

Great Western

Well Name: **Willow Bend LD 18-361HN**

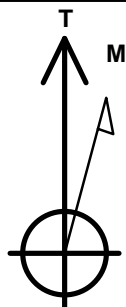
Surface Location: Willow Bend Pad Sec.18-T1S-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 5230.8

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1232792.51	3161528.82	39.970958	-104.923669	
RKB - 16.5' WELL @ 5247.3ft (RKB - 16.5')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 336'FNL & 467'FEL	1.0	0.0	0.0	Point
BHL 470'FSL & 1'FEL	7815.3	-4454.1	445.2	Point
Entry Pt. 460'FNL & 1'FEL	7815.3	-126.4	464.7	Point



Azimuths to True North
Magnetic North: 8.57°

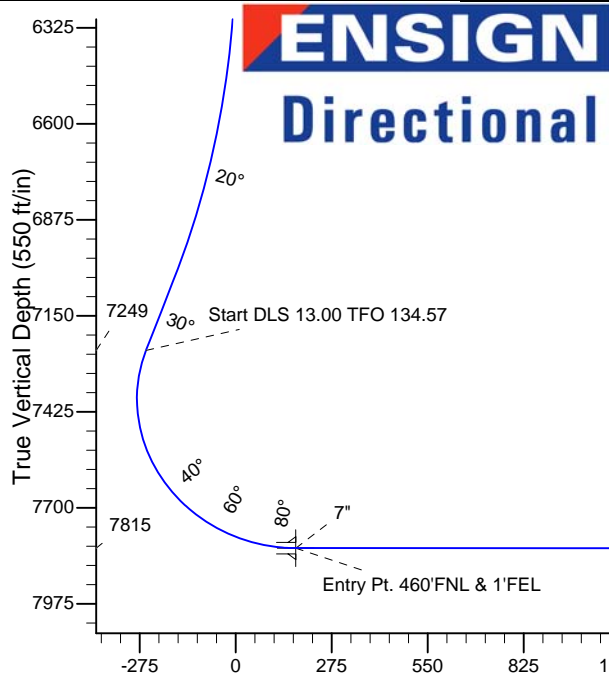
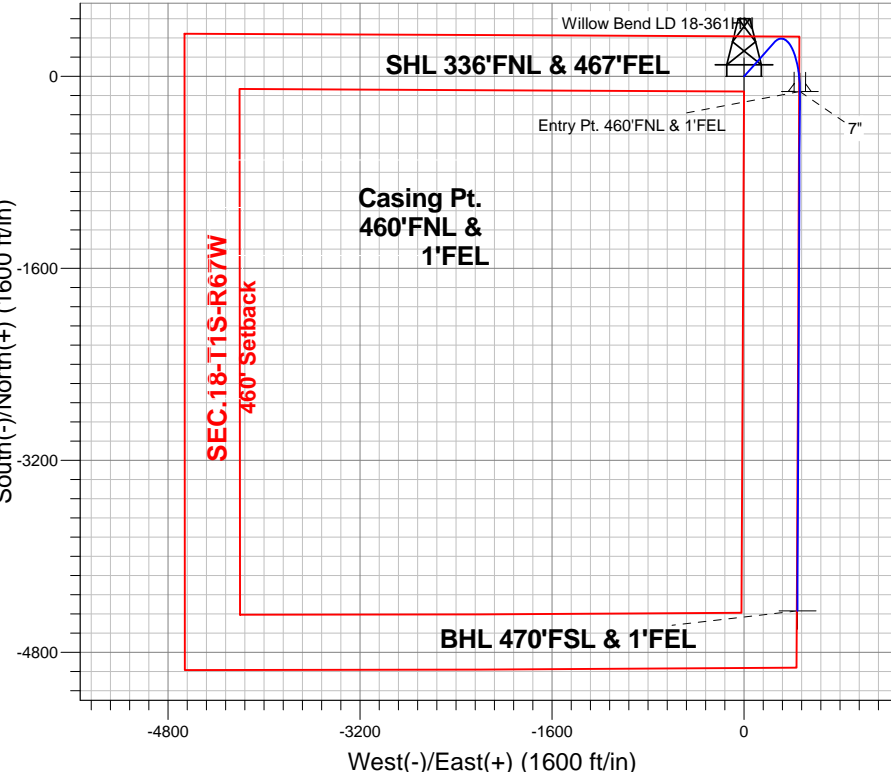
Magnetic Field
Strength: 52621.4snT
Dip Angle: 66.59°
Date: 12/16/2013
Model: IGRF2010

Willow Bend Pad Sec.18-T1S-R67W
Willow Bend LD 18-361HN
Plan #1 (12-16-13)
13:56, December 17 2013

ANNOTATIONS

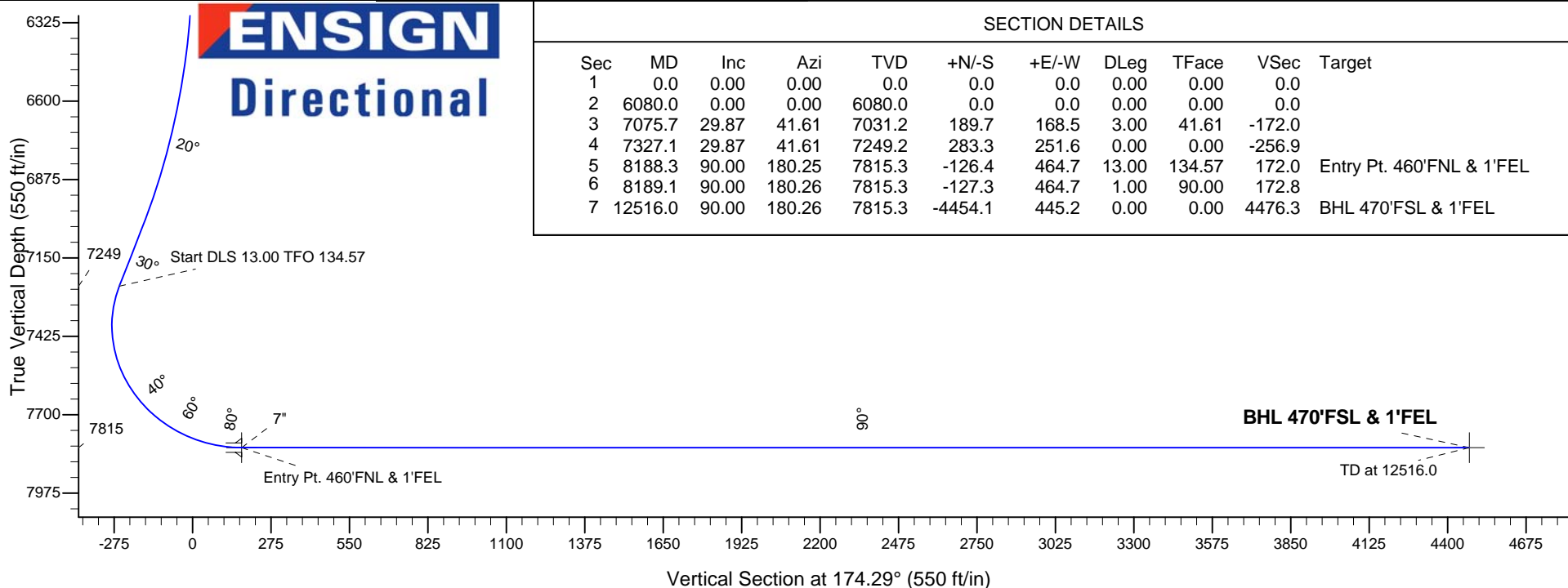
TVD	MD	Annotation
6080.0	6080.0	KOP - Start Build 3.00
7249.2	7327.1	Start DLS 13.00 TFO 134.57
7815.3	12516.0	TD at 12516.0

South(-)/North(+) (1600 ft/in)



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	6080.0	0.00	0.00	6080.0	0.0	0.0	0.00	0.00	0.0	
3	7075.7	29.87	41.61	7031.2	189.7	168.5	3.00	41.61	-172.0	
4	7327.1	29.87	41.61	7249.2	283.3	251.6	0.00	0.00	-256.9	
5	8188.3	90.00	180.25	7815.3	-126.4	464.7	13.00	134.57	172.0	Entry Pt. 460'FNL & 1'FEL
6	8189.1	90.00	180.26	7815.3	-127.3	464.7	1.00	90.00	172.8	
7	12516.0	90.00	180.26	7815.3	-4454.1	445.2	0.00	0.00	4476.3	BHL 470'FSL & 1'FEL





Great Western

Sec.18-T1S-R67W

Willow Bend Pad Sec.18-T1S-R67W

Willow Bend LD 18-361HN

Wellbore #1

Plan: Plan #1 (12-16-13)

Standard Planning Report

17 December, 2013

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	
6,080.0	0.00	0.00	6,080.0	0.0	0.0	0.00	0.00	0.00	0.00	
7,075.7	29.87	41.61	7,031.2	189.7	168.5	3.00	3.00	0.00	41.61	
7,327.1	29.87	41.61	7,249.2	283.3	251.6	0.00	0.00	0.00	0.00	
8,188.3	90.00	180.25	7,815.3	-126.4	464.7	13.00	6.98	16.10	134.57	Entry Pt. 460°FNL & 1°FSL
8,189.1	90.00	180.26	7,815.3	-127.3	464.7	1.00	0.00	1.00	90.00	
12,516.0	90.00	180.26	7,815.3	-4,454.1	445.2	0.00	0.00	0.00	0.00	BHL 470°FSL & 1°FNL

Database:	Landmark	Local Co-ordinate Reference:	Well Willow Bend LD 18-361HN
Company:	Great Western	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Project:	Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site:	Willow Bend Pad Sec.18-T1S-R67W	North Reference:	True
Well:	Willow Bend LD 18-361HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-16-13)		

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
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 336'FNL & 467'FEL									
100.0	0.00	0.00	100.0	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
300.0	0.00	0.00	300.0	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
500.0	0.00	0.00	500.0	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
700.0	0.00	0.00	700.0	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
900.0	0.00	0.00	900.0	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
1,100.0	0.00	0.00	1,100.0	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
1,300.0	0.00	0.00	1,300.0	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
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00

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Project:	Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site:	Willow Bend Pad Sec.18-T1S-R67W	North Reference:	True
Well:	Willow Bend LD 18-361HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-16-13)		

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)
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,080.0	0.00	0.00	6,080.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 3.00									
6,100.0	0.60	41.61	6,100.0	0.1	0.1	-0.1	3.00	3.00	0.00
6,200.0	3.60	41.61	6,199.9	2.8	2.5	-2.6	3.00	3.00	0.00
6,300.0	6.60	41.61	6,299.5	9.5	8.4	-8.6	3.00	3.00	0.00
6,400.0	9.60	41.61	6,398.5	20.0	17.8	-18.1	3.00	3.00	0.00
6,500.0	12.60	41.61	6,496.6	34.4	30.5	-31.2	3.00	3.00	0.00
6,600.0	15.60	41.61	6,593.6	52.6	46.7	-47.7	3.00	3.00	0.00
6,700.0	18.60	41.61	6,689.2	74.6	66.2	-67.6	3.00	3.00	0.00
6,800.0	21.60	41.61	6,783.1	100.3	89.1	-90.9	3.00	3.00	0.00
6,900.0	24.60	41.61	6,875.0	129.6	115.1	-117.5	3.00	3.00	0.00
7,000.0	27.60	41.61	6,964.8	162.5	144.3	-147.3	3.00	3.00	0.00
7,075.7	29.87	41.61	7,031.2	189.7	168.5	-172.0	3.00	3.00	0.00
7,100.0	29.87	41.61	7,052.3	198.8	176.5	-180.2	0.00	0.00	0.00
7,200.0	29.87	41.61	7,139.0	236.0	209.6	-214.0	0.00	0.00	0.00
7,300.0	29.87	41.61	7,225.7	273.2	242.7	-247.7	0.00	0.00	0.00
7,327.1	29.87	41.61	7,249.2	283.3	251.6	-256.9	0.00	0.00	0.00
Start DLS 13.00 TFO 134.57									
7,400.0	24.10	58.31	7,314.2	304.8	276.4	-275.8	13.00	-7.92	22.90
7,500.0	20.79	91.73	7,407.0	315.0	311.7	-282.4	13.00	-3.31	33.42
7,600.0	24.63	124.38	7,499.6	302.6	346.8	-266.7	13.00	3.84	32.65
7,700.0	33.23	144.84	7,587.3	268.3	379.9	-229.2	13.00	8.59	20.46
7,800.0	43.85	156.98	7,665.5	213.8	409.3	-172.1	13.00	10.62	12.14
7,900.0	55.33	165.03	7,730.3	141.9	433.6	-98.1	13.00	11.48	8.05
8,000.0	67.21	171.07	7,778.3	56.3	451.5	-11.1	13.00	11.88	6.04
8,100.0	79.28	176.13	7,807.1	-38.7	462.0	84.4	13.00	12.07	5.06
8,188.3	90.00	180.25	7,815.3	-126.4	464.7	172.0	13.00	12.14	4.67
7" - Entry Pt. 460'FNL & 1'FEL									
8,189.1	90.00	180.26	7,815.3	-127.3	464.7	172.8	1.20	0.38	1.14
8,200.0	90.00	180.26	7,815.3	-138.1	464.7	183.6	0.00	0.00	0.00
8,300.0	90.00	180.26	7,815.3	-238.1	464.2	283.1	0.00	0.00	0.00
8,400.0	90.00	180.26	7,815.3	-338.1	463.8	382.6	0.00	0.00	0.00
8,500.0	90.00	180.26	7,815.3	-438.1	463.3	482.0	0.00	0.00	0.00
8,600.0	90.00	180.26	7,815.3	-538.1	462.9	581.5	0.00	0.00	0.00
8,700.0	90.00	180.26	7,815.3	-638.1	462.4	680.9	0.00	0.00	0.00
8,800.0	90.00	180.26	7,815.3	-738.1	461.9	780.4	0.00	0.00	0.00
8,900.0	90.00	180.26	7,815.3	-838.1	461.5	879.9	0.00	0.00	0.00
9,000.0	90.00	180.26	7,815.3	-938.1	461.0	979.3	0.00	0.00	0.00
9,100.0	90.00	180.26	7,815.3	-1,038.1	460.6	1,078.8	0.00	0.00	0.00
9,200.0	90.00	180.26	7,815.3	-1,138.1	460.1	1,178.2	0.00	0.00	0.00
9,300.0	90.00	180.26	7,815.3	-1,238.1	459.7	1,277.7	0.00	0.00	0.00
9,400.0	90.00	180.26	7,815.3	-1,338.1	459.2	1,377.1	0.00	0.00	0.00
9,500.0	90.00	180.26	7,815.3	-1,438.1	458.8	1,476.6	0.00	0.00	0.00
9,600.0	90.00	180.26	7,815.3	-1,538.1	458.3	1,576.1	0.00	0.00	0.00

