

Well Planning Proposal FOR

**Bill Barrett Corp.
70 Ranch 4-63-3-49H
Weld Co., CO**

Well File: Design #2 (4/25/12)

Presented By:

Pat Rasmussen
Regional Manager

Bret Wolford
Well Planner



Sharewell
Energy Services, LP



Bill Barrett Corp.
Project: Weld Co., CO
Site: Sec.3-T4N-R63W
Well: 70 Ranch 4-63-3-49H
Wellbore: Wellbore #1
Design: Design #2
Lat: 40° 20' 21.732 N
Long: 104° 24' 59.040 W
Pad GL: 4541.00
KB: WELL @ 4559.00usft



PROJECT DETAILS: Weld Co., CO

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level



Azimuths to True North
Magnetic North: 8.56°

Magnetic Field
Strength: 53050.0snT
Dip Angle: 67.03°
Date: 2012/04/18
Model: IGRF2010

WELL DETAILS: 70 Ranch 4-63-3-49H

+N/-S	+E/-W	Northing	Ground Level:	4541.00	Latitude	Longitude	Slot
0.00	0.00	1368318.781	Easting	3302056.208	40° 20' 21.732 N	104° 24' 59.040 W	

WELLBORE TARGET DETAILS (LAT/LONG)

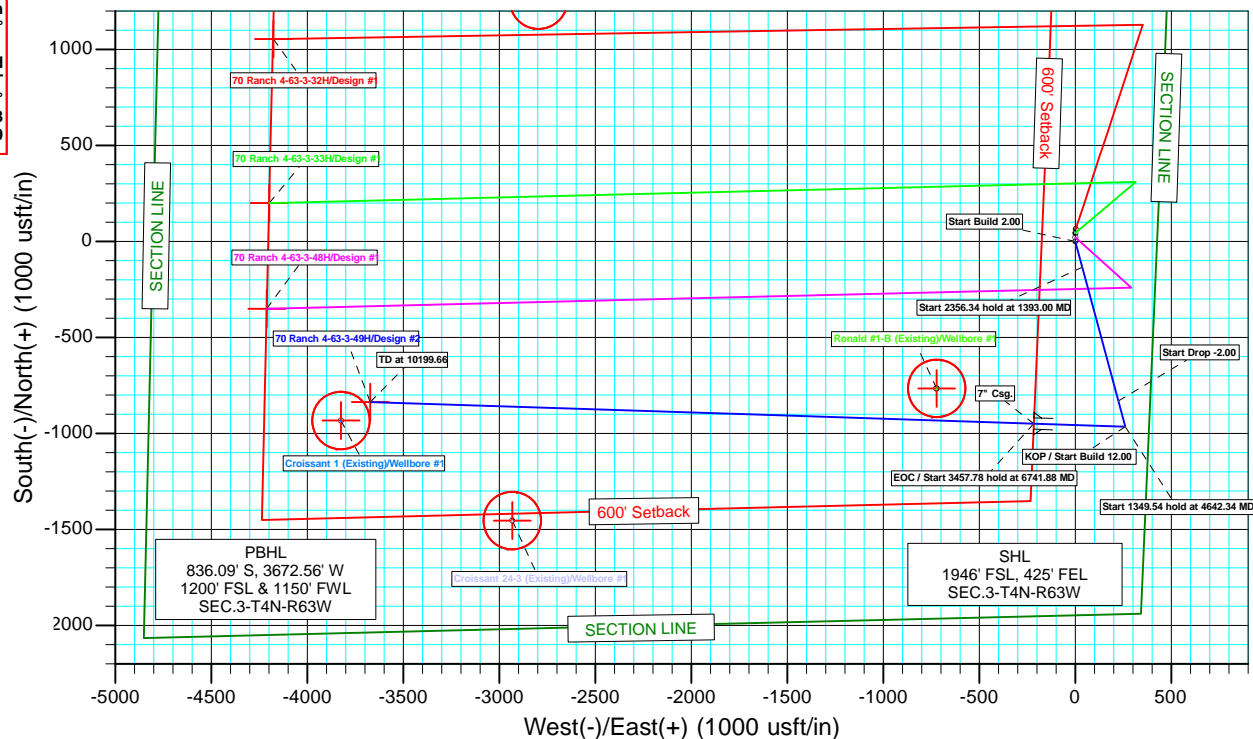
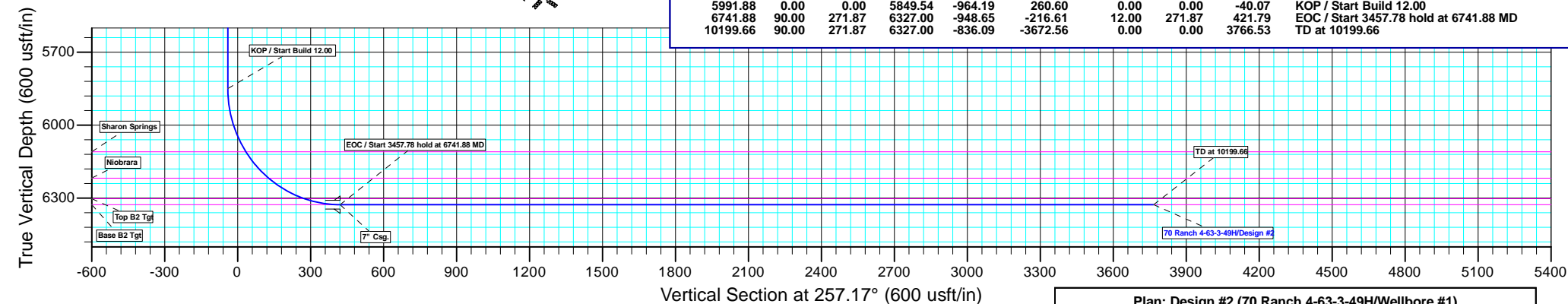
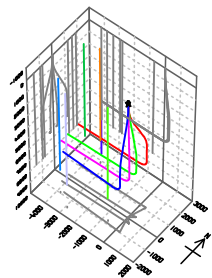
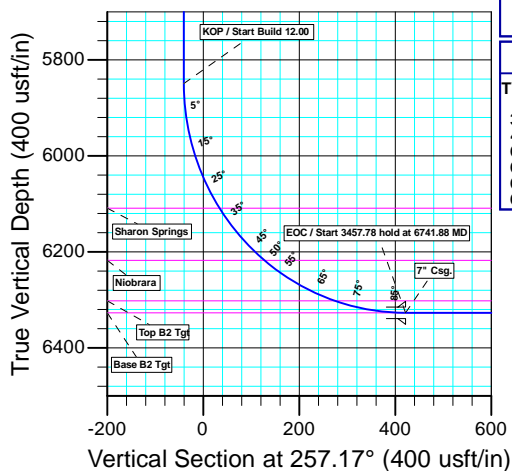
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape Point
4-63-3-49H PBHL	6327.00	-836.09	-3672.56	40° 20' 13.467 N	104° 25' 46.467 W	

CASING DETAILS

TVD	MD	Name	Size
6327.00	6741.88	7" Csg.	7

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
199.00	199.00	Pierre
3949.00	4087.88	Terry/Sussex
4599.00	4741.34	Shannon
6109.00	6266.18	Sharon Springs
6218.00	6412.77	Niobrara
6302.00	6586.67	Top B2 Tgt
6327.00	6739.73	Base B2 Tgt



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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
1393.00	17.86	164.88	1378.61	-133.28	36.02	2.00	164.88	-5.54	Start 2356.34 hold at 1393.00 MD
3749.34	17.86	164.88	3621.39	-830.91	224.58	0.00	0.00	-34.53	Start Drop -2.00
4642.34	0.00	0.00	4500.00	-964.19	260.60	2.00	180.00	-40.07	Start 1349.54 hold at 4642.34 MD
5991.88	0.00	0.00	5849.54	-964.19	260.60	0.00	0.00	-40.07	KOP / Start Build 12.00
6741.88	90.00	271.87	6327.00	-948.65	-216.61	12.00	271.87	421.79	EOC / Start 3457.78 hold at 6741.88 MD
10199.66	90.00	271.87	6327.00	-836.09	-3672.56	0.00	0.00	3766.53	TD at 10199.66

Plan: Design #2 (70 Ranch 4-63-3-49H/Wellbore #1)

Created By: Bret Wolford

Date: 10:56, April 25 2012



Bill Barrett Corporation

Bill Barrett Corp.

Weld Co., CO
Sec.3-T4N-R63W
70 Ranch 4-63-3-49H

Wellbore #1

Plan: Design #2

Standard Planning Report

25 April, 2012



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Company:	Bill Barrett Corp.	TVD Reference:	WELL @ 4559.00usft
Project:	Weld Co., CO	MD Reference:	WELL @ 4559.00usft
Site:	Sec.3-T4N-R63W	North Reference:	True
Well:	70 Ranch 4-63-3-49H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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.3-T4N-R63W			
Site Position:		Northing:	1,368,318.789 usft	Latitude:	40° 20' 21.732 N
From:	Lat/Long	Easting:	3,302,056.208 usft	Longitude:	104° 24' 59.040 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.70 °

Well	70 Ranch 4-63-3-49H					
Well Position	+N/-S	-0.01 usft	Northing:	1,368,318.781 usft	Latitude:	40° 20' 21.732 N
	+E/-W	0.00 usft	Easting:	3,302,056.208 usft	Longitude:	104° 24' 59.040 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,541.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2012/04/18	8.56	67.03	53,050

Design	Design #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	257.17

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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,393.00	17.86	164.88	1,378.61	-133.28	36.02	2.00	2.00	0.00	164.88	
3,749.34	17.86	164.88	3,621.39	-830.91	224.58	0.00	0.00	0.00	0.00	
4,642.34	0.00	0.00	4,500.00	-964.19	260.60	2.00	-2.00	0.00	180.00	
5,991.88	0.00	0.00	5,849.54	-964.19	260.60	0.00	0.00	0.00	0.00	
6,741.88	90.00	271.87	6,327.00	-948.65	-216.61	12.00	12.00	0.00	271.87	4-63-3-49H PBHL
10,199.66	90.00	271.87	6,327.00	-836.09	-3,672.56	0.00	0.00	0.00	0.00	4-63-3-49H PBHL

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Company:	Bill Barrett Corp.	TVD Reference:	WELL @ 4559.00usft
Project:	Weld Co., CO	MD Reference:	WELL @ 4559.00usft
Site:	Sec.3-T4N-R63W	North Reference:	True
Well:	70 Ranch 4-63-3-49H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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
Pierre									
199.00	0.00	0.00	199.00	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
Start Build 2.00									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	2.00	164.88	599.98	-1.68	0.46	-0.07	2.00	2.00	0.00
700.00	4.00	164.88	699.84	-6.74	1.82	-0.28	2.00	2.00	0.00
800.00	6.00	164.88	799.45	-15.15	4.09	-0.63	2.00	2.00	0.00
900.00	8.00	164.88	898.70	-26.91	7.27	-1.12	2.00	2.00	0.00
1,000.00	10.00	164.88	997.47	-42.02	11.36	-1.75	2.00	2.00	0.00
1,100.00	12.00	164.88	1,095.62	-60.43	16.33	-2.51	2.00	2.00	0.00
1,200.00	14.00	164.88	1,193.06	-82.15	22.20	-3.41	2.00	2.00	0.00
1,300.00	16.00	164.88	1,289.64	-107.13	28.96	-4.45	2.00	2.00	0.00
Start 2356.34 hold at 1393.00 MD									
1,393.00	17.86	164.88	1,378.61	-133.28	36.02	-5.54	2.00	2.00	0.00
1,400.00	17.86	164.88	1,385.27	-135.35	36.58	-5.62	0.00	0.00	0.00
1,500.00	17.86	164.88	1,480.45	-164.96	44.58	-6.86	0.00	0.00	0.00
1,600.00	17.86	164.88	1,575.63	-194.56	52.59	-8.09	0.00	0.00	0.00
1,700.00	17.86	164.88	1,670.81	-224.17	60.59	-9.32	0.00	0.00	0.00
1,800.00	17.86	164.88	1,765.99	-253.78	68.59	-10.55	0.00	0.00	0.00
1,900.00	17.86	164.88	1,861.18	-283.38	76.59	-11.78	0.00	0.00	0.00
2,000.00	17.86	164.88	1,956.36	-312.99	84.59	-13.01	0.00	0.00	0.00
2,100.00	17.86	164.88	2,051.54	-342.60	92.60	-14.24	0.00	0.00	0.00
2,200.00	17.86	164.88	2,146.72	-372.20	100.60	-15.47	0.00	0.00	0.00
2,300.00	17.86	164.88	2,241.90	-401.81	108.60	-16.70	0.00	0.00	0.00
2,400.00	17.86	164.88	2,337.08	-431.42	116.60	-17.93	0.00	0.00	0.00
2,500.00	17.86	164.88	2,432.26	-461.02	124.60	-19.16	0.00	0.00	0.00
2,600.00	17.86	164.88	2,527.44	-490.63	132.61	-20.39	0.00	0.00	0.00
2,700.00	17.86	164.88	2,622.62	-520.24	140.61	-21.62	0.00	0.00	0.00
2,800.00	17.86	164.88	2,717.80	-549.84	148.61	-22.85	0.00	0.00	0.00
2,900.00	17.86	164.88	2,812.98	-579.45	156.61	-24.08	0.00	0.00	0.00
3,000.00	17.86	164.88	2,908.16	-609.06	164.62	-25.31	0.00	0.00	0.00
3,100.00	17.86	164.88	3,003.35	-638.67	172.62	-26.54	0.00	0.00	0.00
3,200.00	17.86	164.88	3,098.53	-668.27	180.62	-27.77	0.00	0.00	0.00
3,300.00	17.86	164.88	3,193.71	-697.88	188.62	-29.00	0.00	0.00	0.00
3,400.00	17.86	164.88	3,288.89	-727.49	196.62	-30.23	0.00	0.00	0.00
3,500.00	17.86	164.88	3,384.07	-757.09	204.63	-31.46	0.00	0.00	0.00
3,600.00	17.86	164.88	3,479.25	-786.70	212.63	-32.69	0.00	0.00	0.00
3,700.00	17.86	164.88	3,574.43	-816.31	220.63	-33.92	0.00	0.00	0.00
Start Drop -2.00									
3,749.34	17.86	164.88	3,621.39	-830.91	224.58	-34.53	0.00	0.00	0.00
3,800.00	16.85	164.88	3,669.75	-845.50	228.52	-35.14	2.00	-2.00	0.00
3,900.00	14.85	164.88	3,765.94	-871.86	235.65	-36.23	2.00	-2.00	0.00
4,000.00	12.85	164.88	3,863.03	-894.96	241.89	-37.19	2.00	-2.00	0.00
Terry/Sussex									
4,087.88	11.09	164.88	3,949.00	-912.56	246.64	-37.92	2.00	-2.00	0.00
4,100.00	10.85	164.88	3,960.90	-914.78	247.25	-38.02	2.00	-2.00	0.00
4,200.00	8.85	164.88	4,059.42	-931.29	251.71	-38.70	2.00	-2.00	0.00
4,300.00	6.85	164.88	4,158.48	-944.47	255.27	-39.25	2.00	-2.00	0.00
4,400.00	4.85	164.88	4,257.95	-954.30	257.93	-39.66	2.00	-2.00	0.00

