



Project: Weld Co., CO
 Site: Sec.10-T6N-R67W
 Well: Bower FD 15-180HN
 Wellbore: Wellbore #1
 Design: Design #1
 Lat: 40° 30' 2.041 N
 Long: 104° 53' 1.072 W
 GL: 4853.10

KB: WELL @ 4869.30usft (Original Well Elev)

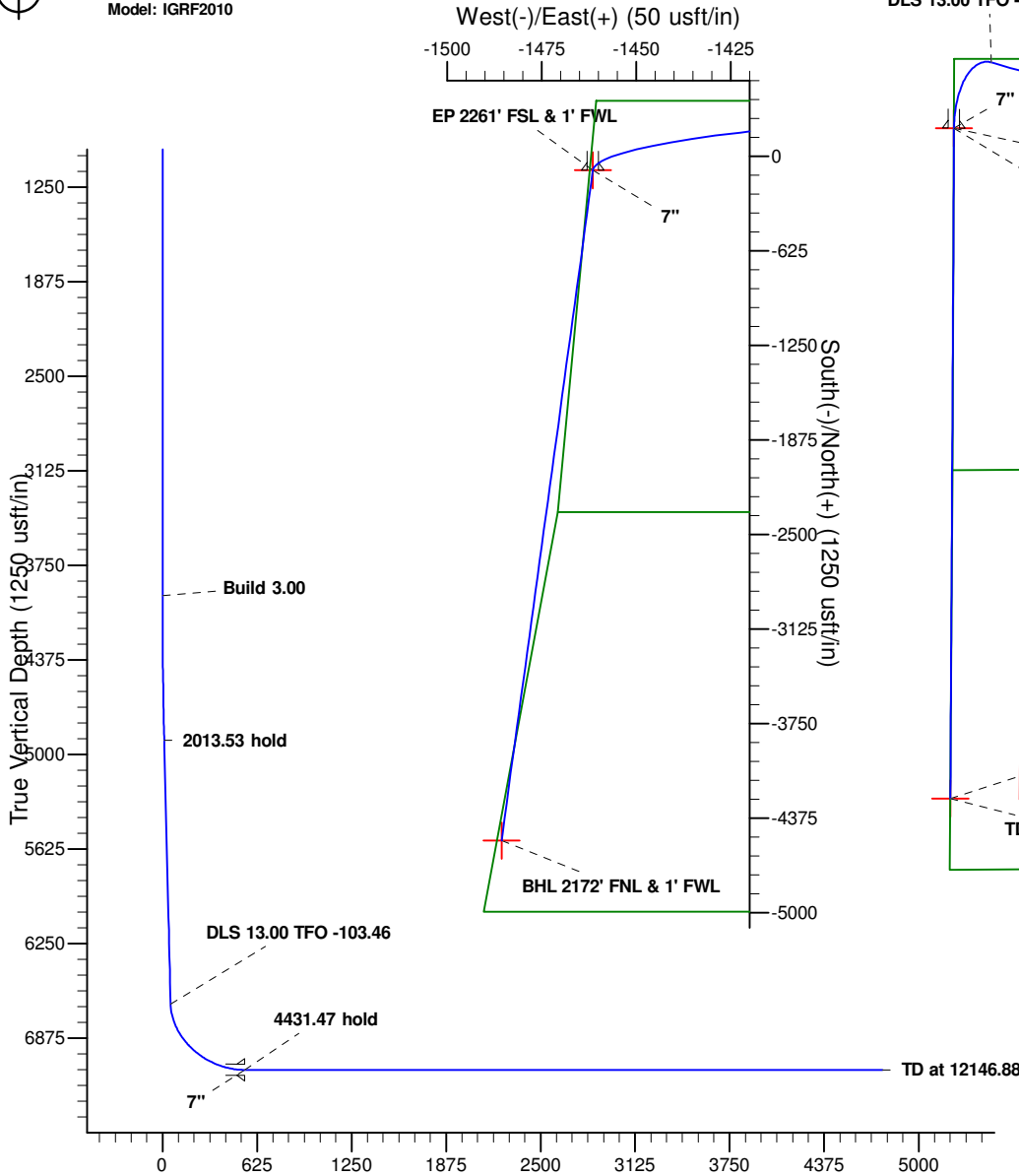


Precision
 Directional Services

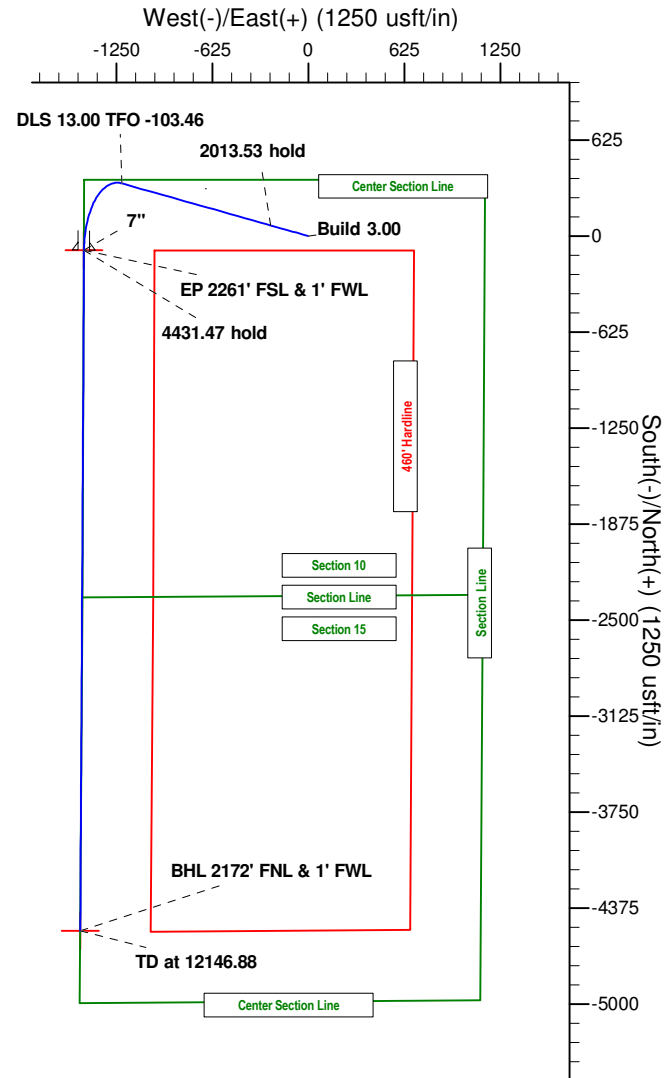


Azimuths to True North
 Magnetic North: 8.55°
 Magnetic Field
 Strength: 52870.9snT
 Dip Angle: 67.01°
 Date: 04/21/2014
 Model: IGRF2010

CASING DETAILS:
 TVD MD Name Size
 7085.30 7715.41 7" 7"



Vertical Section at 198.18° (1250 usft/in)



WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
BHL 2172' FNL & 1' FWL	7085.30	-4523.51	-1485.59	40° 29' 17.340 N	104° 53' 20.299 W	
EP 2261' FSL & 1' FWL	7085.30	-92.11	-1461.41	40° 30' 1.130 N	104° 53' 19.990 W	Point

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3950.00	0.00	0.00	3950.00	0.00	0.00	0.00	0.00	0.00	Build 3.00
4950.64	30.02	285.77	4905.49	69.62	-246.55	3.00	285.77	10.79	2013.53 hold at 4950.64 MD
6964.17	30.02	285.77	6648.91	343.36	-1216.00	0.00	0.00	53.20	DLS 13.00 TFO -103.46
7715.41	90.00	180.31	7085.30	-92.11	-1461.41	13.00	-103.46	543.50	4431.47 hold
12146.88	90.00	180.31	7085.30	-4523.51	-1485.59	0.00	0.00	4761.21	TD at 12146.88