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,080.0	6,080.0	0.0	0.0	KOP - Start Build 3.00
7,327.1	7,249.2	283.3	251.6	Start DLS 13.00 TFO 134.57
12,516.0	7,815.3	-4,454.1	445.2	TD at 12516.0



Great Western

Sec.18-T1S-R67W

Willow Bend Pad Sec.18-T1S-R67W

Willow Bend LD 18-361HN

Wellbore #1

Plan #1 (12-16-13)

Anticollision Report

17 December, 2013

Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-22HC - Wellbore #1 - Plan #2 (12-16-13)													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)			
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-89.30	1.1	-89.7	89.7	82.3	7.42	12.093		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-89.30	1.1	-89.7	89.7	81.8	7.87	11.402		
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	-89.30	1.1	-89.7	89.7	81.4	8.32	10.786		
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-89.30	1.1	-89.7	89.7	80.9	8.77	10.233		
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-89.30	1.1	-89.7	89.7	80.5	9.22	9.733		
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-89.30	1.1	-89.7	89.7	80.0	9.66	9.281		
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	-89.30	1.1	-89.7	89.7	79.6	10.11	8.868		
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	-89.30	1.1	-89.7	89.7	79.1	10.56	8.491		
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-89.30	1.1	-89.7	89.7	78.7	11.01	8.144		
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-89.30	1.1	-89.7	89.7	78.2	11.46	7.825		
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	-89.30	1.1	-89.7	89.7	77.8	11.91	7.530		
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	-89.30	1.1	-89.7	89.7	77.3	12.36	7.256		
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-89.30	1.1	-89.7	89.7	76.9	12.81	7.001		
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-89.30	1.1	-89.7	89.7	76.4	13.26	6.764		
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	-89.30	1.1	-89.7	89.7	76.0	13.71	6.542		
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	-89.30	1.1	-89.7	89.7	75.5	14.16	6.334		
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-89.30	1.1	-89.7	89.7	75.1	14.61	6.140		
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-89.30	1.1	-89.7	89.7	74.6	15.06	5.956		
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	-89.30	1.1	-89.7	89.7	74.2	15.51	5.784		
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	-89.30	1.1	-89.7	89.7	73.7	15.96	5.621		
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-89.30	1.1	-89.7	89.7	73.3	16.41	5.467		
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-89.30	1.1	-89.7	89.7	72.8	16.86	5.321		
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	-89.30	1.1	-89.7	89.7	72.4	17.31	5.183		
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	-89.30	1.1	-89.7	89.7	71.9	17.76	5.051		
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-89.30	1.1	-89.7	89.7	71.5	18.21	4.927		
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-89.30	1.1	-89.7	89.7	71.0	18.66	4.808		
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	-89.30	1.1	-89.7	89.7	70.6	19.11	4.695		
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	-89.30	1.1	-89.7	89.7	70.1	19.55	4.587		
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-89.30	1.1	-89.7	89.7	69.7	20.00	4.484		
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-89.30	1.1	-89.7	89.7	69.2	20.45	4.385		
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	-89.30	1.1	-89.7	89.7	68.8	20.90	4.291		
4,800.0	4,800.0	4,800.0	4,800.0	10.7	10.7	-89.30	1.1	-89.7	89.7	68.3	21.35	4.201		
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-89.30	1.1	-89.7	89.7	67.9	21.80	4.114		
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-89.30	1.1	-89.7	89.7	67.4	22.25	4.031		
5,100.0	5,100.0	5,100.0	5,100.0	11.4	11.4	-89.30	1.1	-89.7	89.7	67.0	22.70	3.951		
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	-89.30	1.1	-89.7	89.7	66.5	23.15	3.874		
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	-89.30	1.1	-89.7	89.7	66.1	23.60	3.801		
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	-89.30	1.1	-89.7	89.7	65.6	24.05	3.730		
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	-89.30	1.1	-89.7	89.7	65.2	24.50	3.661		
5,600.0	5,600.0	5,600.0	5,600.0	12.5	12.5	-89.30	1.1	-89.7	89.7	64.7	24.95	3.595		
5,700.0	5,700.0	5,700.0	5,700.0	12.7	12.7	-89.30	1.1	-89.7	89.7	64.3	25.40	3.532		
5,800.0	5,800.0	5,800.0	5,800.0	12.9	12.9	-89.30	1.1	-89.7	89.7	63.8	25.85	3.470		
5,900.0	5,900.0	5,900.0	5,900.0	13.1	13.1	-89.30	1.1	-89.7	89.7	63.4	26.30	3.411		
6,000.0	6,000.0	6,000.0	6,000.0	13.4	13.4	-89.30	1.1	-89.7	89.7	62.9	26.75	3.354 CC		
6,058.3	6,058.3	6,058.3	6,058.3	13.5	13.5	-130.99	1.1	-89.7	89.8	62.8	27.01	3.325		
6,100.0	6,100.0	6,100.0	6,100.0	13.6	13.6	-130.96	1.1	-89.7	89.8	62.6	27.20	3.301 ES, SF		
6,200.0	6,199.9	6,199.9	6,199.9	13.8	13.8	-132.62	1.1	-89.7	92.2	64.6	27.62	3.339		
6,300.0	6,299.5	6,299.5	6,299.5	14.0	14.0	-136.29	1.1	-89.7	98.5	70.5	28.00	3.516		
6,400.0	6,398.5	6,398.5	6,398.5	14.3	14.3	-141.19	1.1	-89.7	109.1	80.8	28.32	3.852		
6,500.0	6,496.6	6,496.6	6,496.6	14.5	14.5	-146.45	1.1	-89.7	124.8	96.2	28.57	4.367		
6,600.0	6,593.6	6,593.6	6,593.6	14.7	14.7	-151.40	1.1	-89.7	145.8	117.1	28.74	5.073		
6,700.0	6,689.2	6,690.8	6,690.8	15.0	14.9	-155.41	2.2	-89.9	172.1	143.3	28.84	5.969		

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Company:	Great Western	Local Co-ordinate Reference:	Well Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-22HC - Wellbore #1 - Plan #2 (12-16-13)												Offset Site Error:	0.0 ft
Survey Program: 0-MWDD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,800.0	6,783.1	6,789.8	6,789.3	15.3	15.1	-156.76	10.6	-91.8	202.0	173.1	28.91	6.986	
6,900.0	6,875.0	6,888.8	6,886.9	15.6	15.4	-156.04	27.3	-95.6	234.5	205.5	28.99	8.090	
7,000.0	6,964.8	6,987.0	6,981.7	16.0	15.6	-153.97	52.0	-101.1	269.7	240.6	29.10	9.268	
7,100.0	7,052.3	7,083.5	7,072.5	16.4	15.8	-151.21	83.8	-108.3	307.8	278.4	29.39	10.471	
7,200.0	7,139.0	7,178.6	7,159.0	16.9	16.1	-148.17	122.3	-116.9	346.3	316.2	30.12	11.499	
7,300.0	7,225.7	7,270.6	7,239.4	17.5	16.4	-144.70	165.8	-126.7	384.9	354.0	30.96	12.435	
7,400.0	7,314.2	7,358.9	7,316.0	18.0	16.7	-159.79	208.8	-136.4	423.8	392.0	31.81	13.322	
7,500.0	7,407.0	7,440.5	7,386.7	18.4	17.1	169.13	248.5	-145.3	462.2	429.6	32.67	14.150	
7,600.0	7,499.6	7,508.5	7,446.4	18.7	17.3	138.59	280.0	-152.8	502.9	469.6	33.34	15.083	
7,700.0	7,587.3	7,575.4	7,508.9	18.9	17.6	119.70	302.5	-160.8	547.4	513.5	33.89	16.150	
7,800.0	7,665.5	7,649.3	7,580.9	19.0	17.8	109.29	316.0	-170.0	594.3	560.0	34.35	17.301	
7,900.0	7,730.3	7,738.0	7,668.7	19.0	17.9	103.85	315.9	-181.3	642.0	607.3	34.69	18.507	
8,000.0	7,778.3	7,860.8	7,786.6	19.1	18.0	102.57	286.7	-196.6	687.9	653.0	34.81	19.761	
8,100.0	7,807.1	8,070.2	7,954.2	19.2	17.9	106.04	166.6	-218.7	726.0	691.6	34.45	21.078	
8,200.0	7,815.3	8,398.0	8,061.3	19.4	18.1	109.40	-135.0	-233.8	740.5	705.8	34.71	21.335	
8,300.0	7,815.3	8,498.0	8,061.3	19.8	18.6	109.40	-235.0	-234.3	740.5	704.9	35.64	20.780	
8,400.0	7,815.3	8,598.0	8,061.3	20.3	19.3	109.40	-335.0	-234.7	740.5	703.6	36.90	20.067	
8,500.0	7,815.3	8,698.0	8,061.3	21.1	20.1	109.40	-435.0	-235.2	740.5	702.0	38.47	19.248	
8,600.0	7,815.3	8,798.0	8,061.3	22.0	21.1	109.40	-535.0	-235.6	740.5	700.2	40.31	18.369	
8,700.0	7,815.3	8,898.0	8,061.3	23.0	22.2	109.40	-635.0	-236.0	740.5	698.1	42.39	17.471	
8,800.0	7,815.3	8,998.0	8,061.3	24.2	23.3	109.40	-735.0	-236.5	740.5	695.8	44.66	16.581	
8,900.0	7,815.3	9,098.0	8,061.3	25.4	24.6	109.40	-835.0	-236.9	740.5	693.4	47.11	15.719	
9,000.0	7,815.3	9,198.0	8,061.3	26.7	26.0	109.40	-935.0	-237.4	740.5	690.8	49.70	14.899	
9,100.0	7,815.3	9,298.0	8,061.3	28.1	27.4	109.40	-1,035.0	-237.8	740.5	688.1	52.42	14.126	
9,200.0	7,815.3	9,398.0	8,061.3	29.5	28.9	109.40	-1,135.0	-238.3	740.5	685.2	55.25	13.404	
9,300.0	7,815.3	9,498.0	8,061.3	31.0	30.4	109.40	-1,235.0	-238.7	740.5	682.3	58.16	12.731	
9,400.0	7,815.3	9,598.0	8,061.3	32.6	32.0	109.40	-1,335.0	-239.2	740.5	679.3	61.16	12.108	
9,500.0	7,815.3	9,698.0	8,061.3	34.1	33.6	109.40	-1,435.0	-239.6	740.5	676.3	64.22	11.531	
9,600.0	7,815.3	9,798.0	8,061.3	35.8	35.2	109.40	-1,535.0	-240.1	740.5	673.1	67.34	10.996	
9,700.0	7,815.3	9,898.0	8,061.3	37.4	36.9	109.40	-1,635.0	-240.5	740.5	670.0	70.51	10.502	
9,800.0	7,815.3	9,998.0	8,061.3	39.0	38.5	109.40	-1,735.0	-241.0	740.5	666.7	73.72	10.044	
9,900.0	7,815.3	10,098.0	8,061.3	40.7	40.2	109.40	-1,835.0	-241.4	740.5	663.5	76.97	9.620	
10,000.0	7,815.3	10,198.0	8,061.3	42.4	42.0	109.40	-1,935.0	-241.9	740.4	660.2	80.26	9.226	
10,100.0	7,815.3	10,298.0	8,061.3	44.2	43.7	109.40	-2,035.0	-242.3	740.4	656.9	83.57	8.860	
10,200.0	7,815.3	10,398.0	8,061.3	45.9	45.5	109.40	-2,135.0	-242.7	740.4	653.5	86.91	8.519	
10,300.0	7,815.3	10,498.0	8,061.3	47.6	47.2	109.40	-2,235.0	-243.2	740.4	650.2	90.28	8.202	
10,400.0	7,815.3	10,598.0	8,061.3	49.4	49.0	109.40	-2,335.0	-243.6	740.4	646.8	93.67	7.905	
10,500.0	7,815.3	10,698.0	8,061.3	51.2	50.8	109.40	-2,435.0	-244.1	740.4	643.4	97.07	7.628	
10,600.0	7,815.3	10,798.0	8,061.3	53.0	52.6	109.41	-2,535.0	-244.5	740.4	639.9	100.49	7.368	
10,700.0	7,815.3	10,898.0	8,061.3	54.7	54.4	109.41	-2,635.0	-245.0	740.4	636.5	103.93	7.124	
10,800.0	7,815.3	10,998.0	8,061.3	56.5	56.2	109.41	-2,735.0	-245.4	740.4	633.0	107.38	6.895	
10,900.0	7,815.3	11,098.0	8,061.3	58.3	58.0	109.41	-2,835.0	-245.9	740.4	629.6	110.84	6.680	
11,000.0	7,815.3	11,198.0	8,061.3	60.2	59.8	109.41	-2,935.0	-246.3	740.4	626.1	114.31	6.477	
11,100.0	7,815.3	11,298.0	8,061.3	62.0	61.7	109.41	-3,035.0	-246.8	740.4	622.6	117.80	6.285	
11,200.0	7,815.3	11,398.0	8,061.3	63.8	63.5	109.41	-3,135.0	-247.2	740.4	619.1	121.29	6.104	
11,300.0	7,815.3	11,498.0	8,061.3	65.6	65.3	109.41	-3,235.0	-247.7	740.4	615.6	124.79	5.933	
11,400.0	7,815.3	11,598.0	8,061.3	67.5	67.2	109.41	-3,335.0	-248.1	740.4	612.1	128.30	5.771	
11,500.0	7,815.3	11,698.0	8,061.3	69.3	69.0	109.41	-3,435.0	-248.5	740.4	608.6	131.82	5.617	
11,600.0	7,815.3	11,798.0	8,061.3	71.1	70.9	109.41	-3,535.0	-249.0	740.4	605.0	135.34	5.470	
11,700.0	7,815.3	11,898.0	8,061.3	73.0	72.7	109.41	-3,635.0	-249.4	740.4	601.5	138.87	5.331	
11,800.0	7,815.3	11,998.0	8,061.3	74.8	74.6	109.41	-3,735.0	-249.9	740.4	598.0	142.40	5.199	
11,900.0	7,815.3	12,098.0	8,061.3	76.7	76.4	109.41	-3,835.0	-250.3	740.4	594.4	145.95	5.073	

