	24.11	5.50	1,747.8	327.9	31.6	329.4	0.00	0.00	0.00
1,840.0	24.11	5.50	1,784.3	344.1	33.1	345.7	0.00	0.00	0.00
1,880.0	24.11	5.50	1,820.8	360.4	34.7	362.1	0.00	0.00	0.00

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Well:	Raindance FD 20-33D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-18-12)		

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)
1,920.0	24.11	5.50	1,857.3	376.7	36.3	378.4	0.00	0.00	0.00
1,960.0	24.11	5.50	1,893.8	392.9	37.8	394.7	0.00	0.00	0.00
2,000.0	24.11	5.50	1,930.3	409.2	39.4	411.1	0.00	0.00	0.00
2,040.0	24.11	5.50	1,966.8	425.5	41.0	427.4	0.00	0.00	0.00
2,080.0	24.11	5.50	2,003.3	441.7	42.5	443.8	0.00	0.00	0.00
2,120.0	24.11	5.50	2,039.8	458.0	44.1	460.1	0.00	0.00	0.00
2,160.0	24.11	5.50	2,076.3	474.3	45.7	476.5	0.00	0.00	0.00
2,200.0	24.11	5.50	2,112.9	490.5	47.2	492.8	0.00	0.00	0.00
2,240.0	24.11	5.50	2,149.4	506.8	48.8	509.1	0.00	0.00	0.00
2,280.0	24.11	5.50	2,185.9	523.1	50.4	525.5	0.00	0.00	0.00
2,320.0	24.11	5.50	2,222.4	539.3	51.9	541.8	0.00	0.00	0.00
2,357.9	24.11	5.50	2,257.0	554.8	53.4	557.3	0.00	0.00	0.00
GREELEY SAND									
2,360.0	24.11	5.50	2,258.9	555.6	53.5	558.2	0.00	0.00	0.00
2,400.0	24.11	5.50	2,295.4	571.9	55.1	574.5	0.00	0.00	0.00
2,440.0	24.11	5.50	2,331.9	588.1	56.7	590.9	0.00	0.00	0.00
2,480.0	24.11	5.50	2,368.4	604.4	58.2	607.2	0.00	0.00	0.00
2,520.0	24.11	5.50	2,404.9	620.7	59.8	623.5	0.00	0.00	0.00
2,560.0	24.11	5.50	2,441.4	636.9	61.4	639.9	0.00	0.00	0.00
2,600.0	24.11	5.50	2,478.0	653.2	62.9	656.2	0.00	0.00	0.00
2,640.0	24.11	5.50	2,514.5	669.5	64.5	672.6	0.00	0.00	0.00
2,680.0	24.11	5.50	2,551.0	685.7	66.1	688.9	0.00	0.00	0.00
2,720.0	24.11	5.50	2,587.5	702.0	67.6	705.3	0.00	0.00	0.00
2,760.0	24.11	5.50	2,624.0	718.3	69.2	721.6	0.00	0.00	0.00
2,800.0	24.11	5.50	2,660.5	734.5	70.8	737.9	0.00	0.00	0.00
2,840.0	24.11	5.50	2,697.0	750.8	72.3	754.3	0.00	0.00	0.00
2,880.0	24.11	5.50	2,733.5	767.1	73.9	770.6	0.00	0.00	0.00
2,920.0	24.11	5.50	2,770.0	783.3	75.5	787.0	0.00	0.00	0.00
2,960.0	24.11	5.50	2,806.5	799.6	77.0	803.3	0.00	0.00	0.00
3,000.0	24.11	5.50	2,843.0	815.9	78.6	819.6	0.00	0.00	0.00
3,040.0	24.11	5.50	2,879.6	832.1	80.2	836.0	0.00	0.00	0.00
3,080.0	24.11	5.50	2,916.1	848.4	81.7	852.3	0.00	0.00	0.00
3,120.0	24.11	5.50	2,952.6	864.7	83.3	868.7	0.00	0.00	0.00
3,160.0	24.11	5.50	2,989.1	880.9	84.9	885.0	0.00	0.00	0.00
3,200.0	24.11	5.50	3,025.6	897.2	86.4	901.4	0.00	0.00	0.00
3,240.0	24.11	5.50	3,062.1	913.5	88.0	917.7	0.00	0.00	0.00
3,280.0	24.11	5.50	3,098.6	929.7	89.6	934.0	0.00	0.00	0.00
3,320.0	24.11	5.50	3,135.1	946.0	91.1	950.4	0.00	0.00	0.00
3,360.0	24.11	5.50	3,171.6	962.3	92.7	966.7	0.00	0.00	0.00
3,400.0	24.11	5.50	3,208.1	978.5	94.3	983.1	0.00	0.00	0.00
3,440.0	24.11	5.50	3,244.6	994.8	95.8	999.4	0.00	0.00	0.00
3,480.0	24.11	5.50	3,281.2	1,011.1	97.4	1,015.8	0.00	0.00	0.00
3,520.0	24.11	5.50	3,317.7	1,027.3	99.0	1,032.1	0.00	0.00	0.00
3,560.0	24.11	5.50	3,354.2	1,043.6	100.5	1,048.4	0.00	0.00	0.00
3,600.0	24.11	5.50	3,390.7	1,059.9	102.1	1,064.8	0.00	0.00	0.00
3,608.0	24.11	5.50	3,398.0	1,063.1	102.4	1,068.1	0.00	0.00	0.00
PARKMAN									
3,640.0	24.11	5.50	3,427.2	1,076.1	103.7	1,081.1	0.00	0.00	0.00
3,680.0	24.11	5.50	3,463.7	1,092.4	105.2	1,097.5	0.00	0.00	0.00
3,720.0	24.11	5.50	3,500.2	1,108.7	106.8	1,113.8	0.00	0.00	0.00
3,760.0	24.11	5.50	3,536.7	1,124.9	108.4	1,130.1	0.00	0.00	0.00
3,800.0	24.11	5.50	3,573.2	1,141.2	109.9	1,146.5	0.00	0.00	0.00
3,840.0	24.11	5.50	3,609.7	1,157.5	111.5	1,162.8	0.00	0.00	0.00

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Project:	SEC.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site:	Raindance FD West Row Pad	North Reference:	True
Well:	Raindance FD 20-33D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-18-12)		

