

Great Western

Well Name: **Schmunk EF 31-368HC**

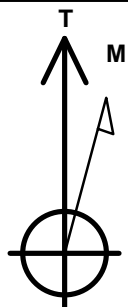
Surface Location: Schmunk Pad Sec.31-T7N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4850.3

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1439633.18	3221264.80	40.537467	-104.703917	
RKB - 16.5' WELL @ 4866.8ft (RKB - 16.5')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 529'FNL & 2004'FEL	1.0	0.0	0.0	Point
BHL 470'FSL & 2020'FEL	7277.8	-4282.9	-50.0	Point
Entry Pt. 460'FNL & 2020'FEL	7277.8	68.9	-15.3	Point



Azimuths to True North
Magnetic North: 8.52°

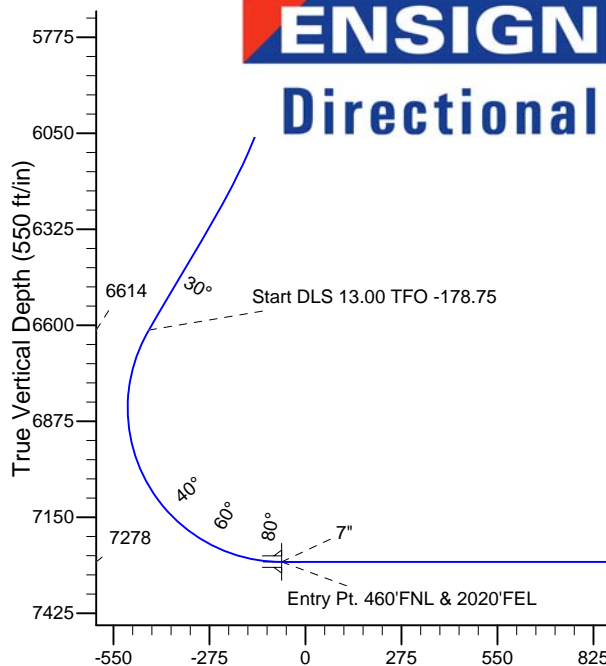
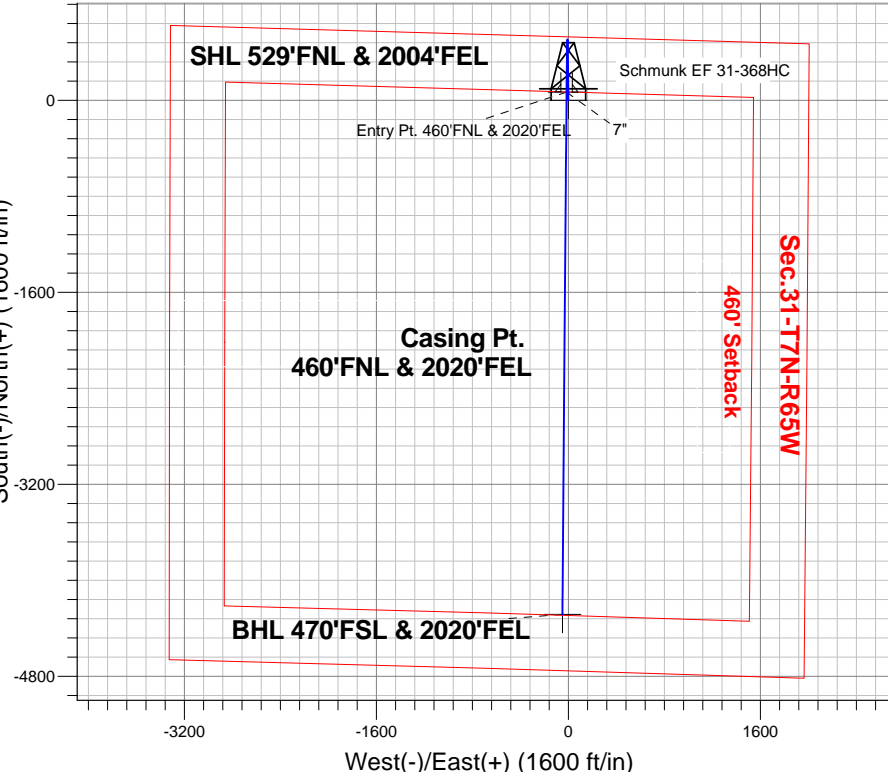
Magnetic Field
Strength: 52954.9snT
Dip Angle: 67.09°
Date: 11/13/2013
Model: IGRF2010

Schmunk Pad Sec.31-T7N-R65W
Schmunk EF 31-368HC
Plan #1 (11-13-13)
13:24, November 14 2013

ANNOTATIONS

TVD	MD	Annotation
5330.0	5330.0	KOP - Start Build 3.00
6614.1	6711.6	Start DLS 13.00 TFO -178.75
7277.8	11989.7	TD at 11989.7

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	5330.0	0.00	0.00	5330.0	0.0	0.0	0.00	0.00	0.0	
3	6343.6	30.41	359.37	6296.7	262.7	-2.9	3.00	359.37	-262.6	
4	6711.6	30.41	359.37	6614.1	448.9	-4.9	0.00	0.00	-448.9	
5	7637.8	90.00	180.45	7277.8	68.9	-15.3	13.00	-178.75	-68.7	Entry Pt. 460'FNL & 2020'FEL
6	7638.5	90.00	180.46	7277.8	68.1	-15.3	1.00	90.00	-67.9	
7	11989.7	90.00	180.46	7277.8	-4282.9	-50.0	0.00	0.00	4283.2	BHL 470'FSL & 2020'FEL

BHL 470'FSL & 2020'FEL

TD at 11989.7

Vertical Section at 180.67° (550 ft/in)



Great Western

SEC.31-T7N-R65W

Schmunk Pad Sec.31-T7N-R65W

Schmunk EF 31-368HC

Wellbore #1

Plan: Plan #1 (11-13-13)

Standard Planning Report

14 November, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Schmunk EF 31-368HC
Company:	Great Western	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Project:	SEC.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site:	Schmunk Pad Sec.31-T7N-R65W	North Reference:	True
Well:	Schmunk EF 31-368HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-13-13)		

Project	SEC.31-T7N-R65W, 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						Schmunk Pad Sec.31-T7N-R65W							
Site Position:						Northing:		1,439,632.94 ft		Latitude:		40.537467	
From:			Lat/Long			Easting:		3,221,234.78 ft		Longitude:		-104.704025	
Position Uncertainty:			0.0 ft			Slot Radius:		"		Grid Convergence:		0.51 °	

Well	Schmunk EF 31-368HC					
Well Position	+N/-S	0.0 ft	Northing:	1,439,633.18 ft	Latitude:	40.537467
	+E/-W	30.0 ft	Easting:	3,221,264.80 ft	Longitude:	-104.703917
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,850.3 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/13/2013	8.52	67.09	52,955

Design	Plan #1 (11-13-13)			
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	180.67

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	
5,330.0	0.00	0.00	5,330.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,343.6	30.41	359.37	6,296.7	262.7	-2.9	3.00	3.00	0.00	359.37	
6,711.6	30.41	359.37	6,614.1	448.9	-4.9	0.00	0.00	0.00	0.00	
7,637.8	90.00	180.45	7,277.8	68.9	-15.3	13.00	6.43	-19.32	-178.75	Entry Pt. 460'FNL &
7,638.5	90.00	180.46	7,277.8	68.1	-15.3	1.00	0.00	1.00	90.00	
11,989.7	90.00	180.46	7,277.8	-4,282.9	-50.0	0.00	0.00	0.00	0.00	BHL 470'FSL & 202

Database:	Landmark	Local Co-ordinate Reference:	Well Schmunk EF 31-368HC
Company:	Great Western	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Project:	SEC.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site:	Schmunk Pad Sec.31-T7N-R65W	North Reference:	True
Well:	Schmunk EF 31-368HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-13-13)		

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 529'FNL & 2004'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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Company:	Great Western	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Project:	SEC.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site:	Schmunk Pad Sec.31-T7N-R65W	North Reference:	True
Well:	Schmunk EF 31-368HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-13-13)		