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 Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-22HC - Wellbore #1 - Plan #2 (12-16-13)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,000.0	7,815.3	12,198.0	8,061.3	78.5	78.3	109.41	-3,935.0	-250.8	740.4	590.9	149.49	4.952	
12,100.0	7,815.3	12,298.0	8,061.3	80.4	80.2	109.41	-4,035.0	-251.2	740.3	587.3	153.04	4.838	
12,200.0	7,815.3	12,398.0	8,061.3	82.3	82.0	109.41	-4,135.0	-251.7	740.3	583.7	156.60	4.728	
12,300.0	7,815.3	12,498.0	8,061.3	84.1	83.9	109.41	-4,235.0	-252.1	740.3	580.2	160.15	4.623	
12,400.0	7,815.3	12,598.0	8,061.3	86.0	85.8	109.41	-4,335.0	-252.6	740.3	576.6	163.72	4.522	
12,500.0	7,815.3	12,698.0	8,061.3	87.9	87.6	109.41	-4,435.0	-253.0	740.3	573.0	167.28	4.426	
12,516.0	7,815.3	12,714.0	8,061.3	88.2	87.9	109.41	-4,451.0	-253.1	740.3	572.5	167.85	4.411	

Offset Design		Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-22HN - Wellbore #1 - Plan #2 (12-16-13)											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)				
0.0	0.0	0.0	0.0	0.0	0.0	-88.95	1.1	-60.0	60.0						
100.0	100.0	100.0	100.0	0.1	0.1	-88.95	1.1	-60.0	60.0	59.8	0.22	266.902			
200.0	200.0	200.0	200.0	0.3	0.3	-88.95	1.1	-60.0	60.0	59.3	0.67	88.967			
300.0	300.0	300.0	300.0	0.6	0.6	-88.95	1.1	-60.0	60.0	58.9	1.12	53.380			
400.0	400.0	400.0	400.0	0.8	0.8	-88.95	1.1	-60.0	60.0	58.4	1.57	38.129			
500.0	500.0	500.0	500.0	1.0	1.0	-88.95	1.1	-60.0	60.0	58.0	2.02	29.656			
600.0	600.0	600.0	600.0	1.2	1.2	-88.95	1.1	-60.0	60.0	57.5	2.47	24.264			
700.0	700.0	700.0	700.0	1.5	1.5	-88.95	1.1	-60.0	60.0	57.1	2.92	20.531			
800.0	800.0	800.0	800.0	1.7	1.7	-88.95	1.1	-60.0	60.0	56.6	3.37	17.793			
900.0	900.0	900.0	900.0	1.9	1.9	-88.95	1.1	-60.0	60.0	56.2	3.82	15.700			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-88.95	1.1	-60.0	60.0	55.7	4.27	14.047			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-88.95	1.1	-60.0	60.0	55.3	4.72	12.710			
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-88.95	1.1	-60.0	60.0	54.8	5.17	11.604			
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-88.95	1.1	-60.0	60.0	54.4	5.62	10.676			
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-88.95	1.1	-60.0	60.0	53.9	6.07	9.885			
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-88.95	1.1	-60.0	60.0	53.5	6.52	9.204			
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-88.95	1.1	-60.0	60.0	53.0	6.97	8.610			
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-88.95	1.1	-60.0	60.0	52.6	7.42	8.088			
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-88.95	1.1	-60.0	60.0	52.1	7.87	7.626			
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	-88.95	1.1	-60.0	60.0	51.7	8.32	7.214			
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-88.95	1.1	-60.0	60.0	51.2	8.77	6.844			
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-88.95	1.1	-60.0	60.0	50.8	9.22	6.510			
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-88.95	1.1	-60.0	60.0	50.3	9.66	6.207			
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	-88.95	1.1	-60.0	60.0	49.9	10.11	5.931			
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	-88.95	1.1	-60.0	60.0	49.4	10.56	5.679			
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-88.95	1.1	-60.0	60.0	49.0	11.01	5.447			
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-88.95	1.1	-60.0	60.0	48.5	11.46	5.233			
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	-88.95	1.1	-60.0	60.0	48.1	11.91	5.036			
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	-88.95	1.1	-60.0	60.0	47.6	12.36	4.853			
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-88.95	1.1	-60.0	60.0	47.2	12.81	4.682			
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-88.95	1.1	-60.0	60.0	46.7	13.26	4.524			
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	-88.95	1.1	-60.0	60.0	46.3	13.71	4.375			
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	-88.95	1.1	-60.0	60.0	45.8	14.16	4.237			
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-88.95	1.1	-60.0	60.0	45.4	14.61	4.106			
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-88.95	1.1	-60.0	60.0	44.9	15.06	3.984			
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	-88.95	1.1	-60.0	60.0	44.5	15.51	3.868			
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	-88.95	1.1	-60.0	60.0	44.0	15.96	3.759			
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-88.95	1.1	-60.0	60.0	43.6	16.41	3.656			
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-88.95	1.1	-60.0	60.0	43.1	16.86	3.559			
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	-88.95	1.1	-60.0	60.0	42.7	17.31	3.466			
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	-88.95	1.1	-60.0	60.0	42.2	17.76	3.379			
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-88.95	1.1	-60.0	60.0	41.8	18.21	3.295			
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-88.95	1.1	-60.0	60.0	41.3	18.66	3.216			
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	-88.95	1.1	-60.0	60.0	40.9	19.11	3.140			
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	-88.95	1.1	-60.0	60.0	40.4	19.55	3.068			
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-88.95	1.1	-60.0	60.0	40.0	20.00	2.999			
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-88.95	1.1	-60.0	60.0	39.5	20.45	2.933			
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	-88.95	1.1	-60.0	60.0	39.1	20.90	2.870			
4,800.0	4,800.0	4,800.0	4,800.0	10.7	10.7	-88.95	1.1	-60.0	60.0	38.6	21.35	2.809			
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-88.95	1.1	-60.0	60.0	38.2	21.80	2.752			
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-88.95	1.1	-60.0	60.0	37.7	22.25	2.696			
5,100.0	5,100.0	5,100.0	5,100.0	11.4	11.4	-88.95	1.1	-60.0	60.0	37.3	22.70	2.643			