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	24.11	5.50	3,646.2	1,173.7	113.1	1,179.2	0.00	0.00	0.00
3,920.0	24.11	5.50	3,682.8	1,190.0	114.6	1,195.5	0.00	0.00	0.00
3,960.0	24.11	5.50	3,719.3	1,206.3	116.2	1,211.9	0.00	0.00	0.00
4,000.0	24.11	5.50	3,755.8	1,222.5	117.8	1,228.2	0.00	0.00	0.00
4,040.0	24.11	5.50	3,792.3	1,238.8	119.3	1,244.5	0.00	0.00	0.00
4,080.0	24.11	5.50	3,828.8	1,255.1	120.9	1,260.9	0.00	0.00	0.00
4,120.0	24.11	5.50	3,865.3	1,271.3	122.5	1,277.2	0.00	0.00	0.00
4,160.0	24.11	5.50	3,901.8	1,287.6	124.0	1,293.6	0.00	0.00	0.00
4,200.0	24.11	5.50	3,938.3	1,303.9	125.6	1,309.9	0.00	0.00	0.00
4,240.0	24.11	5.50	3,974.8	1,320.1	127.2	1,326.3	0.00	0.00	0.00
4,280.0	24.11	5.50	4,011.3	1,336.4	128.7	1,342.6	0.00	0.00	0.00
4,320.0	24.11	5.50	4,047.9	1,352.7	130.3	1,358.9	0.00	0.00	0.00
4,360.0	24.11	5.50	4,084.4	1,368.9	131.9	1,375.3	0.00	0.00	0.00
4,367.3	24.11	5.50	4,091.0	1,371.9	132.1	1,378.3	0.00	0.00	0.00
SUSSEX									
4,400.0	24.11	5.50	4,120.9	1,385.2	133.4	1,391.6	0.00	0.00	0.00
4,440.0	24.11	5.50	4,157.4	1,401.5	135.0	1,408.0	0.00	0.00	0.00
4,480.0	24.11	5.50	4,193.9	1,417.7	136.6	1,424.3	0.00	0.00	0.00
4,520.0	24.11	5.50	4,230.4	1,434.0	138.1	1,440.7	0.00	0.00	0.00
4,560.0	24.11	5.50	4,266.9	1,450.3	139.7	1,457.0	0.00	0.00	0.00
4,600.0	24.11	5.50	4,303.4	1,466.5	141.3	1,473.3	0.00	0.00	0.00
4,640.0	24.11	5.50	4,339.9	1,482.8	142.8	1,489.7	0.00	0.00	0.00
4,680.0	24.11	5.50	4,376.4	1,499.1	144.4	1,506.0	0.00	0.00	0.00
4,720.0	24.11	5.50	4,412.9	1,515.3	146.0	1,522.4	0.00	0.00	0.00
4,760.0	24.11	5.50	4,449.5	1,531.6	147.5	1,538.7	0.00	0.00	0.00
4,794.6	24.11	5.50	4,481.0	1,545.7	148.9	1,552.8	0.00	0.00	0.00
SHANNON									
4,800.0	24.11	5.50	4,486.0	1,547.9	149.1	1,555.0	0.00	0.00	0.00
4,840.0	24.11	5.50	4,522.5	1,564.2	150.7	1,571.4	0.00	0.00	0.00
4,880.0	24.11	5.50	4,559.0	1,580.4	152.2	1,587.7	0.00	0.00	0.00
4,920.0	24.11	5.50	4,595.5	1,596.7	153.8	1,604.1	0.00	0.00	0.00
4,960.0	24.11	5.50	4,632.0	1,613.0	155.4	1,620.4	0.00	0.00	0.00
5,000.0	24.11	5.50	4,668.5	1,629.2	156.9	1,636.8	0.00	0.00	0.00
5,040.0	24.11	5.50	4,705.0	1,645.5	158.5	1,653.1	0.00	0.00	0.00
5,080.0	24.11	5.50	4,741.5	1,661.8	160.1	1,669.4	0.00	0.00	0.00
5,120.0	24.11	5.50	4,778.0	1,678.0	161.6	1,685.8	0.00	0.00	0.00
5,160.0	24.11	5.50	4,814.5	1,694.3	163.2	1,702.1	0.00	0.00	0.00
5,176.5	24.11	5.50	4,829.6	1,701.0	163.8	1,708.9	0.00	0.00	0.00
Start Drop -2.00									
5,200.0	23.64	5.50	4,851.1	1,710.5	164.8	1,718.4	2.00	-2.00	0.00
5,240.0	22.84	5.50	4,887.8	1,726.2	166.3	1,734.2	2.00	-2.00	0.00
5,280.0	22.04	5.50	4,924.8	1,741.4	167.7	1,749.4	2.00	-2.00	0.00
5,320.0	21.24	5.50	4,962.0	1,756.1	169.1	1,764.2	2.00	-2.00	0.00
5,360.0	20.44	5.50	4,999.4	1,770.2	170.5	1,778.4	2.00	-2.00	0.00
5,400.0	19.64	5.50	5,037.0	1,783.9	171.8	1,792.1	2.00	-2.00	0.00
5,440.0	18.84	5.50	5,074.7	1,797.0	173.1	1,805.3	2.00	-2.00	0.00
5,480.0	18.04	5.50	5,112.7	1,809.6	174.3	1,818.0	2.00	-2.00	0.00
5,520.0	17.24	5.50	5,150.8	1,821.7	175.5	1,830.1	2.00	-2.00	0.00
5,560.0	16.44	5.50	5,189.1	1,833.2	176.6	1,841.7	2.00	-2.00	0.00
5,600.0	15.64	5.50	5,227.5	1,844.2	177.6	1,852.7	2.00	-2.00	0.00
5,640.0	14.84	5.50	5,266.1	1,854.7	178.6	1,863.3	2.00	-2.00	0.00
5,680.0	14.04	5.50	5,304.8	1,864.6	179.6	1,873.2	2.00	-2.00	0.00
5,720.0	13.24	5.50	5,343.7	1,874.0	180.5	1,882.7	2.00	-2.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Raindance FD 20-33D
Company:	Great Western	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Project:	SEC.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site:	Raindance FD West Row Pad	North Reference:	True
Well:	Raindance FD 20-33D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-18-12)		

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)
5,760.0	12.44	5.50	5,382.7	1,882.8	181.4	1,891.6	2.00	-2.00	0.00
5,800.0	11.64	5.50	5,421.8	1,891.2	182.2	1,899.9	2.00	-2.00	0.00
5,840.0	10.84	5.50	5,461.1	1,898.9	182.9	1,907.7	2.00	-2.00	0.00
5,880.0	10.04	5.50	5,500.4	1,906.1	183.6	1,915.0	2.00	-2.00	0.00
5,920.0	9.24	5.50	5,539.8	1,912.8	184.2	1,921.7	2.00	-2.00	0.00
5,960.0	8.44	5.50	5,579.4	1,918.9	184.8	1,927.8	2.00	-2.00	0.00
6,000.0	7.64	5.50	5,619.0	1,924.5	185.4	1,933.4	2.00	-2.00	0.00
6,040.0	6.84	5.50	5,658.6	1,929.5	185.9	1,938.4	2.00	-2.00	0.00
6,080.0	6.04	5.50	5,698.4	1,934.0	186.3	1,942.9	2.00	-2.00	0.00
6,120.0	5.24	5.50	5,738.2	1,937.9	186.7	1,946.9	2.00	-2.00	0.00
6,160.0	4.44	5.50	5,778.1	1,941.3	187.0	1,950.2	2.00	-2.00	0.00
6,200.0	3.64	5.50	5,818.0	1,944.1	187.3	1,953.1	2.00	-2.00	0.00
6,240.0	2.84	5.50	5,857.9	1,946.3	187.5	1,955.3	2.00	-2.00	0.00
6,280.0	2.04	5.50	5,897.9	1,948.0	187.6	1,957.0	2.00	-2.00	0.00
6,320.0	1.24	5.50	5,937.8	1,949.2	187.7	1,958.2	2.00	-2.00	0.00
6,360.0	0.44	5.50	5,977.8	1,949.7	187.8	1,958.8	2.00	-2.00	0.00
6,382.2	0.00	0.00	6,000.0	1,949.8	187.8	1,958.9	2.00	-2.00	0.00
Back to Vertical - TARGET BHL 1310'FSL, 0'FWL									
6,400.0	0.00	0.00	6,017.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,440.0	0.00	0.00	6,057.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,480.0	0.00	0.00	6,097.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,520.0	0.00	0.00	6,137.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,560.0	0.00	0.00	6,177.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,217.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,640.0	0.00	0.00	6,257.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,680.0	0.00	0.00	6,297.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,720.0	0.00	0.00	6,337.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,760.0	0.00	0.00	6,377.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,417.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,840.0	0.00	0.00	6,457.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,880.0	0.00	0.00	6,497.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,920.0	0.00	0.00	6,537.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
6,960.0	0.00	0.00	6,577.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,617.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,040.0	0.00	0.00	6,657.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,080.0	0.00	0.00	6,697.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,120.0	0.00	0.00	6,737.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,160.0	0.00	0.00	6,777.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,173.2	0.00	0.00	6,791.0	1,949.8	187.8	1,958.9	0.00	0.00	0.00
NIORARA - TARGET CIRCLE 1310'FSL & 0'FWL									
7,200.0	0.00	0.00	6,817.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,240.0	0.00	0.00	6,857.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,280.0	0.00	0.00	6,897.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,320.0	0.00	0.00	6,937.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,360.0	0.00	0.00	6,977.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,400.0	0.00	0.00	7,017.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,440.0	0.00	0.00	7,057.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,480.0	0.00	0.00	7,097.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,484.2	0.00	0.00	7,102.0	1,949.8	187.8	1,958.9	0.00	0.00	0.00
FORT HAYS									
7,506.2	0.00	0.00	7,124.0	1,949.8	187.8	1,958.9	0.00	0.00	0.00
CODELL									
7,520.0	0.00	0.00	7,137.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Raindance FD 20-33D
Company:	Great Western	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Project:	SEC.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	North Reference:	True
Well:	Raindance FD 20-33D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (10-18-12)		

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)
7,560.0	0.00	0.00	7,177.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,217.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,640.0	0.00	0.00	7,257.8	1,949.8	187.8	1,958.9	0.00	0.00	0.00
7,666.2	0.00	0.00	7,284.0	1,949.8	187.8	1,958.9	0.00	0.00	0.00
TD at 7666.2									