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
5,330.0	0.00	0.00	5,330.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 3.00									
5,400.0	2.10	359.37	5,400.0	1.3	0.0	-1.3	3.00	3.00	0.00
5,500.0	5.10	359.37	5,499.8	7.6	-0.1	-7.6	3.00	3.00	0.00
5,600.0	8.10	359.37	5,599.1	19.1	-0.2	-19.0	3.00	3.00	0.00
5,700.0	11.10	359.37	5,697.7	35.7	-0.4	-35.7	3.00	3.00	0.00
5,800.0	14.10	359.37	5,795.3	57.5	-0.6	-57.5	3.00	3.00	0.00
5,900.0	17.10	359.37	5,891.6	84.4	-0.9	-84.4	3.00	3.00	0.00
6,000.0	20.10	359.37	5,986.3	116.3	-1.3	-116.3	3.00	3.00	0.00
6,100.0	23.10	359.37	6,079.3	153.1	-1.7	-153.1	3.00	3.00	0.00
6,200.0	26.10	359.37	6,170.2	194.7	-2.1	-194.7	3.00	3.00	0.00
6,300.0	29.10	359.37	6,258.8	241.1	-2.7	-241.0	3.00	3.00	0.00
6,343.6	30.41	359.37	6,296.7	262.7	-2.9	-262.6	3.00	3.00	0.00
6,400.0	30.41	359.37	6,345.3	291.2	-3.2	-291.2	0.00	0.00	0.00
6,500.0	30.41	359.37	6,431.6	341.9	-3.8	-341.8	0.00	0.00	0.00
6,600.0	30.41	359.37	6,517.8	392.5	-4.3	-392.4	0.00	0.00	0.00
6,700.0	30.41	359.37	6,604.1	443.1	-4.9	-443.0	0.00	0.00	0.00
6,711.6	30.41	359.37	6,614.1	448.9	-4.9	-448.9	0.00	0.00	0.00
Start DLS 13.00 TFO -178.75									
6,800.0	18.92	358.60	6,694.3	485.8	-5.5	-485.7	13.00	-12.99	-0.87
6,900.0	5.94	354.34	6,791.7	507.2	-6.5	-507.1	13.00	-12.98	-4.26
7,000.0	7.12	185.54	6,891.5	506.2	-7.6	-506.1	13.00	1.18	-168.80
7,100.0	20.10	182.18	6,988.5	482.8	-8.8	-482.6	13.00	12.98	-3.35
7,200.0	33.10	181.42	7,077.7	438.1	-10.2	-438.0	13.00	13.00	-0.76
7,300.0	46.09	181.06	7,154.6	374.5	-11.5	-374.4	13.00	13.00	-0.36
7,400.0	59.09	180.83	7,215.2	295.3	-12.8	-295.1	13.00	13.00	-0.23
7,500.0	72.09	180.66	7,256.4	204.4	-14.0	-204.2	13.00	13.00	-0.17
7,600.0	85.09	180.50	7,276.2	106.6	-15.0	-106.4	13.00	13.00	-0.15
7,637.8	90.00	180.45	7,277.8	68.9	-15.3	-68.7	12.99	12.99	-0.14
7" - Entry Pt. 460'FNL & 2020'FEL									
7,638.5	90.00	180.46	7,277.8	68.1	-15.3	-67.9	1.14	0.56	0.99
7,700.0	90.00	180.46	7,277.8	6.7	-15.8	-6.5	0.00	0.00	0.00
7,800.0	90.00	180.46	7,277.8	-93.3	-16.6	93.5	0.00	0.00	0.00
7,900.0	90.00	180.46	7,277.8	-193.3	-17.4	193.5	0.00	0.00	0.00
8,000.0	90.00	180.46	7,277.8	-293.3	-18.2	293.5	0.00	0.00	0.00
8,100.0	90.00	180.46	7,277.8	-393.3	-19.0	393.5	0.00	0.00	0.00
8,200.0	90.00	180.46	7,277.8	-493.3	-19.8	493.5	0.00	0.00	0.00
8,300.0	90.00	180.46	7,277.8	-593.3	-20.6	593.5	0.00	0.00	0.00
8,400.0	90.00	180.46	7,277.8	-693.3	-21.4	693.5	0.00	0.00	0.00
8,500.0	90.00	180.46	7,277.8	-793.3	-22.2	793.5	0.00	0.00	0.00
8,600.0	90.00	180.46	7,277.8	-893.3	-23.0	893.5	0.00	0.00	0.00
8,700.0	90.00	180.46	7,277.8	-993.3	-23.8	993.5	0.00	0.00	0.00
8,800.0	90.00	180.46	7,277.8	-1,093.3	-24.6	1,093.5	0.00	0.00	0.00
8,900.0	90.00	180.46	7,277.8	-1,193.3	-25.4	1,193.5	0.00	0.00	0.00
9,000.0	90.00	180.46	7,277.8	-1,293.3	-26.2	1,293.5	0.00	0.00	0.00
9,100.0	90.00	180.46	7,277.8	-1,393.3	-27.0	1,393.5	0.00	0.00	0.00
9,200.0	90.00	180.46	7,277.8	-1,493.3	-27.8	1,493.5	0.00	0.00	0.00
9,300.0	90.00	180.46	7,277.8	-1,593.3	-28.6	1,593.5	0.00	0.00	0.00
9,400.0	90.00	180.46	7,277.8	-1,693.3	-29.4	1,693.5	0.00	0.00	0.00
9,500.0	90.00	180.46	7,277.8	-1,793.3	-30.2	1,793.5	0.00	0.00	0.00
9,600.0	90.00	180.46	7,277.8	-1,893.3	-31.0	1,893.5	0.00	0.00	0.00

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Company:	Great Western	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Project:	SEC.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site:	Schmunk Pad Sec.31-T7N-R65W	North Reference:	True
Well:	Schmunk EF 31-368HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-13-13)		

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)	
9,700.0	90.00	180.46	7,277.8	-1,993.3	-31.8	1,993.5	0.00	0.00	0.00	
9,800.0	90.00	180.46	7,277.8	-2,093.3	-32.6	2,093.5	0.00	0.00	0.00	
9,900.0	90.00	180.46	7,277.8	-2,193.3	-33.4	2,193.5	0.00	0.00	0.00	
10,000.0	90.00	180.46	7,277.8	-2,293.3	-34.2	2,293.5	0.00	0.00	0.00	
10,100.0	90.00	180.46	7,277.8	-2,393.3	-34.9	2,393.5	0.00	0.00	0.00	
10,200.0	90.00	180.46	7,277.8	-2,493.3	-35.7	2,493.5	0.00	0.00	0.00	
10,300.0	90.00	180.46	7,277.8	-2,593.3	-36.5	2,593.5	0.00	0.00	0.00	
10,400.0	90.00	180.46	7,277.8	-2,693.3	-37.3	2,693.5	0.00	0.00	0.00	
10,500.0	90.00	180.46	7,277.8	-2,793.3	-38.1	2,793.5	0.00	0.00	0.00	
10,600.0	90.00	180.46	7,277.8	-2,893.3	-38.9	2,893.5	0.00	0.00	0.00	
10,700.0	90.00	180.46	7,277.8	-2,993.3	-39.7	2,993.5	0.00	0.00	0.00	
10,800.0	90.00	180.46	7,277.8	-3,093.3	-40.5	3,093.5	0.00	0.00	0.00	
10,900.0	90.00	180.46	7,277.8	-3,193.2	-41.3	3,193.5	0.00	0.00	0.00	
11,000.0	90.00	180.46	7,277.8	-3,293.2	-42.1	3,293.5	0.00	0.00	0.00	
11,100.0	90.00	180.46	7,277.8	-3,393.2	-42.9	3,393.5	0.00	0.00	0.00	
11,200.0	90.00	180.46	7,277.8	-3,493.2	-43.7	3,493.5	0.00	0.00	0.00	
11,300.0	90.00	180.46	7,277.8	-3,593.2	-44.5	3,593.5	0.00	0.00	0.00	
11,400.0	90.00	180.46	7,277.8	-3,693.2	-45.3	3,693.5	0.00	0.00	0.00	
11,500.0	90.00	180.46	7,277.8	-3,793.2	-46.1	3,793.5	0.00	0.00	0.00	
11,600.0	90.00	180.46	7,277.8	-3,893.2	-46.9	3,893.5	0.00	0.00	0.00	
11,700.0	90.00	180.46	7,277.8	-3,993.2	-47.7	3,993.5	0.00	0.00	0.00	
11,800.0	90.00	180.46	7,277.8	-4,093.2	-48.5	4,093.5	0.00	0.00	0.00	
11,900.0	90.00	180.46	7,277.8	-4,193.2	-49.3	4,193.5	0.00	0.00	0.00	
11,989.7	90.00	180.46	7,277.8	-4,282.9	-50.0	4,283.2	0.00	0.00	0.00	
TD at 11989.7 - BHL 470'FSL & 2020'FEL										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,637.8	7,277.8	7"	7	7-1/2	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
5,330.0	5,330.0	0.0	0.0	KOP - Start Build 3.00
6,711.6	6,614.1	448.9	-4.9	Start DLS 13.00 TFO -178.75
11,989.7	7,277.8	-4,282.9	-50.0	TD at 11989.7



Great Western

SEC.31-T7N-R65W

Schmunk Pad Sec.31-T7N-R65W

Schmunk EF 31-368HC

Wellbore #1

Plan #1 (11-13-13)