Company:	Great Western	Local Co-ordinate Reference:	Well Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design		Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-22HN - Wellbore #1 - Plan #2 (12-16-13)										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				
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	-88.95	1.1	-60.0	60.0	36.8	23.15	2.591				
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	-88.95	1.1	-60.0	60.0	36.4	23.60	2.542				
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	-88.95	1.1	-60.0	60.0	35.9	24.05	2.494				
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	-88.95	1.1	-60.0	60.0	35.5	24.50	2.449				
5,600.0	5,600.0	5,600.0	5,600.0	12.5	12.5	-88.95	1.1	-60.0	60.0	35.0	24.95	2.405				
5,700.0	5,700.0	5,700.0	5,700.0	12.7	12.7	-88.95	1.1	-60.0	60.0	34.6	25.40	2.362				
5,800.0	5,800.0	5,800.0	5,800.0	12.9	12.9	-88.95	1.1	-60.0	60.0	34.1	25.85	2.321				
5,900.0	5,900.0	5,900.0	5,900.0	13.1	13.1	-88.95	1.1	-60.0	60.0	33.7	26.30	2.281				
6,000.0	6,000.0	6,000.0	6,000.0	13.4	13.4	-88.95	1.1	-60.0	60.0	33.2	26.75	2.243 CC				
6,058.3	6,058.3	6,058.3	6,058.3	13.5	13.5	-130.69	1.1	-60.0	60.1	33.1	27.01	2.225				
6,100.0	6,100.0	6,100.0	6,100.0	13.6	13.6	-130.64	1.1	-60.0	60.1	32.9	27.20	2.208 ES, SF				
6,200.0	6,199.9	6,199.9	6,199.9	13.8	13.8	-133.13	1.1	-60.0	62.5	34.9	27.62	2.263				
6,300.0	6,299.5	6,299.5	6,299.5	14.0	14.0	-138.40	1.1	-60.0	68.9	40.9	27.99	2.461				
6,400.0	6,398.5	6,398.5	6,398.5	14.3	14.3	-144.90	1.1	-60.0	80.0	51.7	28.30	2.827				
6,500.0	6,496.6	6,499.8	6,499.7	14.5	14.5	-149.26	5.0	-59.6	94.9	66.3	28.55	3.323				
6,600.0	6,593.6	6,602.3	6,601.3	14.7	14.7	-149.46	18.0	-58.4	111.0	82.2	28.77	3.857				
6,700.0	6,689.2	6,704.8	6,701.4	15.0	15.0	-146.97	39.9	-56.4	128.0	99.0	29.01	4.413				
6,800.0	6,783.1	6,806.9	6,798.7	15.3	15.2	-142.80	70.6	-53.6	146.5	117.2	29.31	4.999				
6,900.0	6,875.0	6,907.7	6,891.7	15.6	15.4	-137.66	109.1	-50.0	167.2	137.5	29.73	5.624				
7,000.0	6,964.8	7,006.7	6,979.4	16.0	15.7	-132.08	154.8	-45.8	190.8	160.5	30.33	6.291				
7,100.0	7,052.3	7,102.0	7,061.6	16.4	16.1	-127.56	202.9	-41.3	218.1	187.0	31.10	7.013				
7,200.0	7,139.0	7,197.1	7,143.6	16.9	16.5	-124.72	250.9	-36.9	247.0	214.9	32.05	7.705				
7,300.0	7,225.7	7,296.8	7,233.5	17.5	16.8	-124.29	293.2	-32.1	275.6	242.7	32.88	8.382				
7,400.0	7,314.2	7,394.9	7,329.0	18.0	17.1	-144.78	314.2	-27.1	304.0	271.0	33.02	9.207				
7,500.0	7,407.0	7,490.2	7,423.9	18.4	17.3	177.99	313.9	-22.2	334.3	301.2	33.07	10.109				
7,600.0	7,499.6	7,583.6	7,514.9	18.7	17.3	142.25	293.8	-17.6	364.8	331.5	33.29	10.957				
7,700.0	7,587.3	7,676.2	7,598.9	18.9	17.3	119.61	255.4	-13.4	393.7	360.1	33.61	11.714				
7,800.0	7,665.5	7,768.8	7,673.0	19.0	17.2	106.31	200.3	-9.8	419.5	385.6	33.90	12.372				
7,900.0	7,730.3	7,861.8	7,734.3	19.0	17.1	98.21	130.6	-7.0	440.8	406.6	34.14	12.909				
8,000.0	7,778.3	7,955.6	7,779.9	19.1	17.1	93.31	48.9	-5.0	456.5	422.1	34.38	13.276				
8,100.0	7,807.1	8,050.0	7,807.4	19.2	17.3	90.71	-41.2	-4.0	465.9	431.2	34.74	13.412				
8,200.0	7,815.3	8,145.3	7,815.3	19.4	17.6	90.00	-136.0	-4.0	468.6	433.3	35.30	13.275				
8,300.0	7,815.3	8,245.3	7,815.3	19.8	18.0	90.00	-236.0	-4.4	468.6	432.4	36.24	12.933				
8,400.0	7,815.3	8,345.3	7,815.3	20.3	18.7	90.00	-336.0	-4.9	468.6	431.1	37.55	12.479				
8,500.0	7,815.3	8,445.3	7,815.3	21.1	19.5	90.00	-436.0	-5.3	468.6	429.4	39.20	11.955				
8,600.0	7,815.3	8,545.3	7,815.3	22.0	20.5	90.00	-536.0	-5.8	468.6	427.5	41.14	11.392				
8,700.0	7,815.3	8,645.3	7,815.3	23.0	21.6	90.00	-636.0	-6.2	468.6	425.3	43.33	10.816				
8,800.0	7,815.3	8,745.3	7,815.3	24.2	22.8	90.00	-736.0	-6.7	468.6	422.9	45.74	10.247				
8,900.0	7,815.3	8,845.3	7,815.3	25.4	24.1	90.00	-836.0	-7.1	468.6	420.3	48.33	9.698				
9,000.0	7,815.3	8,945.3	7,815.3	26.7	25.5	90.00	-936.0	-7.6	468.6	417.6	51.07	9.176				
9,100.0	7,815.3	9,045.3	7,815.3	28.1	26.9	90.00	-1,036.0	-8.1	468.6	414.7	53.95	8.687				
9,200.0	7,815.3	9,145.3	7,815.3	29.5	28.4	90.00	-1,136.0	-8.5	468.6	411.7	56.94	8.231				
9,300.0	7,815.3	9,245.3	7,815.3	31.0	30.0	90.00	-1,236.0	-9.0	468.7	408.6	60.02	7.808				
9,400.0	7,815.3	9,345.3	7,815.3	32.6	31.5	90.00	-1,336.0	-9.4	468.7	405.5	63.19	7.417				
9,500.0	7,815.3	9,445.3	7,815.3	34.1	33.2	90.00	-1,436.0	-9.9	468.7	402.2	66.43	7.055				
9,600.0	7,815.3	9,545.3	7,815.3	35.8	34.8	90.00	-1,536.0	-10.3	468.7	398.9	69.72	6.722				
9,700.0	7,815.3	9,645.3	7,815.3	37.4	36.5	90.00	-1,636.0	-10.8	468.7	395.6	73.07	6.414				
9,800.0	7,815.3	9,745.3	7,815.3	39.0	38.2	90.00	-1,736.0	-11.2	468.7	392.2	76.46	6.129				
9,900.0	7,815.3	9,845.3	7,815.3	40.7	39.9	90.00	-1,836.0	-11.7	468.7	388.8	79.89	5.866				
10,000.0	7,815.3	9,945.3	7,815.3	42.4	41.6	90.00	-1,936.0	-12.1	468.7	385.3	83.36	5.622				
10,100.0	7,815.3	10,045.3	7,815.3	44.2	43.4	90.00	-2,036.0	-12.6	468.7	381.8	86.86	5.396				
10,200.0	7,815.3	10,145.3	7,815.3	45.9	45.2	90.00	-2,136.0	-13.0	468.7	378.3	90.38	5.185				

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 Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-22HN - Wellbore #1 - Plan #2 (12-16-13)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	7,815.3	10,245.3	7,815.3	47.6	46.9	90.00	-2,236.0	-13.5	468.7	374.7	93.93	4.990	
10,400.0	7,815.3	10,345.3	7,815.3	49.4	48.7	90.00	-2,336.0	-13.9	468.7	371.2	97.50	4.807	
10,500.0	7,815.3	10,445.3	7,815.3	51.2	50.5	90.00	-2,436.0	-14.4	468.7	367.6	101.08	4.636	
10,600.0	7,815.3	10,545.3	7,815.3	53.0	52.3	90.00	-2,536.0	-14.8	468.7	364.0	104.69	4.477	
10,700.0	7,815.3	10,645.3	7,815.3	54.7	54.1	90.00	-2,636.0	-15.3	468.7	360.4	108.31	4.327	
10,800.0	7,815.3	10,745.3	7,815.3	56.5	55.9	90.00	-2,736.0	-15.7	468.7	356.7	111.94	4.187	
10,900.0	7,815.3	10,845.3	7,815.3	58.3	57.8	90.00	-2,836.0	-16.2	468.7	353.1	115.59	4.055	
11,000.0	7,815.3	10,945.3	7,815.3	60.2	59.6	90.00	-2,936.0	-16.7	468.7	349.4	119.24	3.930	
11,100.0	7,815.3	11,045.3	7,815.3	62.0	61.4	90.00	-3,036.0	-17.1	468.7	345.8	122.91	3.813	
11,200.0	7,815.3	11,145.3	7,815.3	63.8	63.3	90.00	-3,136.0	-17.6	468.7	342.1	126.59	3.702	
11,300.0	7,815.3	11,245.3	7,815.3	65.6	65.1	90.00	-3,236.0	-18.0	468.7	338.4	130.27	3.598	
11,400.0	7,815.3	11,345.3	7,815.3	67.5	67.0	90.00	-3,336.0	-18.5	468.7	334.7	133.97	3.498	
11,500.0	7,815.3	11,445.3	7,815.3	69.3	68.8	90.00	-3,436.0	-18.9	468.7	331.0	137.67	3.404	
11,600.0	7,815.3	11,545.3	7,815.3	71.1	70.7	90.00	-3,536.0	-19.4	468.7	327.3	141.38	3.315	
11,700.0	7,815.3	11,645.3	7,815.3	73.0	72.5	90.00	-3,636.0	-19.8	468.7	323.6	145.09	3.230	
11,800.0	7,815.3	11,745.3	7,815.3	74.8	74.4	90.00	-3,736.0	-20.3	468.7	319.9	148.81	3.150	
11,900.0	7,815.3	11,845.3	7,815.3	76.7	76.3	90.00	-3,836.0	-20.7	468.7	316.1	152.53	3.073	
12,000.0	7,815.3	11,945.3	7,815.3	78.5	78.1	90.00	-3,936.0	-21.2	468.7	312.4	156.26	2.999	
12,100.0	7,815.3	12,045.3	7,815.3	80.4	80.0	90.00	-4,036.0	-21.6	468.7	308.7	160.00	2.929	
12,200.0	7,815.3	12,145.3	7,815.3	82.3	81.9	90.00	-4,136.0	-22.1	468.7	304.9	163.74	2.862	
12,300.0	7,815.3	12,245.3	7,815.3	84.1	83.7	90.00	-4,236.0	-22.5	468.7	301.2	167.48	2.798	
12,400.0	7,815.3	12,345.3	7,815.3	86.0	85.6	90.00	-4,336.0	-23.0	468.7	297.5	171.23	2.737	
12,500.0	7,815.3	12,445.3	7,815.3	87.9	87.5	90.00	-4,436.0	-23.4	468.7	293.7	174.98	2.679	
12,516.0	7,815.3	12,461.3	7,815.3	88.2	87.8	90.00	-4,452.0	-23.5	468.7	293.1	175.58	2.669	

Company:	Great Western	Local Co-ordinate Reference:	Well Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-23HC - Wellbore #1 - Plan #2 (12-16-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis			Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-89.65	1.1	-179.9	179.9					
100.0	100.0	100.0	100.0	0.1	0.1	-89.65	1.1	-179.9	179.9	179.7	0.22	800.586		
200.0	200.0	200.0	200.0	0.3	0.3	-89.65	1.1	-179.9	179.9	179.3	0.67	266.862		
300.0	300.0	300.0	300.0	0.6	0.6	-89.65	1.1	-179.9	179.9	178.8	1.12	160.117		
400.0	400.0	400.0	400.0	0.8	0.8	-89.65	1.1	-179.9	179.9	178.4	1.57	114.369		
500.0	500.0	500.0	500.0	1.0	1.0	-89.65	1.1	-179.9	179.9	177.9	2.02	88.954		
600.0	600.0	600.0	600.0	1.2	1.2	-89.65	1.1	-179.9	179.9	177.5	2.47	72.781		
700.0	700.0	700.0	700.0	1.5	1.5	-89.65	1.1	-179.9	179.9	177.0	2.92	61.584		
800.0	800.0	800.0	800.0	1.7	1.7	-89.65	1.1	-179.9	179.9	176.6	3.37	53.372		
900.0	900.0	900.0	900.0	1.9	1.9	-89.65	1.1	-179.9	179.9	176.1	3.82	47.093		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.65	1.1	-179.9	179.9	175.7	4.27	42.136		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.65	1.1	-179.9	179.9	175.2	4.72	38.123		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.65	1.1	-179.9	179.9	174.8	5.17	34.808		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-89.65	1.1	-179.9	179.9	174.3	5.62	32.023		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-89.65	1.1	-179.9	179.9	173.9	6.07	29.651		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-89.65	1.1	-179.9	179.9	173.4	6.52	27.606		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-89.65	1.1	-179.9	179.9	173.0	6.97	25.825		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-89.65	1.1	-179.9	179.9	172.5	7.42	24.260		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-89.65	1.1	-179.9	179.9	172.1	7.87	22.874		
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	-89.65	1.1	-179.9	179.9	171.6	8.32	21.637		
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-89.65	1.1	-179.9	179.9	171.2	8.77	20.528		
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-89.65	1.1	-179.9	179.9	170.7	9.22	19.526		
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-89.65	1.1	-179.9	179.9	170.3	9.66	18.618		
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	-89.65	1.1	-179.9	179.9	169.8	10.11	17.791		
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	-89.65	1.1	-179.9	179.9	169.4	10.56	17.034		
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-89.65	1.1	-179.9	179.9	168.9	11.01	16.338		
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-89.65	1.1	-179.9	179.9	168.5	11.46	15.698		
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	-89.65	1.1	-179.9	179.9	168.0	11.91	15.105		
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	-89.65	1.1	-179.9	179.9	167.6	12.36	14.556		
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-89.65	1.1	-179.9	179.9	167.1	12.81	14.045		
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-89.65	1.1	-179.9	179.9	166.7	13.26	13.569		
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	-89.65	1.1	-179.9	179.9	166.2	13.71	13.124		
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	-89.65	1.1	-179.9	179.9	165.8	14.16	12.708		
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-89.65	1.1	-179.9	179.9	165.3	14.61	12.317		
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-89.65	1.1	-179.9	179.9	164.9	15.06	11.949		
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	-89.65	1.1	-179.9	179.9	164.4	15.51	11.603		
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	-89.65	1.1	-179.9	179.9	164.0	15.96	11.276		
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-89.65	1.1	-179.9	179.9	163.5	16.41	10.967		
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-89.65	1.1	-179.9	179.9	163.1	16.86	10.674		
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	-89.65	1.1	-179.9	179.9	162.6	17.31	10.397		
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	-89.65	1.1	-179.9	179.9	162.2	17.76	10.134		
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-89.65	1.1	-179.9	179.9	161.7	18.21	9.884		
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-89.65	1.1	-179.9	179.9	161.3	18.66	9.646		
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	-89.65	1.1	-179.9	179.9	160.8	19.11	9.419		
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	-89.65	1.1	-179.9	179.9	160.4	19.55	9.202		
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-89.65	1.1	-179.9	179.9	159.9	20.00	8.995		
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-89.65	1.1	-179.9	179.9	159.5	20.45	8.798		
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	-89.65	1.1	-179.9	179.9	159.0	20.90	8.608		
4,800.0	4,800.0	4,800.0	4,800.0	10.7	10.7	-89.65	1.1	-179.9	179.9	158.6	21.35	8.427		
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-89.65	1.1	-179.9	179.9	158.1	21.80	8.253		
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-89.65	1.1	-179.9	179.9	157.7	22.25	8.087		
5,100.0	5,100.0	5,100.0	5,100.0	11.4	11.4	-89.65	1.1	-179.9	179.9	157.2	22.70	7.927		