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Project:	Weld Co., CO	MD Reference:	WELL @ 4559.00usft
Site:	Sec.3-T4N-R63W	North Reference:	True
Well:	70 Ranch 4-63-3-49H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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)
4,500.00	2.85	164.88	4,357.72	-960.78	259.68	-39.93	2.00	-2.00	0.00
4,600.00	0.85	164.88	4,457.66	-963.89	260.52	-40.06	2.00	-2.00	0.00
Start 1349.54 hold at 4642.34 MD									
4,642.34	0.00	0.00	4,500.00	-964.19	260.60	-40.07	2.00	-2.00	0.00
4,700.00	0.00	0.00	4,557.66	-964.19	260.60	-40.07	0.00	0.00	0.00
Shannon									
4,741.34	0.00	0.00	4,599.00	-964.19	260.60	-40.07	0.00	0.00	0.00
4,800.00	0.00	0.00	4,657.66	-964.19	260.60	-40.07	0.00	0.00	0.00
4,900.00	0.00	0.00	4,757.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,000.00	0.00	0.00	4,857.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,100.00	0.00	0.00	4,957.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,200.00	0.00	0.00	5,057.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,300.00	0.00	0.00	5,157.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,400.00	0.00	0.00	5,257.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,500.00	0.00	0.00	5,357.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,600.00	0.00	0.00	5,457.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,700.00	0.00	0.00	5,557.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,800.00	0.00	0.00	5,657.66	-964.19	260.60	-40.07	0.00	0.00	0.00
5,900.00	0.00	0.00	5,757.66	-964.19	260.60	-40.07	0.00	0.00	0.00
KOP / Start Build 12.00									
5,991.88	0.00	0.00	5,849.54	-964.19	260.60	-40.07	0.00	0.00	0.00
6,000.00	0.97	271.87	5,857.66	-964.19	260.53	-40.00	12.00	12.00	0.00
6,025.00	3.97	271.87	5,882.64	-964.15	259.45	-38.96	12.00	12.00	0.00
6,050.00	6.97	271.87	5,907.52	-964.07	257.07	-36.65	12.00	12.00	0.00
6,075.00	9.97	271.87	5,932.24	-963.96	253.39	-33.09	12.00	12.00	0.00
6,100.00	12.97	271.87	5,956.74	-963.79	248.42	-28.28	12.00	12.00	0.00
6,125.00	15.97	271.87	5,980.94	-963.59	242.17	-22.23	12.00	12.00	0.00
6,150.00	18.97	271.87	6,004.79	-963.35	234.67	-14.97	12.00	12.00	0.00
6,175.00	21.97	271.87	6,028.21	-963.06	225.93	-6.52	12.00	12.00	0.00
6,200.00	24.97	271.87	6,051.13	-962.74	215.98	3.12	12.00	12.00	0.00
6,225.00	27.97	271.87	6,073.51	-962.37	204.84	13.90	12.00	12.00	0.00
6,250.00	30.97	271.87	6,095.27	-961.97	192.55	25.79	12.00	12.00	0.00
Sharon Springs									
6,266.18	32.92	271.87	6,109.00	-961.69	183.99	34.07	12.00	12.00	0.00
6,275.00	33.97	271.87	6,116.36	-961.54	179.13	38.78	12.00	12.00	0.00
6,300.00	36.97	271.87	6,136.72	-961.06	164.63	52.81	12.00	12.00	0.00
6,325.00	39.97	271.87	6,156.29	-960.56	149.09	67.85	12.00	12.00	0.00
6,350.00	42.97	271.87	6,175.02	-960.02	132.54	83.87	12.00	12.00	0.00
6,375.00	45.97	271.87	6,192.85	-959.45	115.04	100.81	12.00	12.00	0.00
6,400.00	48.97	271.87	6,209.75	-958.85	96.63	118.63	12.00	12.00	0.00
Niobrara									
6,412.77	50.51	271.87	6,218.00	-958.53	86.89	128.05	12.00	12.00	0.00
6,425.00	51.97	271.87	6,225.66	-958.22	77.36	137.28	12.00	12.00	0.00
6,450.00	54.97	271.87	6,240.53	-957.57	57.28	156.71	12.00	12.00	0.00
6,475.00	57.97	271.87	6,254.34	-956.89	36.45	176.87	12.00	12.00	0.00
6,500.00	60.97	271.87	6,267.04	-956.19	14.93	197.70	12.00	12.00	0.00
6,525.00	63.97	271.87	6,278.59	-955.47	-7.23	219.14	12.00	12.00	0.00
6,550.00	66.97	271.87	6,288.97	-954.73	-29.96	241.14	12.00	12.00	0.00
6,575.00	69.97	271.87	6,298.14	-953.97	-53.20	263.63	12.00	12.00	0.00
Top B2 Tgt									
6,586.67	71.38	271.87	6,302.00	-953.61	-64.20	274.28	12.00	12.00	0.00
6,600.00	72.97	271.87	6,306.08	-953.20	-76.89	286.56	12.00	12.00	0.00
6,625.00	75.97	271.87	6,312.77	-952.41	-100.96	309.86	12.00	12.00	0.00

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Company:	Bill Barrett Corp.	TVD Reference:	WELL @ 4559.00usft
Project:	Weld Co., CO	MD Reference:	WELL @ 4559.00usft
Site:	Sec.3-T4N-R63W	North Reference:	True
Well:	70 Ranch 4-63-3-49H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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)
6,650.00	78.97	271.87	6,318.19	-951.62	-125.35	333.46	12.00	12.00	0.00
6,675.00	81.97	271.87	6,322.33	-950.82	-149.99	357.31	12.00	12.00	0.00
6,700.00	84.97	271.87	6,325.17	-950.01	-174.81	381.33	12.00	12.00	0.00
6,725.00	87.97	271.87	6,326.71	-949.20	-199.75	405.46	12.00	12.00	0.00
Base B2 Tgt									
6,739.73	89.74	271.87	6,327.00	-948.72	-214.47	419.71	12.00	12.00	0.00
EOC / Start 3457.78 hold at 6741.88 MD - 7" Csg.									
6,741.88	90.00	271.87	6,327.00	-948.65	-216.61	421.79	11.99	11.99	0.00
6,800.00	90.00	271.87	6,327.00	-946.76	-274.70	478.01	0.00	0.00	0.00
6,900.00	90.00	271.87	6,327.00	-943.50	-374.65	574.74	0.00	0.00	0.00
7,000.00	90.00	271.87	6,327.00	-940.24	-474.60	671.47	0.00	0.00	0.00
7,100.00	90.00	271.87	6,327.00	-936.99	-574.54	768.20	0.00	0.00	0.00
7,200.00	90.00	271.87	6,327.00	-933.73	-674.49	864.93	0.00	0.00	0.00
7,300.00	90.00	271.87	6,327.00	-930.48	-774.44	961.66	0.00	0.00	0.00
7,400.00	90.00	271.87	6,327.00	-927.22	-874.38	1,058.39	0.00	0.00	0.00
7,500.00	90.00	271.87	6,327.00	-923.97	-974.33	1,155.12	0.00	0.00	0.00
7,600.00	90.00	271.87	6,327.00	-920.71	-1,074.28	1,251.86	0.00	0.00	0.00
7,700.00	90.00	271.87	6,327.00	-917.46	-1,174.23	1,348.59	0.00	0.00	0.00
7,800.00	90.00	271.87	6,327.00	-914.20	-1,274.17	1,445.32	0.00	0.00	0.00
7,900.00	90.00	271.87	6,327.00	-910.95	-1,374.12	1,542.05	0.00	0.00	0.00
8,000.00	90.00	271.87	6,327.00	-907.69	-1,474.07	1,638.78	0.00	0.00	0.00
8,100.00	90.00	271.87	6,327.00	-904.44	-1,574.01	1,735.51	0.00	0.00	0.00
8,200.00	90.00	271.87	6,327.00	-901.18	-1,673.96	1,832.24	0.00	0.00	0.00
8,300.00	90.00	271.87	6,327.00	-897.93	-1,773.91	1,928.97	0.00	0.00	0.00
8,400.00	90.00	271.87	6,327.00	-894.67	-1,873.85	2,025.70	0.00	0.00	0.00
8,500.00	90.00	271.87	6,327.00	-891.42	-1,973.80	2,122.43	0.00	0.00	0.00
8,600.00	90.00	271.87	6,327.00	-888.16	-2,073.75	2,219.16	0.00	0.00	0.00
8,700.00	90.00	271.87	6,327.00	-884.91	-2,173.70	2,315.90	0.00	0.00	0.00
8,800.00	90.00	271.87	6,327.00	-881.65	-2,273.64	2,412.63	0.00	0.00	0.00
8,900.00	90.00	271.87	6,327.00	-878.40	-2,373.59	2,509.36	0.00	0.00	0.00
9,000.00	90.00	271.87	6,327.00	-875.14	-2,473.54	2,606.09	0.00	0.00	0.00
9,100.00	90.00	271.87	6,327.00	-871.88	-2,573.48	2,702.82	0.00	0.00	0.00
9,200.00	90.00	271.87	6,327.00	-868.63	-2,673.43	2,799.55	0.00	0.00	0.00
9,300.00	90.00	271.87	6,327.00	-865.37	-2,773.38	2,896.28	0.00	0.00	0.00
9,400.00	90.00	271.87	6,327.00	-862.12	-2,873.32	2,993.01	0.00	0.00	0.00
9,500.00	90.00	271.87	6,327.00	-858.86	-2,973.27	3,089.74	0.00	0.00	0.00
9,600.00	90.00	271.87	6,327.00	-855.61	-3,073.22	3,186.47	0.00	0.00	0.00
9,700.00	90.00	271.87	6,327.00	-852.35	-3,173.17	3,283.20	0.00	0.00	0.00
9,800.00	90.00	271.87	6,327.00	-849.10	-3,273.11	3,379.94	0.00	0.00	0.00
9,900.00	90.00	271.87	6,327.00	-845.84	-3,373.06	3,476.67	0.00	0.00	0.00
10,000.00	90.00	271.87	6,327.00	-842.59	-3,473.01	3,573.40	0.00	0.00	0.00
10,100.00	90.00	271.87	6,327.00	-839.33	-3,572.95	3,670.13	0.00	0.00	0.00
TD at 10199.66 - 4-63-3-49H PBHL									
10,199.66	90.00	271.87	6,327.00	-836.09	-3,672.56	3,766.53	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Company:	Bill Barrett Corp.	TVD Reference:	WELL @ 4559.00usft
Project:	Weld Co., CO	MD Reference:	WELL @ 4559.00usft
Site:	Sec.3-T4N-R63W	North Reference:	True
Well:	70 Ranch 4-63-3-49H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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									
4-63-3-49H PBHL	0.00	0.00	6,327.00	-836.09	-3,672.56	1,367,437.878	3,298,394.136	40° 20' 13.467 N	104° 25' 46.467 W
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(")	(")
6,741.88	6,327.00	7" Csg.	7	8-3/4

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
199.00	199.00	Pierre		0.00	
4,087.88	3,949.00	Terry/Sussex		0.00	
4,741.34	4,599.00	Shannon		0.00	
6,266.18	6,109.00	Sharon Springs		0.00	
6,412.77	6,218.00	Niobrara		0.00	
6,586.67	6,302.00	Top B2 Tgt		0.00	
6,739.73	6,327.00	Base B2 Tgt		0.00	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Start Build 2.00
1,393.00	1,378.61	-133.28	36.02	Start 2356.34 hold at 1393.00 MD
3,749.34	3,621.39	-830.91	224.58	Start Drop -2.00
4,642.34	4,500.00	-964.19	260.60	Start 1349.54 hold at 4642.34 MD
5,991.88	5,849.54	-964.19	260.60	KOP / Start Build 12.00
6,741.88	6,327.00	-948.65	-216.61	EOC / Start 3457.78 hold at 6741.88 MD
10,199.66	6,327.00	-836.09	-3,672.56	TD at 10199.66



Bill Barrett Corporation

Bill Barrett Corp.