Anticollision Report

14 November, 2013

Company:	Great Western	Local Co-ordinate Reference:	Well Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (11-13-13)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 11/13/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,989.7	Plan #1 (11-13-13) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Schmunk Pad Sec.31-T7N-R65W						
Schmunk EF 31-365HN - Wellbore #1 - Plan #1 (11-13-1	4,733.5	4,733.5	60.3	39.3	2.865	CC, ES
Schmunk EF 31-365HN - Wellbore #1 - Plan #1 (11-13-1	4,800.0	4,798.8	60.8	39.5	2.849	SF
Schmunk EF 31-367HN - Wellbore #1 - Plan #1 (11-13-1	5,135.6	5,135.6	30.3	7.5	1.326	Level 3, CC
Schmunk EF 31-367HN - Wellbore #1 - Plan #1 (11-13-1	5,200.0	5,199.8	30.5	7.3	1.317	Level 3, ES, SF
Schmunk EF 31-369HN - Wellbore #1 - Plan #1 (11-13-1	5,100.0	5,100.0	30.0	7.3	1.322	Level 3, CC, ES, SF

Offset Design Schmunk Pad Sec.31-T7N-R65W - Schmunk EF 31-365HN - Wellbore #1 - Plan #1 (11-13-13)													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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	91.02	-1.1	60.3	60.3					
100.0	100.0	100.0	100.0	0.1	0.1	91.02	-1.1	60.3	60.3	60.1	0.22	268.394		
200.0	200.0	200.0	200.0	0.3	0.3	91.02	-1.1	60.3	60.3	59.7	0.67	89.465		
300.0	300.0	300.0	300.0	0.6	0.6	91.02	-1.1	60.3	60.3	59.2	1.12	53.679		
400.0	400.0	400.0	400.0	0.8	0.8	91.02	-1.1	60.3	60.3	58.8	1.57	38.342		
500.0	500.0	500.0	500.0	1.0	1.0	91.02	-1.1	60.3	60.3	58.3	2.02	29.822		
600.0	600.0	600.0	600.0	1.2	1.2	91.02	-1.1	60.3	60.3	57.9	2.47	24.399		
700.0	700.0	700.0	700.0	1.5	1.5	91.02	-1.1	60.3	60.3	57.4	2.92	20.646		
800.0	800.0	800.0	800.0	1.7	1.7	91.02	-1.1	60.3	60.3	57.0	3.37	17.893		
900.0	900.0	900.0	900.0	1.9	1.9	91.02	-1.1	60.3	60.3	56.5	3.82	15.788		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	91.02	-1.1	60.3	60.3	56.1	4.27	14.126		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	91.02	-1.1	60.3	60.3	55.6	4.72	12.781		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	91.02	-1.1	60.3	60.3	55.2	5.17	11.669		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	91.02	-1.1	60.3	60.3	54.7	5.62	10.736		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	91.02	-1.1	60.3	60.3	54.3	6.07	9.941		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	91.02	-1.1	60.3	60.3	53.8	6.52	9.255		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	91.02	-1.1	60.3	60.3	53.4	6.97	8.658		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	91.02	-1.1	60.3	60.3	52.9	7.42	8.133		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	91.02	-1.1	60.3	60.3	52.5	7.87	7.668		
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	91.02	-1.1	60.3	60.3	52.0	8.32	7.254		
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	91.02	-1.1	60.3	60.3	51.6	8.77	6.882		
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	91.02	-1.1	60.3	60.3	51.1	9.22	6.546		

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 Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
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
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	91.02	-1.1	60.3	60.3	50.7	9.66	6.242	
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	91.02	-1.1	60.3	60.3	50.2	10.11	5.964	
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	91.02	-1.1	60.3	60.3	49.8	10.56	5.711	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	91.02	-1.1	60.3	60.3	49.3	11.01	5.477	
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	91.02	-1.1	60.3	60.3	48.9	11.46	5.263	
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	91.02	-1.1	60.3	60.3	48.4	11.91	5.064	
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	91.02	-1.1	60.3	60.3	48.0	12.36	4.880	
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	91.02	-1.1	60.3	60.3	47.5	12.81	4.709	
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	91.02	-1.1	60.3	60.3	47.1	13.26	4.549	
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	91.02	-1.1	60.3	60.3	46.6	13.71	4.400	
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	91.02	-1.1	60.3	60.3	46.2	14.16	4.260	
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	91.02	-1.1	60.3	60.3	45.7	14.61	4.129	
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	91.02	-1.1	60.3	60.3	45.3	15.06	4.006	
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	91.02	-1.1	60.3	60.3	44.8	15.51	3.890	
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	91.02	-1.1	60.3	60.3	44.4	15.96	3.780	
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	91.02	-1.1	60.3	60.3	43.9	16.41	3.677	
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	91.02	-1.1	60.3	60.3	43.5	16.86	3.579	
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	91.02	-1.1	60.3	60.3	43.0	17.31	3.486	
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	91.02	-1.1	60.3	60.3	42.6	17.76	3.397	
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	91.02	-1.1	60.3	60.3	42.1	18.21	3.314	
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	91.02	-1.1	60.3	60.3	41.7	18.66	3.234	
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	91.02	-1.1	60.3	60.3	41.2	19.11	3.158	
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	91.02	-1.1	60.3	60.3	40.8	19.55	3.085	
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	91.02	-1.1	60.3	60.3	40.3	20.00	3.016	
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	91.02	-1.1	60.3	60.3	39.9	20.45	2.949	
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	91.02	-1.1	60.3	60.3	39.4	20.90	2.886	
4,733.5	4,733.5	4,733.5	4,733.5	10.5	10.5	91.02	-1.1	60.3	60.3	39.3	21.05	2.865 CC, ES	
4,800.0	4,800.0	4,798.8	4,798.8	10.7	10.7	90.66	-0.7	60.8	60.8	39.5	21.35	2.849 SF	
4,900.0	4,900.0	4,896.1	4,895.9	10.9	10.9	87.96	2.3	64.8	64.9	43.1	21.78	2.981	
5,000.0	5,000.0	4,992.6	4,992.0	11.1	11.1	83.51	8.3	72.6	73.5	51.3	22.21	3.308	
5,100.0	5,100.0	5,088.0	5,086.2	11.4	11.3	78.56	17.0	84.0	86.8	64.2	22.64	3.836	
5,200.0	5,200.0	5,181.6	5,178.0	11.6	11.5	74.00	28.4	98.9	105.3	82.2	23.06	4.565	
5,300.0	5,300.0	5,273.2	5,266.7	11.8	11.8	70.20	42.1	117.0	128.7	105.2	23.48	5.480	
5,400.0	5,400.0	5,362.6	5,352.2	12.0	12.0	67.66	58.0	137.8	156.5	132.6	23.90	6.549	
5,500.0	5,499.8	5,450.2	5,434.6	12.3	12.3	66.03	75.9	161.3	186.9	162.6	24.30	7.694	
5,600.0	5,599.1	5,535.8	5,513.9	12.5	12.6	65.51	95.6	187.1	219.5	194.9	24.69	8.894	
5,700.0	5,697.7	5,619.5	5,589.7	12.7	13.0	65.61	116.9	215.0	254.2	229.2	25.07	10.141	
5,800.0	5,795.3	5,700.0	5,661.3	12.9	13.3	66.05	139.2	244.4	290.9	265.5	25.45	11.430	
5,900.0	5,891.6	5,784.4	5,734.7	13.2	13.8	66.80	164.5	277.6	329.5	303.6	25.87	12.735	
6,000.0	5,986.3	5,875.9	5,813.8	13.4	14.3	68.05	192.4	314.1	367.5	341.1	26.35	13.943	
6,100.0	6,079.3	5,967.4	5,892.9	13.8	14.9	69.60	220.2	350.6	404.2	377.3	26.90	15.026	
6,200.0	6,170.2	6,058.5	5,971.7	14.1	15.5	71.38	248.0	387.0	440.1	412.6	27.54	15.984	
6,300.0	6,258.8	6,149.0	6,049.9	14.5	16.2	73.33	275.6	423.2	475.6	447.3	28.28	16.819	
6,400.0	6,345.3	6,238.8	6,127.6	15.0	16.9	75.93	302.9	459.1	511.1	482.0	29.17	17.523	
6,500.0	6,431.6	6,328.6	6,205.2	15.5	17.6	78.68	330.2	494.9	547.8	517.6	30.16	18.160	
6,600.0	6,517.8	6,418.4	6,282.9	16.1	18.3	81.10	357.6	530.8	585.5	554.3	31.23	18.750	
6,700.0	6,604.1	6,508.1	6,360.5	16.7	19.0	83.24	384.9	566.7	624.0	591.7	32.34	19.292	
6,800.0	6,694.3	6,598.9	6,438.9	17.2	19.8	90.05	412.6	602.9	663.9	630.3	33.66	19.726	
6,900.0	6,791.7	6,689.3	6,517.1	17.5	20.6	99.05	440.1	639.0	704.7	669.8	34.85	20.218	
7,000.0	6,891.5	6,774.1	6,590.5	17.7	21.3	-88.99	465.8	672.9	745.2	709.4	35.80	20.817	
7,100.0	6,988.5	6,852.3	6,660.0	17.6	21.9	-82.93	481.5	705.0	785.8	749.4	36.34	21.625	
7,200.0	7,077.7	6,937.4	6,737.2	17.4	22.4	-79.95	482.9	740.5	825.5	789.1	36.42	22.668	