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 Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-23HC - Wellbore #1 - Plan #2 (12-16-13)													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		
5,133.3	5,133.3	5,133.3	5,133.3	11.4	11.4	-89.65	1.1	-179.9	179.9	157.1	22.85	7.875	CC, ES	
5,200.0	5,200.0	5,197.2	5,197.2	11.6	11.6	-89.61	1.2	-180.3	180.3	157.2	23.14	7.793		
5,300.0	5,300.0	5,291.4	5,291.4	11.8	11.8	-89.31	2.2	-183.3	183.5	159.9	23.56	7.788	SF	
5,400.0	5,400.0	5,385.4	5,385.1	12.0	12.0	-88.75	4.1	-189.1	189.7	165.8	23.98	7.913		
5,500.0	5,500.0	5,478.8	5,478.1	12.2	12.2	-87.97	7.0	-197.8	199.2	174.8	24.40	8.162		
5,600.0	5,600.0	5,571.6	5,570.0	12.5	12.4	-87.05	10.8	-209.3	211.8	186.9	24.83	8.530		
5,700.0	5,700.0	5,663.4	5,660.7	12.7	12.6	-86.04	15.5	-223.5	227.5	202.2	25.25	9.008		
5,800.0	5,800.0	5,754.2	5,749.8	12.9	12.8	-85.00	21.0	-240.2	246.3	220.6	25.68	9.590		
5,900.0	5,900.0	5,843.8	5,837.1	13.1	13.0	-83.99	27.3	-259.3	268.3	242.1	26.12	10.269		
6,000.0	6,000.0	5,932.0	5,922.4	13.4	13.3	-83.02	34.4	-280.7	293.2	266.7	26.57	11.038		
6,100.0	6,100.0	6,018.8	6,005.5	13.6	13.5	-123.59	42.1	-304.1	321.2	294.4	26.86	11.958		
6,200.0	6,199.9	6,100.0	6,082.7	13.8	13.8	-122.37	50.0	-328.2	354.0	326.7	27.24	12.997		
6,300.0	6,299.5	6,185.3	6,162.9	14.0	14.1	-121.58	59.1	-355.7	392.0	364.4	27.60	14.204		
6,400.0	6,398.5	6,264.2	6,236.3	14.3	14.5	-121.08	68.2	-383.1	435.1	407.2	27.93	15.577		
6,500.0	6,496.6	6,339.6	6,305.7	14.5	14.8	-120.72	77.4	-411.1	483.1	454.8	28.25	17.102		
6,600.0	6,593.6	6,411.4	6,371.0	14.7	15.2	-120.39	86.8	-439.4	535.8	507.2	28.55	18.765		
6,700.0	6,689.2	6,479.3	6,432.1	15.0	15.5	-120.01	96.0	-467.6	592.9	564.0	28.85	20.552		
6,800.0	6,783.1	6,543.2	6,488.9	15.3	15.9	-119.50	105.2	-495.3	654.3	625.1	29.15	22.443		
6,900.0	6,875.0	6,600.0	6,538.9	15.6	16.2	-118.73	113.7	-521.0	719.7	690.2	29.48	24.415		
7,000.0	6,964.8	6,658.4	6,589.7	16.0	16.6	-117.90	122.7	-548.4	788.8	758.9	29.85	26.422		
7,100.0	7,052.3	6,718.9	6,641.8	16.4	17.1	-117.70	132.4	-577.6	861.1	830.8	30.29	28.433		
7,200.0	7,139.0	6,783.5	6,697.5	16.9	17.6	-119.56	142.7	-608.8	934.6	903.8	30.74	30.404		
7,300.0	7,225.7	6,848.2	6,753.1	17.5	18.1	-121.17	153.0	-640.0	1,008.4	977.2	31.23	32.290		
7,400.0	7,314.2	6,913.1	6,809.1	18.0	18.6	-147.72	163.3	-671.3	1,083.3	1,052.2	31.00	34.940		
7,500.0	7,407.0	6,977.7	6,864.6	18.4	19.1	167.11	173.6	-702.5	1,158.8	1,127.1	31.70	36.558		
7,600.0	7,499.6	7,038.5	6,917.0	18.7	19.6	125.52	183.3	-731.8	1,231.7	1,198.4	33.35	36.937		
7,700.0	7,587.3	7,092.5	6,963.5	18.9	20.1	98.99	191.9	-757.9	1,299.8	1,265.1	34.69	37.466		
7,800.0	7,665.5	7,137.0	7,001.8	19.0	20.5	83.03	199.0	-779.4	1,361.5	1,326.5	35.07	38.821		
7,900.0	7,730.3	7,169.6	7,029.9	19.0	20.7	72.85	204.2	-795.1	1,415.7	1,381.3	34.43	41.115		
8,000.0	7,778.3	7,188.6	7,046.3	19.1	20.9	66.01	207.2	-804.3	1,461.4	1,428.3	33.09	44.168		
8,100.0	7,807.1	7,193.2	7,050.2	19.2	20.9	61.37	207.9	-806.5	1,497.6	1,466.0	31.55	47.462		
8,200.0	7,815.3	7,183.2	7,041.6	19.4	20.9	58.61	206.3	-801.7	1,523.5	1,492.9	30.54	49.891		
8,300.0	7,815.3	7,167.5	7,028.1	19.8	20.7	58.01	203.8	-794.1	1,548.7	1,517.9	30.74	50.378		
8,400.0	7,815.3	7,151.7	7,014.5	20.3	20.6	57.41	201.3	-786.5	1,579.7	1,548.6	31.10	50.791		
8,500.0	7,815.3	7,136.0	7,001.0	21.1	20.4	56.81	198.8	-778.9	1,616.2	1,584.6	31.60	51.145		
8,600.0	7,815.3	7,120.3	6,987.4	22.0	20.3	56.22	196.3	-771.3	1,657.7	1,625.5	32.21	51.458		
8,700.0	7,815.3	7,104.6	6,973.9	23.0	20.2	55.62	193.8	-763.8	1,704.0	1,671.0	32.93	51.747		
8,800.0	7,815.3	7,088.9	6,960.4	24.2	20.0	55.03	191.3	-756.2	1,754.6	1,720.8	33.72	52.026		
8,900.0	7,815.3	7,073.1	6,946.8	25.4	19.9	54.44	188.8	-748.6	1,809.2	1,774.6	34.59	52.308		
9,000.0	7,815.3	7,057.4	6,933.3	26.7	19.8	53.85	186.3	-741.0	1,867.4	1,831.9	35.50	52.600		
9,100.0	7,815.3	9,496.4	8,061.3	28.1	34.4	97.52	-1,000.1	-1,401.8	1,878.9	1,825.2	53.71	34.982		
9,200.0	7,815.3	9,596.4	8,061.3	29.5	35.3	97.52	-1,100.1	-1,403.8	1,880.5	1,823.9	56.58	33.234		
9,300.0	7,815.3	9,696.4	8,061.3	31.0	36.4	97.51	-1,200.0	-1,405.9	1,882.1	1,822.5	59.56	31.600		
9,400.0	7,815.3	9,796.4	8,061.3	32.6	37.5	97.50	-1,300.0	-1,407.9	1,883.7	1,821.0	62.62	30.079		
9,500.0	7,815.3	9,896.4	8,061.3	34.1	38.7	97.50	-1,400.0	-1,409.9	1,885.2	1,819.5	65.76	28.666		
9,600.0	7,815.3	9,996.3	8,061.3	35.8	40.0	97.49	-1,499.9	-1,412.0	1,886.8	1,817.8	68.97	27.357		
9,700.0	7,815.3	10,096.3	8,061.3	37.4	41.3	97.49	-1,599.9	-1,414.0	1,888.4	1,816.2	72.24	26.142		
9,800.0	7,815.3	10,196.3	8,061.3	39.0	42.7	97.48	-1,699.9	-1,416.1	1,890.0	1,814.4	75.55	25.017		
9,900.0	7,815.3	10,296.3	8,061.3	40.7	44.2	97.47	-1,799.8	-1,418.1	1,891.5	1,812.6	78.91	23.972		
10,000.0	7,815.3	10,396.3	8,061.3	42.4	45.7	97.47	-1,899.8	-1,420.2	1,893.1	1,810.8	82.30	23.003		
10,100.0	7,815.3	10,496.3	8,061.3	44.2	47.2	97.46	-1,999.7	-1,422.2	1,894.7	1,809.0	85.73	22.101		
10,200.0	7,815.3	10,596.3	8,061.3	45.9	48.8	97.45	-2,099.7	-1,424.2	1,896.3	1,807.1	89.19	21.262		

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 Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-23HC - Wellbore #1 - Plan #2 (12-16-13)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	7,815.3	10,696.3	8,061.3	47.6	50.3	97.45	-2,199.7	-1,426.3	1,897.9	1,805.2	92.67	20.479	
10,400.0	7,815.3	10,796.2	8,061.3	49.4	52.0	97.44	-2,299.6	-1,428.3	1,899.4	1,803.2	96.18	19.749	
10,500.0	7,815.3	10,896.2	8,061.3	51.2	53.6	97.44	-2,399.6	-1,430.4	1,901.0	1,801.3	99.71	19.065	
10,600.0	7,815.3	10,996.2	8,061.3	53.0	55.2	97.43	-2,499.6	-1,432.4	1,902.6	1,799.3	103.26	18.425	
10,700.0	7,815.3	11,096.2	8,061.3	54.7	56.9	97.42	-2,599.5	-1,434.4	1,904.2	1,797.3	106.82	17.825	
10,800.0	7,815.3	11,196.2	8,061.3	56.5	58.6	97.42	-2,699.5	-1,436.5	1,905.7	1,795.3	110.41	17.261	
10,900.0	7,815.3	11,296.2	8,061.3	58.3	60.3	97.41	-2,799.5	-1,438.5	1,907.3	1,793.3	114.00	16.731	
11,000.0	7,815.3	11,396.2	8,061.3	60.2	62.0	97.41	-2,899.4	-1,440.6	1,908.9	1,791.3	117.61	16.231	
11,100.0	7,815.3	11,496.2	8,061.3	62.0	63.7	97.40	-2,999.4	-1,442.6	1,910.5	1,789.2	121.23	15.759	
11,200.0	7,815.3	11,596.1	8,061.3	63.8	65.5	97.39	-3,099.4	-1,444.6	1,912.0	1,787.2	124.86	15.314	
11,300.0	7,815.3	11,696.1	8,061.3	65.6	67.2	97.39	-3,199.3	-1,446.7	1,913.6	1,785.1	128.50	14.892	
11,400.0	7,815.3	11,796.1	8,061.3	67.5	69.0	97.38	-3,299.3	-1,448.7	1,915.2	1,783.0	132.15	14.493	
11,500.0	7,815.3	11,896.1	8,061.3	69.3	70.7	97.37	-3,399.3	-1,450.8	1,916.8	1,781.0	135.80	14.114	
11,600.0	7,815.3	11,996.1	8,061.3	71.1	72.5	97.37	-3,499.2	-1,452.8	1,918.3	1,778.9	139.47	13.755	
11,700.0	7,815.3	12,096.1	8,061.3	73.0	74.3	97.36	-3,599.2	-1,454.8	1,919.9	1,776.8	143.14	13.413	
11,800.0	7,815.3	12,196.1	8,061.3	74.8	76.1	97.36	-3,699.2	-1,456.9	1,921.5	1,774.7	146.82	13.088	
11,900.0	7,815.3	12,296.1	8,061.3	76.7	77.9	97.35	-3,799.1	-1,458.9	1,923.1	1,772.6	150.50	12.778	
12,000.0	7,815.3	12,396.0	8,061.3	78.5	79.7	97.34	-3,899.1	-1,461.0	1,924.7	1,770.5	154.19	12.482	
12,100.0	7,815.3	12,496.0	8,061.3	80.4	81.5	97.34	-3,999.1	-1,463.0	1,926.2	1,768.3	157.88	12.200	
12,200.0	7,815.3	12,596.0	8,061.3	82.3	83.3	97.33	-4,099.0	-1,465.1	1,927.8	1,766.2	161.58	11.931	
12,300.0	7,815.3	12,696.0	8,061.3	84.1	85.1	97.33	-4,199.0	-1,467.1	1,929.4	1,764.1	165.29	11.673	
12,400.0	7,815.3	12,796.0	8,061.3	86.0	86.9	97.32	-4,299.0	-1,469.1	1,931.0	1,762.0	168.99	11.426	
12,500.0	7,815.3	12,896.0	8,061.3	87.9	88.7	97.31	-4,398.9	-1,471.2	1,932.5	1,759.8	172.71	11.190	
12,516.0	7,815.3	12,912.0	8,061.3	88.2	89.0	97.31	-4,415.0	-1,471.5	1,932.8	1,759.5	173.30	11.153	

Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-23HN - Wellbore #1 - Plan #2 (12-16-13)													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)			
0.0	0.0	0.0	0.0	0.0	0.0	-89.58	1.1	-149.7	149.7					
100.0	100.0	100.0	100.0	0.1	0.1	-89.58	1.1	-149.7	149.7	149.4	0.22	665.913		
200.0	200.0	200.0	200.0	0.3	0.3	-89.58	1.1	-149.7	149.7	149.0	0.67	221.971		
300.0	300.0	300.0	300.0	0.6	0.6	-89.58	1.1	-149.7	149.7	148.6	1.12	133.183		
400.0	400.0	400.0	400.0	0.8	0.8	-89.58	1.1	-149.7	149.7	148.1	1.57	95.130		
500.0	500.0	500.0	500.0	1.0	1.0	-89.58	1.1	-149.7	149.7	147.7	2.02	73.990		
600.0	600.0	600.0	600.0	1.2	1.2	-89.58	1.1	-149.7	149.7	147.2	2.47	60.538		
700.0	700.0	700.0	700.0	1.5	1.5	-89.58	1.1	-149.7	149.7	146.8	2.92	51.224		
800.0	800.0	800.0	800.0	1.7	1.7	-89.58	1.1	-149.7	149.7	146.3	3.37	44.394		
900.0	900.0	900.0	900.0	1.9	1.9	-89.58	1.1	-149.7	149.7	145.9	3.82	39.171		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.58	1.1	-149.7	149.7	145.4	4.27	35.048		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.58	1.1	-149.7	149.7	145.0	4.72	31.710		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.58	1.1	-149.7	149.7	144.5	5.17	28.953		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-89.58	1.1	-149.7	149.7	144.1	5.62	26.637		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-89.58	1.1	-149.7	149.7	143.6	6.07	24.663		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-89.58	1.1	-149.7	149.7	143.2	6.52	22.963		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-89.58	1.1	-149.7	149.7	142.7	6.97	21.481		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-89.58	1.1	-149.7	149.7	142.3	7.42	20.179		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-89.58	1.1	-149.7	149.7	141.8	7.87	19.026		
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	-89.58	1.1	-149.7	149.7	141.4	8.32	17.998		
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-89.58	1.1	-149.7	149.7	140.9	8.77	17.075		
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-89.58	1.1	-149.7	149.7	140.5	9.22	16.242		
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-89.58	1.1	-149.7	149.7	140.0	9.66	15.486		
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	-89.58	1.1	-149.7	149.7	139.6	10.11	14.798		
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	-89.58	1.1	-149.7	149.7	139.1	10.56	14.168		
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-89.58	1.1	-149.7	149.7	138.7	11.01	13.590		
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-89.58	1.1	-149.7	149.7	138.2	11.46	13.057		
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	-89.58	1.1	-149.7	149.7	137.8	11.91	12.564		
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	-89.58	1.1	-149.7	149.7	137.3	12.36	12.108		
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-89.58	1.1	-149.7	149.7	136.9	12.81	11.683		
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-89.58	1.1	-149.7	149.7	136.4	13.26	11.287		
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	-89.58	1.1	-149.7	149.7	136.0	13.71	10.917		
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	-89.58	1.1	-149.7	149.7	135.5	14.16	10.570		
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-89.58	1.1	-149.7	149.7	135.1	14.61	10.245		
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-89.58	1.1	-149.7	149.7	134.6	15.06	9.939		
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	-89.58	1.1	-149.7	149.7	134.2	15.51	9.651		
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	-89.58	1.1	-149.7	149.7	133.7	15.96	9.379		
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-89.58	1.1	-149.7	149.7	133.3	16.41	9.122		
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-89.58	1.1	-149.7	149.7	132.8	16.86	8.879		
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	-89.58	1.1	-149.7	149.7	132.4	17.31	8.648		
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	-89.58	1.1	-149.7	149.7	131.9	17.76	8.429		
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-89.58	1.1	-149.7	149.7	131.5	18.21	8.221		
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-89.58	1.1	-149.7	149.7	131.0	18.66	8.023		
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	-89.58	1.1	-149.7	149.7	130.6	19.11	7.834		
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	-89.58	1.1	-149.7	149.7	130.1	19.55	7.654		
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-89.58	1.1	-149.7	149.7	129.7	20.00	7.482		
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-89.58	1.1	-149.7	149.7	129.2	20.45	7.318		
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	-89.58	1.1	-149.7	149.7	128.8	20.90	7.160		
4,800.0	4,800.0	4,800.0	4,800.0	10.7	10.7	-89.58	1.1	-149.7	149.7	128.3	21.35	7.010		
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-89.58	1.1	-149.7	149.7	127.9	21.80	6.865		
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-89.58	1.1	-149.7	149.7	127.4	22.25	6.726		
5,100.0	5,100.0	5,100.0	5,100.0	11.4	11.4	-89.58	1.1	-149.7	149.7	127.0	22.70	6.593		

Company:	Great Western	Local Co-ordinate Reference:	Well Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-23HN - Wellbore #1 - Plan #2 (12-16-13)													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	-89.58	1.1	-149.7	149.7	126.5	23.15	6.465		
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	-89.58	1.1	-149.7	149.7	126.1	23.60	6.342		
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	-89.58	1.1	-149.7	149.7	125.6	24.05	6.223 CC, ES		
5,500.0	5,500.0	5,493.1	5,493.1	12.2	12.2	-89.27	1.9	-151.8	151.9	127.5	24.48	6.208 SF		
5,600.0	5,600.0	5,585.8	5,585.5	12.5	12.4	-88.40	4.4	-158.1	158.8	133.9	24.90	6.378		
5,700.0	5,700.0	5,677.6	5,676.6	12.7	12.6	-87.10	8.5	-168.4	170.2	144.9	25.32	6.724		
5,800.0	5,800.0	5,768.1	5,765.9	12.9	12.8	-85.57	14.1	-182.5	186.2	160.5	25.74	7.236		
5,900.0	5,900.0	5,857.0	5,852.7	13.1	13.0	-83.96	21.2	-200.3	206.9	180.7	26.16	7.906		
6,000.0	6,000.0	5,944.0	5,936.6	13.4	13.3	-82.41	29.5	-221.2	232.0	205.4	26.60	8.722		
6,100.0	6,100.0	6,028.6	6,017.3	13.6	13.5	-122.43	38.9	-244.9	261.5	234.6	26.93	9.709		
6,200.0	6,199.9	6,110.3	6,094.1	13.8	13.8	-120.74	49.3	-271.0	297.0	269.7	27.30	10.876		
6,300.0	6,299.5	6,188.5	6,166.2	14.0	14.1	-119.58	60.3	-298.8	338.7	311.0	27.65	12.248		
6,400.0	6,398.5	6,262.6	6,233.5	14.3	14.4	-118.74	71.8	-327.6	386.3	358.3	27.98	13.804		
6,500.0	6,496.6	6,332.3	6,295.7	14.5	14.7	-118.02	83.4	-357.0	439.3	411.0	28.29	15.525		
6,600.0	6,593.6	6,400.0	6,354.9	14.7	15.1	-117.34	95.5	-387.5	497.3	468.7	28.60	17.390		
6,700.0	6,689.2	6,469.9	6,415.2	15.0	15.5	-116.75	108.6	-420.4	559.5	530.6	28.92	19.349		
6,800.0	6,783.1	6,544.8	6,479.7	15.3	16.0	-116.35	122.7	-455.7	624.0	594.7	29.25	21.329		
6,900.0	6,875.0	6,617.2	6,542.1	15.6	16.4	-115.94	136.2	-489.9	690.6	661.0	29.62	23.320		
7,000.0	6,964.8	6,687.0	6,602.2	16.0	16.9	-115.46	149.3	-522.8	759.5	729.5	30.02	25.303		
7,100.0	7,052.3	6,753.9	6,659.8	16.4	17.4	-115.53	161.9	-554.4	830.5	800.0	30.46	27.260		
7,200.0	7,139.0	6,820.0	6,716.7	16.9	17.9	-117.46	174.2	-585.6	902.5	871.5	30.93	29.176		
7,300.0	7,225.7	6,886.0	6,773.7	17.5	18.4	-119.12	186.6	-616.8	975.0	943.5	31.44	31.006		
7,400.0	7,314.2	6,952.3	6,830.7	18.0	19.0	-145.29	199.1	-648.1	1,048.6	1,017.4	31.27	33.540		
7,500.0	7,407.0	7,017.5	6,886.9	18.4	19.5	169.74	211.3	-678.8	1,123.6	1,091.6	31.93	35.191		
7,600.0	7,499.6	7,078.4	6,939.4	18.7	20.1	127.98	222.7	-707.6	1,196.6	1,163.0	33.61	35.607		
7,700.0	7,587.3	7,131.8	6,985.4	18.9	20.5	101.06	232.7	-732.8	1,265.5	1,230.5	35.08	36.078		
7,800.0	7,665.5	7,175.1	7,022.7	19.0	20.9	84.63	240.8	-753.2	1,328.7	1,293.1	35.59	37.335		
7,900.0	7,730.3	7,206.0	7,049.3	19.0	21.2	73.95	246.6	-767.8	1,384.9	1,349.9	35.01	39.553		
8,000.0	7,778.3	7,222.8	7,063.8	19.1	21.3	66.63	249.8	-775.8	1,433.2	1,399.5	33.63	42.614		
8,100.0	7,807.1	7,224.9	7,065.6	19.2	21.3	61.54	250.2	-776.7	1,472.3	1,440.3	31.95	46.075		
8,200.0	7,815.3	7,212.1	7,054.5	19.4	21.2	58.41	247.8	-770.7	1,501.2	1,470.5	30.75	48.826		
8,300.0	7,815.3	7,193.5	7,038.6	19.8	21.1	57.69	244.3	-761.9	1,529.5	1,498.6	30.91	49.486		
8,400.0	7,815.3	7,175.0	7,022.6	20.3	20.9	56.98	240.8	-753.2	1,563.5	1,532.3	31.22	50.073		
8,500.0	7,815.3	7,156.5	7,006.6	21.1	20.7	56.26	237.3	-744.4	1,602.7	1,571.1	31.67	50.601		
8,600.0	7,815.3	7,137.9	6,990.7	22.0	20.6	55.55	233.9	-735.7	1,647.0	1,614.7	32.24	51.086		
8,700.0	7,815.3	8,850.3	7,815.3	23.0	28.8	90.00	-630.7	-1,192.1	1,654.5	1,610.5	44.02	37.583		
8,800.0	7,815.3	8,950.3	7,815.3	24.2	29.4	90.00	-730.7	-1,192.6	1,654.5	1,608.2	46.37	35.684		
8,900.0	7,815.3	9,050.3	7,815.3	25.4	30.2	90.00	-830.7	-1,193.0	1,654.5	1,605.6	48.90	33.838		
9,000.0	7,815.3	9,150.3	7,815.3	26.7	31.0	90.00	-930.7	-1,193.5	1,654.5	1,602.9	51.59	32.073		
9,100.0	7,815.3	9,250.3	7,815.3	28.1	32.0	90.00	-1,030.7	-1,193.9	1,654.5	1,600.1	54.41	30.407		
9,200.0	7,815.3	9,350.3	7,815.3	29.5	33.2	90.00	-1,130.7	-1,194.4	1,654.5	1,597.2	57.35	28.847		
9,300.0	7,815.3	9,450.3	7,815.3	31.0	34.4	90.00	-1,230.7	-1,194.8	1,654.5	1,594.1	60.40	27.394		
9,400.0	7,815.3	9,550.3	7,815.3	32.6	35.7	90.00	-1,330.7	-1,195.2	1,654.5	1,591.0	63.52	26.046		
9,500.0	7,815.3	9,650.3	7,815.3	34.1	37.0	90.00	-1,430.7	-1,195.7	1,654.5	1,587.8	66.72	24.797		
9,600.0	7,815.3	9,750.3	7,815.3	35.8	38.4	90.00	-1,530.7	-1,196.1	1,654.5	1,584.5	69.99	23.641		
9,700.0	7,815.3	9,850.3	7,815.3	37.4	39.9	90.00	-1,630.7	-1,196.6	1,654.5	1,581.2	73.30	22.571		
9,800.0	7,815.3	9,950.3	7,815.3	39.0	41.4	90.00	-1,730.7	-1,197.0	1,654.5	1,577.8	76.67	21.580		
9,900.0	7,815.3	10,050.3	7,815.3	40.7	43.0	90.00	-1,830.7	-1,197.5	1,654.5	1,574.4	80.07	20.662		
10,000.0	7,815.3	10,150.3	7,815.3	42.4	44.5	90.00	-1,930.7	-1,197.9	1,654.5	1,571.0	83.52	19.810		
10,100.0	7,815.3	10,250.3	7,815.3	44.2	46.2	90.00	-2,030.7	-1,198.4	1,654.5	1,567.5	86.99	19.019		
10,200.0	7,815.3	10,350.3	7,815.3	45.9	47.8	90.00	-2,130.7	-1,198.8	1,654.5	1,564.0	90.50	18.282		
10,300.0	7,815.3	10,450.3	7,815.3	47.6	49.5	90.00	-2,230.7	-1,199.3	1,654.5	1,560.5	94.02	17.596		