Weld Co., CO

Sec.3-T4N-R63W

70 Ranch 4-63-3-49H

Wellbore #1

Design #2

Anticollision Report

25 April, 2012



Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Reference	Design #2		
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	2012/04/25		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	10,199.66	Design #2 (Wellbore #1)	MWD	MWD - Standard

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.3-T4N-R63W						
70 Ranch 4-63-3-32H - Wellbore #1 - Design #1	500.00	500.00	65.63	63.65	33.107	CC, ES
70 Ranch 4-63-3-32H - Wellbore #1 - Design #1	10,199.66	10,359.77	1,898.51	1,681.27	8.739	SF
70 Ranch 4-63-3-33H - Wellbore #1 - Design #1	500.00	500.00	43.72	41.73	22.051	CC, ES
70 Ranch 4-63-3-33H - Wellbore #1 - Design #1	10,199.66	10,159.19	1,048.69	832.76	4.857	SF
70 Ranch 4-63-3-48H - Wellbore #1 - Design #1	500.00	500.00	21.86	19.88	11.026	CC, ES
70 Ranch 4-63-3-48H - Wellbore #1 - Design #1	10,199.66	10,119.39	498.84	283.99	2.322	SF
Croissant 1 (Existing) - Wellbore #1 - Wellbore #1	10,199.66	6,336.00	180.02	65.58	1.573	CC, ES, SF
Croissant 24-3 (Existing) - Wellbore #1 - Wellbore #1	9,440.11	6,335.00	592.85	499.51	6.352	CC, ES
Croissant 24-3 (Existing) - Wellbore #1 - Wellbore #1	9,500.00	6,335.00	595.87	500.87	6.272	SF
Ronald #1-B (Existing) - Wellbore #1 - Wellbore #1	7,252.99	6,308.00	167.10	132.14	4.780	CC, ES, SF

Offset Design	Sec.3-T4N-R63W - 70 Ranch 4-63-3-32H - Wellbore #1 - Design #1												Offset Site Error:	0.00 usft
Survey Program:	0-MWD												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance										Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	2.43	65.57	2.79	65.63					
100.00	100.00	100.00	100.00	0.09	0.09	2.43	65.57	2.79	65.63	65.45	0.18	356.098		
200.00	200.00	200.00	200.00	0.32	0.32	2.43	65.57	2.79	65.63	65.00	0.63	103.546		
300.00	300.00	300.00	300.00	0.54	0.54	2.43	65.57	2.79	65.63	64.55	1.08	60.581		
400.00	400.00	400.00	400.00	0.77	0.77	2.43	65.57	2.79	65.63	64.10	1.53	42.815		
466.67	466.67	466.67	466.67	0.92	0.92	2.43	65.57	2.79	65.63	63.80	1.83	35.814		
500.00	500.00	500.00	500.00	0.99	0.99	2.43	65.57	2.79	65.63	63.65	1.98	33.107	CC, ES	
600.00	599.98	597.74	597.72	1.19	1.21	2.37	67.16	3.31	68.94	66.53	2.41	28.658		
700.00	699.84	694.84	694.69	1.38	1.44	2.21	71.87	4.85	78.83	76.00	2.83	27.899		
800.00	799.45	790.68	790.18	1.59	1.66	1.99	79.57	7.38	95.23	91.97	3.26	29.204		
900.00	898.70	884.69	883.53	1.84	1.90	1.74	90.08	10.82	118.03	114.32	3.71	31.844		
1,000.00	997.47	976.32	974.13	2.14	2.16	1.48	103.11	15.10	147.04	142.88	4.16	35.356		
1,100.00	1,095.62	1,065.09	1,061.43	2.49	2.46	1.21	118.36	20.10	182.07	177.46	4.62	39.434		
1,200.00	1,193.06	1,150.60	1,145.02	2.89	2.77	0.92	135.47	25.71	222.89	217.80	5.08	43.873		
1,300.00	1,289.64	1,232.48	1,224.53	3.36	3.11	0.62	154.07	31.80	269.21	263.66	5.55	48.527		
1,393.00	1,378.61	1,305.16	1,294.60	3.86	3.44	0.33	172.38	37.81	317.00	311.01	5.99	52.960		
1,400.00	1,385.27	1,310.49	1,299.72	3.90	3.47	0.31	173.79	38.27	320.76	314.74	6.02	53.281		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,500.00	1,480.45	1,385.36	1,371.34	4.47	3.85	0.08	194.54	45.07	375.69	369.17	6.52	57.637		
1,600.00	1,575.63	1,457.80	1,440.05	5.06	4.25	-0.05	216.30	52.21	432.66	425.63	7.02	61.609		
1,700.00	1,670.81	1,527.82	1,505.91	5.66	4.66	-0.12	238.90	59.62	491.56	484.02	7.54	65.202		
1,800.00	1,765.99	1,605.96	1,578.98	6.26	5.16	-0.04	265.22	68.25	551.66	543.59	8.07	68.331		
1,900.00	1,861.18	1,685.86	1,653.69	6.88	5.67	0.05	292.14	77.08	611.79	603.17	8.61	71.041		
2,000.00	1,956.36	1,765.76	1,728.39	7.49	6.19	0.12	319.07	85.90	671.91	662.76	9.16	73.376		
2,100.00	2,051.54	1,845.66	1,803.10	8.11	6.72	0.18	346.00	94.73	732.04	722.33	9.71	75.401		
2,200.00	2,146.72	1,925.56	1,877.81	8.73	7.25	0.23	372.92	103.56	792.17	781.90	10.27	77.168		
2,300.00	2,241.90	2,005.47	1,952.52	9.35	7.79	0.27	399.85	112.39	852.30	841.47	10.83	78.720		
2,400.00	2,337.08	2,085.37	2,027.22	9.98	8.33	0.31	426.77	121.22	912.43	901.03	11.39	80.084		
2,500.00	2,432.26	2,165.27	2,101.93	10.60	8.87	0.34	453.70	130.05	972.56	960.59	11.96	81.296		
2,600.00	2,527.44	2,245.17	2,176.64	11.23	9.41	0.37	480.63	138.87	1,032.69	1,020.15	12.54	82.378		
2,700.00	2,622.62	2,325.07	2,251.35	11.86	9.96	0.40	507.55	147.70	1,092.82	1,079.71	13.11	83.350		
2,800.00	2,717.80	2,404.97	2,326.05	12.49	10.50	0.42	534.48	156.53	1,152.95	1,139.26	13.69	84.226		
2,900.00	2,812.98	2,484.87	2,400.76	13.11	11.05	0.44	561.41	165.36	1,213.08	1,198.81	14.27	85.015		
3,000.00	2,908.17	2,564.77	2,475.47	13.74	11.60	0.46	588.33	174.19	1,273.21	1,258.36	14.85	85.733		
3,100.00	3,003.35	2,644.67	2,550.18	14.37	12.15	0.48	615.26	183.02	1,333.34	1,317.90	15.43	86.387		
3,200.00	3,098.53	2,724.57	2,624.88	15.01	12.70	0.49	642.18	191.85	1,393.47	1,377.45	16.02	86.986		
3,300.00	3,193.71	2,804.48	2,699.59	15.64	13.25	0.51	669.11	200.67	1,453.60	1,436.99	16.61	87.535		
3,400.00	3,288.89	2,884.38	2,774.30	16.27	13.80	0.52	696.04	209.50	1,513.73	1,496.54	17.19	88.039		
3,500.00	3,384.07	2,964.28	2,849.01	16.90	14.35	0.53	722.96	218.33	1,573.86	1,556.08	17.78	88.505		
3,600.00	3,479.25	3,044.18	2,923.72	17.53	14.91	0.54	749.89	227.16	1,633.99	1,615.62	18.37	88.935		
3,700.00	3,574.43	3,124.08	2,998.42	18.16	15.46	0.55	776.81	235.99	1,694.12	1,675.16	18.96	89.335		
3,749.34	3,621.39	3,163.50	3,035.28	18.48	15.73	0.56	790.10	240.34	1,723.79	1,704.54	19.26	89.521		
3,800.00	3,669.75	3,204.23	3,073.37	18.74	16.01	0.57	803.83	244.84	1,753.91	1,734.30	19.62	89.413		
3,900.00	3,765.94	3,286.08	3,149.89	19.16	16.58	0.61	831.41	253.89	1,811.34	1,791.05	20.29	89.260		
4,000.00	3,863.03	3,369.76	3,228.14	19.53	17.16	0.69	859.61	263.13	1,866.03	1,845.07	20.96	89.044		
4,100.00	3,960.90	3,455.18	3,308.00	19.87	17.75	0.80	888.39	272.57	1,917.90	1,896.30	21.60	88.783		
4,200.00	4,059.42	3,542.23	3,389.39	20.17	18.36	0.94	917.73	282.19	1,966.91	1,944.68	22.23	88.492		
4,300.00	4,158.48	3,630.80	3,472.21	20.42	18.97	1.11	947.58	291.98	2,012.99	1,990.17	22.83	88.182		
4,400.00	4,257.95	3,692.80	3,557.37	20.63	19.52	1.33	977.43	301.77	2,058.87	2,035.04	23.43	87.851		
4,500.00	4,357.72	3,779.26	3,642.41	20.80	20.11	1.60	1,007.28	311.56	2,104.75	2,079.91	24.03	87.500		
4,600.00	4,457.66	3,865.10	3,727.15	20.92	20.72	1.92	1,037.13	321.35	2,150.63	2,124.77	24.63	87.129		
4,642.34	4,500.00	3,900.00	3,760.00	20.97	21.27	2.24	1,066.98	331.14	2,196.51	2,169.63	25.23	86.748		
4,700.00	4,557.66	3,939.68	3,807.66	21.02	21.82	2.56	1,096.83	340.93	2,242.39	2,214.77	25.83	86.357		
4,800.00	4,657.66	4,029.68	3,897.66	21.11	22.37	2.88	1,126.68	350.72	2,288.27	2,259.65	26.43	85.956		
4,900.00	4,757.66	4,119.68	3,987.66	21.19	22.92	3.20	1,156.53	360.51	2,334.15	2,304.53	27.03	85.545		
5,000.00	4,857.66	4,209.68	4,077.66	21.28	23.47	3.52	1,186.38	370.30	2,379.99	2,349.37	27.63	85.124		
5,100.00	4,957.66	4,299.68	4,167.66	21.37	24.02	3.84	1,216.23	380.09	2,425.83	2,394.21	28.23	84.693		
5,200.00	5,057.66	4,389.68	4,257.66	21.47	24.57	4.16	1,246.08	389.88	2,471.67	2,438.05	28.83	84.252		
5,300.00	5,157.66	4,479.68	4,347.66	21.56	25.12	4.48	1,275.93	399.67	2,517.51	2,482.89	29.43	83.801		
5,400.00	5,257.66	4,569.68	4,437.66	21.66	25.67	4.80	1,305.78	409.46	2,563.35	2,528.73	30.03	83.340		
5,500.00	5,357.66	4,659.68	4,527.66	21.76	26.22	5.12	1,335.63	419.25	2,609.19	2,574.57	30.63	82.869		
5,600.00	5,457.66	4,749.68	4,617.66	21.86	26.77	5.44	1,365.48	429.04	2,655.03	2,620.41	31.23	82.388		
5,700.00	5,557.66	4,839.68	4,707.66	21.96	27.32	5.76	1,395.33	438.83	2,700.87	2,666.25	31.83	81.897		