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 Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0ft
Survey Program: 0-MWD												Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
7,300.0	7,154.6	7,034.2	6,823.4	17.2	22.8	-78.13	464.7	779.9	862.7	826.7	36.00	23.967	
7,400.0	7,215.2	7,150.0	6,918.8	16.9	23.1	-77.45	416.5	823.5	895.5	860.3	35.16	25.471	
7,500.0	7,256.4	7,295.0	7,017.1	16.7	23.2	-77.89	320.5	868.0	921.2	887.1	34.14	26.986	
7,600.0	7,276.2	7,476.9	7,092.3	16.6	23.0	-79.01	159.7	901.4	936.2	902.7	33.46	27.977	
7,700.0	7,277.8	7,637.7	7,106.8	16.6	22.8	-79.50	0.3	907.0	938.5	904.8	33.63	27.906	
7,800.0	7,277.8	7,737.7	7,106.8	17.0	22.8	-79.50	-99.7	906.3	938.6	904.3	34.26	27.395	
7,900.0	7,277.8	7,837.7	7,106.8	17.5	23.0	-79.50	-199.7	905.6	938.7	903.4	35.28	26.603	
8,000.0	7,277.8	7,937.7	7,106.8	18.2	23.3	-79.51	-299.7	904.9	938.8	902.1	36.67	25.599	
8,100.0	7,277.8	8,037.7	7,106.8	19.1	23.8	-79.51	-399.7	904.2	938.9	900.5	38.39	24.460	
8,200.0	7,277.8	8,137.7	7,106.8	20.2	24.5	-79.51	-499.7	903.5	939.0	898.6	40.38	23.253	
8,300.0	7,277.8	8,237.7	7,106.8	21.3	25.3	-79.51	-599.7	902.8	939.1	896.5	42.62	22.034	
8,400.0	7,277.8	8,337.7	7,106.8	22.6	26.2	-79.51	-699.7	902.2	939.2	894.2	45.07	20.839	
8,500.0	7,277.8	8,437.7	7,106.8	23.9	27.3	-79.51	-799.7	901.5	939.4	891.7	47.69	19.695	
8,600.0	7,277.8	8,537.7	7,106.8	25.3	28.5	-79.51	-899.7	900.8	939.5	889.0	50.47	18.616	
8,700.0	7,277.8	8,637.7	7,106.8	26.8	29.8	-79.51	-999.7	900.1	939.6	886.2	53.36	17.607	
8,800.0	7,277.8	8,737.7	7,106.8	28.4	31.2	-79.52	-1,099.7	899.4	939.7	883.3	56.37	16.671	
8,900.0	7,277.8	8,837.7	7,106.8	30.0	32.6	-79.52	-1,199.7	898.7	939.8	880.3	59.46	15.806	
9,000.0	7,277.8	8,937.7	7,106.8	31.6	34.0	-79.52	-1,299.6	898.0	939.9	877.3	62.63	15.008	
9,100.0	7,277.8	9,037.7	7,106.8	33.2	35.5	-79.52	-1,399.6	897.3	940.0	874.2	65.86	14.273	
9,200.0	7,277.8	9,137.7	7,106.8	34.9	37.1	-79.52	-1,499.6	896.7	940.1	871.0	69.15	13.595	
9,300.0	7,277.8	9,237.7	7,106.8	36.6	38.7	-79.52	-1,599.6	896.0	940.2	867.8	72.49	12.970	
9,400.0	7,277.8	9,337.7	7,106.8	38.3	40.3	-79.52	-1,699.6	895.3	940.4	864.5	75.87	12.394	
9,500.0	7,277.8	9,437.7	7,106.8	40.1	41.9	-79.52	-1,799.6	894.6	940.5	861.2	79.29	11.861	
9,600.0	7,277.8	9,537.7	7,106.8	41.8	43.6	-79.53	-1,899.6	893.9	940.6	857.8	82.74	11.368	
9,700.0	7,277.8	9,637.7	7,106.8	43.6	45.3	-79.53	-1,999.6	893.2	940.7	854.5	86.22	10.910	
9,800.0	7,277.8	9,737.7	7,106.8	45.4	47.0	-79.53	-2,099.6	892.5	940.8	851.1	89.72	10.485	
9,900.0	7,277.8	9,837.7	7,106.8	47.2	48.7	-79.53	-2,199.6	891.9	940.9	847.7	93.25	10.090	
10,000.0	7,277.8	9,937.7	7,106.8	49.0	50.4	-79.53	-2,299.6	891.2	941.0	844.2	96.80	9.722	
10,100.0	7,277.8	10,037.7	7,106.8	50.8	52.2	-79.53	-2,399.6	890.5	941.1	840.8	100.36	9.377	
10,200.0	7,277.8	10,137.7	7,106.8	52.6	53.9	-79.53	-2,499.6	889.8	941.2	837.3	103.94	9.056	
10,300.0	7,277.8	10,237.7	7,106.8	54.4	55.7	-79.53	-2,599.6	889.1	941.3	833.8	107.53	8.754	
10,400.0	7,277.8	10,337.7	7,106.8	56.3	57.5	-79.54	-2,699.6	888.4	941.5	830.3	111.14	8.471	
10,500.0	7,277.8	10,437.7	7,106.8	58.1	59.3	-79.54	-2,799.6	887.7	941.6	826.8	114.76	8.205	
10,600.0	7,277.8	10,537.7	7,106.8	60.0	61.1	-79.54	-2,899.6	887.1	941.7	823.3	118.39	7.954	
10,700.0	7,277.8	10,637.7	7,106.8	61.8	62.9	-79.54	-2,999.6	886.4	941.8	819.8	122.03	7.718	
10,800.0	7,277.8	10,737.7	7,106.8	63.7	64.7	-79.54	-3,099.6	885.7	941.9	816.2	125.68	7.495	
10,900.0	7,277.8	10,837.7	7,106.8	65.5	66.5	-79.54	-3,199.6	885.0	942.0	812.7	129.33	7.284	
11,000.0	7,277.8	10,937.7	7,106.8	67.4	68.3	-79.54	-3,299.6	884.3	942.1	809.1	133.00	7.084	
11,100.0	7,277.8	11,037.7	7,106.8	69.2	70.1	-79.54	-3,399.6	883.6	942.2	805.6	136.67	6.894	
11,200.0	7,277.8	11,137.7	7,106.8	71.1	72.0	-79.55	-3,499.6	882.9	942.3	802.0	140.34	6.715	
11,300.0	7,277.8	11,237.7	7,106.8	73.0	73.8	-79.55	-3,599.6	882.3	942.5	798.4	144.03	6.544	
11,400.0	7,277.8	11,337.7	7,106.8	74.8	75.6	-79.55	-3,699.6	881.6	942.6	794.9	147.71	6.381	
11,500.0	7,277.8	11,437.7	7,106.8	76.7	77.5	-79.55	-3,799.6	880.9	942.7	791.3	151.41	6.226	
11,600.0	7,277.8	11,537.7	7,106.8	78.6	79.3	-79.55	-3,899.6	880.2	942.8	787.7	155.10	6.078	
11,700.0	7,277.8	11,637.7	7,106.8	80.5	81.2	-79.55	-3,999.6	879.5	942.9	784.1	158.81	5.937	
11,800.0	7,277.8	11,737.7	7,106.8	82.4	83.0	-79.55	-4,099.6	878.8	943.0	780.5	162.51	5.803	
11,900.0	7,277.8	11,837.7	7,106.8	84.2	84.9	-79.55	-4,199.6	878.1	943.1	776.9	166.22	5.674	
11,989.7	7,277.8	11,927.4	7,106.8	85.9	86.6	-79.55	-4,289.3	877.5	943.2	773.7	169.55	5.563	