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

Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-23HN - Wellbore #1 - Plan #2 (12-16-13)													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 +N/-S (ft)	Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,400.0	7,815.3	10,550.3	7,815.3	49.4	51.1	90.00	-2,330.7	-1,199.7	1,654.5	1,556.9	97.58	16.956		
10,500.0	7,815.3	10,650.3	7,815.3	51.2	52.8	90.00	-2,430.7	-1,200.2	1,654.5	1,553.3	101.15	16.357		
10,600.0	7,815.3	10,750.3	7,815.3	53.0	54.5	90.00	-2,530.7	-1,200.6	1,654.5	1,549.7	104.74	15.796		
10,700.0	7,815.3	10,850.3	7,815.3	54.7	56.3	90.00	-2,630.7	-1,201.1	1,654.5	1,546.1	108.34	15.271		
10,800.0	7,815.3	10,950.3	7,815.3	56.5	58.0	90.00	-2,730.7	-1,201.5	1,654.5	1,542.5	111.96	14.777		
10,900.0	7,815.3	11,050.3	7,815.3	58.3	59.7	90.00	-2,830.7	-1,202.0	1,654.5	1,538.9	115.60	14.312		
11,000.0	7,815.3	11,150.3	7,815.3	60.2	61.5	90.00	-2,930.7	-1,202.4	1,654.5	1,535.2	119.24	13.875		
11,100.0	7,815.3	11,250.3	7,815.3	62.0	63.3	90.00	-3,030.7	-1,202.9	1,654.5	1,531.6	122.90	13.462		
11,200.0	7,815.3	11,350.3	7,815.3	63.8	65.0	90.00	-3,130.7	-1,203.3	1,654.5	1,527.9	126.57	13.072		
11,300.0	7,815.3	11,450.3	7,815.3	65.6	66.8	90.00	-3,230.7	-1,203.8	1,654.5	1,524.2	130.24	12.703		
11,400.0	7,815.3	11,550.3	7,815.3	67.5	68.6	90.00	-3,330.7	-1,204.2	1,654.5	1,520.5	133.93	12.353		
11,500.0	7,815.3	11,650.3	7,815.3	69.3	70.4	90.00	-3,430.7	-1,204.7	1,654.5	1,516.8	137.62	12.022		
11,600.0	7,815.3	11,750.3	7,815.3	71.1	72.2	90.00	-3,530.6	-1,205.1	1,654.5	1,513.1	141.32	11.707		
11,700.0	7,815.3	11,850.3	7,815.3	73.0	74.0	90.00	-3,630.6	-1,205.6	1,654.5	1,509.4	145.02	11.408		
11,800.0	7,815.3	11,950.3	7,815.3	74.8	75.8	90.00	-3,730.6	-1,206.0	1,654.4	1,505.7	148.74	11.123		
11,900.0	7,815.3	12,050.3	7,815.3	76.7	77.7	90.00	-3,830.6	-1,206.5	1,654.4	1,502.0	152.46	10.852		
12,000.0	7,815.3	12,150.3	7,815.3	78.5	79.5	90.00	-3,930.6	-1,206.9	1,654.4	1,498.3	156.18	10.593		
12,100.0	7,815.3	12,250.3	7,815.3	80.4	81.3	90.00	-4,030.6	-1,207.4	1,654.4	1,494.5	159.91	10.346		
12,200.0	7,815.3	12,350.3	7,815.3	82.3	83.1	90.00	-4,130.6	-1,207.8	1,654.4	1,490.8	163.64	10.110		
12,300.0	7,815.3	12,450.3	7,815.3	84.1	85.0	90.00	-4,230.6	-1,208.3	1,654.4	1,487.1	167.38	9.885		
12,400.0	7,815.3	12,550.3	7,815.3	86.0	86.8	90.00	-4,330.6	-1,208.7	1,654.4	1,483.3	171.12	9.668		
12,500.0	7,815.3	12,650.3	7,815.3	87.9	88.7	90.00	-4,430.6	-1,209.2	1,654.4	1,479.6	174.86	9.461		
12,516.0	7,815.3	12,666.4	7,815.3	88.2	89.0	90.00	-4,446.7	-1,209.2	1,654.4	1,479.0	175.46	9.429		

Company:	Great Western	Local Co-ordinate Reference:	Well Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-37HN - Wellbore #1 - Plan #2 (12-16-13)												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	-89.48	1.1	-120.0	120.0				
100.0	100.0	100.0	100.0	0.1	0.1	-89.48	1.1	-120.0	120.0	119.7	0.22	533.736	
200.0	200.0	200.0	200.0	0.3	0.3	-89.48	1.1	-120.0	120.0	119.3	0.67	177.912	
300.0	300.0	300.0	300.0	0.6	0.6	-89.48	1.1	-120.0	120.0	118.8	1.12	106.747	
400.0	400.0	400.0	400.0	0.8	0.8	-89.48	1.1	-120.0	120.0	118.4	1.57	76.248	
500.0	500.0	500.0	500.0	1.0	1.0	-89.48	1.1	-120.0	120.0	117.9	2.02	59.304	
600.0	600.0	600.0	600.0	1.2	1.2	-89.48	1.1	-120.0	120.0	117.5	2.47	48.521	
700.0	700.0	700.0	700.0	1.5	1.5	-89.48	1.1	-120.0	120.0	117.0	2.92	41.057	
800.0	800.0	800.0	800.0	1.7	1.7	-89.48	1.1	-120.0	120.0	116.6	3.37	35.582	
900.0	900.0	900.0	900.0	1.9	1.9	-89.48	1.1	-120.0	120.0	116.1	3.82	31.396	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.48	1.1	-120.0	120.0	115.7	4.27	28.091	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.48	1.1	-120.0	120.0	115.2	4.72	25.416	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.48	1.1	-120.0	120.0	114.8	5.17	23.206	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-89.48	1.1	-120.0	120.0	114.3	5.62	21.349	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-89.48	1.1	-120.0	120.0	113.9	6.07	19.768	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-89.48	1.1	-120.0	120.0	113.4	6.52	18.405	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-89.48	1.1	-120.0	120.0	113.0	6.97	17.217	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-89.48	1.1	-120.0	120.0	112.5	7.42	16.174	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-89.48	1.1	-120.0	120.0	112.1	7.87	15.250	
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	-89.48	1.1	-120.0	120.0	111.6	8.32	14.425	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-89.48	1.1	-120.0	120.0	111.2	8.77	13.686	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-89.48	1.1	-120.0	120.0	110.8	9.22	13.018	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-89.48	1.1	-120.0	120.0	110.3	9.66	12.412	
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	-89.48	1.1	-120.0	120.0	109.9	10.11	11.861	
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	-89.48	1.1	-120.0	120.0	109.4	10.56	11.356	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-89.48	1.1	-120.0	120.0	109.0	11.01	10.893	
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-89.48	1.1	-120.0	120.0	108.5	11.46	10.465	
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	-89.48	1.1	-120.0	120.0	108.1	11.91	10.070	
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	-89.48	1.1	-120.0	120.0	107.6	12.36	9.704	
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-89.48	1.1	-120.0	120.0	107.2	12.81	9.364	
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-89.48	1.1	-120.0	120.0	106.7	13.26	9.046	
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	-89.48	1.1	-120.0	120.0	106.3	13.71	8.750	
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	-89.48	1.1	-120.0	120.0	105.8	14.16	8.472	
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-89.48	1.1	-120.0	120.0	105.4	14.61	8.211	
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-89.48	1.1	-120.0	120.0	104.9	15.06	7.966	
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	-89.48	1.1	-120.0	120.0	104.5	15.51	7.735	
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	-89.48	1.1	-120.0	120.0	104.0	15.96	7.517	
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-89.48	1.1	-120.0	120.0	103.6	16.41	7.311	
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-89.48	1.1	-120.0	120.0	103.1	16.86	7.116	
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	-89.48	1.1	-120.0	120.0	102.7	17.31	6.932	
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	-89.48	1.1	-120.0	120.0	102.2	17.76	6.756	
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-89.48	1.1	-120.0	120.0	101.8	18.21	6.589	
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-89.48	1.1	-120.0	120.0	101.3	18.66	6.431	
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	-89.48	1.1	-120.0	120.0	100.9	19.11	6.279	
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	-89.48	1.1	-120.0	120.0	100.4	19.55	6.135	
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-89.48	1.1	-120.0	120.0	100.0	20.00	5.997	
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-89.48	1.1	-120.0	120.0	99.5	20.45	5.865	
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	-89.48	1.1	-120.0	120.0	99.1	20.90	5.739	
4,800.0	4,800.0	4,800.0	4,800.0	10.7	10.7	-89.48	1.1	-120.0	120.0	98.6	21.35	5.618	
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-89.48	1.1	-120.0	120.0	98.2	21.80	5.502	
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-89.48	1.1	-120.0	120.0	97.7	22.25	5.391	
5,100.0	5,100.0	5,100.0	5,100.0	11.4	11.4	-89.48	1.1	-120.0	120.0	97.3	22.70	5.285	