5,800.00	5,657.66	4,929.68	4,797.66	22.07	27.87	6.08	1,425.18	448.62	2,746.71	2,712.09	32.43	81.396		
5,900.00	5,757.66	5,019.68	4,887.66	22.17	28.42	6.40	1,455.03	458.41	2,792.55	2,757.93	33.03	80.885		
5,991.88	5,849.54	5,109.68	4,977.66	22.27	28.97	6.72	1,484.88	468.20	2,838.39	2,803.77	33.63	80.364		
6,000.00	5,857.66	5,199.68	5,067.66	22.28	29.52	7.04	1,514.73	477.99	2,884.23	2,849.61	34.23	79.833		
6,025.00	5,882.64	5,224.66	5,092.64	22.30	30.07	7.36	1,544.58	487.78	2,930.07	2,895.45	34.83	79.292		
6,050.00	5,907.52	5,249.64	5,117.52	22.32	30.62	7.68	1,574.43	497.57	2,975.91	2,940.29	35.43	78.741		
6,075.00	5,932.24	5,274.62	5,142.24	22.34	31.17	8.00	1,604.28	507.36	3,021.75	2,986.13	36.03	78.180		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,100.00	5,956.74	6,177.33	5,993.06	22.35	23.87	2.21	1,128.41	329.31	2,094.08	2,063.63	30.45	68.768		
6,125.00	5,980.94	6,210.57	6,024.39	22.36	23.86	2.08	1,128.23	318.22	2,093.65	2,063.19	30.46	68.741		
6,150.00	6,004.79	6,243.53	6,054.62	22.36	23.84	1.93	1,128.01	305.11	2,093.14	2,062.69	30.45	68.736		
6,175.00	6,028.21	6,276.18	6,083.60	22.36	23.82	1.76	1,127.77	290.09	2,092.54	2,062.11	30.44	68.745		
6,200.00	6,051.13	6,308.47	6,111.19	22.36	23.79	1.57	1,127.49	273.33	2,091.88	2,061.45	30.42	68.756		
6,225.00	6,073.51	6,340.37	6,137.27	22.35	23.76	1.37	1,127.19	254.97	2,091.14	2,060.72	30.41	68.759		
6,250.00	6,095.27	6,371.86	6,161.76	22.34	23.72	1.17	1,126.86	235.18	2,090.33	2,059.92	30.41	68.742		
6,275.00	6,116.36	6,402.93	6,184.58	22.33	23.68	0.96	1,126.52	214.12	2,089.46	2,059.04	30.42	68.689		
6,300.00	6,136.72	6,433.55	6,205.69	22.32	23.64	0.75	1,126.15	191.95	2,088.54	2,058.09	30.45	68.588		
6,325.00	6,156.29	6,463.71	6,225.06	22.31	23.61	0.54	1,125.77	168.83	2,087.56	2,057.05	30.51	68.428		
6,350.00	6,175.02	6,493.41	6,242.66	22.29	23.57	0.34	1,125.38	144.93	2,086.53	2,055.94	30.59	68.199		
6,375.00	6,192.85	6,522.64	6,258.51	22.27	23.53	0.15	1,124.98	120.37	2,085.47	2,054.75	30.72	67.892		
6,400.00	6,209.75	6,551.41	6,272.60	22.26	23.50	-0.04	1,124.57	95.30	2,084.36	2,053.48	30.88	67.496		
6,425.00	6,225.66	6,579.72	6,284.97	22.24	23.46	-0.21	1,124.15	69.84	2,083.23	2,052.14	31.09	67.006		
6,450.00	6,240.54	6,607.57	6,295.66	22.23	23.44	-0.36	1,123.73	44.12	2,082.07	2,050.72	31.34	66.425		
6,475.00	6,254.34	6,634.99	6,304.68	22.21	23.41	-0.50	1,123.30	18.25	2,080.88	2,049.23	31.65	65.754		
6,500.00	6,267.04	6,661.97	6,312.11	22.19	23.39	-0.62	1,122.88	-7.69	2,079.68	2,047.68	32.00	64.997		
6,525.00	6,278.59	6,688.53	6,317.97	22.18	23.38	-0.73	1,122.45	-33.58	2,078.46	2,046.06	32.39	64.161		
6,550.00	6,288.97	6,714.68	6,322.33	22.17	23.38	-0.81	1,122.03	-59.36	2,077.23	2,044.39	32.84	63.261		
6,575.00	6,298.14	6,740.43	6,325.24	22.15	23.38	-0.88	1,121.61	-84.95	2,076.00	2,042.67	33.33	62.291		
6,600.00	6,306.08	6,765.81	6,326.75	22.15	23.39	-0.92	1,121.19	-110.28	2,074.76	2,040.90	33.86	61.275		
6,625.00	6,312.77	6,790.55	6,327.00	22.14	23.42	-0.94	1,120.78	-135.01	2,073.53	2,039.10	34.43	60.228		
6,650.00	6,318.19	6,814.93	6,327.00	22.14	23.45	-0.94	1,120.38	-159.38	2,072.30	2,037.25	35.05	59.120		
6,675.00	6,322.33	6,839.55	6,327.00	22.14	23.50	-0.94	1,119.98	-184.00	2,071.08	2,035.36	35.72	57.978		
6,700.00	6,325.17	6,864.36	6,327.00	22.16	23.57	-0.94	1,119.57	-208.80	2,069.86	2,033.44	36.42	56.839		
6,725.00	6,326.71	6,889.28	6,327.00	22.18	23.66	-0.94	1,119.16	-233.72	2,068.64	2,031.50	37.13	55.708		
6,741.88	6,327.00	6,906.13	6,327.00	22.20	23.74	-0.94	1,118.89	-250.57	2,067.81	2,030.17	37.64	54.932		
6,800.00	6,327.00	6,964.18	6,327.00	22.32	24.09	-0.94	1,117.93	-308.61	2,064.97	2,025.40	39.56	52.196		
6,900.00	6,327.00	7,064.06	6,327.00	22.85	25.15	-0.94	1,116.29	-408.48	2,060.07	2,016.86	43.21	47.675		
7,000.00	6,327.00	7,163.94	6,327.00	24.01	26.71	-0.94	1,114.65	-508.35	2,055.17	2,007.93	47.25	43.498		
7,100.00	6,327.00	7,263.82	6,327.00	25.74	28.61	-0.94	1,113.01	-608.21	2,050.28	1,998.69	51.58	39.747		
7,200.00	6,327.00	7,363.70	6,327.00	27.78	30.72	-0.94	1,111.37	-708.08	2,045.38	1,989.23	56.15	36.429		
7,300.00	6,327.00	7,463.58	6,327.00	30.01	32.96	-0.94	1,109.73	-807.95	2,040.49	1,979.60	60.89	33.513		
7,400.00	6,327.00	7,563.46	6,327.00	32.34	35.30	-0.94	1,108.09	-907.81	2,035.59	1,969.82	65.77	30.952		
7,500.00	6,327.00	7,663.34	6,327.00	34.76	37.71	-0.94	1,106.45	-1,007.68	2,030.69	1,959.94	70.75	28.701		
7,600.00	6,327.00	7,763.22	6,327.00	37.24	40.17	-0.94	1,104.81	-1,107.55	2,025.80	1,949.97	75.83	26.716		
7,700.00	6,327.00	7,863.10	6,327.00	39.76	42.67	-0.94	1,103.17	-1,207.41	2,020.90	1,939.93	80.97	24.957		
7,800.00	6,327.00	7,962.98	6,327.00	42.33	45.21	-0.94	1,101.53	-1,307.28	2,016.00	1,929.83	86.18	23.393		
7,900.00	6,327.00	8,062.86	6,327.00	44.92	47.78	-0.94	1,099.89	-1,407.15	2,011.11	1,919.68	91.43	21.996		
8,000.00	6,327.00	8,162.74	6,327.00	47.54	50.38	-0.94	1,098.25	-1,507.01	2,006.21	1,909.49	96.73	20.741		
8,100.00	6,327.00	8,262.62	6,327.00	50.18	52.99	-0.94	1,096.61	-1,606.88	2,001.32	1,899.26	102.05	19.611		
8,200.00	6,327.00	8,362.50	6,327.00	52.84	55.63	-0.94	1,094.97	-1,706.75	1,996.42	1,889.01	107.41	18.587		
8,300.00	6,327.00	8,462.38	6,327.00	55.51	58.28	-0.94	1,093.33	-1,806.61	1,991.52	1,878.73	112.79	17.657		
8,400.00	6,327.00	8,562.26	6,327.00	58.19	60.94	-0.94	1,091.69	-1,906.48	1,986.63	1,868.43	118.19	16.808		
8,500.00	6,327.00	8,662.14	6,327.00	60.89	63.61	-0.94	1,090.05	-2,006.35	1,981.73	1,858.12	123.61	16.032		
8,600.00	6,327.00	8,762.02	6,327.00	63.60	66.30	-0.94	1,088.41	-2,106.21	1,976.84	1,847.78	129.05	15.318		
8,700.00	6,327.00	8,861.90	6,327.00	66.31	68.99	-0.94	1,086.77	-2,206.08	1,971.94	1,837.44	134.50	14.661		
8,800.00	6,327.00	8,961.78	6,327.00	69.04	71.69	-0.94	1,085.13	-2,305.95	1,967.04	1,827.07	139.97	14.054		
8,900.00	6,327.00	9,061.66	6,327.00	71.77	74.40	-0.94	1,083.49	-2,405.81	1,962.15	1,816.70	145.44	13.491		
9,000.00	6,327.00	9,161.54	6,327.00	74.51	77.12	-0.94	1,081.85	-2,505.68	1,957.25	1,806.32	150.93	12.968		
9,100.00	6,327.00	9,261.42	6,327.00	77.25	79.84	-0.94	1,080.21	-2,605.55	1,952.35	1,795.93	156.42	12.481		
9,200.00	6,327.00	9,361.30	6,327.00	80.00	82.56	-0.94	1,078.57	-2,705.41	1,947.46	1,785.53	161.93	12.027		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design Sec.3-T4N-R63W - 70 Ranch 4-63-3-32H - Wellbore #1 - Design #1												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
9,300.00	6,327.00	9,461.18	6,327.00	82.75	85.29	-0.94	1,076.93	-2,805.28	1,942.56	1,775.13	167.44	11.602	
9,400.00	6,327.00	9,561.06	6,327.00	85.50	88.03	-0.94	1,075.29	-2,905.15	1,937.67	1,764.71	172.95	11.203	
9,500.00	6,327.00	9,660.94	6,327.00	88.26	90.77	-0.94	1,073.64	-3,005.01	1,932.77	1,754.29	178.47	10.829	
9,600.00	6,327.00	9,760.82	6,327.00	91.02	93.51	-0.94	1,072.00	-3,104.88	1,927.87	1,743.87	184.00	10.477	
9,700.00	6,327.00	9,860.70	6,327.00	93.79	96.26	-0.94	1,070.36	-3,204.75	1,922.98	1,733.44	189.53	10.146	
9,800.00	6,327.00	9,960.58	6,327.00	96.56	99.00	-0.94	1,068.72	-3,304.61	1,918.08	1,723.01	195.07	9.833	
9,900.00	6,327.00	10,060.46	6,327.00	99.33	101.76	-0.94	1,067.08	-3,404.48	1,913.18	1,712.57	200.61	9.537	
10,000.00	6,327.00	10,160.34	6,327.00	102.10	104.51	-0.94	1,065.44	-3,504.35	1,908.29	1,702.13	206.16	9.256	
10,100.00	6,327.00	10,260.22	6,327.00	104.88	107.27	-0.94	1,063.80	-3,604.21	1,903.39	1,691.69	211.71	8.991	
10,199.66	6,327.00	10,359.77	6,327.00	107.64	110.02	-0.94	1,062.17	-3,703.74	1,898.51	1,681.27	217.24	8.739 SF	