Company:	Great Western	Local Co-ordinate Reference:	Well Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	92.04	-1.1	30.3	30.3					
100.0	100.0	100.0	100.0	0.1	0.1	92.04	-1.1	30.3	30.3	30.1	0.22	134.879		
200.0	200.0	200.0	200.0	0.3	0.3	92.04	-1.1	30.3	30.3	29.6	0.67	44.960		
300.0	300.0	300.0	300.0	0.6	0.6	92.04	-1.1	30.3	30.3	29.2	1.12	26.976		
400.0	400.0	400.0	400.0	0.8	0.8	92.04	-1.1	30.3	30.3	28.7	1.57	19.268		
500.0	500.0	500.0	500.0	1.0	1.0	92.04	-1.1	30.3	30.3	28.3	2.02	14.987		
600.0	600.0	600.0	600.0	1.2	1.2	92.04	-1.1	30.3	30.3	27.8	2.47	12.262		
700.0	700.0	700.0	700.0	1.5	1.5	92.04	-1.1	30.3	30.3	27.4	2.92	10.375		
800.0	800.0	800.0	800.0	1.7	1.7	92.04	-1.1	30.3	30.3	26.9	3.37	8.992		
900.0	900.0	900.0	900.0	1.9	1.9	92.04	-1.1	30.3	30.3	26.5	3.82	7.934		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	92.04	-1.1	30.3	30.3	26.0	4.27	7.099		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	92.04	-1.1	30.3	30.3	25.6	4.72	6.423		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	92.04	-1.1	30.3	30.3	25.1	5.17	5.864		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	92.04	-1.1	30.3	30.3	24.7	5.62	5.395		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	92.04	-1.1	30.3	30.3	24.2	6.07	4.996		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	92.04	-1.1	30.3	30.3	23.8	6.52	4.651		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	92.04	-1.1	30.3	30.3	23.3	6.97	4.351		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	92.04	-1.1	30.3	30.3	22.9	7.42	4.087		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	92.04	-1.1	30.3	30.3	22.4	7.87	3.854		
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	92.04	-1.1	30.3	30.3	22.0	8.32	3.645		
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	92.04	-1.1	30.3	30.3	21.6	8.77	3.458		
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	92.04	-1.1	30.3	30.3	21.1	9.22	3.290		
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	92.04	-1.1	30.3	30.3	20.7	9.66	3.137		
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	92.04	-1.1	30.3	30.3	20.2	10.11	2.997		
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	92.04	-1.1	30.3	30.3	19.8	10.56	2.870		
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	92.04	-1.1	30.3	30.3	19.3	11.01	2.753		
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	92.04	-1.1	30.3	30.3	18.9	11.46	2.645		
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	92.04	-1.1	30.3	30.3	18.4	11.91	2.545		
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	92.04	-1.1	30.3	30.3	18.0	12.36	2.452		
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	92.04	-1.1	30.3	30.3	17.5	12.81	2.366		
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	92.04	-1.1	30.3	30.3	17.1	13.26	2.286		
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	92.04	-1.1	30.3	30.3	16.6	13.71	2.211		
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	92.04	-1.1	30.3	30.3	16.2	14.16	2.141		
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	92.04	-1.1	30.3	30.3	15.7	14.61	2.075		
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	92.04	-1.1	30.3	30.3	15.3	15.06	2.013		
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	92.04	-1.1	30.3	30.3	14.8	15.51	1.955		
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	92.04	-1.1	30.3	30.3	14.4	15.96	1.900		
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	92.04	-1.1	30.3	30.3	13.9	16.41	1.848		
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	92.04	-1.1	30.3	30.3	13.5	16.86	1.798		
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	92.04	-1.1	30.3	30.3	13.0	17.31	1.752		
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	92.04	-1.1	30.3	30.3	12.6	17.76	1.707		
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	92.04	-1.1	30.3	30.3	12.1	18.21	1.665		
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	92.04	-1.1	30.3	30.3	11.7	18.66	1.625		
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	92.04	-1.1	30.3	30.3	11.2	19.11	1.587		
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	92.04	-1.1	30.3	30.3	10.8	19.55	1.550		
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	92.04	-1.1	30.3	30.3	10.3	20.00	1.515		
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	92.04	-1.1	30.3	30.3	9.9	20.45	1.482 Level 3		
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	92.04	-1.1	30.3	30.3	9.4	20.90	1.450 Level 3		
4,800.0	4,800.0	4,800.0	4,800.0	10.7	10.7	92.04	-1.1	30.3	30.3	9.0	21.35	1.420 Level 3		
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	92.04	-1.1	30.3	30.3	8.5	21.80	1.391 Level 3		
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	92.04	-1.1	30.3	30.3	8.1	22.25	1.362 Level 3		
5,100.0	5,100.0	5,100.0	5,100.0	11.4	11.4	92.04	-1.1	30.3	30.3	7.6	22.70	1.335 Level 3		

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 Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,135.6	5,135.6	5,135.6	5,135.6	11.4	11.4	92.04	-1.1	30.3	30.3	7.5	22.86	1.326	Level 3, CC	
5,200.0	5,200.0	5,199.8	5,199.8	11.6	11.6	90.86	-0.5	30.5	30.5	7.3	23.15	1.317	Level 3, ES, SF	
5,300.0	5,300.0	5,299.1	5,298.9	11.8	11.8	82.06	4.5	32.0	32.4	8.8	23.59	1.372	Level 3	
5,400.0	5,400.0	5,397.7	5,397.0	12.0	12.0	70.25	14.2	35.1	37.5	13.5	24.03	1.562		
5,500.0	5,499.8	5,495.8	5,493.9	12.3	12.2	62.11	28.7	39.6	45.4	20.9	24.46	1.856		
5,600.0	5,599.1	5,593.3	5,589.4	12.5	12.5	57.57	47.8	45.6	55.0	30.1	24.86	2.212		
5,700.0	5,697.7	5,690.3	5,683.2	12.7	12.7	55.35	71.4	53.0	65.8	40.6	25.24	2.609		
5,800.0	5,795.3	5,786.7	5,775.0	12.9	13.0	54.57	99.3	61.8	77.8	52.2	25.61	3.036		
5,900.0	5,891.6	5,882.5	5,864.7	13.2	13.2	54.67	131.3	71.9	90.7	64.7	26.00	3.487		
6,000.0	5,986.3	5,977.8	5,952.1	13.4	13.6	55.30	167.4	83.2	104.5	78.1	26.43	3.954		
6,100.0	6,079.3	6,072.3	6,036.9	13.8	13.9	56.24	207.3	95.7	119.3	92.4	26.90	4.433		
6,200.0	6,170.2	6,166.3	6,119.0	14.1	14.4	57.36	250.9	109.4	135.0	107.5	27.45	4.916		
6,300.0	6,258.8	6,264.2	6,203.1	14.5	14.9	59.12	298.8	124.4	150.3	122.2	28.16	5.339		
6,400.0	6,345.3	6,363.0	6,287.8	15.0	15.4	62.08	347.2	139.6	163.8	134.7	29.12	5.626		
6,500.0	6,431.6	6,461.7	6,372.5	15.5	16.0	64.85	395.6	154.8	177.5	147.3	30.24	5.872		
6,600.0	6,517.8	6,560.4	6,457.2	16.1	16.6	67.23	443.9	170.0	191.6	160.2	31.42	6.098		
6,700.0	6,604.1	6,671.4	6,558.0	16.7	17.2	73.10	486.3	187.9	202.9	170.0	32.86	6.175		
6,800.0	6,694.3	6,773.1	6,656.7	17.2	17.5	84.01	501.5	205.3	214.8	180.6	34.19	6.282		
6,900.0	6,791.7	6,868.0	6,749.8	17.5	17.6	97.68	494.7	221.6	232.2	197.3	34.89	6.656		
7,000.0	6,891.5	6,957.7	6,834.6	17.7	17.6	-85.43	469.8	236.3	253.0	218.0	35.07	7.215		
7,100.0	6,988.5	7,043.7	6,909.6	17.6	17.5	-75.47	430.1	249.1	274.8	240.1	34.73	7.913		
7,200.0	7,077.7	7,127.0	6,973.7	17.4	17.3	-69.54	378.2	260.0	295.6	261.7	33.87	8.727		
7,300.0	7,154.6	7,208.4	7,026.0	17.2	17.0	-65.33	316.7	268.7	313.7	281.1	32.63	9.614		
7,400.0	7,215.2	7,288.5	7,065.8	16.9	16.8	-62.45	247.5	275.2	327.9	296.6	31.30	10.475		
7,500.0	7,256.4	7,367.8	7,092.4	16.7	16.6	-60.71	173.0	279.3	337.5	307.2	30.30	11.139		
7,600.0	7,276.2	7,446.8	7,105.5	16.6	16.4	-60.01	95.2	281.0	341.9	311.9	29.96	11.411		
7,700.0	7,277.8	7,537.7	7,106.8	16.6	16.4	-60.02	4.5	280.6	342.2	311.9	30.24	11.314		
7,800.0	7,277.8	7,637.7	7,106.8	17.0	16.8	-60.02	-95.5	279.9	342.2	311.3	30.93	11.064		
7,900.0	7,277.8	7,737.7	7,106.8	17.5	17.4	-60.03	-195.5	279.1	342.3	310.3	31.97	10.706		
8,000.0	7,277.8	7,837.7	7,106.8	18.2	18.2	-60.03	-295.5	278.4	342.3	309.0	33.33	10.272		
8,100.0	7,277.8	7,937.7	7,106.8	19.1	19.1	-60.04	-395.5	277.6	342.4	307.4	34.97	9.792		
8,200.0	7,277.8	8,037.7	7,106.8	20.2	20.1	-60.04	-495.5	276.9	342.4	305.6	36.85	9.294		
8,300.0	7,277.8	8,137.7	7,106.8	21.3	21.3	-60.05	-595.5	276.2	342.5	303.5	38.94	8.796		
8,400.0	7,277.8	8,237.7	7,106.8	22.6	22.6	-60.05	-695.5	275.4	342.5	301.3	41.20	8.313		
8,500.0	7,277.8	8,337.7	7,106.8	23.9	23.9	-60.06	-795.5	274.7	342.6	299.0	43.62	7.854		
8,600.0	7,277.8	8,437.7	7,106.8	25.3	25.4	-60.06	-895.5	273.9	342.6	296.5	46.16	7.423		
8,700.0	7,277.8	8,537.7	7,106.8	26.8	26.8	-60.07	-995.5	273.2	342.7	293.9	48.81	7.021		
8,800.0	7,277.8	8,637.7	7,106.8	28.4	28.4	-60.07	-1,095.5	272.5	342.7	291.2	51.55	6.649		
8,900.0	7,277.8	8,737.7	7,106.8	30.0	30.0	-60.08	-1,195.5	271.7	342.8	288.4	54.36	6.306		
9,000.0	7,277.8	8,837.7	7,106.8	31.6	31.6	-60.08	-1,295.5	271.0	342.8	285.6	57.24	5.989		
9,100.0	7,277.8	8,937.7	7,106.8	33.2	33.2	-60.09	-1,395.5	270.2	342.9	282.7	60.18	5.698		
9,200.0	7,277.8	9,037.7	7,106.8	34.9	34.9	-60.09	-1,495.5	269.5	342.9	279.8	63.16	5.430		
9,300.0	7,277.8	9,137.7	7,106.8	36.6	36.6	-60.10	-1,595.5	268.8	343.0	276.8	66.19	5.182		
9,400.0	7,277.8	9,237.7	7,106.8	38.3	38.3	-60.10	-1,695.5	268.0	343.0	273.8	69.25	4.954		
9,500.0	7,277.8	9,337.7	7,106.8	40.1	40.1	-60.11	-1,795.5	267.3	343.1	270.8	72.34	4.743		
9,600.0	7,277.8	9,437.7	7,106.8	41.8	41.8	-60.11	-1,895.5	266.5	343.1	267.7	75.47	4.547		
9,700.0	7,277.8	9,537.7	7,106.8	43.6	43.6	-60.12	-1,995.5	265.8	343.2	264.6	78.61	4.366		
9,800.0	7,277.8	9,637.7	7,106.8	45.4	45.4	-60.12	-2,095.5	265.1	343.2	261.5	81.78	4.197		
9,900.0	7,277.8	9,737.7	7,106.8	47.2	47.2	-60.13	-2,195.5	264.3	343.3	258.3	84.97	4.040		
10,000.0	7,277.8	9,837.7	7,106.8	49.0	49.0	-60.13	-2,295.5	263.6	343.4	255.2	88.17	3.894		
10,100.0	7,277.8	9,937.7	7,106.8	50.8	50.8	-60.13	-2,395.5	262.8	343.4	252.0	91.39	3.757		
10,200.0	7,277.8	10,037.7	7,106.8	52.6	52.6	-60.14	-2,495.5	262.1	343.5	248.8	94.63	3.630		