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	
- Shape									Latitude Longitude
TARGET BHL 1310'F:		0.00	0.00	6,000.0	1,949.8	187.8	1,414,065.25	3,159,578.54	40.468594 -104.926444
- plan hits target center									
- Point									
TARGET CIRCLE 131		0.00	0.00	6,791.0	1,949.8	187.8	1,414,065.25	3,159,578.54	40.468594 -104.926444
- plan hits target center									
- Circle (radius 75.0)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
600.2	600.0	8 5/8"	8-5/8	12-1/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,357.9	2,257.0	GREELEY SAND		0.00	
3,608.0	3,398.0	PARKMAN		0.00	
4,367.3	4,091.0	SUSSEX		0.00	
4,794.6	4,481.0	SHANNON		0.00	
7,173.2	6,791.0	NIOBRARA		0.00	
7,484.2	7,102.0	FORT HAYS		0.00	
7,506.2	7,124.0	CODELL		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
400.0	400.0	0.0	0.0	KOP - Start Build 2.00
1,605.7	1,570.4	248.8	24.0	Start 3570.7 hold at 1605.7 MD
5,176.5	4,829.6	1,701.0	163.8	Start Drop -2.00
6,382.2	6,000.0	1,949.8	187.8	Back to Vertical
7,666.2	7,284.0	1,949.8	187.8	TD at 7666.2



Great Western

SEC.30-T6N-R67W

Raindance FD West Row Pad Sec.30-T6N-R67W

Raindance FD 20-33D

Wellbore #1

Plan #1 (10-18-12)

Anticollision Report

22 October, 2012

Company:	Great Western	Local Co-ordinate Reference:	Well Rainsance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Rainsance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rainsance FD 20-33D	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 (10-18-12)	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		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
1,300.0	1,285.3	1,278.6	1,253.3	3.8	4.6	35.67	205.4	76.1	96.5	89.9	6.60	14.625		
1,400.0	1,379.8	1,375.0	1,342.3	4.4	5.3	37.37	240.7	87.3	105.6	98.1	7.45	14.171		
1,500.0	1,473.2	1,471.2	1,429.9	5.0	6.0	39.07	278.6	99.3	115.0	106.6	8.43	13.652		
1,605.7	1,570.4	1,572.6	1,520.7	5.7	6.9	40.87	321.6	113.0	125.4	115.8	9.58	13.093		
1,700.0	1,656.5	1,665.2	1,602.5	6.4	7.7	42.33	363.0	126.1	135.6	124.9	10.72	12.652		
1,800.0	1,747.8	1,764.5	1,690.2	7.2	8.5	43.64	407.4	140.3	146.6	134.7	11.97	12.247		
1,900.0	1,839.0	1,863.9	1,777.9	8.0	9.4	44.77	451.9	154.4	157.7	144.4	13.26	11.897		
2,000.0	1,930.3	1,963.2	1,865.6	8.7	10.3	45.75	496.4	168.5	168.8	154.3	14.56	11.594		
2,100.0	2,021.6	2,062.6	1,953.3	9.5	11.2	46.61	540.9	182.7	180.0	164.1	15.89	11.330		
2,200.0	2,112.9	2,161.9	2,041.0	10.3	12.1	47.36	585.3	196.8	191.2	174.0	17.23	11.099		
2,300.0	2,204.1	2,261.2	2,128.7	11.1	13.0	48.04	629.8	210.9	202.5	183.9	18.58	10.897		
2,400.0	2,295.4	2,360.6	2,216.4	11.8	13.9	48.64	674.3	225.1	213.7	193.8	19.94	10.717		
2,500.0	2,386.7	2,459.9	2,304.1	12.6	14.8	49.18	718.7	239.2	225.0	203.7	21.31	10.558		
2,600.0	2,478.0	2,559.3	2,391.8	13.4	15.7	49.67	763.2	253.3	236.3	213.6	22.69	10.416		
2,700.0	2,569.2	2,658.6	2,479.5	14.2	16.6	50.12	807.7	267.5	247.6	223.6	24.07	10.288		
2,800.0	2,660.5	2,757.9	2,567.2	15.0	17.5	50.53	852.2	281.6	259.0	233.5	25.46	10.172		
2,900.0	2,751.8	2,857.3	2,654.9	15.8	18.3	50.90	896.6	295.7	270.3	243.5	26.85	10.068		
3,000.0	2,843.0	2,956.6	2,742.6	16.5	19.2	51.24	941.1	309.9	281.7	253.4	28.24	9.973		
3,100.0	2,934.3	3,055.9	2,830.3	17.3	20.1	51.56	985.6	324.0	293.0	263.4	29.64	9.886		
3,200.0	3,025.6	3,155.3	2,918.0	18.1	21.0	51.85	1,030.1	338.2	304.4	273.4	31.04	9.806		
3,300.0	3,116.9	3,254.6	3,005.7	18.9	21.9	52.12	1,074.5	352.3	315.8	283.3	32.45	9.733		
3,400.0	3,208.1	3,354.0	3,093.3	19.7	22.8	52.37	1,119.0	366.4	327.2	293.3	33.85	9.666		
3,500.0	3,299.4	3,453.3	3,181.0	20.5	23.7	52.61	1,163.5	380.6	338.6	303.3	35.26	9.603		
3,600.0	3,390.7	3,552.6	3,268.7	21.3	24.6	52.83	1,207.9	394.7	350.0	313.3	36.66	9.545		
3,700.0	3,482.0	3,652.0	3,356.4	22.1	25.5	53.04	1,252.4	408.8	361.4	323.3	38.07	9.491		
3,800.0	3,573.2	3,751.3	3,444.1	22.9	26.4	53.23	1,296.9	423.0	372.8	333.3	39.49	9.441		
3,900.0	3,664.5	3,850.7	3,531.8	23.6	27.3	53.41	1,341.4	437.1	384.2	343.3	40.90	9.394		
4,000.0	3,755.8	3,950.0	3,619.5	24.4	28.2	53.58	1,385.8	451.2	395.6	353.3	42.31	9.350		
4,100.0	3,847.1	4,049.3	3,707.2	25.2	29.1	53.75	1,430.3	465.4	407.0	363.3	43.72	9.309		
4,200.0	3,938.3	4,148.7	3,794.9	26.0	30.0	53.90	1,474.8	479.5	418.4	373.3	45.14	9.270		
4,300.0	4,029.6	4,248.0	3,882.6	26.8	30.9	54.04	1,519.2	493.6	429.9	383.3	46.56	9.233		
4,400.0	4,120.9	4,347.4	3,970.3	27.6	31.8	54.18	1,563.7	507.8	441.3	393.3	47.97	9.199		
4,500.0	4,212.1	4,446.7	4,058.0	28.4	32.7	54.31	1,608.2	521.9	452.7	403.3	49.39	9.167		
4,600.0	4,303.4	4,546.0	4,145.7	29.2	33.6	54.44	1,652.7	536.0	464.2	413.3	50.81	9.136		
4,700.0	4,394.7	4,645.4	4,233.4	30.0	34.5	54.55	1,697.1	550.2	475.6	423.4	52.22	9.107		
4,800.0	4,486.0	4,744.7	4,321.1	30.8	35.4	54.67	1,741.6	564.3	487.0	433.4	53.64	9.079		
4,900.0	4,577.2	4,844.1	4,408.8	31.6	36.3	54.77	1,786.1	578.4	498.5	443.4	55.06	9.053		
5,000.0	4,668.5	4,943.4	4,496.5	32.4	37.3	54.88	1,830.5	592.6	509.9	453.4	56.48	9.027		
5,100.0	4,759.8	5,042.7	4,584.2	33.1	38.2	54.98	1,875.0	606.7	521.3	463.4	57.90	9.004		
5,176.5	4,829.6	5,118.7	4,651.3	33.8	38.8	55.05	1,909.0	617.5	530.1	471.1	58.99	8.986		
5,200.0	4,851.1	5,142.1	4,671.9	33.9	39.1	55.11	1,919.5	620.8	532.8	473.5	59.31	8.984 SF		
5,300.0	4,943.4	5,241.2	4,759.4	34.5	40.0	55.19	1,963.9	634.9	545.7	485.2	60.49	9.023		
5,400.0	5,037.0	5,340.0	4,846.6	35.0	40.9	55.01	2,008.1	649.0	560.6	499.2	61.46	9.121		
5,500.0	5,131.7	5,438.3	4,933.4	35.5	41.7	54.61	2,052.1	663.0	577.5	515.3	62.25	9.278		
5,600.0	5,227.5	5,536.1	5,019.7	36.0	42.6	54.01	2,095.9	676.9	596.6	533.7	62.84	9.493		
5,700.0	5,324.3	5,633.1	5,105.4	36.4	43.5	53.24	2,139.3	690.7	617.8	554.5	63.25	9.767		
5,800.0	5,421.8	5,729.3	5,190.3	36.8	44.4	52.33	2,182.4	704.4	641.3	577.8	63.49	10.100		
5,900.0	5,520.1	5,824.5	5,274.4	37.1	45.2	51.32	2,225.0	717.9	667.2	603.7	63.58	10.495		
6,000.0	5,619.0	5,918.7	5,357.5	37.4	46.1	50.24	2,267.2	731.3	695.7	632.2	63.52	10.953		
6,100.0	5,718.3	6,011.7	5,439.6	37.6	46.9	49.12	2,308.8	744.6	726.8	663.5	63.33	11.477		
6,200.0	5,818.0	6,124.7	5,540.1	37.8	47.8	47.65	2,358.0	760.2	759.6	696.8	62.82	12.092		