Great Western Oil & Gas

Weld Co., CO

Sec.10-T6N-R67W

Bower FD 15-180HN

Wellbore #1

Plan: Design #1

Standard Planning Report

05 May, 2014



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Bower FD 15-180HN
Company:	Great Western Oil & Gas	TVD Reference:	WELL @ 4869.30usft (Original Well Elev)
Project:	Weld Co., CO	MD Reference:	WELL @ 4869.30usft (Original Well Elev)
Site:	Sec.10-T6N-R67W	North Reference:	True
Well:	Bower FD 15-180HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Weld Co., CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec.10-T6N-R67W			
Site Position:		Northing:	1,425,792.79 usft	Latitude:	40° 30' 2.041 N
From:	Lat/Long	Easting:	3,171,409.11 usft	Longitude:	104° 53' 1.072 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.40

Well	Bower FD 15-180HN					
Well Position	+N/-S	-0.02 usft	Northing:	1,425,792.77 usft	Latitude:	40° 30' 2.041 N
	+E/-W	0.00 usft	Easting:	3,171,409.11 usft	Longitude:	104° 53' 1.072 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,853.10 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	04/21/14	8.55	67.01	52,871

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	198.18

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,950.00	0.00	0.00	3,950.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,950.64	30.02	285.77	4,905.49	69.62	-246.55	3.00	3.00	0.00	285.77	
6,964.17	30.02	285.77	6,648.91	343.36	-1,216.00	0.00	0.00	0.00	0.00	
7,715.41	90.00	180.31	7,085.30	-92.11	-1,461.41	13.00	7.98	-14.04	-103.46	EP 2261' FSL & 1' FV
12,146.88	90.00	180.31	7,085.30	-4,523.51	-1,485.59	0.00	0.00	0.00	0.00	BHL 2172' FNL & 1' F

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Bower FD 15-180HN
Company:	Great Western Oil & Gas	TVD Reference:	WELL @ 4869.30usft (Original Well Elev)
Project:	Weld Co., CO	MD Reference:	WELL @ 4869.30usft (Original Well Elev)
Site:	Sec.10-T6N-R67W	North Reference:	True
Well:	Bower FD 15-180HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,950.00	0.00	0.00	3,950.00	0.00	0.00	0.00	0.00	0.00	0.00
Build 3.00									
4,000.00	1.50	285.77	3,999.99	0.18	-0.63	0.03	3.00	3.00	0.00
4,100.00	4.50	285.77	4,099.85	1.60	-5.67	0.25	3.00	3.00	0.00
4,200.00	7.50	285.77	4,199.29	4.44	-15.72	0.69	3.00	3.00	0.00
4,300.00	10.50	285.77	4,298.04	8.69	-30.78	1.35	3.00	3.00	0.00
4,400.00	13.50	285.77	4,395.85	14.34	-50.78	2.22	3.00	3.00	0.00
4,500.00	16.50	285.77	4,492.43	21.37	-75.69	3.31	3.00	3.00	0.00
4,600.00	19.50	285.77	4,587.52	29.77	-105.42	4.61	3.00	3.00	0.00
4,700.00	22.50	285.77	4,680.87	39.51	-139.91	6.12	3.00	3.00	0.00
4,800.00	25.50	285.77	4,772.22	50.56	-179.05	7.83	3.00	3.00	0.00
4,900.00	28.50	285.77	4,861.31	62.89	-222.73	9.74	3.00	3.00	0.00
4,950.64	30.02	285.77	4,905.49	69.62	-246.55	10.79	3.00	3.00	0.00
2013.53 hold at 4950.64 MD									