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 Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Offset Design Schmunk Pad Sec.31-T7N-R65W - Schmunk EF 31-367HN - Wellbore #1 - Plan #1 (11-13-13)												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	7,277.8	10,137.7	7,106.8	54.4	54.4	-60.14	-2,595.5	261.4	343.5	245.6	97.87	3.510	
10,400.0	7,277.8	10,237.7	7,106.8	56.3	56.3	-60.15	-2,695.5	260.6	343.6	242.4	101.13	3.397	
10,500.0	7,277.8	10,337.7	7,106.8	58.1	58.1	-60.15	-2,795.5	259.9	343.6	239.2	104.40	3.291	
10,600.0	7,277.8	10,437.7	7,106.8	60.0	59.9	-60.16	-2,895.5	259.1	343.7	236.0	107.68	3.192	
10,700.0	7,277.8	10,537.7	7,106.8	61.8	61.8	-60.16	-2,995.5	258.4	343.7	232.7	110.96	3.097	
10,800.0	7,277.8	10,637.7	7,106.8	63.7	63.6	-60.17	-3,095.5	257.7	343.8	229.5	114.26	3.009	
10,900.0	7,277.8	10,737.7	7,106.8	65.5	65.5	-60.17	-3,195.5	256.9	343.8	226.3	117.56	2.925	
11,000.0	7,277.8	10,837.7	7,106.8	67.4	67.4	-60.18	-3,295.5	256.2	343.9	223.0	120.87	2.845	
11,100.0	7,277.8	10,937.7	7,106.8	69.2	69.2	-60.18	-3,395.4	255.4	343.9	219.7	124.18	2.769	
11,200.0	7,277.8	11,037.7	7,106.8	71.1	71.1	-60.19	-3,495.4	254.7	344.0	216.5	127.50	2.698	
11,300.0	7,277.8	11,137.7	7,106.8	73.0	73.0	-60.19	-3,595.4	254.0	344.0	213.2	130.83	2.630	
11,400.0	7,277.8	11,237.7	7,106.8	74.8	74.8	-60.20	-3,695.4	253.2	344.1	209.9	134.16	2.565	
11,500.0	7,277.8	11,337.7	7,106.8	76.7	76.7	-60.20	-3,795.4	252.5	344.1	206.6	137.49	2.503	
11,600.0	7,277.8	11,437.7	7,106.8	78.6	78.6	-60.21	-3,895.4	251.7	344.2	203.3	140.83	2.444	
11,700.0	7,277.8	11,537.7	7,106.8	80.5	80.5	-60.21	-3,995.4	251.0	344.2	200.0	144.17	2.388	
11,800.0	7,277.8	11,637.7	7,106.8	82.4	82.3	-60.22	-4,095.4	250.3	344.3	196.7	147.52	2.334	
11,900.0	7,277.8	11,737.7	7,106.8	84.2	84.2	-60.22	-4,195.4	249.5	344.3	193.4	150.87	2.282	
11,989.7	7,277.8	11,827.4	7,106.8	85.9	85.9	-60.23	-4,285.1	248.9	344.4	190.5	153.88	2.238	

Company:	Great Western	Local Co-ordinate Reference:	Well Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
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	-89.98	0.0	-30.0	30.0				
100.0	100.0	100.0	100.0	0.1	0.1	-89.98	0.0	-30.0	30.0	29.8	0.22	133.557	
200.0	200.0	200.0	200.0	0.3	0.3	-89.98	0.0	-30.0	30.0	29.3	0.67	44.519	
300.0	300.0	300.0	300.0	0.6	0.6	-89.98	0.0	-30.0	30.0	28.9	1.12	26.711	
400.0	400.0	400.0	400.0	0.8	0.8	-89.98	0.0	-30.0	30.0	28.4	1.57	19.080	
500.0	500.0	500.0	500.0	1.0	1.0	-89.98	0.0	-30.0	30.0	28.0	2.02	14.840	
600.0	600.0	600.0	600.0	1.2	1.2	-89.98	0.0	-30.0	30.0	27.5	2.47	12.142	
700.0	700.0	700.0	700.0	1.5	1.5	-89.98	0.0	-30.0	30.0	27.1	2.92	10.274	
800.0	800.0	800.0	800.0	1.7	1.7	-89.98	0.0	-30.0	30.0	26.6	3.37	8.904	
900.0	900.0	900.0	900.0	1.9	1.9	-89.98	0.0	-30.0	30.0	26.2	3.82	7.856	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.98	0.0	-30.0	30.0	25.7	4.27	7.029	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.98	0.0	-30.0	30.0	25.3	4.72	6.360	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.98	0.0	-30.0	30.0	24.8	5.17	5.807	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-89.98	0.0	-30.0	30.0	24.4	5.62	5.342	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-89.98	0.0	-30.0	30.0	24.0	6.07	4.947	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-89.98	0.0	-30.0	30.0	23.5	6.52	4.605	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-89.98	0.0	-30.0	30.0	23.1	6.97	4.308	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-89.98	0.0	-30.0	30.0	22.6	7.42	4.047	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-89.98	0.0	-30.0	30.0	22.2	7.87	3.816	
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	-89.98	0.0	-30.0	30.0	21.7	8.32	3.610	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-89.98	0.0	-30.0	30.0	21.3	8.77	3.425	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-89.98	0.0	-30.0	30.0	20.8	9.22	3.257	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-89.98	0.0	-30.0	30.0	20.4	9.66	3.106	
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	-89.98	0.0	-30.0	30.0	19.9	10.11	2.968	
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	-89.98	0.0	-30.0	30.0	19.5	10.56	2.842	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-89.98	0.0	-30.0	30.0	19.0	11.01	2.726	
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-89.98	0.0	-30.0	30.0	18.6	11.46	2.619	
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	-89.98	0.0	-30.0	30.0	18.1	11.91	2.520	
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	-89.98	0.0	-30.0	30.0	17.7	12.36	2.428	
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-89.98	0.0	-30.0	30.0	17.2	12.81	2.343	
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-89.98	0.0	-30.0	30.0	16.8	13.26	2.264	
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	-89.98	0.0	-30.0	30.0	16.3	13.71	2.189	
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	-89.98	0.0	-30.0	30.0	15.9	14.16	2.120	
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-89.98	0.0	-30.0	30.0	15.4	14.61	2.055	
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-89.98	0.0	-30.0	30.0	15.0	15.06	1.993	
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	-89.98	0.0	-30.0	30.0	14.5	15.51	1.936	
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	-89.98	0.0	-30.0	30.0	14.1	15.96	1.881	
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-89.98	0.0	-30.0	30.0	13.6	16.41	1.830	
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-89.98	0.0	-30.0	30.0	13.2	16.86	1.781	
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	-89.98	0.0	-30.0	30.0	12.7	17.31	1.735	
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	-89.98	0.0	-30.0	30.0	12.3	17.76	1.691	
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-89.98	0.0	-30.0	30.0	11.8	18.21	1.649	
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-89.98	0.0	-30.0	30.0	11.4	18.66	1.609	
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	-89.98	0.0	-30.0	30.0	10.9	19.11	1.571	
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	-89.98	0.0	-30.0	30.0	10.5	19.55	1.535	
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-89.98	0.0	-30.0	30.0	10.0	20.00	1.501	
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-89.98	0.0	-30.0	30.0	9.6	20.45	1.468 Level 3	
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	-89.98	0.0	-30.0	30.0	9.1	20.90	1.436 Level 3	
4,800.0	4,800.0	4,800.0	4,800.0	10.7	10.7	-89.98	0.0	-30.0	30.0	8.7	21.35	1.406 Level 3	
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-89.98	0.0	-30.0	30.0	8.2	21.80	1.377 Level 3	
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-89.98	0.0	-30.0	30.0	7.8	22.25	1.349 Level 3	
5,100.0	5,100.0	5,100.0	5,100.0	11.4	11.4	-89.98	0.0	-30.0	30.0	7.3	22.70	1.322 Level 3, CC, ES, SF	