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 Raindance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Raindance FD 20-33D	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 (10-18-12)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Raindance FD East Row Pad Sec.30-T6N-R67W - Raindance FD 20-18D - Wellbore #1 - Plan #1 (10-1												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
6,300.0	5,917.8	6,244.4	5,648.7	37.9	48.6	46.19	2,406.0	775.5	792.0	729.8	62.15	12.743	
6,382.2	6,000.0	6,344.7	5,741.2	38.0	49.2	50.56	2,442.9	787.2	818.2	756.7	61.57	13.289	
6,400.0	6,017.8	6,366.7	5,761.7	38.0	49.3	50.24	2,450.6	789.6	823.8	762.4	61.41	13.416	
6,500.0	6,117.8	6,492.5	5,879.9	38.1	49.9	48.62	2,491.6	802.6	853.4	792.8	60.62	14.078	
6,600.0	6,217.8	6,622.1	6,003.6	38.1	50.6	47.27	2,528.6	814.4	879.6	819.5	60.01	14.656	
6,700.0	6,317.8	6,755.3	6,132.3	38.2	51.1	46.18	2,561.0	824.7	902.1	842.5	59.58	15.141	
6,800.0	6,417.8	6,891.5	6,265.4	38.3	51.6	45.32	2,588.3	833.4	920.7	861.4	59.30	15.526	
6,900.0	6,517.8	7,030.2	6,402.2	38.4	52.0	44.67	2,609.8	840.2	935.2	876.0	59.15	15.810	
7,000.0	6,617.8	7,170.8	6,541.9	38.4	52.3	44.23	2,625.1	845.1	945.4	886.3	59.13	15.989	
7,100.0	6,717.8	7,312.6	6,683.4	38.5	52.5	43.98	2,634.0	847.9	951.3	892.1	59.22	16.064	
7,200.0	6,817.8	7,447.3	6,818.1	38.6	52.6	43.91	2,636.2	848.6	952.8	893.4	59.41	16.038	
7,300.0	6,917.8	7,547.3	6,918.1	38.7	52.7	43.91	2,636.2	848.6	952.8	893.2	59.61	15.984	
7,400.0	7,017.8	7,647.3	7,018.1	38.8	52.7	43.91	2,636.2	848.6	952.8	893.0	59.81	15.929	
7,500.0	7,117.8	7,747.3	7,118.1	38.8	52.8	43.91	2,636.2	848.6	952.8	892.8	60.02	15.874	
7,600.0	7,217.8	7,847.3	7,218.1	38.9	52.9	43.91	2,636.2	848.6	952.8	892.5	60.23	15.818	
7,666.2	7,284.0	7,913.5	7,284.3	39.0	52.9	43.91	2,636.2	848.6	952.8	892.4	60.37	15.781	

Company:	Great Western	Local Co-ordinate Reference:	Well Rainsance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Rainsance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rainsance FD 20-33D	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 (10-18-12)	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		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.7	0.7	0.0	0.0	94.32	-1.1	14.5	14.5	14.5	0.00	N/A		
100.0	100.0	100.7	100.7	0.1	0.1	94.32	-1.1	14.5	14.5	14.3	0.23	64.111		
200.0	200.0	200.7	200.7	0.3	0.3	94.32	-1.1	14.5	14.5	13.8	0.68	21.470		
300.0	300.0	300.7	300.7	0.6	0.6	94.32	-1.1	14.5	14.5	13.4	1.13	12.894		
400.0	400.0	400.7	400.7	0.8	0.8	94.32	-1.1	14.5	14.5	12.9	1.57	9.214		
441.4	441.4	442.1	442.1	0.9	0.9	90.00	-1.1	14.5	14.5	12.7	1.76	8.239 CC		
500.0	500.0	500.7	500.7	1.0	1.0	95.69	-1.1	14.5	14.6	12.6	2.02	7.205 ES		
600.0	599.8	600.5	600.5	1.2	1.2	114.67	-1.1	14.5	16.0	13.5	2.48	6.449 SF		
700.0	699.5	700.2	700.2	1.5	1.5	136.54	-1.1	14.5	21.2	18.2	2.94	7.198		
800.0	798.7	799.4	799.4	1.7	1.7	152.02	-1.1	14.5	31.2	27.8	3.40	9.167		
900.0	897.5	899.2	899.2	2.0	1.9	159.67	0.4	15.4	44.4	40.6	3.85	11.527		
1,000.0	995.6	999.4	999.3	2.4	2.1	162.37	4.8	18.2	58.9	54.6	4.31	13.673		
1,100.0	1,093.1	1,099.9	1,099.4	2.8	2.4	162.88	12.2	22.8	74.2	69.4	4.78	15.538		
1,200.0	1,189.6	1,200.7	1,199.4	3.3	2.6	162.28	22.6	29.4	90.3	85.1	5.27	17.131		
1,300.0	1,285.3	1,301.7	1,299.2	3.8	2.9	161.08	36.0	37.9	107.3	101.5	5.81	18.458		
1,400.0	1,379.8	1,402.9	1,398.5	4.4	3.2	159.53	52.4	48.2	125.0	118.6	6.41	19.520		
1,500.0	1,473.2	1,504.4	1,497.3	5.0	3.6	157.79	71.7	60.5	143.7	136.6	7.07	20.316		
1,605.7	1,570.4	1,611.7	1,600.9	5.7	4.0	155.83	95.5	75.5	164.5	156.6	7.88	20.875		
1,700.0	1,656.5	1,707.8	1,692.7	6.4	4.5	153.98	119.5	90.6	182.6	173.9	8.74	20.886		
1,800.0	1,747.8	1,810.1	1,789.3	7.2	5.1	151.57	147.9	108.6	200.0	190.2	9.79	20.430		
1,900.0	1,839.0	1,909.0	1,882.0	8.0	5.7	149.12	177.2	127.1	216.3	205.4	10.93	19.792		
2,000.0	1,930.3	2,007.3	1,974.0	8.7	6.3	147.02	206.3	145.5	233.0	220.8	12.12	19.222		
2,100.0	2,021.6	2,105.5	2,066.0	9.5	6.9	145.20	235.4	163.8	249.9	236.5	13.35	18.720		
2,200.0	2,112.9	2,203.8	2,158.1	10.3	7.5	143.61	264.5	182.2	267.0	252.4	14.61	18.282		
2,300.0	2,204.1	2,302.1	2,250.1	11.1	8.2	142.22	293.6	200.6	284.3	268.4	15.88	17.899		
2,400.0	2,295.4	2,400.3	2,342.2	11.8	8.8	140.98	322.7	219.0	301.8	284.6	17.18	17.564		
2,500.0	2,386.7	2,498.6	2,434.2	12.6	9.5	139.88	351.8	237.4	319.4	300.9	18.49	17.271		
2,600.0	2,478.0	2,596.9	2,526.2	13.4	10.2	138.90	380.9	255.8	337.0	317.2	19.81	17.012		
2,700.0	2,569.2	2,695.1	2,618.3	14.2	10.8	138.01	410.0	274.2	354.8	333.7	21.14	16.783		
2,800.0	2,660.5	2,793.4	2,710.3	15.0	11.5	137.21	439.1	292.5	372.6	350.2	22.48	16.579		
2,900.0	2,751.8	2,891.7	2,802.4	15.8	12.1	136.48	468.2	310.9	390.6	366.7	23.82	16.397		
3,000.0	2,843.0	2,990.0	2,894.4	16.5	12.8	135.81	497.3	329.3	408.5	383.4	25.16	16.234		
3,100.0	2,934.3	3,088.2	2,986.4	17.3	13.5	135.20	526.5	347.7	426.5	400.0	26.52	16.086		
3,200.0	3,025.6	3,186.5	3,078.5	18.1	14.2	134.64	555.6	366.1	444.6	416.7	27.87	15.953		
3,300.0	3,116.9	3,284.8	3,170.5	18.9	14.8	134.12	584.7	384.5	462.7	433.5	29.22	15.832		
3,400.0	3,208.1	3,383.0	3,262.5	19.7	15.5	133.65	613.8	402.9	480.8	450.2	30.58	15.722		
3,500.0	3,299.4	3,481.3	3,354.6	20.5	16.2	133.20	642.9	421.2	499.0	467.0	31.94	15.621		
3,600.0	3,390.7	3,579.6	3,446.6	21.3	16.9	132.79	672.0	439.6	517.1	483.8	33.30	15.528		
3,700.0	3,482.0	3,677.8	3,538.7	22.1	17.6	132.41	701.1	458.0	535.4	500.7	34.67	15.442		
3,800.0	3,573.2	3,776.1	3,630.7	22.9	18.2	132.05	730.2	476.4	553.6	517.6	36.03	15.364		
3,900.0	3,664.5	3,874.4	3,722.7	23.6	18.9	131.71	759.3	494.8	571.8	534.4	37.40	15.291		
4,000.0	3,755.8	3,972.6	3,814.8	24.4	19.6	131.40	788.4	513.2	590.1	551.3	38.76	15.223		
4,100.0	3,847.1	4,070.9	3,906.8	25.2	20.3	131.10	817.5	531.5	608.4	568.3	40.13	15.160		
4,200.0	3,938.3	4,169.2	3,998.9	26.0	21.0	130.82	846.6	549.9	626.7	585.2	41.50	15.101		
4,300.0	4,029.6	4,267.4	4,090.9	26.8	21.6	130.56	875.7	568.3	645.0	602.1	42.87	15.046		
4,400.0	4,120.9	4,365.7	4,182.9	27.6	22.3	130.31	904.8	586.7	663.3	619.1	44.24	14.994		
4,500.0	4,212.1	4,464.0	4,275.0	28.4	23.0	130.07	933.9	605.1	681.7	636.0	45.61	14.946		
4,600.0	4,303.4	4,562.2	4,367.0	29.2	23.7	129.85	963.0	623.5	700.0	653.0	46.98	14.901		
4,700.0	4,394.7	4,660.5	4,459.1	30.0	24.4	129.64	992.2	641.9	718.4	670.0	48.35	14.858		
4,800.0	4,486.0	4,758.8	4,551.1	30.8	25.1	129.44	1,021.3	660.2	736.7	687.0	49.72	14.817		
4,900.0	4,577.2	4,857.0	4,643.1	31.6	25.7	129.25	1,050.4	678.6	755.1	704.0	51.09	14.779		