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Site:	Sec.10-T6N-R67W	North Reference:	True
Well:	Bower FD 15-180HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,000.00	30.02	285.77	4,948.22	76.33	-270.32	11.83	0.00	0.00	0.00	
5,100.00	30.02	285.77	5,034.81	89.92	-318.46	13.93	0.00	0.00	0.00	
5,200.00	30.02	285.77	5,121.39	103.52	-366.61	16.04	0.00	0.00	0.00	
5,300.00	30.02	285.77	5,207.98	117.11	-414.76	18.14	0.00	0.00	0.00	
5,400.00	30.02	285.77	5,294.57	130.71	-462.90	20.25	0.00	0.00	0.00	
5,500.00	30.02	285.77	5,381.15	144.30	-511.05	22.36	0.00	0.00	0.00	
5,600.00	30.02	285.77	5,467.74	157.90	-559.20	24.46	0.00	0.00	0.00	
5,700.00	30.02	285.77	5,554.32	171.49	-607.34	26.57	0.00	0.00	0.00	
5,800.00	30.02	285.77	5,640.91	185.09	-655.49	28.68	0.00	0.00	0.00	
5,900.00	30.02	285.77	5,727.49	198.68	-703.64	30.78	0.00	0.00	0.00	
6,000.00	30.02	285.77	5,814.08	212.28	-751.78	32.89	0.00	0.00	0.00	
6,100.00	30.02	285.77	5,900.66	225.88	-799.93	34.99	0.00	0.00	0.00	
6,200.00	30.02	285.77	5,987.25	239.47	-848.08	37.10	0.00	0.00	0.00	
6,300.00	30.02	285.77	6,073.84	253.07	-896.22	39.21	0.00	0.00	0.00	
6,400.00	30.02	285.77	6,160.42	266.66	-944.37	41.31	0.00	0.00	0.00	
6,500.00	30.02	285.77	6,247.01	280.26	-992.52	43.42	0.00	0.00	0.00	
6,600.00	30.02	285.77	6,333.59	293.85	-1,040.66	45.53	0.00	0.00	0.00	
6,700.00	30.02	285.77	6,420.18	307.45	-1,088.81	47.63	0.00	0.00	0.00	
6,800.00	30.02	285.77	6,506.76	321.04	-1,136.96	49.74	0.00	0.00	0.00	
6,900.00	30.02	285.77	6,593.35	334.64	-1,185.10	51.85	0.00	0.00	0.00	
6,964.17	30.02	285.77	6,648.91	343.36	-1,216.00	53.20	0.00	0.00	0.00	
DLS 13.00 TFO -103.46										
6,975.00	29.72	283.01	6,658.30	344.70	-1,221.22	53.55	13.00	-2.76	-25.51	
7,000.00	29.25	276.47	6,680.07	346.78	-1,233.33	55.35	13.00	-1.86	-26.15	
7,025.00	29.11	269.81	6,701.90	347.45	-1,245.49	58.51	13.00	-0.56	-26.65	
7,050.00	29.30	263.16	6,723.73	346.70	-1,257.65	63.02	13.00	0.76	-26.60	
7,075.00	29.82	256.65	6,745.48	344.54	-1,269.77	68.86	13.00	2.05	-26.03	
7,100.00	30.64	250.40	6,767.09	340.96	-1,281.83	76.01	13.00	3.28	-25.00	
7,125.00	31.74	244.49	6,788.48	335.99	-1,293.77	84.46	13.00	4.42	-23.62	
7,150.00	33.10	238.99	6,809.58	329.64	-1,305.55	94.17	13.00	5.44	-22.04	
7,175.00	34.69	233.89	6,830.34	321.93	-1,317.16	105.12	13.00	6.33	-20.37	
7,200.00	36.46	229.22	6,850.68	312.88	-1,328.53	117.26	13.00	7.11	-18.71	
7,225.00	38.41	224.93	6,870.53	302.53	-1,339.64	130.57	13.00	7.78	-17.14	
7,250.00	40.50	221.01	6,889.84	290.90	-1,350.46	144.99	13.00	8.35	-15.68	
7,275.00	42.71	217.42	6,908.53	278.04	-1,360.94	160.48	13.00	8.84	-14.36	
7,300.00	45.02	214.13	6,926.56	263.98	-1,371.06	176.99	13.00	9.25	-13.18	
7,325.00	47.42	211.09	6,943.85	248.78	-1,380.77	194.47	13.00	9.60	-12.14	
7,350.00	49.90	208.28	6,960.37	232.47	-1,390.06	212.86	13.00	9.90	-11.23	
7,375.00	52.43	205.68	6,976.04	215.12	-1,398.88	232.10	13.00	10.15	-10.43	
7,400.00	55.03	203.24	6,990.83	196.77	-1,407.22	252.13	13.00	10.36	-9.74	
7,425.00	57.66	200.96	7,004.69	177.49	-1,415.04	272.89	13.00	10.55	-9.13	
7,450.00	60.34	198.80	7,017.57	157.34	-1,422.32	294.31	13.00	10.70	-8.61	
7,475.00	63.05	196.76	7,029.42	136.38	-1,429.04	316.31	13.00	10.83	-8.16	
7,500.00	65.78	194.82	7,040.22	114.69	-1,435.17	338.84	13.00	10.95	-7.78	
7,525.00	68.54	192.96	7,049.92	92.32	-1,440.70	361.81	13.00	11.04	-7.45	
7,550.00	71.32	191.16	7,058.50	69.36	-1,445.60	385.15	13.00	11.12	-7.17	
7,575.00	74.12	189.43	7,065.92	45.88	-1,449.86	408.80	13.00	11.19	-6.94	
7,600.00	76.93	187.74	7,072.17	21.95	-1,453.47	432.66	13.00	11.24	-6.75	
7,625.00	79.75	186.09	7,077.23	-2.36	-1,456.42	456.67	13.00	11.28	-6.60	
7,650.00	82.58	184.47	7,081.07	-26.95	-1,458.69	480.74	13.00	11.31	-6.48	
7,675.00	85.41	182.87	7,083.68	-51.76	-1,460.29	504.81	13.00	11.34	-6.40	
7,700.00	88.25	181.29	7,085.06	-76.70	-1,461.19	528.79	13.00	11.35	-6.35	
7,715.41	90.00	180.31	7,085.30	-92.11	-1,461.41	543.50	13.00	11.36	-6.33	
4431.47 hold										