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.72	0.00	43.72					
100.00	100.00	100.00	100.00	0.09	0.09	0.00	43.72	0.00	43.72	43.53	0.18	237.184		
200.00	200.00	200.00	200.00	0.32	0.32	0.00	43.72	0.00	43.72	43.08	0.63	68.969		
300.00	300.00	300.00	300.00	0.54	0.54	0.00	43.72	0.00	43.72	42.63	1.08	40.351		
400.00	400.00	400.00	400.00	0.77	0.77	0.00	43.72	0.00	43.72	42.18	1.53	28.518		
466.67	466.67	466.67	466.67	0.92	0.92	0.00	43.72	0.00	43.72	41.88	1.83	23.854		
500.00	500.00	500.00	500.00	0.99	0.99	0.00	43.72	0.00	43.72	41.73	1.98	22.051	CC, ES	
600.00	599.98	598.94	598.92	1.19	1.21	1.05	44.82	1.30	46.52	44.12	2.40	19.355		
700.00	699.84	697.37	697.22	1.38	1.43	3.51	48.11	5.19	55.01	52.19	2.82	19.513		
800.00	799.45	794.80	794.28	1.59	1.66	6.21	53.51	11.57	69.25	66.00	3.26	21.260		
900.00	898.70	892.41	891.29	1.84	1.91	8.15	60.47	19.79	88.58	84.87	3.72	23.839		
1,000.00	997.47	989.82	988.09	2.14	2.17	8.69	67.49	28.09	111.17	106.99	4.18	26.598		
1,100.00	1,095.62	1,086.46	1,084.13	2.49	2.44	8.43	74.45	36.32	136.84	132.18	4.66	29.387		
1,200.00	1,193.06	1,182.22	1,179.29	2.89	2.71	7.75	81.35	44.47	165.58	160.44	5.15	32.180		
1,300.00	1,289.64	1,276.98	1,273.46	3.36	2.98	6.88	88.18	52.54	197.39	191.75	5.64	34.968		
1,393.00	1,378.61	1,364.11	1,360.05	3.86	3.24	6.00	94.46	59.96	229.74	223.62	6.12	37.561		
1,400.00	1,385.27	1,370.62	1,366.52	3.90	3.26	5.93	94.93	60.51	232.27	226.12	6.15	37.743		
1,500.00	1,480.45	1,463.76	1,459.08	4.47	3.53	5.11	101.64	68.44	268.51	261.81	6.70	40.088		
1,600.00	1,575.63	1,556.89	1,551.63	5.06	3.80	4.49	108.35	76.37	304.79	297.54	7.25	42.065		
1,700.00	1,670.81	1,650.03	1,644.18	5.66	4.08	4.00	115.06	84.30	341.10	333.30	7.80	43.724		
1,800.00	1,765.99	1,743.16	1,736.74	6.26	4.35	3.60	121.77	92.23	377.43	369.06	8.36	45.137		
1,900.00	1,861.18	1,836.30	1,829.29	6.88	4.63	3.27	128.48	100.16	413.77	404.84	8.93	46.353		
2,000.00	1,956.36	1,929.43	1,921.85	7.49	4.91	3.00	135.19	108.09	450.12	440.63	9.49	47.408		
2,100.00	2,051.54	2,022.57	2,014.40	8.11	5.19	2.77	141.90	116.02	486.49	476.42	10.07	48.332		
2,200.00	2,146.72	2,115.70	2,106.95	8.73	5.47	2.57	148.61	123.95	522.86	512.22	10.64	49.146		
2,300.00	2,241.90	2,208.84	2,199.51	9.35	5.75	2.39	155.33	131.88	559.23	548.02	11.21	49.869		
2,400.00	2,337.08	2,301.97	2,292.06	9.98	6.03	2.24	162.04	139.81	595.61	583.82	11.79	50.515		
2,500.00	2,432.26	2,395.11	2,384.61	10.60	6.31	2.10	168.75	147.74	632.00	619.63	12.37	51.094		
2,600.00	2,527.44	2,488.24	2,477.17	11.23	6.59	1.98	175.46	155.67	668.38	655.43	12.95	51.617		
2,700.00	2,622.62	2,581.38	2,569.72	11.86	6.87	1.87	182.17	163.60	704.77	691.24	13.53	52.091		
2,800.00	2,717.80	2,674.51	2,662.27	12.49	7.15	1.78	188.88	171.53	741.16	727.05	14.11	52.522		
2,900.00	2,812.98	2,767.65	2,754.83	13.11	7.43	1.69	195.59	179.46	777.56	762.86	14.69	52.917		
3,000.00	2,908.17	2,860.78	2,847.38	13.74	7.71	1.61	202.30	187.39	813.95	798.68	15.28	53.278		
3,100.00	3,003.35	2,953.92	2,939.94	14.37	7.99	1.53	209.02	195.32	850.35	834.49	15.86	53.611		
3,200.00	3,098.53	3,047.05	3,032.49	15.01	8.27	1.47	215.73	203.25	886.75	870.30	16.45	53.918		
3,300.00	3,193.71	3,140.19	3,125.04	15.64	8.56	1.40	222.44	211.18	923.15	906.12	17.03	54.202		
3,400.00	3,288.89	3,233.32	3,217.60	16.27	8.84	1.35	229.15	219.11	959.55	941.93	17.62	54.466		
3,500.00	3,384.07	3,326.46	3,310.15	16.90	9.12	1.29	235.86	227.04	995.95	977.75	18.20	54.711		
3,600.00	3,479.25	3,419.59	3,402.70	17.53	9.40	1.24	242.57	234.97	1,032.35	1,013.56	18.79	54.940		
3,700.00	3,574.43	3,512.73	3,495.26	18.16	9.68	1.20	249.28	242.90	1,068.76	1,049.38	19.38	55.153		
3,749.34	3,621.39	3,558.68	3,540.92	18.48	9.82	1.18	252.59	246.81	1,086.72	1,067.05	19.67	55.254		
3,800.00	3,669.75	3,606.01	3,587.96	18.74	9.97	1.16	256.00	250.84	1,104.76	1,084.77	20.00	55.252		
3,900.00	3,765.94	3,700.32	3,681.68	19.16	10.25	1.17	262.80	258.87	1,138.02	1,117.42	20.60	55.239		
4,000.00	3,863.03	3,795.67	3,776.43	19.53	10.54	1.23	269.67	266.99	1,168.12	1,146.93	21.19	55.133		
4,100.00	3,960.90	3,891.95	3,872.11	19.87	10.83	1.34	276.61	275.19	1,195.02	1,173.27	21.75	54.947		
4,200.00	4,059.42	3,989.05	3,968.60	20.17	11.13	1.50	283.60	283.45	1,218.70	1,196.41	22.28	54.690		
4,300.00	4,158.48	4,086.84	4,065.79	20.42	11.43	1.69	290.65	291.78	1,239.13	1,216.34	22.79	54.371		
4,400.00	4,257.95	4,185.21	4,163.55	20.63	11.72	1.93	297.74	300.16	1,256.31	1,233.04	23.27	53.996		
4,500.00	4,357.72	4,319.09	4,296.82	20.80	12.06	2.26	305.85	309.74	1,269.08	1,245.33	23.75	53.437		
4,600.00	4,457.66	4,461.80	4,439.36	20.92	12.32	2.44	310.10	314.76	1,275.27	1,251.15	24.12	52.870		
4,642.34	4,500.00	4,522.44	4,500.00	20.97	12.41	2.45	310.52	315.25	1,275.88	1,244.30	31.58	40.407		
4,700.00	4,557.66	4,580.10	4,557.66	21.02	12.50	2.45	310.52	315.25	1,275.88	1,244.14	31.73	40.208		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,800.00	4,657.66	4,680.10	4,657.66	21.11	12.67	2.45	310.52	315.25	1,275.88	1,243.87	32.00	39.865		
4,900.00	4,757.66	4,780.10	4,757.66	21.19	12.85	2.45	310.52	315.25	1,275.88	1,243.59	32.28	39.521		
5,000.00	4,857.66	4,880.10	4,857.66	21.28	13.03	2.45	310.52	315.25	1,275.88	1,243.31	32.57	39.178		
5,100.00	4,957.66	4,980.10	4,957.66	21.37	13.20	2.45	310.52	315.25	1,275.88	1,243.02	32.85	38.838		
5,200.00	5,057.66	5,080.10	5,057.66	21.47	13.38	2.45	310.52	315.25	1,275.88	1,242.74	33.14	38.500		
5,300.00	5,157.66	5,180.10	5,157.66	21.56	13.56	2.45	310.52	315.25	1,275.88	1,242.45	33.43	38.164		
5,400.00	5,257.66	5,280.10	5,257.66	21.66	13.74	2.45	310.52	315.25	1,275.88	1,242.15	33.73	37.831		
5,500.00	5,357.66	5,380.10	5,357.66	21.76	13.93	2.45	310.52	315.25	1,275.88	1,241.85	34.02	37.501		
5,600.00	5,457.66	5,480.10	5,457.66	21.86	14.11	2.45	310.52	315.25	1,275.88	1,241.55	34.32	37.173		
5,700.00	5,557.66	5,580.10	5,557.66	21.96	14.30	2.45	310.52	315.25	1,275.88	1,241.25	34.63	36.848		
5,800.00	5,657.66	5,680.10	5,657.66	22.07	14.48	2.45	310.52	315.25	1,275.88	1,240.94	34.93	36.525		
5,900.00	5,757.66	5,780.10	5,757.66	22.17	14.67	2.45	310.52	315.25	1,275.88	1,240.64	35.24	36.206		
5,991.88	5,849.54	5,871.98	5,849.54	22.27	14.84	2.45	310.52	315.25	1,275.88	1,240.35	35.52	35.915		
6,000.00	5,857.66	5,881.88	5,859.44	22.28	14.86	2.45	310.51	315.15	1,275.87	1,246.88	28.99	44.014		
6,025.00	5,882.64	5,912.35	5,889.86	22.30	14.90	2.43	310.47	313.54	1,275.79	1,246.73	29.07	43.894		
6,050.00	5,907.52	5,942.78	5,920.08	22.32	14.93	2.38	310.39	310.01	1,275.62	1,246.50	29.12	43.799		
6,075.00	5,932.24	5,973.15	5,949.96	22.34	14.95	2.30	310.25	304.57	1,275.36	1,246.19	29.17	43.726		
6,100.00	5,956.74	6,003.44	5,979.34	22.35	14.96	2.20	310.08	297.27	1,275.01	1,245.81	29.19	43.675		
6,125.00	5,980.94	6,033.61	6,008.10	22.36	14.96	2.07	309.85	288.16	1,274.56	1,245.36	29.21	43.641		
6,150.00	6,004.79	6,063.64	6,036.10	22.36	14.95	1.92	309.59	277.31	1,274.03	1,244.82	29.21	43.622		
6,175.00	6,028.21	6,093.52	6,063.22	22.36	14.94	1.75	309.28	264.78	1,273.42	1,244.22	29.20	43.611		
6,200.00	6,051.13	6,123.23	6,089.35	22.36	14.92	1.56	308.93	250.67	1,272.72	1,243.53	29.19	43.604		
6,225.00	6,073.51	6,152.74	6,114.40	22.35	14.90	1.36	308.55	235.08	1,271.94	1,242.77	29.18	43.594		
6,250.00	6,095.27	6,182.03	6,138.26	22.34	14.88	1.15	308.14	218.10	1,271.09	1,241.92	29.17	43.574		
6,275.00	6,116.36	6,211.10	6,160.86	22.33	14.86	0.93	307.69	199.83	1,270.18	1,241.00	29.17	43.537		
6,300.00	6,136.72	6,239.93	6,182.14	22.32	14.84	0.71	307.21	180.39	1,269.19	1,240.00	29.19	43.474		
6,325.00	6,156.29	6,268.51	6,202.04	22.31	14.83	0.49	306.71	159.88	1,268.14	1,238.91	29.23	43.379		
6,350.00	6,175.02	6,296.84	6,220.51	22.29	14.82	0.27	306.19	138.43	1,267.04	1,237.74	29.30	43.242		
6,375.00	6,192.85	6,324.89	6,237.52	22.27	14.83	0.05	305.64	116.13	1,265.88	1,236.48	29.40	43.058		
6,400.00	6,209.75	6,352.68	6,253.06	22.26	14.85	-0.16	305.08	93.09	1,264.67	1,235.14	29.54	42.816		
6,425.00	6,225.66	6,380.20	6,267.09	22.24	14.90	-0.36	304.50	69.43	1,263.42	1,233.71	29.72	42.515		
6,450.00	6,240.54	6,407.44	6,279.61	22.23	14.99	-0.55	303.91	45.25	1,262.14	1,232.20	29.94	42.152		
6,475.00	6,254.34	6,434.41	6,290.64	22.21	15.12	-0.72	303.30	20.65	1,260.82	1,230.60	30.22	41.728		
6,500.00	6,267.04	6,461.11	6,300.16	22.19	15.30	-0.87	302.69	-4.28	1,259.47	1,228.93	30.54	41.242		
6,525.00	6,278.59	6,487.53	6,308.20	22.18	15.52	-1.01	302.08	-29.44	1,258.09	1,227.18	30.91	40.699		
6,550.00	6,288.97	6,513.69	6,314.78	22.17	15.77	-1.13	301.46	-54.74	1,256.70	1,225.36	31.34	40.102		
6,575.00	6,298.14	6,539.59	6,319.91	22.15	16.05	-1.23	300.84	-80.11	1,255.29	1,223.47	31.81	39.459		
6,600.00	6,306.08	6,565.22	6,323.64	22.15	16.35	-1.31	300.22	-105.47	1,253.86	1,221.53	32.33	38.779		
6,625.00	6,312.77	6,590.61	6,325.97	22.14	16.68	-1.36	299.60	-130.73	1,252.44	1,219.54	32.90	38.066		
6,650.00	6,318.19	6,615.75	6,326.96	22.14	17.02	-1.40	298.98	-155.84	1,251.01	1,217.50	33.51	37.333		
6,675.00	6,322.33	6,640.47	6,327.00	22.14	17.39	-1.40	298.38	-180.56	1,249.58	1,215.41	34.17	36.568		
6,700.00	6,325.17	6,665.27	6,327.00	22.16	17.78	-1.40	297.77	-205.35	1,248.16	1,213.29	34.87	35.796		
6,725.00	6,326.71	6,690.18	6,327.00	22.18	18.16	-1.40	297.16	-230.25	1,246.73	1,211.14	35.59	35.031		
6,741.88	6,327.00	6,707.02	6,327.00	22.20	18.44	-1.40	296.75	-247.09	1,245.77	1,209.67	36.11	34.504		
6,800.00	6,327.00	6,765.05	6,327.00	22.32	19.47	-1.40	295.33	-305.10	1,242.46	1,204.44	38.02	32.680		
6,900.00	6,327.00	6,864.89	6,327.00	22.85	21.39	-1.40	292.89	-404.91	1,236.76	1,195.09	41.67	29.680		
7,000.00	6,327.00	6,964.73	6,327.00	24.01	23.48	-1.40	290.45	-504.72	1,231.06	1,185.34	45.72	26.927		
7,100.00	6,327.00	7,064.56	6,327.00	25.74	25.71	-1.40	288.00	-604.53	1,225.36	1,175.29	50.07	24.473		
7,200.00	6,327.00	7,164.40	6,327.00	27.78	28.03	-1.40	285.56	-704.33	1,219.66	1,165.01	54.65	22.317		
7,300.00	6,327.00	7,264.24	6,327.00	30.01	30.44	-1.40	283.12	-804.14	1,213.96	1,154.55	59.41	20.433		
7,400.00	6,327.00	7,364.08	6,327.00	32.34	32.91	-1.40	280.67	-903.95	1,208.26	1,143.95	64.31	18.789		
7,500.00	6,327.00	7,463.91	6,327.00	34.76	35.42	-1.40	278.23	-1,003.76	1,202.56	1,133.25	69.31	17.350		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
7,600.00	6,327.00	7,563.75	6,327.00	37.24	37.98	-1.40	275.79	-1,103.56	1,196.86	1,122.46	74.40	16.086		
7,700.00	6,327.00	7,663.59	6,327.00	39.76	40.56	-1.40	273.35	-1,203.37	1,191.16	1,111.60	79.56	14.971		
7,800.00	6,327.00	7,763.43	6,327.00	42.33	43.18	-1.40	270.90	-1,303.18	1,185.46	1,100.68	84.78	13.983		
7,900.00	6,327.00	7,863.26	6,327.00	44.92	45.81	-1.40	268.46	-1,402.99	1,179.76	1,089.72	90.04	13.102		
8,000.00	6,327.00	7,963.10	6,327.00	47.54	48.47	-1.40	266.02	-1,502.79	1,174.06	1,078.71	95.35	12.314		
8,100.00	6,327.00	8,062.94	6,327.00	50.18	51.13	-1.40	263.58	-1,602.60	1,168.36	1,067.68	100.68	11.604		
8,200.00	6,327.00	8,162.78	6,327.00	52.84	53.81	-1.40	261.13	-1,702.41	1,162.66	1,056.61	106.05	10.964		
8,300.00	6,327.00	8,262.61	6,327.00	55.51	56.51	-1.40	258.69	-1,802.22	1,156.96	1,045.53	111.44	10.382		
8,400.00	6,327.00	8,362.45	6,327.00	58.19	59.21	-1.40	256.25	-1,902.02	1,151.26	1,034.42	116.85	9.853		
8,500.00	6,327.00	8,462.29	6,327.00	60.89	61.92	-1.40	253.80	-2,001.83	1,145.56	1,023.29	122.27	9.369		
8,600.00	6,327.00	8,562.13	6,327.00	63.60	64.64	-1.40	251.36	-2,101.64	1,139.86	1,012.15	127.71	8.925		
8,700.00	6,327.00	8,661.96	6,327.00	66.31	67.36	-1.40	248.92	-2,201.45	1,134.16	1,000.99	133.17	8.517		
8,800.00	6,327.00	8,761.80	6,327.00	69.04	70.09	-1.40	246.48	-2,301.25	1,128.46	989.82	138.64	8.140		
8,900.00	6,327.00	8,861.64	6,327.00	71.77	72.83	-1.40	244.03	-2,401.06	1,122.76	978.65	144.12	7.791		
9,000.00	6,327.00	8,961.48	6,327.00	74.51	75.57	-1.40	241.59	-2,500.87	1,117.06	967.46	149.61	7.467		
9,100.00	6,327.00	9,061.31	6,327.00	77.25	78.31	-1.40	239.15	-2,600.68	1,111.36	956.26	155.10	7.165		
9,200.00	6,327.00	9,161.15	6,327.00	80.00	81.06	-1.40	236.70	-2,700.48	1,105.66	945.06	160.61	6.884		
9,300.00	6,327.00	9,260.99	6,327.00	82.75	83.81	-1.40	234.26	-2,800.29	1,099.96	933.85	166.12	6.622		
9,400.00	6,327.00	9,360.83	6,327.00	85.50	86.56	-1.40	231.82	-2,900.10	1,094.27	922.63	171.64	6.375		
9,500.00	6,327.00	9,460.66	6,327.00	88.26	89.32	-1.40	229.38	-2,999.91	1,088.57	911.41	177.16	6.145		
9,600.00	6,327.00	9,560.50	6,327.00	91.02	92.08	-1.40	226.93	-3,099.71	1,082.87	900.18	182.69	5.927		
9,700.00	6,327.00	9,660.34	6,327.00	93.79	94.84	-1.40	224.49	-3,199.52	1,077.17	888.95	188.22	5.723		
9,800.00	6,327.00	9,760.18	6,327.00	96.56	97.60	-1.40	222.05	-3,299.33	1,071.47	877.71	193.76	5.530		
9,900.00	6,327.00	9,860.01	6,327.00	99.33	100.37	-1.40	219.60	-3,399.14	1,065.77	866.47	199.30	5.348		
10,000.00	6,327.00	9,959.85	6,327.00	102.10	103.13	-1.40	217.16	-3,498.94	1,060.07	855.22	204.84	5.175		
10,100.00	6,327.00	10,059.69	6,327.00	104.88	105.90	-1.40	214.72	-3,598.75	1,054.37	843.98	210.39	5.011		
10,199.66	6,327.00	10,159.19	6,327.00	107.64	108.66	-1.40	212.28	-3,698.22	1,048.69	832.76	215.92	4.857 SF		