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

Offset Design				Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-37HN - Wellbore #1 - Plan #2 (12-16-13)										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	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (")	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor				
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	-89.48	1.1	-120.0	120.0	96.8	23.15	5.182				
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	-89.48	1.1	-120.0	120.0	96.4	23.60	5.083				
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	-89.48	1.1	-120.0	120.0	95.9	24.05	4.988				
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	-89.48	1.1	-120.0	120.0	95.5	24.50	4.897				
5,600.0	5,600.0	5,600.0	5,600.0	12.5	12.5	-89.48	1.1	-120.0	120.0	95.0	24.95	4.808				
5,700.0	5,700.0	5,700.0	5,700.0	12.7	12.7	-89.48	1.1	-120.0	120.0	94.6	25.40	4.723				
5,800.0	5,800.0	5,800.0	5,800.0	12.9	12.9	-89.48	1.1	-120.0	120.0	94.1	25.85	4.641				
5,900.0	5,900.0	5,900.0	5,900.0	13.1	13.1	-89.48	1.1	-120.0	120.0	93.7	26.30	4.562				
6,000.0	6,000.0	6,000.0	6,000.0	13.4	13.4	-89.48	1.1	-120.0	120.0	93.2	26.75	4.485 CC				
6,052.8	6,052.8	6,052.8	6,052.8	13.5	13.5	-131.14	1.1	-120.0	120.1	93.1	26.98	4.449				
6,100.0	6,100.0	6,099.2	6,099.2	13.6	13.6	-131.09	1.2	-120.0	120.1	92.9	27.19	4.417 ES, SF				
6,200.0	6,199.9	6,195.0	6,194.9	13.8	13.8	-131.05	3.7	-122.3	124.9	97.3	27.60	4.525				
6,300.0	6,299.5	6,289.9	6,289.5	14.0	14.0	-130.96	9.7	-127.6	136.4	108.4	27.97	4.876				
6,400.0	6,398.5	6,383.5	6,382.2	14.3	14.2	-130.79	19.1	-136.0	154.6	126.3	28.32	5.459				
6,500.0	6,496.6	6,475.1	6,472.3	14.5	14.4	-130.53	31.5	-147.1	179.3	150.6	28.64	6.260				
6,600.0	6,593.6	6,564.2	6,559.0	14.7	14.7	-130.18	46.7	-160.6	210.2	181.3	28.94	7.264				
6,700.0	6,689.2	6,650.3	6,641.9	15.0	14.9	-129.72	64.2	-176.2	247.2	218.0	29.24	8.455				
6,800.0	6,783.1	6,733.2	6,720.5	15.3	15.1	-129.14	83.7	-193.6	289.9	260.4	29.54	9.815				
6,900.0	6,875.0	6,812.5	6,794.7	15.6	15.4	-128.44	104.7	-212.3	338.0	308.2	29.85	11.324				
7,000.0	6,964.8	6,888.0	6,864.1	16.0	15.6	-127.60	126.8	-232.0	391.2	361.0	30.20	12.955				
7,100.0	7,052.3	6,959.7	6,928.9	16.4	15.9	-127.03	149.7	-252.4	449.0	418.4	30.62	14.664				
7,200.0	7,139.0	7,028.6	6,990.1	16.9	16.2	-127.43	173.4	-273.5	509.4	478.2	31.18	16.338				
7,300.0	7,225.7	7,096.4	7,049.1	17.5	16.5	-127.50	198.3	-295.7	571.5	539.7	31.80	17.974				
7,400.0	7,314.2	7,173.4	7,115.6	18.0	16.9	-149.45	227.3	-321.5	634.8	602.8	31.97	19.858				
7,500.0	7,407.0	7,245.5	7,177.8	18.4	17.3	171.40	254.5	-345.7	698.8	666.4	32.44	21.544				
7,600.0	7,499.6	7,309.0	7,232.7	18.7	17.7	134.22	278.4	-367.0	762.5	729.2	33.32	22.884				
7,700.0	7,587.3	7,362.7	7,279.4	18.9	18.0	109.85	297.5	-385.2	825.2	791.0	34.26	24.091				
7,800.0	7,665.5	7,417.0	7,328.4	19.0	18.3	94.86	310.9	-404.3	886.0	851.2	34.89	25.398				
7,900.0	7,730.3	7,478.2	7,385.0	19.0	18.5	85.58	318.2	-426.4	943.3	908.3	35.07	26.901				
8,000.0	7,778.3	7,560.0	7,461.0	19.1	18.8	80.78	314.7	-456.1	995.5	960.6	34.96	28.477				
8,100.0	7,807.1	7,721.3	7,602.8	19.2	19.2	82.08	264.4	-511.7	1,040.0	1,005.1	34.96	29.749				
8,200.0	7,815.3	8,203.8	7,815.3	19.4	19.4	90.00	-133.3	-596.5	1,061.2	1,025.6	35.60	29.811				
8,300.0	7,815.3	8,303.8	7,815.3	19.8	19.7	90.00	-233.3	-597.0	1,061.2	1,024.6	36.53	29.051				
8,400.0	7,815.3	8,403.8	7,815.3	20.3	20.2	90.00	-333.3	-597.4	1,061.2	1,023.3	37.82	28.056				
8,500.0	7,815.3	8,503.8	7,815.3	21.1	20.9	90.00	-433.3	-597.9	1,061.2	1,021.7	39.45	26.899				
8,600.0	7,815.3	8,603.8	7,815.3	22.0	21.8	90.00	-533.3	-598.3	1,061.2	1,019.8	41.37	25.652				
8,700.0	7,815.3	8,703.8	7,815.3	23.0	22.8	90.00	-633.3	-598.8	1,061.2	1,017.6	43.54	24.373				
8,800.0	7,815.3	8,803.8	7,815.3	24.2	24.0	90.00	-733.3	-599.2	1,061.2	1,015.3	45.93	23.106				
8,900.0	7,815.3	8,903.8	7,815.3	25.4	25.2	90.00	-833.3	-599.7	1,061.2	1,012.7	48.50	21.881				
9,000.0	7,815.3	9,003.8	7,815.3	26.7	26.5	90.00	-933.3	-600.1	1,061.2	1,010.0	51.23	20.715				
9,100.0	7,815.3	9,103.8	7,815.3	28.1	27.9	90.00	-1,033.3	-600.6	1,061.2	1,007.1	54.09	19.619				
9,200.0	7,815.3	9,203.8	7,815.3	29.5	29.4	90.00	-1,133.3	-601.0	1,061.2	1,004.1	57.07	18.596				
9,300.0	7,815.3	9,303.8	7,815.3	31.0	30.8	90.00	-1,233.3	-601.5	1,061.2	1,001.1	60.14	17.646				
9,400.0	7,815.3	9,403.8	7,815.3	32.6	32.4	90.00	-1,333.3	-601.9	1,061.2	997.9	63.29	16.767				
9,500.0	7,815.3	9,503.8	7,815.3	34.1	34.0	90.00	-1,433.3	-602.4	1,061.2	994.7	66.52	15.954				
9,600.0	7,815.3	9,603.8	7,815.3	35.8	35.6	90.00	-1,533.3	-602.9	1,061.2	991.4	69.80	15.203				
9,700.0	7,815.3	9,703.8	7,815.3	37.4	37.2	90.00	-1,633.3	-603.3	1,061.2	988.1	73.14	14.509				
9,800.0	7,815.3	9,803.8	7,815.3	39.0	38.9	90.00	-1,733.3	-603.8	1,061.2	984.7	76.53	13.867				
9,900.0	7,815.3	9,903.8	7,815.3	40.7	40.6	90.00	-1,833.3	-604.2	1,061.2	981.3	79.95	13.274				
10,000.0	7,815.3	10,003.8	7,815.3	42.4	42.3	90.00	-1,933.3	-604.7	1,061.2	977.8	83.41	12.723				
10,100.0	7,815.3	10,103.8	7,815.3	44.2	44.0	90.00	-2,033.3	-605.1	1,061.2	974.3	86.90	12.212				
10,200.0	7,815.3	10,203.8	7,815.3	45.9	45.7	90.00	-2,133.3	-605.6	1,061.2	970.8	90.42	11.737				

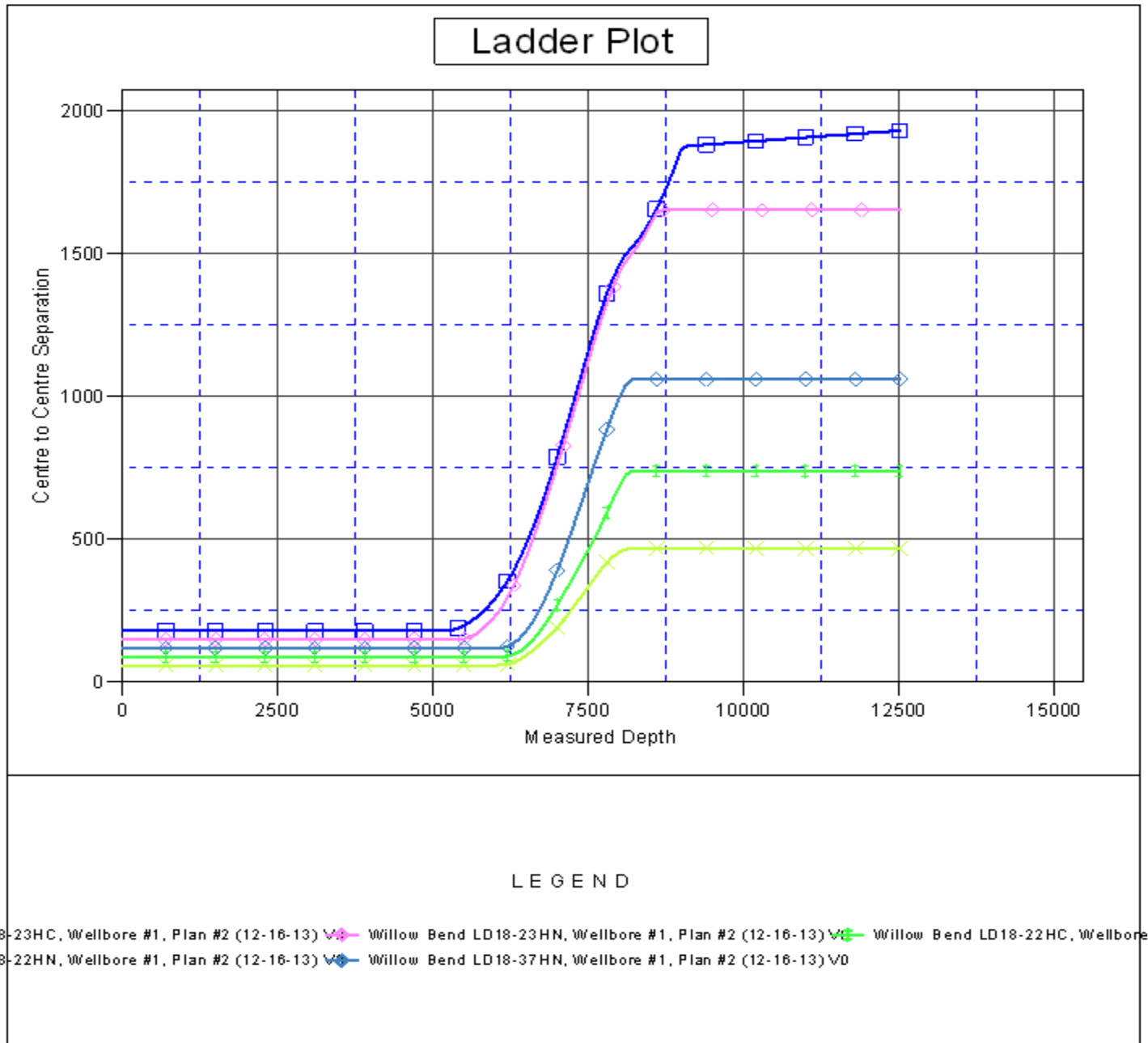
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Offset Design													Offset Site Error:	
Willow Bend Pad Sec.18-T1S-R67W - Willow Bend LD18-37HN - Wellbore #1 - Plan #2 (12-16-13)													0.0 ft	
Survey Program: 0-MWD													Offset Well Error:	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,300.0	7,815.3	10,303.8	7,815.3	47.6	47.5	90.00	-2,233.3	-606.0	1,061.2	967.3	93.96	11.295		
10,400.0	7,815.3	10,403.8	7,815.3	49.4	49.2	90.00	-2,333.3	-606.5	1,061.2	963.7	97.52	10.882		
10,500.0	7,815.3	10,503.8	7,815.3	51.2	51.0	90.00	-2,433.3	-606.9	1,061.2	960.1	101.10	10.496		
10,600.0	7,815.3	10,603.8	7,815.3	53.0	52.8	90.00	-2,533.3	-607.4	1,061.2	956.5	104.70	10.136		
10,700.0	7,815.3	10,703.8	7,815.3	54.7	54.6	90.00	-2,633.3	-607.8	1,061.2	952.9	108.32	9.797		
10,800.0	7,815.3	10,803.8	7,815.3	56.5	56.4	90.00	-2,733.3	-608.3	1,061.2	949.3	111.95	9.480		
10,900.0	7,815.3	10,903.8	7,815.3	58.3	58.2	90.00	-2,833.3	-608.8	1,061.2	945.6	115.59	9.181		
11,000.0	7,815.3	11,003.8	7,815.3	60.2	60.0	90.00	-2,933.3	-609.2	1,061.2	942.0	119.24	8.900		
11,100.0	7,815.3	11,103.8	7,815.3	62.0	61.8	90.00	-3,033.3	-609.7	1,061.2	938.3	122.91	8.634		
11,200.0	7,815.3	11,203.8	7,815.3	63.8	63.7	90.00	-3,133.3	-610.1	1,061.2	934.7	126.58	8.384		
11,300.0	7,815.3	11,303.8	7,815.3	65.6	65.5	90.00	-3,233.3	-610.6	1,061.2	931.0	130.26	8.147		
11,400.0	7,815.3	11,403.8	7,815.3	67.5	67.3	90.00	-3,333.3	-611.0	1,061.2	927.3	133.95	7.922		
11,500.0	7,815.3	11,503.8	7,815.3	69.3	69.2	90.00	-3,433.3	-611.5	1,061.2	923.6	137.65	7.710		
11,600.0	7,815.3	11,603.8	7,815.3	71.1	71.0	90.00	-3,533.3	-611.9	1,061.3	919.9	141.36	7.508		
11,700.0	7,815.3	11,703.8	7,815.3	73.0	72.9	90.00	-3,633.3	-612.4	1,061.3	916.2	145.07	7.315		
11,800.0	7,815.3	11,803.8	7,815.3	74.8	74.7	90.00	-3,733.3	-612.8	1,061.3	912.5	148.79	7.133		
11,900.0	7,815.3	11,903.8	7,815.3	76.7	76.6	90.00	-3,833.3	-613.3	1,061.3	908.7	152.51	6.959		
12,000.0	7,815.3	12,003.8	7,815.3	78.5	78.4	90.00	-3,933.3	-613.8	1,061.3	905.0	156.24	6.793		
12,100.0	7,815.3	12,103.8	7,815.3	80.4	80.3	90.00	-4,033.3	-614.2	1,061.3	901.3	159.97	6.634		
12,200.0	7,815.3	12,203.8	7,815.3	82.3	82.1	90.00	-4,133.3	-614.7	1,061.3	897.6	163.71	6.483		
12,300.0	7,815.3	12,303.8	7,815.3	84.1	84.0	90.00	-4,233.3	-615.1	1,061.3	893.8	167.45	6.338		
12,400.0	7,815.3	12,403.8	7,815.3	86.0	85.9	90.00	-4,333.3	-615.6	1,061.3	890.1	171.19	6.199		
12,500.0	7,815.3	12,503.8	7,815.3	87.9	87.7	90.00	-4,433.3	-616.0	1,061.3	886.3	174.94	6.066		
12,516.0	7,815.3	12,519.8	7,815.3	88.2	88.0	90.00	-4,449.3	-616.1	1,061.3	885.7	175.54	6.046		

Company:	Great Western	Local Co-ordinate Reference:	Well Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5247.3ft (RKB - 16.5')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Willow Bend LD 18-361HN
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 Willow Bend LD 18-361HN
Project:	Sec.18-T1S-R67W	TVD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Reference Site:	Willow Bend Pad Sec.18-T1S-R67W	MD Reference:	WELL @ 5247.3ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Willow Bend LD 18-361HN	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 (12-16-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5247.3ft (RKB - 16.5')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Willow Bend LD 18-361HN

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.37°