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Well:	Bower FD 15-180HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,800.00	90.00	180.31	7,085.30	-176.70	-1,461.87	624.00	0.00	0.00	0.00	
7,900.00	90.00	180.31	7,085.30	-276.69	-1,462.41	719.18	0.00	0.00	0.00	
8,000.00	90.00	180.31	7,085.30	-376.69	-1,462.96	814.36	0.00	0.00	0.00	
8,100.00	90.00	180.31	7,085.30	-476.69	-1,463.51	909.53	0.00	0.00	0.00	
8,200.00	90.00	180.31	7,085.30	-576.69	-1,464.05	1,004.71	0.00	0.00	0.00	
8,300.00	90.00	180.31	7,085.30	-676.69	-1,464.60	1,099.89	0.00	0.00	0.00	
8,400.00	90.00	180.31	7,085.30	-776.69	-1,465.14	1,195.06	0.00	0.00	0.00	
8,500.00	90.00	180.31	7,085.30	-876.69	-1,465.69	1,290.24	0.00	0.00	0.00	
8,600.00	90.00	180.31	7,085.30	-976.68	-1,466.23	1,385.42	0.00	0.00	0.00	
8,700.00	90.00	180.31	7,085.30	-1,076.68	-1,466.78	1,480.59	0.00	0.00	0.00	
8,800.00	90.00	180.31	7,085.30	-1,176.68	-1,467.33	1,575.77	0.00	0.00	0.00	
8,900.00	90.00	180.31	7,085.30	-1,276.68	-1,467.87	1,670.95	0.00	0.00	0.00	
9,000.00	90.00	180.31	7,085.30	-1,376.68	-1,468.42	1,766.12	0.00	0.00	0.00	
9,100.00	90.00	180.31	7,085.30	-1,476.68	-1,468.96	1,861.30	0.00	0.00	0.00	
9,200.00	90.00	180.31	7,085.30	-1,576.67	-1,469.51	1,956.48	0.00	0.00	0.00	
9,300.00	90.00	180.31	7,085.30	-1,676.67	-1,470.05	2,051.65	0.00	0.00	0.00	
9,400.00	90.00	180.31	7,085.30	-1,776.67	-1,470.60	2,146.83	0.00	0.00	0.00	
9,500.00	90.00	180.31	7,085.30	-1,876.67	-1,471.15	2,242.00	0.00	0.00	0.00	
9,600.00	90.00	180.31	7,085.30	-1,976.67	-1,471.69	2,337.18	0.00	0.00	0.00	
9,700.00	90.00	180.31	7,085.30	-2,076.67	-1,472.24	2,432.36	0.00	0.00	0.00	
9,800.00	90.00	180.31	7,085.30	-2,176.67	-1,472.78	2,527.53	0.00	0.00	0.00	
9,900.00	90.00	180.31	7,085.30	-2,276.66	-1,473.33	2,622.71	0.00	0.00	0.00	
10,000.00	90.00	180.31	7,085.30	-2,376.66	-1,473.87	2,717.89	0.00	0.00	0.00	
10,100.00	90.00	180.31	7,085.30	-2,476.66	-1,474.42	2,813.06	0.00	0.00	0.00	
10,200.00	90.00	180.31	7,085.30	-2,576.66	-1,474.97	2,908.24	0.00	0.00	0.00	
10,300.00	90.00	180.31	7,085.30	-2,676.66	-1,475.51	3,003.42	0.00	0.00	0.00	
10,400.00	90.00	180.31	7,085.30	-2,776.66	-1,476.06	3,098.59	0.00	0.00	0.00	
10,500.00	90.00	180.31	7,085.30	-2,876.66	-1,476.60	3,193.77	0.00	0.00	0.00	
10,600.00	90.00	180.31	7,085.30	-2,976.65	-1,477.15	3,288.95	0.00	0.00	0.00	
10,700.00	90.00	180.31	7,085.30	-3,076.65	-1,477.69	3,384.12	0.00	0.00	0.00	
10,800.00	90.00	180.31	7,085.30	-3,176.65	-1,478.24	3,479.30	0.00	0.00	0.00	
10,900.00	90.00	180.31	7,085.30	-3,276.65	-1,478.79	3,574.47	0.00	0.00	0.00	
11,000.00	90.00	180.31	7,085.30	-3,376.65	-1,479.33	3,669.65	0.00	0.00	0.00	
11,100.00	90.00	180.31	7,085.30	-3,476.65	-1,479.88	3,764.83	0.00	0.00	0.00	
11,200.00	90.00	180.31	7,085.30	-3,576.65	-1,480.42	3,860.00	0.00	0.00	0.00	
11,300.00	90.00	180.31	7,085.30	-3,676.64	-1,480.97	3,955.18	0.00	0.00	0.00	
11,400.00	90.00	180.31	7,085.30	-3,776.64	-1,481.51	4,050.36	0.00	0.00	0.00	
11,500.00	90.00	180.31	7,085.30	-3,876.64	-1,482.06	4,145.53	0.00	0.00	0.00	
11,600.00	90.00	180.31	7,085.30	-3,976.64	-1,482.61	4,240.71	0.00	0.00	0.00	
11,700.00	90.00	180.31	7,085.30	-4,076.64	-1,483.15	4,335.89	0.00	0.00	0.00	
11,800.00	90.00	180.31	7,085.30	-4,176.64	-1,483.70	4,431.06	0.00	0.00	0.00	
11,900.00	90.00	180.31	7,085.30	-4,276.63	-1,484.24	4,526.24	0.00	0.00	0.00	
12,000.00	90.00	180.31	7,085.30	-4,376.63	-1,484.79	4,621.42	0.00	0.00	0.00	
12,100.00	90.00	180.31	7,085.30	-4,476.63	-1,485.33	4,716.59	0.00	0.00	0.00	
12,146.88	90.00	180.31	7,085.30	-4,523.51	-1,485.59	4,761.21	0.00	0.00	0.00	
TD at 12146.88										