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.86	0.00	21.86					
100.00	100.00	100.00	100.00	0.09	0.09	0.00	21.86	0.00	21.86	21.67	0.18	118.592		
200.00	200.00	200.00	200.00	0.32	0.32	0.00	21.86	0.00	21.86	21.22	0.63	34.484		
300.00	300.00	300.00	300.00	0.54	0.54	0.00	21.86	0.00	21.86	20.77	1.08	20.175		
400.00	400.00	400.00	400.00	0.77	0.77	0.00	21.86	0.00	21.86	20.32	1.53	14.259		
500.00	500.00	500.00	500.00	0.99	0.99	0.00	21.86	0.00	21.86	19.88	1.98	11.026 CC, ES		
600.00	599.98	600.50	600.48	1.19	1.20	2.19	20.68	1.31	22.39	20.00	2.39	9.381		
700.00	699.84	700.95	700.78	1.38	1.39	8.14	17.15	5.24	24.14	21.38	2.77	8.725		
800.00	799.45	801.27	800.72	1.59	1.62	16.19	11.27	11.77	27.54	24.36	3.19	8.640		
900.00	898.70	901.05	899.94	1.84	1.86	21.56	4.24	19.58	33.52	29.87	3.65	9.172		
1,000.00	997.47	1,000.65	998.98	2.14	2.13	22.22	-2.77	27.38	42.42	38.26	4.15	10.209		
1,100.00	1,095.62	1,099.95	1,097.73	2.49	2.40	20.39	-9.77	35.16	54.09	49.42	4.67	11.574		
1,200.00	1,193.06	1,198.83	1,196.06	2.89	2.67	17.56	-16.74	42.91	68.68	63.48	5.20	13.206		
1,300.00	1,289.64	1,297.17	1,293.85	3.36	2.95	14.54	-23.66	50.61	86.33	80.61	5.73	15.069		
1,393.00	1,378.61	1,388.03	1,384.21	3.86	3.21	11.88	-30.07	57.73	105.62	99.40	6.22	16.979		
1,400.00	1,385.27	1,394.85	1,390.99	3.90	3.23	11.69	-30.55	58.26	107.17	100.92	6.26	17.125		
1,500.00	1,480.45	1,492.21	1,487.81	4.47	3.52	9.48	-37.41	65.89	129.53	122.72	6.81	19.021		
1,600.00	1,575.63	1,589.57	1,584.63	5.06	3.80	7.93	-44.27	73.51	152.01	144.65	7.37	20.631		
1,700.00	1,670.81	1,686.94	1,681.45	5.66	4.09	6.77	-51.13	81.14	174.58	166.65	7.93	22.006		
1,800.00	1,765.99	1,784.30	1,778.28	6.26	4.38	5.88	-57.98	88.77	197.21	188.71	8.50	23.191		
1,900.00	1,861.18	1,881.67	1,875.10	6.88	4.67	5.18	-64.84	96.39	219.87	210.80	9.08	24.221		
2,000.00	1,956.36	1,979.03	1,971.92	7.49	4.96	4.60	-71.70	104.02	242.57	232.91	9.66	25.123		
2,100.00	2,051.54	2,076.39	2,068.74	8.11	5.25	4.13	-78.56	111.65	265.28	255.04	10.24	25.918		
2,200.00	2,146.72	2,173.76	2,165.57	8.73	5.54	3.73	-85.42	119.27	288.00	277.19	10.82	26.624		
2,300.00	2,241.90	2,271.12	2,262.39	9.35	5.83	3.38	-92.28	126.90	310.74	299.34	11.40	27.255		
2,400.00	2,337.08	2,368.49	2,359.21	9.98	6.12	3.09	-99.14	134.53	333.49	321.51	11.99	27.821		
2,500.00	2,432.26	2,465.85	2,456.03	10.60	6.42	2.83	-106.00	142.15	356.25	343.67	12.57	28.332		
2,600.00	2,527.44	2,563.21	2,552.85	11.23	6.71	2.60	-112.86	149.78	379.01	365.85	13.16	28.795		
2,700.00	2,622.62	2,660.58	2,649.68	11.86	7.00	2.40	-119.72	157.40	401.78	388.03	13.75	29.216		
2,800.00	2,717.80	2,757.94	2,746.50	12.49	7.30	2.22	-126.58	165.03	424.55	410.21	14.34	29.602		
2,900.00	2,812.98	2,855.31	2,843.32	13.11	7.59	2.06	-133.44	172.66	447.33	432.40	14.93	29.955		
3,000.00	2,908.17	2,952.67	2,940.14	13.74	7.88	1.91	-140.30	180.28	470.11	454.58	15.52	30.281		
3,100.00	3,003.35	3,050.03	3,036.96	14.37	8.18	1.78	-147.16	187.91	492.89	476.77	16.12	30.582		
3,200.00	3,098.53	3,147.40	3,133.79	15.01	8.47	1.66	-154.02	195.54	515.68	498.97	16.71	30.860		
3,300.00	3,193.71	3,244.76	3,230.61	15.64	8.77	1.55	-160.88	203.16	538.46	521.16	17.30	31.118		
3,400.00	3,288.89	3,342.12	3,327.43	16.27	9.06	1.45	-167.74	210.79	561.25	543.35	17.90	31.359		
3,500.00	3,384.07	3,439.49	3,424.25	16.90	9.36	1.36	-174.60	218.42	584.04	565.55	18.49	31.584		
3,600.00	3,479.25	3,536.85	3,521.07	17.53	9.65	1.27	-181.46	226.04	606.83	587.75	19.09	31.793		
3,700.00	3,574.43	3,634.22	3,617.90	18.16	9.95	1.19	-188.32	233.67	629.63	609.94	19.68	31.990		
3,749.34	3,621.39	3,682.25	3,665.67	18.48	10.09	1.15	-191.70	237.43	640.87	620.90	19.98	32.083		
3,800.00	3,669.75	3,731.68	3,714.81	18.74	10.24	1.13	-195.18	241.30	652.00	631.71	20.29	32.130		
3,900.00	3,765.94	3,829.75	3,812.34	19.16	10.54	1.14	-202.09	248.98	671.50	650.62	20.88	32.155		
4,000.00	3,863.03	3,928.42	3,910.46	19.53	10.84	1.24	-209.05	256.71	687.71	666.26	21.46	32.049		
4,100.00	3,960.90	4,027.55	4,009.04	19.87	11.14	1.41	-216.03	264.48	700.62	678.60	22.02	31.824		
4,200.00	4,059.42	4,127.04	4,107.98	20.17	11.44	1.66	-223.04	272.27	710.21	687.66	22.55	31.491		
4,300.00	4,158.48	4,225.50	4,205.89	20.42	11.74	1.98	-229.97	279.98	716.50	693.43	23.06	31.068		
4,400.00	4,257.95	4,311.49	4,291.54	20.63	11.94	2.20	-235.01	285.58	720.60	697.14	23.46	30.720		
4,500.00	4,357.72	4,400.00	4,379.91	20.80	12.11	2.35	-238.41	289.36	723.32	699.55	23.77	30.428		
4,600.00	4,457.66	4,483.67	4,463.54	20.92	12.24	2.42	-239.94	291.06	724.62	700.61	24.01	30.183		
4,642.34	4,500.00	4,520.13	4,500.00	20.97	12.30	2.42	-240.09	291.23	724.75	693.15	31.59	22.940		
4,700.00	4,557.66	4,577.79	4,557.66	21.02	12.39	2.42	-240.09	291.23	724.75	693.00	31.75	22.827		
4,800.00	4,657.66	4,677.79	4,657.66	21.11	12.54	2.42	-240.09	291.23	724.75	692.74	32.00	22.647		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,900.00	4,757.66	4,777.79	4,757.66	21.19	12.70	2.42	-240.09	291.23	724.75	692.49	32.26	22.469		
5,000.00	4,857.66	4,877.79	4,857.66	21.28	12.85	2.42	-240.09	291.23	724.75	692.23	32.51	22.290		
5,100.00	4,957.66	4,977.79	4,957.66	21.37	13.01	2.42	-240.09	291.23	724.75	691.97	32.78	22.112		
5,200.00	5,057.66	5,077.79	5,057.66	21.47	13.17	2.42	-240.09	291.23	724.75	691.70	33.04	21.934		
5,300.00	5,157.66	5,177.79	5,157.66	21.56	13.33	2.42	-240.09	291.23	724.75	691.43	33.31	21.757		
5,400.00	5,257.66	5,277.79	5,257.66	21.66	13.49	2.42	-240.09	291.23	724.75	691.16	33.58	21.580		
5,500.00	5,357.66	5,377.79	5,357.66	21.76	13.66	2.42	-240.09	291.23	724.75	690.88	33.86	21.404		
5,600.00	5,457.66	5,477.79	5,457.66	21.86	13.83	2.42	-240.09	291.23	724.75	690.61	34.14	21.229		
5,700.00	5,557.66	5,577.79	5,557.66	21.96	13.99	2.42	-240.09	291.23	724.75	690.32	34.42	21.054		
5,800.00	5,657.66	5,677.79	5,657.66	22.07	14.16	2.42	-240.09	291.23	724.75	690.04	34.71	20.880		
5,900.00	5,757.66	5,777.79	5,757.66	22.17	14.34	2.42	-240.09	291.23	724.75	689.75	35.00	20.707		
5,991.88	5,849.54	5,869.67	5,849.54	22.27	14.50	2.42	-240.09	291.23	724.75	689.48	35.27	20.550		
6,000.00	5,857.66	5,878.71	5,858.58	22.28	14.51	2.42	-240.09	291.14	724.74	696.15	28.59	25.351		
6,025.00	5,882.64	5,906.52	5,886.35	22.30	14.55	2.40	-240.13	289.81	724.67	696.01	28.66	25.283		
6,050.00	5,907.52	5,934.32	5,913.99	22.32	14.58	2.36	-240.20	286.86	724.52	695.80	28.72	25.227		
6,075.00	5,932.24	5,962.09	5,941.38	22.34	14.60	2.29	-240.31	282.32	724.28	695.52	28.76	25.183		
6,100.00	5,956.74	5,989.82	5,968.43	22.35	14.62	2.20	-240.46	276.20	723.96	695.17	28.79	25.150		
6,125.00	5,980.94	6,017.51	5,995.03	22.36	14.63	2.09	-240.65	268.53	723.56	694.76	28.80	25.125		
6,150.00	6,004.79	6,045.15	6,021.09	22.36	14.63	1.96	-240.87	259.35	723.08	694.28	28.80	25.107		
6,175.00	6,028.21	6,072.72	6,046.52	22.36	14.63	1.81	-241.13	248.72	722.52	693.73	28.79	25.094		
6,200.00	6,051.13	6,100.21	6,071.23	22.36	14.63	1.64	-241.43	236.66	721.88	693.11	28.78	25.084		
6,225.00	6,073.51	6,127.62	6,095.12	22.35	14.63	1.46	-241.76	223.25	721.18	692.41	28.76	25.073		
6,250.00	6,095.27	6,154.94	6,118.14	22.34	14.62	1.27	-242.12	208.54	720.40	691.65	28.75	25.057		
6,275.00	6,116.36	6,182.15	6,140.19	22.33	14.61	1.07	-242.51	192.60	719.55	690.81	28.74	25.032		
6,300.00	6,136.72	6,209.27	6,161.22	22.32	14.60	0.87	-242.92	175.50	718.64	689.89	28.75	24.996		
6,325.00	6,156.29	6,236.27	6,181.16	22.31	14.60	0.66	-243.37	157.31	717.67	688.89	28.77	24.942		
6,350.00	6,175.02	6,263.15	6,199.97	22.29	14.59	0.45	-243.84	138.11	716.64	687.82	28.82	24.867		
6,375.00	6,192.85	6,289.91	6,217.58	22.27	14.59	0.24	-244.33	117.98	715.55	686.66	28.89	24.767		
6,400.00	6,209.75	6,316.54	6,233.97	22.26	14.59	0.03	-244.85	97.00	714.41	685.42	29.00	24.637		
6,425.00	6,225.66	6,343.04	6,249.09	22.24	14.60	-0.17	-245.38	75.24	713.23	684.09	29.14	24.474		
6,450.00	6,240.54	6,369.41	6,262.90	22.23	14.63	-0.36	-245.93	52.80	712.01	682.68	29.33	24.276		
6,475.00	6,254.34	6,395.64	6,275.40	22.21	14.67	-0.54	-246.49	29.75	710.74	681.18	29.56	24.041		
6,500.00	6,267.04	6,421.73	6,286.56	22.19	14.74	-0.71	-247.07	6.17	709.44	679.60	29.85	23.770		
6,525.00	6,278.59	6,447.68	6,296.36	22.18	14.86	-0.86	-247.66	-17.85	708.11	677.93	30.18	23.462		
6,550.00	6,288.97	6,473.50	6,304.81	22.17	15.03	-1.00	-248.25	-42.24	706.76	676.19	30.57	23.120		
6,575.00	6,298.14	6,499.18	6,311.88	22.15	15.25	-1.11	-248.86	-66.91	705.38	674.37	31.01	22.748		
6,600.00	6,306.08	6,524.71	6,317.59	22.15	15.52	-1.21	-249.47	-91.79	703.98	672.48	31.50	22.348		
6,625.00	6,312.77	6,550.11	6,321.95	22.14	15.82	-1.29	-250.08	-116.80	702.57	670.53	32.04	21.927		
6,650.00	6,318.19	6,575.37	6,324.95	22.14	16.14	-1.35	-250.69	-141.87	701.15	668.52	32.63	21.488		
6,675.00	6,322.33	6,600.50	6,326.62	22.14	16.49	-1.39	-251.31	-166.93	699.73	666.47	33.26	21.038		
6,700.00	6,325.17	6,625.47	6,327.00	22.16	16.86	-1.40	-251.92	-191.89	698.30	664.37	33.94	20.577		
6,725.00	6,326.71	6,650.38	6,327.00	22.18	17.27	-1.40	-252.53	-216.80	696.88	662.21	34.67	20.103		
6,741.88	6,327.00	6,667.23	6,327.00	22.20	17.54	-1.40	-252.94	-233.64	695.92	660.74	35.17	19.786		
6,800.00	6,327.00	6,725.26	6,327.00	22.32	18.54	-1.40	-254.36	-291.65	692.60	655.58	37.03	18.705		
6,900.00	6,327.00	6,825.10	6,327.00	22.85	20.44	-1.40	-256.80	-391.46	686.91	646.28	40.63	16.906		
7,000.00	6,327.00	6,924.93	6,327.00	24.01	22.54	-1.40	-259.24	-491.26	681.21	636.56	44.65	15.257		
7,100.00	6,327.00	7,024.77	6,327.00	25.74	24.76	-1.40	-261.69	-591.07	675.51	626.53	48.98	13.792		
7,200.00	6,327.00	7,124.61	6,327.00	27.78	27.10	-1.40	-264.13	-690.88	669.81	616.26	53.55	12.508		
7,300.00	6,327.00	7,224.44	6,327.00	30.01	29.51	-1.40	-266.57	-790.69	664.11	605.81	58.30	11.391		
7,400.00	6,327.00	7,324.28	6,327.00	32.34	31.99	-1.40	-269.01	-890.49	658.41	595.21	63.19	10.419		
7,500.00	6,327.00	7,424.12	6,327.00	34.76	34.51	-1.40	-271.46	-990.30	652.71	584.51	68.19	9.571		
7,600.00	6,327.00	7,523.96	6,327.00	37.24	37.07	-1.40	-273.90	-1,090.11	647.01	573.72	73.28	8.829		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design Sec.3-T4N-R63W - 70 Ranch 4-63-3-48H - Wellbore #1 - Design #1												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,700.00	6,327.00	7,623.79	6,327.00	39.76	39.67	-1.40	-276.34	-1,189.92	641.31	562.86	78.44	8.175	
7,800.00	6,327.00	7,723.63	6,327.00	42.33	42.29	-1.40	-278.79	-1,289.72	635.61	551.95	83.66	7.597	
7,900.00	6,327.00	7,823.47	6,327.00	44.92	44.93	-1.40	-281.23	-1,389.53	629.91	540.98	88.93	7.083	
8,000.00	6,327.00	7,923.31	6,327.00	47.54	47.59	-1.40	-283.67	-1,489.34	624.21	529.98	94.23	6.624	
8,100.00	6,327.00	8,023.14	6,327.00	50.18	50.26	-1.40	-286.11	-1,589.15	618.51	518.94	99.57	6.212	
8,200.00	6,327.00	8,122.98	6,327.00	52.84	52.95	-1.40	-288.56	-1,688.95	612.81	507.87	104.94	5.840	
8,300.00	6,327.00	8,222.82	6,327.00	55.51	55.64	-1.40	-291.00	-1,788.76	607.11	496.78	110.33	5.503	
8,400.00	6,327.00	8,322.66	6,327.00	58.19	58.35	-1.40	-293.44	-1,888.57	601.41	485.67	115.74	5.196	
8,500.00	6,327.00	8,422.49	6,327.00	60.89	61.07	-1.40	-295.88	-1,988.38	595.71	474.54	121.17	4.916	
8,600.00	6,327.00	8,522.33	6,327.00	63.60	63.79	-1.40	-298.33	-2,088.18	590.01	463.40	126.61	4.660	
8,700.00	6,327.00	8,622.17	6,327.00	66.31	66.52	-1.40	-300.77	-2,187.99	584.31	452.24	132.07	4.424	
8,800.00	6,327.00	8,722.01	6,327.00	69.04	69.25	-1.40	-303.21	-2,287.80	578.61	441.07	137.54	4.207	
8,900.00	6,327.00	8,821.84	6,327.00	71.77	71.99	-1.40	-305.66	-2,387.61	572.91	429.89	143.02	4.006	
9,000.00	6,327.00	8,921.68	6,327.00	74.51	74.73	-1.40	-308.10	-2,487.41	567.21	418.70	148.51	3.819	
9,100.00	6,327.00	9,021.52	6,327.00	77.25	77.48	-1.40	-310.54	-2,587.22	561.51	407.50	154.01	3.646	
9,200.00	6,327.00	9,121.36	6,327.00	80.00	80.23	-1.40	-312.98	-2,687.03	555.81	396.30	159.51	3.484	
9,300.00	6,327.00	9,221.19	6,327.00	82.75	82.98	-1.40	-315.43	-2,786.84	550.11	385.09	165.03	3.333	
9,400.00	6,327.00	9,321.03	6,327.00	85.50	85.74	-1.40	-317.87	-2,886.64	544.41	373.87	170.55	3.192	
9,500.00	6,327.00	9,420.87	6,327.00	88.26	88.50	-1.40	-320.31	-2,986.45	538.71	362.64	176.07	3.060	
9,600.00	6,327.00	9,520.71	6,327.00	91.02	91.26	-1.40	-322.75	-3,086.26	533.01	351.41	181.60	2.935	
9,700.00	6,327.00	9,620.54	6,327.00	93.79	94.02	-1.40	-325.20	-3,186.07	527.31	340.18	187.13	2.818	
9,800.00	6,327.00	9,720.38	6,327.00	96.56	96.79	-1.40	-327.64	-3,285.88	521.61	328.94	192.67	2.707	
9,900.00	6,327.00	9,820.22	6,327.00	99.33	99.55	-1.40	-330.08	-3,385.68	515.92	317.70	198.21	2.603	
10,000.00	6,327.00	9,920.06	6,327.00	102.10	102.32	-1.40	-332.52	-3,485.49	510.22	306.46	203.76	2.504	
10,100.00	6,327.00	10,019.89	6,327.00	104.88	105.09	-1.40	-334.97	-3,585.30	504.52	295.21	209.31	2.410	
10,199.66	6,327.00	10,119.39	6,327.00	107.64	107.85	-1.40	-337.40	-3,684.77	498.84	283.99	214.84	2.322 SF	