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 Raindance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Raindance FD 20-33D	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 (10-18-12)	Offset TVD Reference:	Offset Datum

Offset Design		Raindance FD East Row Pad Sec.30-T6N-R67W - Raindance FD 20-25D - Wellbore #1 - Plan #1 (10-1											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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	Offset Wellbore Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
5,000.0	4,668.5	4,955.3	4,735.2	32.4	26.4	129.07	1,079.5	697.0	773.5	721.0	52.46	14.743		
5,100.0	4,759.8	5,053.6	4,827.2	33.1	27.1	128.89	1,108.6	715.4	791.9	738.0	53.84	14.709		
5,176.5	4,829.6	5,128.7	4,897.6	33.8	27.6	128.76	1,130.8	729.5	805.9	751.0	54.88	14.684		
5,200.0	4,851.1	5,151.8	4,919.3	33.9	27.8	128.79	1,137.7	733.8	810.2	755.0	55.20	14.679		
5,300.0	4,943.4	5,249.3	5,010.6	34.5	28.5	128.76	1,166.5	752.0	827.0	770.6	56.45	14.652		
5,400.0	5,037.0	5,341.8	5,097.9	35.0	29.0	128.69	1,192.4	768.3	842.2	784.7	57.52	14.642		
5,500.0	5,131.7	5,434.6	5,186.4	35.5	29.4	128.63	1,215.8	783.2	856.0	797.5	58.48	14.637		
5,600.0	5,227.5	5,527.6	5,276.0	36.0	29.8	128.58	1,236.9	796.5	868.3	809.0	59.36	14.629		
5,700.0	5,324.3	5,620.8	5,366.5	36.4	30.2	128.54	1,255.6	808.3	879.2	819.1	60.15	14.618		
5,800.0	5,421.8	5,714.2	5,457.9	36.8	30.5	128.51	1,271.8	818.5	888.7	827.8	60.84	14.606		
5,900.0	5,520.1	5,807.7	5,550.1	37.1	30.8	128.48	1,285.5	827.2	896.7	835.2	61.45	14.592		
6,000.0	5,619.0	5,900.0	5,641.4	37.4	31.1	128.46	1,296.5	834.1	903.2	841.2	61.96	14.577		
6,100.0	5,718.3	5,995.2	5,736.1	37.6	31.3	128.45	1,305.3	839.6	908.2	845.8	62.38	14.559		
6,200.0	5,818.0	6,089.1	5,829.6	37.8	31.4	128.44	1,311.3	843.4	911.7	849.0	62.69	14.542		
6,300.0	5,917.8	6,183.0	5,923.5	37.9	31.6	128.43	1,314.7	845.6	913.7	850.7	62.91	14.522		
6,382.2	6,000.0	6,260.2	6,000.7	38.0	31.6	133.93	1,315.6	846.1	914.2	851.1	63.03	14.505		
6,400.0	6,017.8	6,278.1	6,018.5	38.0	31.7	133.93	1,315.6	846.1	914.2	851.1	63.05	14.498		
6,500.0	6,117.8	6,378.1	6,118.5	38.1	31.7	133.93	1,315.6	846.1	914.2	850.9	63.23	14.458		
6,600.0	6,217.8	6,478.1	6,218.5	38.1	31.8	133.93	1,315.6	846.1	914.2	850.8	63.40	14.418		
6,700.0	6,317.8	6,578.1	6,318.5	38.2	31.9	133.93	1,315.6	846.1	914.2	850.6	63.58	14.378		
6,800.0	6,417.8	6,678.1	6,418.5	38.3	32.0	133.93	1,315.6	846.1	914.2	850.4	63.76	14.337		
6,900.0	6,517.8	6,778.1	6,518.5	38.4	32.1	133.93	1,315.6	846.1	914.2	850.2	63.95	14.295		
7,000.0	6,617.8	6,878.1	6,618.5	38.4	32.2	133.93	1,315.6	846.1	914.2	850.0	64.13	14.254		
7,100.0	6,717.8	6,978.1	6,718.5	38.5	32.3	133.93	1,315.6	846.1	914.2	849.8	64.32	14.212		
7,200.0	6,817.8	7,078.1	6,818.5	38.6	32.4	133.93	1,315.6	846.1	914.2	849.6	64.52	14.170		
7,300.0	6,917.8	7,178.1	6,918.5	38.7	32.5	133.93	1,315.6	846.1	914.2	849.5	64.71	14.127		
7,400.0	7,017.8	7,278.1	7,018.5	38.8	32.6	133.93	1,315.6	846.1	914.2	849.3	64.91	14.084		
7,500.0	7,117.8	7,378.1	7,118.5	38.8	32.7	133.93	1,315.6	846.1	914.2	849.1	65.11	14.041		
7,600.0	7,217.8	7,478.1	7,218.5	38.9	32.8	133.93	1,315.6	846.1	914.2	848.9	65.31	13.998		
7,666.2	7,284.0	7,544.2	7,284.7	39.0	32.9	133.93	1,315.6	846.1	914.2	848.7	65.44	13.969		

Company:	Great Western	Local Co-ordinate Reference:	Well Raindance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Raindance FD 20-33D	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 (10-18-12)	Offset TVD Reference:	Offset Datum