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Bower FD 15-180HN
Company:	Great Western Oil & Gas	TVD Reference:	WELL @ 4869.30usft (Original Well Elev)
Project:	Weld Co., CO	MD Reference:	WELL @ 4869.30usft (Original Well Elev)
Site:	Sec.10-T6N-R67W	North Reference:	True
Well:	Bower FD 15-180HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
BHL 2172' FNL & 1' FWI	0.00	0.00	7,085.30	-4,523.51	-1,485.59	1,421,259.04	3,169,955.00	40° 29' 17.340 N	104° 53' 20.299 W
- plan hits target center									
- Point									
EP 2261' FSL & 1' FWL	0.00	0.00	7,085.30	-92.11	-1,461.41	1,425,690.50	3,169,948.38	40° 30' 1.130 N	104° 53' 19.990 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(usft)	(usft)	Name		(")	(")
7,715.41	7,085.30	7"		7	7-1/2

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
3,950.00	3,950.00	0.00	0.00	Build 3.00
4,950.64	4,905.49	69.62	-246.55	2013.53 hold at 4950.64 MD
6,964.17	6,648.91	343.36	-1,216.00	DLS 13.00 TFO -103.46
7,715.41	7,085.30	-92.11	-1,461.41	4431.47 hold
12,146.88	7,085.30	-4,523.51	-1,485.59	TD at 12146.88



Precision
Directional Services

Great Western Oil & Gas

Weld Co., CO

Sec.10-T6N-R67W

Bower FD 15-180HN

Wellbore #1

Design #1

Anticollision Summary Report

05 May, 2014



Company:	Great Western Oil & Gas	Local Co-ordinate Reference:	Well Bower FD 15-180HN
Project:	Weld Co., CO	TVD Reference:	WELL @ 4869.30usft (Original Well Elev)
Reference Site:	Sec.10-T6N-R67W	MD Reference:	WELL @ 4869.30usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Bower FD 15-180HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