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWVD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	9.00	0.00	0.00	0.01	-103.70	-932.29	-3,824.72	3,936.71					
100.00	100.00	109.00	100.00	0.09	0.12	-103.70	-932.29	-3,824.72	3,936.71	3,936.49	0.21	N/A		
200.00	200.00	209.00	200.00	0.32	0.24	-103.70	-932.29	-3,824.72	3,936.71	3,936.16	0.55	7,131.778		
300.00	300.00	309.00	300.00	0.54	0.35	-103.70	-932.29	-3,824.72	3,936.71	3,935.82	0.89	4,427.537		
400.00	400.00	409.00	400.00	0.77	0.46	-103.70	-932.29	-3,824.72	3,936.71	3,935.48	1.23	3,210.263		
500.00	500.00	509.00	500.00	0.99	0.57	-103.70	-932.29	-3,824.72	3,936.71	3,935.15	1.56	2,517.987		
600.00	599.98	608.98	599.98	1.19	0.68	-103.67	-932.29	-3,824.72	3,936.75	3,934.88	1.87	2,101.308		
700.00	699.84	708.84	699.84	1.38	0.80	-103.60	-932.29	-3,824.72	3,936.89	3,934.72	2.17	1,811.629		
800.00	799.45	808.45	799.45	1.59	0.91	-103.47	-932.29	-3,824.72	3,937.13	3,934.63	2.50	1,575.143		
900.00	898.70	907.70	898.70	1.84	1.02	-103.29	-932.29	-3,824.72	3,937.50	3,934.64	2.86	1,376.040		
1,000.00	997.47	1,006.47	997.47	2.14	1.13	-103.07	-932.29	-3,824.72	3,938.03	3,934.76	3.27	1,205.041		
1,100.00	1,095.62	1,104.62	1,095.62	2.49	1.24	-102.79	-932.29	-3,824.72	3,938.76	3,935.04	3.73	1,056.918		
1,200.00	1,193.06	1,202.06	1,193.06	2.89	1.35	-102.46	-932.29	-3,824.72	3,939.74	3,935.50	4.24	928.506		
1,300.00	1,289.64	1,298.64	1,289.64	3.36	1.46	-102.09	-932.29	-3,824.72	3,941.03	3,936.21	4.82	817.493		
1,393.00	1,378.61	1,387.61	1,378.61	3.86	1.56	-101.69	-932.29	-3,824.72	3,942.56	3,937.15	5.41	728.086		
1,400.00	1,385.27	1,394.27	1,385.27	3.90	1.57	-101.66	-932.29	-3,824.72	3,942.69	3,937.23	5.46	721.865		
1,500.00	1,480.45	1,489.45	1,480.45	4.47	1.67	-101.22	-932.29	-3,824.72	3,944.66	3,938.52	6.14	642.332		
1,600.00	1,575.63	1,584.63	1,575.63	5.06	1.78	-100.77	-932.29	-3,824.72	3,946.87	3,940.03	6.83	577.477		
1,700.00	1,670.81	1,679.81	1,670.81	5.66	1.89	-100.33	-932.29	-3,824.72	3,949.31	3,941.78	7.54	523.939		
1,800.00	1,765.99	1,774.99	1,765.99	6.26	1.99	-99.89	-932.29	-3,824.72	3,952.00	3,943.75	8.25	479.185		
1,900.00	1,861.18	1,870.18	1,861.18	6.88	2.10	-99.44	-932.29	-3,824.72	3,954.91	3,945.95	8.96	441.324		
2,000.00	1,956.36	1,965.36	1,956.36	7.49	2.21	-99.00	-932.29	-3,824.72	3,958.07	3,948.39	9.68	408.941		
2,100.00	2,051.54	2,060.54	2,051.54	8.11	2.32	-98.56	-932.29	-3,824.72	3,961.46	3,951.06	10.40	380.970		
2,200.00	2,146.72	2,155.72	2,146.72	8.73	2.42	-98.12	-932.29	-3,824.72	3,965.08	3,953.96	11.12	356.593		
2,300.00	2,241.90	2,250.90	2,241.90	9.35	2.53	-97.68	-932.29	-3,824.72	3,968.94	3,957.09	11.84	335.179		
2,400.00	2,337.08	2,346.08	2,337.08	9.98	2.64	-97.24	-932.29	-3,824.72	3,973.03	3,960.46	12.56	316.232		
2,500.00	2,432.26	2,441.26	2,432.26	10.60	2.74	-96.80	-932.29	-3,824.72	3,977.35	3,964.06	13.29	299.361		
2,600.00	2,527.44	2,536.44	2,527.44	11.23	2.85	-96.37	-932.29	-3,824.72	3,981.90	3,967.89	14.01	284.250		
2,700.00	2,622.62	2,631.62	2,622.62	11.86	2.96	-95.93	-932.29	-3,824.72	3,986.68	3,971.95	14.73	270.644		
2,800.00	2,717.80	2,726.80	2,717.80	12.49	3.06	-95.50	-932.29	-3,824.72	3,991.70	3,976.25	15.45	258.334		
2,900.00	2,812.98	2,821.98	2,812.98	13.11	3.17	-95.06	-932.29	-3,824.72	3,996.94	3,980.77	16.17	247.149		
3,000.00	2,908.17	2,917.17	2,908.17	13.74	3.28	-94.63	-932.29	-3,824.72	4,002.41	3,985.52	16.89	236.945		
3,100.00	3,003.35	3,012.35	3,003.35	14.37	3.39	-94.20	-932.29	-3,824.72	4,008.11	3,990.50	17.61	227.601		
3,200.00	3,098.53	3,107.53	3,098.53	15.01	3.49	-93.77	-932.29	-3,824.72	4,014.04	3,995.71	18.33	219.017		
3,300.00	3,193.71	3,202.71	3,193.71	15.64	3.60	-93.34	-932.29	-3,824.72	4,020.19	4,001.14	19.04	211.106		
3,400.00	3,288.89	3,297.89	3,288.89	16.27	3.71	-92.92	-932.29	-3,824.72	4,026.56	4,006.80	19.76	203.794		
3,500.00	3,384.07	3,393.07	3,384.07	16.90	3.81	-92.49	-932.29	-3,824.72	4,033.16	4,012.69	20.47	197.018		
3,600.00	3,479.25	3,488.25	3,479.25	17.53	3.92	-92.07	-932.29	-3,824.72	4,039.98	4,018.79	21.18	190.724		
3,700.00	3,574.43	3,583.43	3,574.43	18.16	4.03	-91.64	-932.29	-3,824.72	4,047.02	4,025.12	21.89	184.863		
3,749.34	3,621.39	3,630.39	3,621.39	18.48	4.08	-91.43	-932.29	-3,824.72	4,050.57	4,028.33	22.24	182.117		
3,800.00	3,669.75	3,678.75	3,669.75	18.74	4.13	-91.23	-932.29	-3,824.72	4,054.17	4,031.63	22.55	179.815		
3,900.00	3,765.94	3,774.94	3,765.94	19.16	4.24	-90.85	-932.29	-3,824.72	4,060.82	4,037.78	23.03	176.296		
4,000.00	3,863.03	3,872.03	3,863.03	19.53	4.35	-90.53	-932.29	-3,824.72	4,066.78	4,043.30	23.49	173.142		
4,100.00	3,960.90	3,969.90	3,960.90	19.87	4.46	-90.25	-932.29	-3,824.72	4,072.01	4,048.10	23.91	170.330		
4,200.00	4,059.42	4,068.42	4,059.42	20.17	4.57	-90.01	-932.29	-3,824.72	4,076.43	4,052.14	24.29	167.836		
4,300.00	4,158.48	4,167.48	4,158.48	20.42	4.68	-89.83	-932.29	-3,824.72	4,080.01	4,055.38	24.63	165.641		
4,400.00	4,257.95	4,266.95	4,257.95	20.63	4.80	-89.69	-932.29	-3,824.72	4,082.71	4,057.77	24.94	163.723		
4,500.00	4,357.72	4,366.72	4,357.72	20.80	4.91	-89.60	-932.29	-3,824.72	4,084.50	4,059.30	25.20	162.064		
4,600.00	4,457.66	4,466.66	4,457.66	20.92	5.02	-89.56	-932.29	-3,824.72	4,085.36	4,059.93	25.43	160.647		
4,642.34	4,500.00	4,509.00	4,500.00	20.97	5.07	-89.55	-932.29	-3,824.72	4,085.45	4,068.07	17.38	235.128		
4,700.00	4,557.66	4,566.66	4,557.66	21.02	5.13	-89.55	-932.29	-3,824.72	4,085.45	4,067.92	17.53	233.066		
4,800.00	4,657.66	4,666.66	4,657.66	21.11	5.24	-89.55	-932.29	-3,824.72	4,085.45	4,067.66	17.79	229.654		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWVD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,900.00	4,757.66	4,766.66	4,757.66	21.19	5.36	-89.55	-932.29	-3,824.72	4,085.45	4,067.40	18.05	226.312		
5,000.00	4,857.66	4,866.66	4,857.66	21.28	5.47	-89.55	-932.29	-3,824.72	4,085.45	4,067.13	18.32	223.040		
5,100.00	4,957.66	4,966.66	4,957.66	21.37	5.58	-89.55	-932.29	-3,824.72	4,085.45	4,066.86	18.58	219.836		
5,200.00	5,057.66	5,066.66	5,057.66	21.47	5.69	-89.55	-932.29	-3,824.72	4,085.45	4,066.60	18.85	216.700		
5,300.00	5,157.66	5,166.66	5,157.66	21.56	5.81	-89.55	-932.29	-3,824.72	4,085.45	4,066.32	19.12	213.630		
5,400.00	5,257.66	5,266.66	5,257.66	21.66	5.92	-89.55	-932.29	-3,824.72	4,085.45	4,066.05	19.40	210.625		
5,500.00	5,357.66	5,366.66	5,357.66	21.76	6.03	-89.55	-932.29	-3,824.72	4,085.45	4,065.78	19.67	207.684		
5,600.00	5,457.66	5,466.66	5,457.66	21.86	6.14	-89.55	-932.29	-3,824.72	4,085.45	4,065.50	19.95	204.807		
5,700.00	5,557.66	5,566.66	5,557.66	21.96	6.26	-89.55	-932.29	-3,824.72	4,085.45	4,065.22	20.23	201.991		
5,800.00	5,657.66	5,666.66	5,657.66	22.07	6.37	-89.55	-932.29	-3,824.72	4,085.45	4,064.94	20.51	199.236		
5,900.00	5,757.66	5,766.66	5,757.66	22.17	6.48	-89.55	-932.29	-3,824.72	4,085.45	4,064.66	20.79	196.540		
5,991.88	5,849.54	5,858.54	5,849.54	22.27	6.58	-89.55	-932.29	-3,824.72	4,085.45	4,064.40	21.05	194.114		
6,000.00	5,857.66	5,866.66	5,857.66	22.28	6.59	-89.55	-932.29	-3,824.72	4,085.38	4,057.01	28.37	144.005		
6,025.00	5,882.64	5,891.64	5,882.64	22.30	6.62	-89.55	-932.29	-3,824.72	4,084.30	4,055.94	28.36	144.022		
6,050.00	5,907.52	5,916.52	5,907.52	22.32	6.65	-89.55	-932.29	-3,824.72	4,081.92	4,053.62	28.30	144.259		
6,075.00	5,932.24	5,941.24	5,932.24	22.34	6.68	-89.56	-932.29	-3,824.72	4,078.23	4,050.05	28.18	144.718		
6,100.00	5,956.74	5,965.74	5,956.74	22.35	6.70	-89.56	-932.29	-3,824.72	4,073.26	4,045.25	28.01	145.400		
6,125.00	5,980.94	5,989.94	5,980.94	22.36	6.73	-89.56	-932.29	-3,824.72	4,067.02	4,039.22	27.80	146.310		
6,150.00	6,004.79	6,013.79	6,004.79	22.36	6.76	-89.56	-932.29	-3,824.72	4,059.51	4,031.98	27.53	147.453		
6,175.00	6,028.21	6,037.21	6,028.21	22.36	6.78	-89.56	-932.29	-3,824.72	4,050.77	4,023.55	27.22	148.837		
6,200.00	6,051.13	6,060.13	6,051.13	22.36	6.81	-89.57	-932.29	-3,824.72	4,040.82	4,013.96	26.85	150.469		
6,225.00	6,073.51	6,082.51	6,073.51	22.35	6.84	-89.57	-932.29	-3,824.72	4,029.68	4,003.23	26.45	152.360		
6,250.00	6,095.27	6,104.27	6,095.27	22.34	6.86	-89.58	-932.29	-3,824.72	4,017.38	3,991.38	26.00	154.522		
6,275.00	6,116.36	6,125.36	6,116.36	22.33	6.88	-89.58	-932.29	-3,824.72	4,003.96	3,978.46	25.51	156.967		
6,300.00	6,136.72	6,145.72	6,136.72	22.32	6.91	-89.59	-932.29	-3,824.72	3,989.46	3,964.48	24.98	159.708		
6,325.00	6,156.29	6,165.29	6,156.29	22.31	6.93	-89.59	-932.29	-3,824.72	3,973.91	3,949.50	24.42	162.760		
6,350.00	6,175.02	6,184.02	6,175.02	22.29	6.95	-89.60	-932.29	-3,824.72	3,957.36	3,933.54	23.82	166.136		
6,375.00	6,192.85	6,201.85	6,192.85	22.27	6.97	-89.61	-932.29	-3,824.72	3,939.86	3,916.66	23.20	169.846		
6,400.00	6,209.75	6,218.75	6,209.75	22.26	6.99	-89.61	-932.29	-3,824.72	3,921.44	3,898.89	22.55	173.897		
6,425.00	6,225.66	6,234.66	6,225.66	22.24	7.01	-89.62	-932.29	-3,824.72	3,902.17	3,880.28	21.89	178.290		
6,450.00	6,240.54	6,249.54	6,240.54	22.23	7.02	-89.63	-932.29	-3,824.72	3,882.05	3,860.87	21.21	183.011		
6,475.00	6,254.34	6,263.34	6,254.34	22.21	7.04	-89.64	-932.29	-3,824.72	3,861.25	3,840.72	20.54	188.029		
6,500.00	6,267.04	6,276.04	6,267.04	22.19	7.05	-89.64	-932.29	-3,824.72	3,839.73	3,819.86	19.87	193.279		
6,525.00	6,278.59	6,287.59	6,278.59	22.18	7.07	-89.65	-932.29	-3,824.72	3,817.57	3,798.35	19.22	198.652		
6,550.00	6,288.97	6,297.97	6,288.97	22.17	7.08	-89.66	-932.29	-3,824.72	3,794.83	3,776.23	18.60	203.969		
6,575.00	6,298.14	6,307.14	6,298.14	22.15	7.09	-89.67	-932.29	-3,824.72	3,771.59	3,753.54	18.05	208.948		
6,600.00	6,306.08	6,315.08	6,306.08	22.15	7.10	-89.68	-932.29	-3,824.72	3,747.90	3,730.31	17.58	213.159		
6,625.00	6,312.77	6,321.77	6,312.77	22.14	7.10	-89.69	-932.29	-3,824.72	3,723.82	3,706.58	17.24	215.951		
6,650.00	6,318.19	6,327.19	6,318.19	22.14	7.11	-89.70	-932.29	-3,824.72	3,699.43	3,682.32	17.10	216.300		
6,675.00	6,322.33	6,331.33	6,322.33	22.14	7.12	-89.71	-932.29	-3,824.72	3,674.78	3,657.48	17.30	212.374		
6,700.00	6,325.17	6,334.17	6,325.17	22.16	7.12	-89.72	-932.29	-3,824.72	3,649.96	3,631.70	18.26	199.883		
6,725.00	6,326.71	6,335.71	6,326.71	22.18	7.12	-89.73	-932.29	-3,824.72	3,625.02	3,603.23	21.79	166.377		
6,741.88	6,327.00	6,336.00	6,327.00	22.20	7.12	-89.74	-932.29	-3,824.72	3,608.15	3,583.36	24.79	145.525		
6,800.00	6,327.00	6,336.00	6,327.00	22.32	7.12	-89.77	-932.29	-3,824.72	3,550.05	3,524.38	25.67	138.273		
6,900.00	6,327.00	6,336.00	6,327.00	22.85	7.12	-89.81	-932.29	-3,824.72	3,450.09	3,422.68	27.41	125.875		
7,000.00	6,327.00	6,336.00	6,327.00	24.01	7.12	-89.86	-932.29	-3,824.72	3,350.14	3,320.77	29.37	114.084		
7,100.00	6,327.00	6,336.00	6,327.00	25.74	7.12	-89.92	-932.29	-3,824.72	3,250.18	3,218.69	31.49	103.212		
7,200.00	6,327.00	6,336.00	6,327.00	27.78	7.12	-89.97	-932.29	-3,824.72	3,150.23	3,116.49	33.74	93.358		
7,300.00	6,327.00	6,336.00	6,327.00	30.01	7.12	-90.03	-932.29	-3,824.72	3,050.29	3,014.19	36.10	84.507		
7,400.00	6,327.00	6,336.00	6,327.00	32.34	7.12	-90.10	-932.29	-3,824.72	2,950.34	2,911.82	38.52	76.587		
7,500.00	6,327.00	6,336.00	6,327.00	34.76	7.12	-90.17	-932.29	-3,824.72	2,850.40	2,809.39	41.01	69.505		
7,600.00	6,327.00	6,336.00	6,327.00	37.24	7.12	-90.24	-932.29	-3,824.72	2,750.47	2,706.92	43.55	63.164		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
7,700.00	6,327.00	6,336.00	6,327.00	39.76	7.12	-90.32	-932.29	-3,824.72	2,650.54	2,604.42	46.12	57.472		
7,800.00	6,327.00	6,336.00	6,327.00	42.33	7.12	-90.41	-932.29	-3,824.72	2,550.62	2,501.89	48.72	52.349		
7,900.00	6,327.00	6,336.00	6,327.00	44.92	7.12	-90.50	-932.29	-3,824.72	2,450.70	2,399.34	51.35	47.722		
8,000.00	6,327.00	6,336.00	6,327.00	47.54	7.12	-90.60	-932.29	-3,824.72	2,350.79	2,296.78	54.00	43.529		
8,100.00	6,327.00	6,336.00	6,327.00	50.18	7.12	-90.71	-932.29	-3,824.72	2,250.88	2,194.21	56.67	39.716		
8,200.00	6,327.00	6,336.00	6,327.00	52.84	7.12	-90.83	-932.29	-3,824.72	2,150.99	2,091.63	59.36	36.237		
8,300.00	6,327.00	6,336.00	6,327.00	55.51	7.12	-90.96	-932.29	-3,824.72	2,051.10	1,989.05	62.06	33.052		
8,400.00	6,327.00	6,336.00	6,327.00	58.19	7.12	-91.10	-932.29	-3,824.72	1,951.23	1,886.47	64.77	30.128		
8,500.00	6,327.00	6,336.00	6,327.00	60.89	7.12	-91.27	-932.29	-3,824.72	1,851.37	1,783.89	67.48	27.434		
8,600.00	6,327.00	6,336.00	6,327.00	63.60	7.12	-91.44	-932.29	-3,824.72	1,751.53	1,681.32	70.21	24.947		
8,700.00	6,327.00	6,336.00	6,327.00	66.31	7.12	-91.64	-932.29	-3,824.72	1,651.71	1,578.76	72.94	22.643		
8,800.00	6,327.00	6,336.00	6,327.00	69.04	7.12	-91.87	-932.29	-3,824.72	1,551.91	1,476.22	75.69	20.505		
8,900.00	6,327.00	6,336.00	6,327.00	71.77	7.12	-92.13	-932.29	-3,824.72	1,452.13	1,373.70	78.43	18.515		
9,000.00	6,327.00	6,336.00	6,327.00	74.51	7.12	-92.42	-932.29	-3,824.72	1,352.40	1,271.21	81.18	16.659		
9,100.00	6,327.00	6,336.00	6,327.00	77.25	7.12	-92.76	-932.29	-3,824.72	1,252.70	1,168.76	83.94	14.924		
9,200.00	6,327.00	6,336.00	6,327.00	80.00	7.12	-93.17	-932.29	-3,824.72	1,153.05	1,066.35	86.70	13.299		
9,300.00	6,327.00	6,336.00	6,327.00	82.75	7.12	-93.64	-932.29	-3,824.72	1,053.47	964.01	89.46	11.776		
9,400.00	6,327.00	6,336.00	6,327.00	85.50	7.12	-94.22	-932.29	-3,824.72	953.98	861.75	92.23	10.344		
9,500.00	6,327.00	6,336.00	6,327.00	88.26	7.12	-94.93	-932.29	-3,824.72	854.61	759.61	95.00	8.996		
9,600.00	6,327.00	6,336.00	6,327.00	91.02	7.12	-95.83	-932.29	-3,824.72	755.41	657.63	97.77	7.726		
9,700.00	6,327.00	6,336.00	6,327.00	93.79	7.12	-96.99	-932.29	-3,824.72	656.44	555.90	100.55	6.529		
9,800.00	6,327.00	6,336.00	6,327.00	96.56	7.12	-98.58	-932.29	-3,824.72	557.85	454.52	103.33	5.399		
9,900.00	6,327.00	6,336.00	6,327.00	99.33	7.12	-100.84	-932.29	-3,824.72	459.86	353.76	106.11	4.334		
10,000.00	6,327.00	6,336.00	6,327.00	102.10	7.12	-104.31	-932.29	-3,824.72	362.98	254.09	108.89	3.334		
10,100.00	6,327.00	6,336.00	6,327.00	104.88	7.12	-110.27	-932.29	-3,824.72	268.38	156.71	111.67	2.403		
10,199.66	6,327.00	6,336.00	6,327.00	107.64	7.12	-122.30	-932.29	-3,824.72	180.02	65.58	114.45	1.573 CC, ES, SF		