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 Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,200.0	5,200.0	5,199.4	5,199.3	11.6	11.6	-85.52	2.4	-30.9	31.0	7.9	23.15	1.341	Level 3	
5,300.0	5,300.0	5,298.2	5,297.8	11.8	11.8	-74.09	9.6	-33.7	35.1	11.5	23.59	1.488	Level 3	
5,400.0	5,400.0	5,396.1	5,394.9	12.0	12.0	-61.39	21.4	-38.2	43.5	19.4	24.02	1.809		
5,500.0	5,499.8	5,493.4	5,490.6	12.3	12.2	-54.57	37.7	-44.5	54.4	30.0	24.44	2.227		
5,600.0	5,599.1	5,589.9	5,584.6	12.5	12.5	-51.23	58.4	-52.4	66.9	42.1	24.82	2.696		
5,700.0	5,697.7	5,685.8	5,676.7	12.7	12.7	-49.90	83.3	-61.9	80.5	55.3	25.18	3.198		
5,800.0	5,795.3	5,781.0	5,766.6	12.9	13.0	-49.75	112.2	-73.0	95.1	69.5	25.54	3.723		
5,900.0	5,891.6	5,875.4	5,854.3	13.2	13.3	-50.28	145.0	-85.6	110.6	84.7	25.90	4.268		
6,000.0	5,986.3	5,969.0	5,939.4	13.4	13.7	-51.22	181.5	-99.5	126.9	100.6	26.29	4.827		
6,100.0	6,079.3	6,062.0	6,021.8	13.8	14.1	-52.39	221.5	-114.9	144.2	117.5	26.74	5.393		
6,200.0	6,170.2	6,157.1	6,104.3	14.1	14.6	-53.86	265.9	-131.9	162.0	134.7	27.27	5.939		
6,300.0	6,258.8	6,255.6	6,189.2	14.5	15.1	-56.31	312.2	-149.6	177.5	149.5	27.98	6.344		
6,400.0	6,345.3	6,354.0	6,274.2	15.0	15.7	-59.66	358.6	-167.4	191.2	162.2	28.96	6.601		
6,500.0	6,431.6	6,452.4	6,359.2	15.5	16.3	-62.81	405.0	-185.2	205.3	175.1	30.11	6.817		
6,600.0	6,517.8	6,550.8	6,444.1	16.1	17.0	-65.55	451.4	-202.9	219.9	188.5	31.33	7.018		
6,700.0	6,604.1	6,658.9	6,540.1	16.7	17.6	-69.68	496.5	-223.0	233.5	200.8	32.73	7.134		
6,800.0	6,694.3	6,764.6	6,641.2	17.2	18.1	-77.48	517.6	-244.3	246.7	212.4	34.21	7.211		
6,900.0	6,791.7	6,863.8	6,737.9	17.5	18.2	-81.55	514.5	-264.8	264.0	228.9	35.10	7.522		
7,000.0	6,891.5	6,957.7	6,826.8	17.7	18.3	-79.78	491.2	-283.7	284.0	248.6	35.47	8.009		
7,100.0	6,988.5	7,047.8	6,905.6	17.6	18.1	-76.74	451.3	-300.6	304.9	269.6	35.30	8.638		
7,200.0	7,077.7	7,134.9	6,972.8	17.4	17.9	-72.24	397.9	-315.1	324.9	290.3	34.61	9.389		
7,300.0	7,154.6	7,220.0	7,027.2	17.2	17.7	-68.47	333.8	-326.9	342.6	309.1	33.50	10.224		
7,400.0	7,215.2	7,303.6	7,067.9	16.9	17.4	-65.63	261.6	-335.9	356.6	324.4	32.26	11.054		
7,500.0	7,256.4	7,386.1	7,094.4	16.7	17.2	-63.72	183.7	-341.8	366.3	335.0	31.26	11.718		
7,600.0	7,276.2	7,468.1	7,106.2	16.6	17.0	-62.72	102.8	-344.7	371.0	340.2	30.84	12.028		
7,700.0	7,277.8	7,562.6	7,106.8	16.6	16.8	-62.57	8.2	-345.3	371.2	340.1	31.09	11.939		
7,800.0	7,277.8	7,662.6	7,106.8	17.0	17.0	-62.55	-91.8	-345.8	370.9	339.2	31.80	11.667		
7,900.0	7,277.8	7,762.6	7,106.8	17.5	17.7	-62.53	-191.8	-346.2	370.7	337.8	32.85	11.282		
8,000.0	7,277.8	7,862.6	7,106.8	18.2	18.5	-62.50	-291.8	-346.7	370.4	336.1	34.23	10.820		
8,100.0	7,277.8	7,962.6	7,106.8	19.1	19.4	-62.48	-391.8	-347.2	370.1	334.2	35.89	10.311		
8,200.0	7,277.8	8,062.6	7,106.8	20.2	20.5	-62.46	-491.8	-347.7	369.8	332.0	37.80	9.783		
8,300.0	7,277.8	8,162.6	7,106.8	21.3	21.7	-62.44	-591.8	-348.2	369.5	329.6	39.92	9.257		
8,400.0	7,277.8	8,262.6	7,106.8	22.6	23.0	-62.41	-691.8	-348.6	369.3	327.0	42.22	8.746		
8,500.0	7,277.8	8,362.6	7,106.8	23.9	24.3	-62.39	-791.8	-349.1	369.0	324.3	44.67	8.261		
8,600.0	7,277.8	8,462.6	7,106.8	25.3	25.8	-62.37	-891.8	-349.6	368.7	321.4	47.24	7.804		
8,700.0	7,277.8	8,562.6	7,106.8	26.8	27.2	-62.34	-991.7	-350.1	368.4	318.5	49.92	7.379		
8,800.0	7,277.8	8,662.6	7,106.8	28.4	28.8	-62.32	-1,091.7	-350.6	368.1	315.4	52.70	6.986		
8,900.0	7,277.8	8,762.6	7,106.8	30.0	30.4	-62.30	-1,191.7	-351.0	367.8	312.3	55.55	6.622		
9,000.0	7,277.8	8,862.6	7,106.8	31.6	32.0	-62.27	-1,291.7	-351.5	367.6	309.1	58.46	6.287		
9,100.0	7,277.8	8,962.6	7,106.8	33.2	33.6	-62.25	-1,391.7	-352.0	367.3	305.8	61.43	5.979		
9,200.0	7,277.8	9,062.6	7,106.8	34.9	35.3	-62.23	-1,491.7	-352.5	367.0	302.5	64.45	5.694		
9,300.0	7,277.8	9,162.6	7,106.8	36.6	37.0	-62.21	-1,591.7	-353.0	366.7	299.2	67.51	5.432		
9,400.0	7,277.8	9,262.6	7,106.8	38.3	38.7	-62.18	-1,691.7	-353.4	366.4	295.8	70.61	5.190		
9,500.0	7,277.8	9,362.6	7,106.8	40.1	40.4	-62.16	-1,791.7	-353.9	366.2	292.4	73.73	4.966		
9,600.0	7,277.8	9,462.6	7,106.8	41.8	42.2	-62.14	-1,891.7	-354.4	365.9	289.0	76.89	4.759		
9,700.0	7,277.8	9,562.6	7,106.8	43.6	44.0	-62.11	-1,991.7	-354.9	365.6	285.5	80.06	4.566		
9,800.0	7,277.8	9,662.6	7,106.8	45.4	45.7	-62.09	-2,091.7	-355.4	365.3	282.0	83.26	4.387		
9,900.0	7,277.8	9,762.6	7,106.8	47.2	47.5	-62.07	-2,191.7	-355.8	365.0	278.6	86.48	4.221		
10,000.0	7,277.8	9,862.6	7,106.8	49.0	49.3	-62.04	-2,291.7	-356.3	364.7	275.0	89.71	4.066		
10,100.0	7,277.8	9,962.6	7,106.8	50.8	51.1	-62.02	-2,391.7	-356.8	364.5	271.5	92.96	3.921		
10,200.0	7,277.8	10,062.6	7,106.8	52.6	52.9	-62.00	-2,491.7	-357.3	364.2	268.0	96.22	3.785		
10,300.0	7,277.8	10,162.6	7,106.8	54.4	54.8	-61.97	-2,591.7	-357.8	363.9	264.4	99.49	3.658		