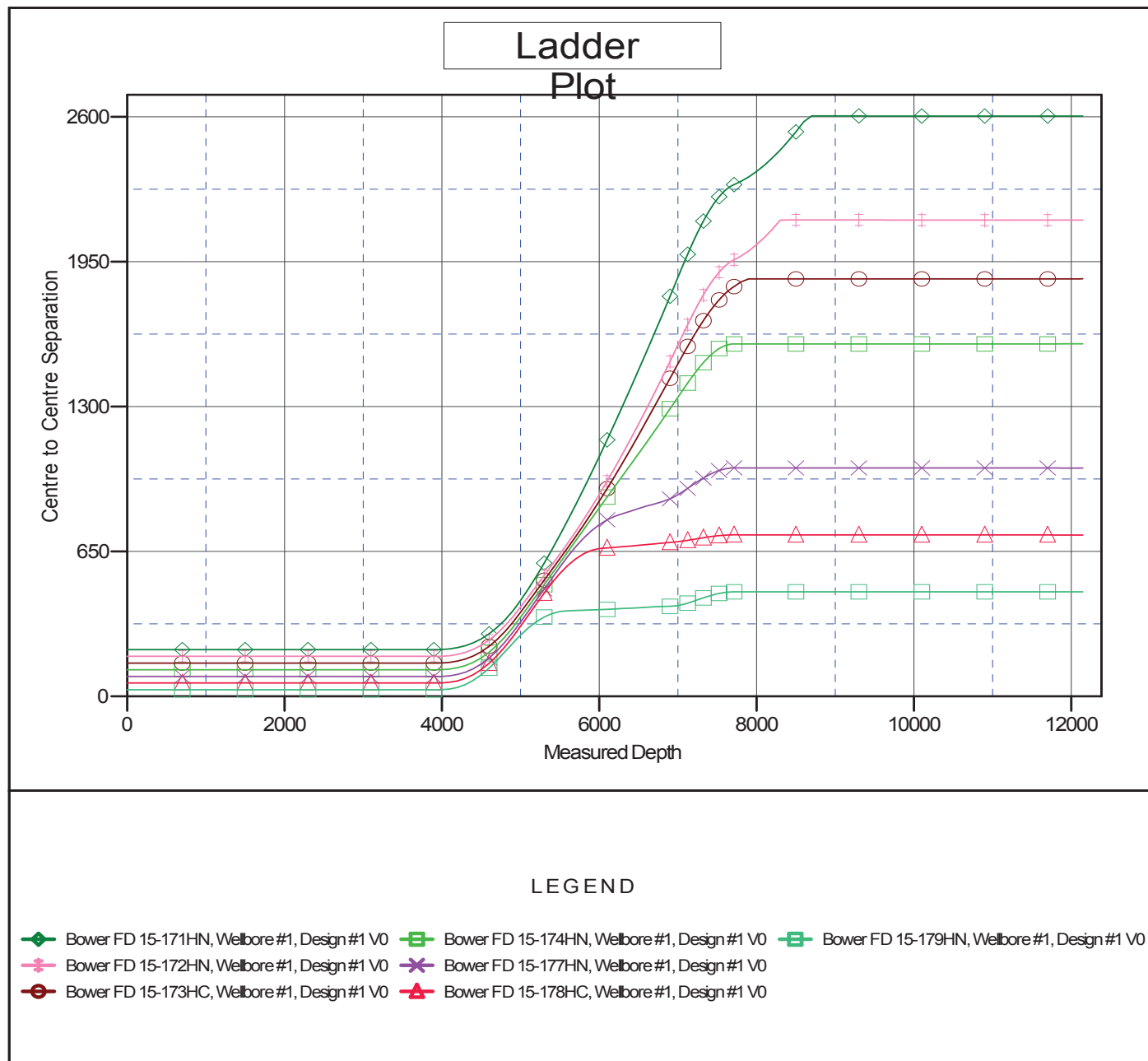
Survey Tool Program		Date	04/22/14		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	12,146.88	Design #1 (Wellbore #1)	MWD	Std MWD	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec.10-T6N-R67W						
Bower FD 15-171HN - Wellbore #1 - Design #1	3,950.00	3,950.00	209.92	189.32	10.192	CC, ES
Bower FD 15-171HN - Wellbore #1 - Design #1	4,100.00	4,099.85	212.89	191.52	9.963	SF
Bower FD 15-172HN - Wellbore #1 - Design #1	3,950.00	3,950.00	179.64	159.05	8.722	CC, ES
Bower FD 15-172HN - Wellbore #1 - Design #1	4,100.00	4,099.85	182.62	161.25	8.546	SF
Bower FD 15-173HC - Wellbore #1 - Design #1	3,950.00	3,950.00	149.37	128.77	7.252	CC, ES
Bower FD 15-173HC - Wellbore #1 - Design #1	4,100.00	4,099.85	152.34	130.98	7.130	SF
Bower FD 15-174HN - Wellbore #1 - Design #1	3,950.00	3,950.00	119.42	98.83	5.798	CC, ES
Bower FD 15-174HN - Wellbore #1 - Design #1	4,100.00	4,099.85	122.44	101.08	5.731	SF
Bower FD 15-177HN - Wellbore #1 - Design #1	3,950.00	3,950.00	89.14	68.54	4.328	CC, ES
Bower FD 15-177HN - Wellbore #1 - Design #1	4,000.00	3,999.99	89.46	68.61	4.289	SF
Bower FD 15-178HC - Wellbore #1 - Design #1	3,950.00	3,950.00	59.97	39.37	2.911	CC, ES
Bower FD 15-178HC - Wellbore #1 - Design #1	4,000.00	3,999.99	60.29	39.43	2.891	SF
Bower FD 15-179HN - Wellbore #1 - Design #1	3,950.00	3,950.00	29.69	9.09	1.441	Level 3, CC, ES
Bower FD 15-179HN - Wellbore #1 - Design #1	4,000.00	3,999.99	30.01	9.15	1.439	Level 3, SF

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Reference Site:	Sec.10-T6N-R67W	MD Reference:	WELL @ 4869.30usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Bower FD 15-180HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4869.30usft (Original Well E
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Bower FD 15-180HN
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.40°



Company:	Great Western Oil & Gas	Local Co-ordinate Reference:	Well Bower FD 15-180HN
Project:	Weld Co., CO	TVD Reference:	WELL @ 4869.30usft (Original Well Elev)
Reference Site:	Sec.10-T6N-R67W	MD Reference:	WELL @ 4869.30usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Bower FD 15-180HN	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4869.30usft (Original Well E

Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Bower FD 15-180HN

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.40°