Offset Design Raindance FD West Row Pad Sec.30-T6N-R67W - Raindance FD 20-32D - Wellbore #1 - Plan #1 (10-1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
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	
0.0	0.0	0.4	0.4	0.0	0.0	0.00	14.9	0.0	14.9	14.9	0.00	N/A		
100.0	100.0	100.4	100.4	0.1	0.1	0.00	14.9	0.0	14.9	14.7	0.23	66.191		
166.5	166.5	166.9	166.9	0.3	0.3	0.00	14.9	0.0	14.9	14.4	0.52	28.465 CC		
200.0	200.0	200.4	200.4	0.3	0.3	0.00	14.9	0.0	14.9	14.3	0.68	22.122 ES		
300.0	300.0	300.0	300.0	0.6	0.6	0.35	16.7	0.1	16.7	15.6	1.13	14.810		
400.0	400.0	399.0	398.9	0.8	0.8	1.06	21.8	0.4	21.9	20.3	1.59	13.805		
500.0	500.0	497.9	497.4	1.0	1.0	-4.01	30.4	0.9	28.8	26.8	2.04	14.140		
600.0	599.8	596.6	595.3	1.2	1.3	-3.96	42.3	1.6	35.7	33.2	2.49	14.320		
700.0	699.5	695.0	692.5	1.5	1.6	-4.10	57.5	2.5	42.5	39.6	2.95	14.404		
800.0	798.7	793.2	789.0	1.7	2.0	-4.34	76.0	3.6	49.3	45.9	3.42	14.416		
900.0	897.5	891.2	884.5	2.0	2.4	-4.66	97.8	4.9	56.1	52.2	3.90	14.369		
1,000.0	995.6	988.9	979.0	2.4	2.9	-5.02	122.7	6.3	62.7	58.3	4.40	14.270		
1,100.0	1,093.1	1,086.5	1,072.4	2.8	3.4	-5.42	150.8	8.0	69.3	64.4	4.91	14.126		
1,200.0	1,189.6	1,183.8	1,164.6	3.3	4.0	-5.84	181.9	9.8	75.9	70.4	5.44	13.943		
1,300.0	1,285.3	1,280.9	1,255.4	3.8	4.6	-6.29	216.1	11.8	82.3	76.3	6.00	13.720		
1,400.0	1,379.8	1,377.8	1,344.9	4.4	5.3	-6.74	253.3	14.0	88.7	82.1	6.57	13.502		
1,500.0	1,473.2	1,474.5	1,432.9	5.0	6.0	-7.21	293.3	16.3	94.9	87.7	7.18	13.215		
1,605.7	1,570.4	1,576.5	1,524.2	5.7	6.9	-7.72	338.8	19.0	101.4	93.6	7.86	12.905		
1,700.0	1,656.5	1,667.2	1,603.9	6.4	7.7	-8.09	381.9	21.5	108.7	100.1	8.54	12.729 SF		
1,800.0	1,747.8	1,762.9	1,686.5	7.2	8.6	-8.25	430.1	24.3	119.6	110.3	9.27	12.896		
1,900.0	1,839.0	1,859.7	1,768.6	8.0	9.5	-8.25	481.3	27.3	133.4	123.4	10.03	13.310		
2,000.0	1,930.3	1,958.6	1,852.2	8.7	10.5	-8.23	534.1	30.4	147.8	137.0	10.79	13.693		
2,100.0	2,021.6	2,057.6	1,935.9	9.5	11.5	-8.21	586.9	33.5	162.1	150.6	11.57	14.017		
2,200.0	2,112.9	2,156.6	2,019.5	10.3	12.5	-8.20	639.7	36.6	176.5	164.1	12.35	14.293		
2,300.0	2,204.1	2,255.5	2,103.2	11.1	13.5	-8.19	692.5	39.7	190.8	177.7	13.13	14.531		
2,400.0	2,295.4	2,354.5	2,186.8	11.8	14.5	-8.18	745.3	42.8	205.2	191.3	13.92	14.737		
2,500.0	2,386.7	2,453.5	2,270.5	12.6	15.5	-8.17	798.1	45.9	219.5	204.8	14.72	14.918		
2,600.0	2,478.0	2,552.4	2,354.1	13.4	16.5	-8.16	850.9	49.0	233.9	218.4	15.51	15.077		
2,700.0	2,569.2	2,651.4	2,437.8	14.2	17.5	-8.15	903.7	52.1	248.2	231.9	16.31	15.219		
2,800.0	2,660.5	2,750.4	2,521.4	15.0	18.5	-8.14	956.5	55.1	262.6	245.5	17.11	15.345		
2,900.0	2,751.8	2,849.3	2,605.0	15.8	19.6	-8.14	1,009.3	58.2	276.9	259.0	17.92	15.458		
3,000.0	2,843.0	2,948.3	2,688.7	16.5	20.6	-8.13	1,062.1	61.3	291.3	272.6	18.72	15.561		
3,100.0	2,934.3	3,047.2	2,772.3	17.3	21.6	-8.13	1,114.9	64.4	305.6	286.1	19.53	15.653		
3,200.0	3,025.6	3,146.2	2,856.0	18.1	22.6	-8.12	1,167.7	67.5	320.0	299.7	20.33	15.738		
3,300.0	3,116.9	3,245.2	2,939.6	18.9	23.6	-8.12	1,220.4	70.6	334.3	313.2	21.14	15.815		
3,400.0	3,208.1	3,344.1	3,023.3	19.7	24.6	-8.12	1,273.2	73.7	348.7	326.7	21.95	15.886		
3,500.0	3,299.4	3,443.1	3,106.9	20.5	25.6	-8.11	1,326.0	76.8	363.0	340.3	22.76	15.951		
3,600.0	3,390.7	3,542.1	3,190.6	21.3	26.6	-8.11	1,378.8	79.9	377.4	353.8	23.57	16.011		
3,700.0	3,482.0	3,641.0	3,274.2	22.1	27.6	-8.11	1,431.6	83.0	391.7	367.4	24.38	16.067		
3,800.0	3,573.2	3,740.0	3,357.9	22.9	28.6	-8.10	1,484.4	86.1	406.1	380.9	25.19	16.118		
3,900.0	3,664.5	3,839.0	3,441.5	23.6	29.7	-8.10	1,537.2	89.2	420.4	394.4	26.01	16.166		
4,000.0	3,755.8	3,937.9	3,525.2	24.4	30.7	-8.10	1,590.0	92.2	434.8	408.0	26.82	16.211		
4,100.0	3,847.1	4,036.9	3,608.8	25.2	31.7	-8.10	1,642.8	95.3	449.1	421.5	27.63	16.253		
4,200.0	3,938.3	4,135.9	3,692.5	26.0	32.7	-8.10	1,695.6	98.4	463.5	435.0	28.45	16.292		
4,300.0	4,029.6	4,234.8	3,776.1	26.8	33.7	-8.09	1,748.4	101.5	477.8	448.6	29.26	16.329		
4,400.0	4,120.9	4,333.8	3,859.8	27.6	34.7	-8.09	1,801.2	104.6	492.2	462.1	30.08	16.363		
4,500.0	4,212.1	4,432.8	3,943.4	28.4	35.7	-8.09	1,854.0	107.7	506.5	475.7	30.89	16.396		
4,600.0	4,303.4	4,531.7	4,027.1	29.2	36.7	-8.09	1,906.8	110.8	520.9	489.2	31.71	16.427		
4,700.0	4,394.7	4,630.7	4,110.7	30.0	37.8	-8.09	1,959.6	113.9	535.2	502.7	32.53	16.456		
4,800.0	4,486.0	4,729.7	4,194.4	30.8	38.8	-8.09	2,012.4	117.0	549.6	516.3	33.34	16.483		
4,900.0	4,577.2	4,828.6	4,278.0	31.6	39.8	-8.08	2,065.2	120.1	563.9	529.8	34.16	16.509		

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 Raindance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Raindance FD 20-33D	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 (10-18-12)	Offset TVD Reference:	Offset Datum