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 Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

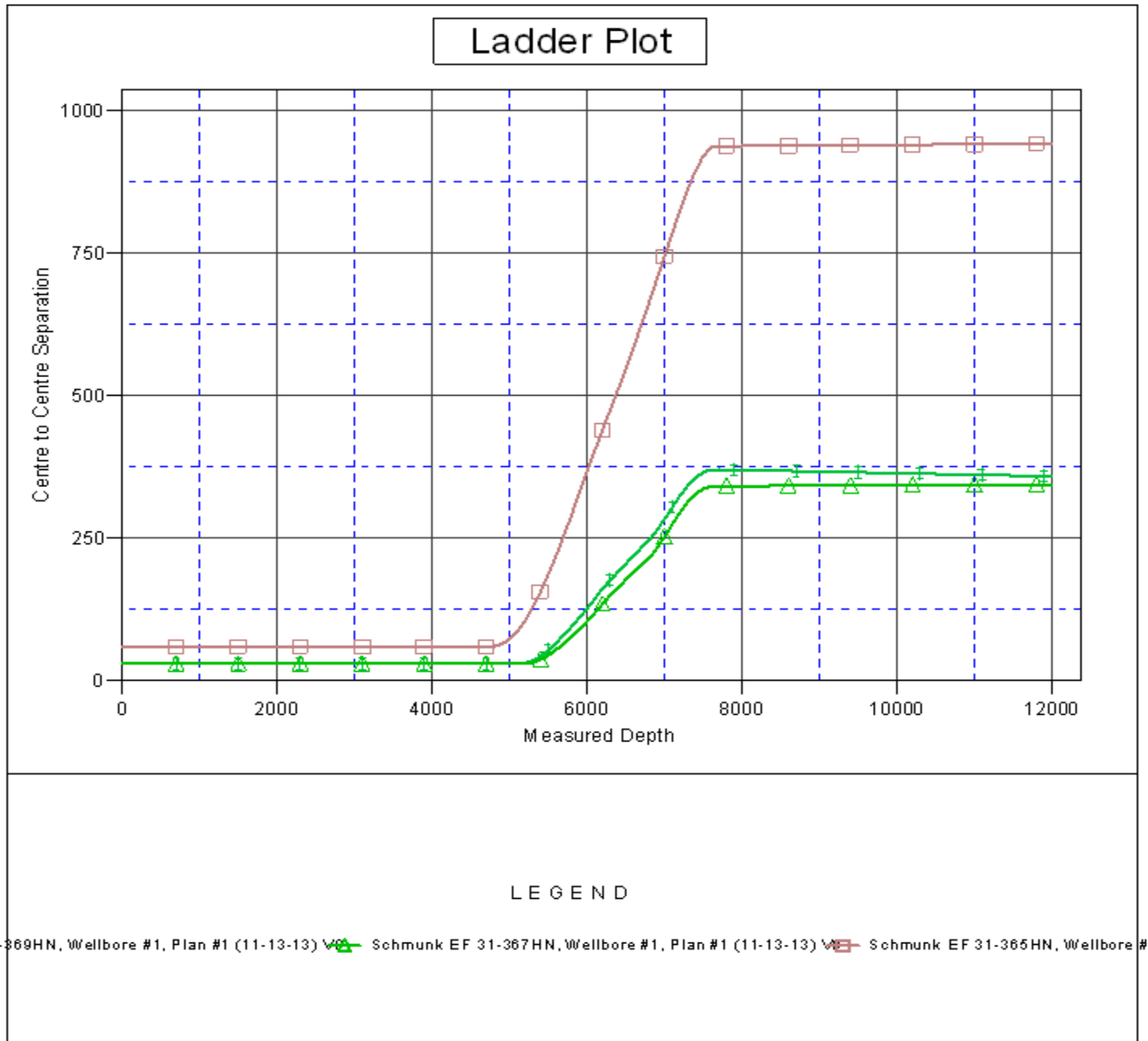
Offset Design Schmunk Pad Sec.31-T7N-R65W - Schmunk EF 31-369HN - Wellbore #1 - Plan #1 (11-13-13)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (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
10,400.0	7,277.8	10,262.6	7,106.8	56.3	56.6	61.95	-2,691.7	-358.3	363.6	260.9	102.77	3.538	
10,500.0	7,277.8	10,362.6	7,106.8	58.1	58.4	61.92	-2,791.7	-358.7	363.3	257.3	106.06	3.426	
10,600.0	7,277.8	10,462.6	7,106.8	60.0	60.3	61.90	-2,891.7	-359.2	363.1	253.7	109.36	3.320	
10,700.0	7,277.8	10,562.6	7,106.8	61.8	62.1	61.88	-2,991.7	-359.7	362.8	250.1	112.67	3.220	
10,800.0	7,277.8	10,662.6	7,106.8	63.7	64.0	61.85	-3,091.7	-360.2	362.5	246.5	115.98	3.126	
10,900.0	7,277.8	10,762.6	7,106.8	65.5	65.8	61.83	-3,191.7	-360.7	362.2	242.9	119.30	3.036	
11,000.0	7,277.8	10,862.6	7,106.8	67.4	67.7	61.81	-3,291.7	-361.1	361.9	239.3	122.62	2.952	
11,100.0	7,277.8	10,962.6	7,106.8	69.2	69.5	61.78	-3,391.7	-361.6	361.7	235.7	125.95	2.871	
11,200.0	7,277.8	11,062.6	7,106.8	71.1	71.4	61.76	-3,491.7	-362.1	361.4	232.1	129.28	2.795	
11,300.0	7,277.8	11,162.6	7,106.8	73.0	73.3	61.73	-3,591.7	-362.6	361.1	228.5	132.62	2.723	
11,400.0	7,277.8	11,262.6	7,106.8	74.8	75.2	61.71	-3,691.7	-363.1	360.8	224.9	135.96	2.654	
11,500.0	7,277.8	11,362.6	7,106.8	76.7	77.0	61.69	-3,791.7	-363.5	360.5	221.2	139.31	2.588	
11,600.0	7,277.8	11,462.6	7,106.8	78.6	78.9	61.66	-3,891.7	-364.0	360.3	217.6	142.65	2.525	
11,700.0	7,277.8	11,562.6	7,106.8	80.5	80.8	61.64	-3,991.7	-364.5	360.0	214.0	146.00	2.466	
11,800.0	7,277.8	11,662.6	7,106.8	82.4	82.7	61.61	-4,091.7	-365.0	359.7	210.3	149.35	2.408	
11,900.0	7,277.8	11,762.6	7,106.8	84.2	84.5	61.59	-4,191.7	-365.5	359.4	206.7	152.70	2.354	
11,967.1	7,277.8	11,829.7	7,106.8	85.5	85.8	61.57	-4,258.8	-365.8	359.2	204.3	154.96	2.318	
11,989.7	7,277.8	11,843.6	7,106.8	85.9	86.1	61.57	-4,272.7	-365.8	359.3	203.7	155.57	2.309	

Company: Great Western
Project: SEC.31-T7N-R65W
Reference Site: Schmunk Pad Sec.31-T7N-R65W
Site Error: 0.0ft
Reference Well: Schmunk EF 31-368HC
Well Error: 0.0ft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1 (11-13-13)

Local Co-ordinate Reference: Well Schmunk EF 31-368HC
TVD Reference: WELL @ 4866.8ft (RKB - 16.5')
MD Reference: WELL @ 4866.8ft (RKB - 16.5')
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Landmark
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 4866.8ft (RKB - 16.5')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Schmunk EF 31-368HC
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.51°



Company:	Great Western	Local Co-ordinate Reference:	Well Schmunk EF 31-368HC
Project:	SEC.31-T7N-R65W	TVD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Reference Site:	Schmunk Pad Sec.31-T7N-R65W	MD Reference:	WELL @ 4866.8ft (RKB - 16.5')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schmunk EF 31-368HC	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 (11-13-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4866.8ft (RKB - 16.5')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Schmunk EF 31-368HC
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.51°