Offset Design Raindance FD West Row Pad Sec.30-T6N-R67W - Raindance FD 20-32D - Wellbore #1 - Plan #1 (10-1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,668.5	4,927.6	4,361.7	32.4	40.8	-8.08	-8.08	2,118.0	123.2	578.3	543.3	34.98	16.534	
5,100.0	4,759.8	5,026.5	4,445.3	33.1	41.8	-8.08	-8.08	2,170.8	126.3	592.6	556.9	35.79	16.558	
5,176.5	4,829.6	5,102.2	4,509.3	33.8	42.6	-8.08	-8.08	2,211.1	128.6	603.6	567.2	36.42	16.575	
5,200.0	4,851.1	5,125.5	4,529.0	33.9	42.8	-8.09	-8.09	2,223.6	129.4	607.1	570.5	36.60	16.588	
5,300.0	4,943.4	5,224.1	4,612.3	34.5	43.8	-8.10	-8.10	2,276.1	132.4	624.0	586.6	37.30	16.727	
5,400.0	5,037.0	5,322.0	4,695.0	35.0	44.8	-8.08	-8.08	2,328.4	135.5	644.2	606.3	37.93	16.982	
5,500.0	5,131.7	5,419.1	4,777.1	35.5	45.8	-8.04	-8.04	2,380.2	138.5	667.8	629.3	38.49	17.350	
5,600.0	5,227.5	5,515.4	4,858.5	36.0	46.8	-7.97	-7.97	2,431.6	141.5	694.8	655.8	38.97	17.828	
5,700.0	5,324.3	5,610.7	4,939.0	36.4	47.8	-7.88	-7.88	2,482.4	144.5	725.1	685.7	39.38	18.414	
5,800.0	5,421.8	5,704.8	5,018.6	36.8	48.8	-7.77	-7.77	2,532.6	147.5	758.7	719.0	39.71	19.107	
5,900.0	5,520.1	5,797.8	5,097.2	37.1	49.7	-7.66	-7.66	2,582.2	150.4	795.5	755.5	39.96	19.909	
6,000.0	5,619.0	5,889.4	5,174.6	37.4	50.7	-7.54	-7.54	2,631.1	153.2	835.5	795.4	40.13	20.821	
6,100.0	5,718.3	5,979.5	5,250.8	37.6	51.6	-7.43	-7.43	2,679.2	156.0	878.7	838.5	40.22	21.846	
6,200.0	5,818.0	6,068.0	5,325.6	37.8	52.5	-7.31	-7.31	2,726.4	158.8	925.0	884.8	40.24	22.987	
6,300.0	5,917.8	6,154.9	5,399.1	37.9	53.4	-7.19	-7.19	2,772.8	161.5	974.4	934.2	40.18	24.249	
6,382.2	6,000.0	6,225.0	5,458.3	38.0	54.1	-1.60	-1.60	2,810.1	163.7	1,017.1	977.1	40.08	25.381	
6,400.0	6,017.8	6,241.4	5,472.1	38.0	54.3	-1.56	-1.56	2,818.9	164.2	1,026.6	986.5	40.15	25.572	
6,500.0	6,117.8	6,376.8	5,588.4	38.1	55.3	-1.19	-1.19	2,888.3	168.3	1,077.9	1,037.2	40.67	26.502	
6,600.0	6,217.8	6,520.0	5,714.6	38.1	56.3	-0.89	-0.89	2,955.5	172.2	1,124.8	1,083.6	41.22	27.290	
6,700.0	6,317.8	6,670.7	5,851.0	38.2	57.3	-0.63	-0.63	3,019.5	176.0	1,167.3	1,125.5	41.79	27.933	
6,800.0	6,417.8	6,828.6	5,997.4	38.3	58.2	-0.43	-0.43	3,078.7	179.4	1,204.8	1,162.4	42.36	28.438	
6,900.0	6,517.8	6,993.3	6,153.3	38.4	59.0	-0.26	-0.26	3,131.8	182.5	1,237.0	1,194.1	42.94	28.810	
7,000.0	6,617.8	7,164.1	6,317.8	38.4	59.8	-0.12	-0.12	3,177.3	185.2	1,263.7	1,220.2	43.49	29.058	
7,100.0	6,717.8	7,340.1	6,489.9	38.5	60.4	-0.02	-0.02	3,213.8	187.4	1,284.5	1,240.5	44.01	29.187	
7,200.0	6,817.8	7,520.0	6,667.8	38.6	60.9	0.05	0.05	3,240.3	188.9	1,299.2	1,254.7	44.49	29.204	
7,300.0	6,917.8	7,702.6	6,849.8	38.7	61.2	0.09	0.09	3,255.6	189.8	1,307.6	1,262.7	44.91	29.115	
7,400.0	7,017.8	7,871.1	7,018.2	38.8	61.3	0.10	0.10	3,259.5	190.0	1,309.7	1,264.5	45.26	28.937	
7,500.0	7,117.8	7,971.1	7,118.2	38.8	61.4	0.10	0.10	3,259.5	190.0	1,309.7	1,264.2	45.54	28.762	
7,600.0	7,217.8	8,071.1	7,218.2	38.9	61.4	0.10	0.10	3,259.5	190.0	1,309.7	1,263.9	45.82	28.586	
7,642.2	7,260.0	8,113.3	7,260.4	39.0	61.5	0.10	0.10	3,259.5	190.0	1,309.7	1,263.8	45.94	28.512	
7,666.2	7,284.0	8,131.9	7,279.0	39.0	61.5	0.10	0.10	3,259.5	190.0	1,309.7	1,263.7	46.00	28.474	

Offset Design Survey Program: 0-MWD													Raindance FD West Row Pad Sec.30-T6N-R67W - Raindance FD 20-34D - Wellbore #1 - Plan #1 (10-1)		Offset Site 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)					
0.0	0.0	0.8	0.8	0.0	0.0	180.00	-15.3	0.0	15.3	15.3	0.00	N/A				
100.0	100.0	100.8	100.8	0.1	0.1	180.00	-15.3	0.0	15.3	15.1	0.23	67.554				
200.0	200.0	200.8	200.8	0.3	0.3	180.00	-15.3	0.0	15.3	14.6	0.68	22.638				
300.0	300.0	300.8	300.8	0.6	0.6	180.00	-15.3	0.0	15.3	14.2	1.13	13.597				
400.0	400.0	400.8	400.8	0.8	0.8	180.00	-15.3	0.0	15.3	13.7	1.58	9.717 CC, ES				
500.0	500.0	500.8	500.8	1.0	1.0	175.06	-15.3	0.0	17.0	15.0	2.03	8.403 SF				
600.0	599.8	600.6	600.6	1.2	1.2	176.21	-15.3	0.0	22.3	19.8	2.48	8.964				
700.0	699.5	700.3	700.3	1.5	1.5	177.27	-15.3	0.0	31.0	28.0	2.94	10.539				
800.0	798.7	799.5	799.5	1.7	1.7	178.03	-15.3	0.0	43.1	39.7	3.39	12.721				
900.0	897.5	898.3	898.3	2.0	1.9	178.55	-15.3	0.0	58.8	54.9	3.84	15.291				
1,000.0	995.6	996.4	996.4	2.4	2.1	178.90	-15.3	0.0	77.9	73.6	4.30	18.123				
1,100.0	1,093.1	1,093.9	1,093.9	2.8	2.3	179.14	-15.3	0.0	100.3	95.6	4.75	21.136				
1,200.0	1,189.6	1,190.4	1,190.4	3.3	2.6	179.31	-15.3	0.0	126.2	121.0	5.20	24.276				
1,300.0	1,285.3	1,286.1	1,286.1	3.8	2.8	179.43	-15.3	0.0	155.5	149.8	5.65	27.504				
1,400.0	1,379.8	1,380.6	1,380.6	4.4	3.0	179.52	-15.3	0.0	188.0	181.9	6.11	30.793				
1,500.0	1,473.2	1,474.0	1,474.0	5.0	3.2	179.59	-15.3	0.0	223.8	217.3	6.56	34.123				
1,605.7	1,570.4	1,578.3	1,578.3	5.7	3.4	179.61	-14.3	0.3	264.3	257.2	7.05	37.488				
1,700.0	1,656.5	1,675.4	1,675.3	6.4	3.7	179.50	-10.1	1.5	299.0	291.5	7.54	39.656				
1,800.0	1,747.8	1,781.0	1,780.5	7.2	3.9	179.29	-2.1	3.8	332.6	324.6	8.08	41.179				
1,900.0	1,839.0	1,889.2	1,888.0	8.0	4.1	178.98	10.1	7.2	362.8	354.1	8.63	42.017				
2,000.0	1,930.3	1,999.9	1,997.3	8.7	4.4	178.60	26.5	11.8	389.3	380.1	9.21	42.277				
2,100.0	2,021.6	2,102.6	2,098.3	9.5	4.7	178.19	44.8	17.0	412.9	403.1	9.78	42.213				
2,200.0	2,112.9	2,199.8	2,193.8	10.3	5.0	177.85	62.4	22.0	436.3	425.9	10.36	42.117				
2,300.0	2,204.1	2,297.0	2,289.2	11.1	5.3	177.54	80.0	27.0	459.7	448.7	10.94	42.010				
2,400.0	2,295.4	2,394.2	2,384.7	11.8	5.6	177.26	97.6	31.9	483.1	471.5	11.53	41.892				
2,500.0	2,386.7	2,491.4	2,480.2	12.6	5.9	177.01	115.1	36.9	506.5	494.3	12.12	41.770				
2,600.0	2,478.0	2,588.6	2,575.6	13.4	6.3	176.78	132.7	41.9	529.9	517.1	12.72	41.647				
2,700.0	2,569.2	2,685.8	2,671.1	14.2	6.6	176.56	150.3	46.9	553.3	540.0	13.32	41.524				
2,800.0	2,660.5	2,783.0	2,766.6	15.0	7.0	176.37	167.8	51.8	576.7	562.8	13.93	41.402				
2,900.0	2,751.8	2,880.2	2,862.1	15.8	7.3	176.19	185.4	56.8	600.1	585.6	14.54	41.281				
3,000.0	2,843.0	2,977.4	2,957.5	16.5	7.7	176.02	203.0	61.8	623.6	608.4	15.15	41.164				
3,100.0	2,934.3	3,074.6	3,053.0	17.3	8.1	175.87	220.6	66.8	647.0	631.2	15.76	41.050				
3,200.0	3,025.6	3,171.8	3,148.5	18.1	8.4	175.73	238.1	71.7	670.4	654.1	16.38	40.939				
3,300.0	3,116.9	3,269.0	3,243.9	18.9	8.8	175.59	255.7	76.7	693.9	676.9	16.99	40.831				
3,400.0	3,208.1	3,366.2	3,339.4	19.7	9.2	175.47	273.3	81.7	717.3	699.7	17.61	40.727				
3,500.0	3,299.4	3,463.4	3,434.9	20.5	9.5	175.35	290.8	86.7	740.8	722.6	18.23	40.626				
3,600.0	3,390.7	3,560.6	3,530.3	21.3	9.9	175.24	308.4	91.6	764.2	745.4	18.86	40.529				
3,700.0	3,482.0	3,657.8	3,625.8	22.1	10.3	175.14	326.0	96.6	787.7	768.2	19.48	40.436				
3,800.0	3,573.2	3,755.0	3,721.3	22.9	10.7	175.04	343.6	101.6	811.2	791.1	20.11	40.346				
3,900.0	3,664.5	3,852.2	3,816.7	23.6	11.0	174.95	361.1	106.6	834.6	813.9	20.73	40.259				
4,000.0	3,755.8	3,949.4	3,912.2	24.4	11.4	174.86	378.7	111.5	858.1	836.7	21.36	40.175				
4,100.0	3,847.1	4,046.6	4,007.7	25.2	11.8	174.78	396.3	116.5	881.6	859.6	21.99	40.094				
4,200.0	3,938.3	4,143.8	4,103.2	26.0	12.2	174.70	413.9	121.5	905.0	882.4	22.62	40.016				
4,300.0	4,029.6	4,241.0	4,198.6	26.8	12.6	174.63	431.4	126.5	928.5	905.2	23.25	39.941				
4,400.0	4,120.9	4,338.2	4,294.1	27.6	13.0	174.56	449.0	131.4	952.0	928.1	23.88	39.868				
4,500.0	4,212.1	4,435.4	4,389.6	28.4	13.4	174.49	466.6	136.4	975.4	950.9	24.51	39.798				
4,600.0	4,303.4	4,532.6	4,485.0	29.2	13.7	174.43	484.1	141.4	998.9	973.8	25.14	39.731				
4,700.0	4,394.7	4,629.8	4,580.5	30.0	14.1	174.37	501.7	146.3	1,022.4	996.6	25.78	39.665				
4,800.0	4,486.0	4,727.0	4,676.0	30.8	14.5	174.31	519.3	151.3	1,045.9	1,019.4	26.41	39.602				
4,900.0	4,577.2	4,824.2	4,771.4	31.6	14.9	174.25	536.9	156.3	1,069.3	1,042.3	27.04	39.541				
5,000.0	4,668.5	4,921.4	4,866.9	32.4	15.3	174.20	554.4	161.3	1,092.8	1,065.1	27.68	39.482				

COMPASS 2003.21 Build 46

Company:	Great Western	Local Co-ordinate Reference:	Well Raindance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Raindance FD 20-33D	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 (10-18-12)	Offset TVD Reference:	Offset Datum

Offset Design Raindance FD West Row Pad Sec.30-T6N-R67W - Raindance FD 20-34D - Wellbore #1 - Plan #1 (10-1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	4,759.8	5,018.6	4,962.4	33.1	15.7	174.15	572.0	166.2	1,116.3	1,088.0	28.31	39.425		
5,176.5	4,829.6	5,092.9	5,035.4	33.8	16.0	174.11	585.4	170.0	1,134.2	1,105.4	28.80	39.383		
5,200.0	4,851.1	5,115.8	5,057.9	33.9	16.1	174.11	589.6	171.2	1,139.7	1,110.7	28.97	39.335		
5,300.0	4,943.4	5,187.3	5,128.2	34.5	16.3	174.12	601.7	174.7	1,161.7	1,132.2	29.57	39.283		
5,400.0	5,037.0	5,257.5	5,197.5	35.0	16.5	174.15	612.0	177.6	1,182.7	1,152.6	30.10	39.292		
5,500.0	5,131.7	5,327.4	5,266.9	35.5	16.7	174.18	620.7	180.0	1,202.6	1,172.0	30.57	39.337		
5,600.0	5,227.5	5,400.0	5,339.1	36.0	16.9	174.22	627.9	182.1	1,221.3	1,190.3	30.99	39.408		
5,700.0	5,324.3	5,466.9	5,405.8	36.4	17.0	174.27	633.0	183.5	1,239.0	1,207.6	31.34	39.528		
5,800.0	5,421.8	5,536.4	5,475.2	36.8	17.2	174.32	636.8	184.6	1,255.5	1,223.8	31.65	39.673		
5,900.0	5,520.1	5,600.0	5,538.7	37.1	17.3	174.38	638.8	185.1	1,270.9	1,239.0	31.88	39.862		
6,000.0	5,619.0	5,681.0	5,619.8	37.4	17.4	174.45	639.4	185.3	1,285.1	1,253.0	32.09	40.044		
6,100.0	5,718.3	5,780.3	5,719.1	37.6	17.5	174.52	639.4	185.3	1,296.6	1,264.3	32.31	40.127		
6,200.0	5,818.0	5,880.0	5,818.8	37.8	17.7	174.57	639.4	185.3	1,304.7	1,272.2	32.49	40.155		
6,300.0	5,917.8	5,979.9	5,918.6	37.9	17.9	174.60	639.4	185.3	1,309.3	1,276.7	32.62	40.133		
6,382.2	6,000.0	6,062.1	6,000.8	38.0	18.0	-179.89	639.4	185.3	1,310.4	1,277.8	32.70	40.077		
6,400.0	6,017.8	6,079.9	6,018.6	38.0	18.0	-179.89	639.4	185.3	1,310.4	1,277.7	32.76	40.003		
6,500.0	6,117.8	6,179.9	6,118.6	38.1	18.2	-179.89	639.4	185.3	1,310.4	1,277.3	33.11	39.580		
6,600.0	6,217.8	6,279.9	6,218.6	38.1	18.3	-179.89	639.4	185.3	1,310.4	1,277.0	33.46	39.163		
6,700.0	6,317.8	6,379.9	6,318.6	38.2	18.5	-179.89	639.4	185.3	1,310.4	1,276.6	33.82	38.752		
6,800.0	6,417.8	6,479.9	6,418.6	38.3	18.7	-179.89	639.4	185.3	1,310.4	1,276.3	34.17	38.348		
6,900.0	6,517.8	6,579.9	6,518.6	38.4	18.8	-179.89	639.4	185.3	1,310.4	1,275.9	34.53	37.950		
7,000.0	6,617.8	6,679.9	6,618.6	38.4	19.0	-179.89	639.4	185.3	1,310.4	1,275.6	34.89	37.557		
7,100.0	6,717.8	6,779.9	6,718.6	38.5	19.1	-179.89	639.4	185.3	1,310.4	1,275.2	35.25	37.171		
7,200.0	6,817.8	6,879.9	6,818.6	38.6	19.3	-179.89	639.4	185.3	1,310.4	1,274.8	35.62	36.791		
7,300.0	6,917.8	6,979.9	6,918.6	38.7	19.5	-179.89	639.4	185.3	1,310.4	1,274.5	35.98	36.417		
7,400.0	7,017.8	7,079.9	7,018.6	38.8	19.7	-179.89	639.4	185.3	1,310.4	1,274.1	36.35	36.049		
7,500.0	7,117.8	7,179.9	7,118.6	38.8	19.8	-179.89	639.4	185.3	1,310.4	1,273.7	36.72	35.686		
7,600.0	7,217.8	7,279.9	7,218.6	38.9	20.0	-179.89	639.4	185.3	1,310.4	1,273.4	37.09	35.329		
7,666.2	7,284.0	7,346.1	7,284.8	39.0	20.1	-179.89	639.4	185.3	1,310.4	1,273.1	37.34	35.096		

Company:	Great Western	Local Co-ordinate Reference:	Well Raindance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Raindance FD 20-33D	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 (10-18-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4795.9ft (Original Well Elev) Coordinates are relative to: Raindance FD 20-33D
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.37°



Company:	Great Western	Local Co-ordinate Reference:	Well Raindance FD 20-33D
Project:	SEC.30-T6N-R67W	TVD Reference:	WELL @ 4795.9ft (Original Well Elev)
Reference Site:	Raindance FD West Row Pad Sec.30-T6N-R67W	MD Reference:	WELL @ 4795.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Raindance FD 20-33D	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 (10-18-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4795.9ft (Original Well Elev) Coordinates are relative to: Raindance FD 20-33D
 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: 0.37°