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWVD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	8.00	0.00	0.00	0.01	-116.36	-1,453.35	-2,932.72	3,273.09					
100.00	100.00	108.00	100.00	0.09	0.12	-116.36	-1,453.35	-2,932.72	3,273.09	3,272.87	0.21	N/A		
200.00	200.00	208.00	200.00	0.32	0.23	-116.36	-1,453.35	-2,932.72	3,273.09	3,272.53	0.55	5,941.647		
300.00	300.00	308.00	300.00	0.54	0.35	-116.36	-1,453.35	-2,932.72	3,273.09	3,272.20	0.89	3,685.831		
400.00	400.00	408.00	400.00	0.77	0.46	-116.36	-1,453.35	-2,932.72	3,273.09	3,271.86	1.23	2,671.547		
500.00	500.00	508.00	500.00	0.99	0.57	-116.36	-1,453.35	-2,932.72	3,273.09	3,271.52	1.56	2,095.028		
600.00	599.98	607.98	599.98	1.19	0.68	-116.33	-1,453.35	-2,932.72	3,272.75	3,270.87	1.87	1,747.758		
700.00	699.84	707.84	699.84	1.38	0.80	-116.24	-1,453.35	-2,932.72	3,271.73	3,269.56	2.17	1,506.092		
800.00	799.45	807.45	799.45	1.59	0.91	-116.09	-1,453.35	-2,932.72	3,270.06	3,267.57	2.50	1,308.902		
900.00	898.70	906.70	898.70	1.84	1.02	-115.88	-1,453.35	-2,932.72	3,267.77	3,264.91	2.86	1,143.005		
1,000.00	997.47	1,005.47	997.47	2.14	1.13	-115.61	-1,453.35	-2,932.72	3,264.88	3,261.62	3.26	1,000.547		
1,100.00	1,095.62	1,103.62	1,095.62	2.49	1.24	-115.28	-1,453.35	-2,932.72	3,261.46	3,257.75	3.72	877.052		
1,200.00	1,193.06	1,201.06	1,193.06	2.89	1.35	-114.89	-1,453.35	-2,932.72	3,257.57	3,253.34	4.23	769.815		
1,300.00	1,289.64	1,297.64	1,289.64	3.36	1.46	-114.44	-1,453.35	-2,932.72	3,253.28	3,248.48	4.81	676.906		
1,393.00	1,378.61	1,386.61	1,378.61	3.86	1.56	-113.97	-1,453.35	-2,932.72	3,249.01	3,243.61	5.40	601.910		
1,400.00	1,385.27	1,393.27	1,385.27	3.90	1.57	-113.94	-1,453.35	-2,932.72	3,248.68	3,243.23	5.44	596.687		
1,500.00	1,480.45	1,488.45	1,480.45	4.47	1.67	-113.40	-1,453.35	-2,932.72	3,244.12	3,238.00	6.12	529.861		
1,600.00	1,575.63	1,583.63	1,575.63	5.06	1.78	-112.86	-1,453.35	-2,932.72	3,239.85	3,233.03	6.82	475.305		
1,700.00	1,670.81	1,678.81	1,670.81	5.66	1.89	-112.33	-1,453.35	-2,932.72	3,235.86	3,228.34	7.52	430.234		
1,800.00	1,765.99	1,773.99	1,765.99	6.26	1.99	-111.79	-1,453.35	-2,932.72	3,232.16	3,223.93	8.23	392.536		
1,900.00	1,861.18	1,869.18	1,861.18	6.88	2.10	-111.25	-1,453.35	-2,932.72	3,228.75	3,219.79	8.95	360.634		
2,000.00	1,956.36	1,964.36	1,956.36	7.49	2.21	-110.70	-1,453.35	-2,932.72	3,225.62	3,215.94	9.68	333.345		
2,100.00	2,051.54	2,059.54	2,051.54	8.11	2.31	-110.16	-1,453.35	-2,932.72	3,222.78	3,212.38	10.40	309.773		
2,200.00	2,146.72	2,154.72	2,146.72	8.73	2.42	-109.62	-1,453.35	-2,932.72	3,220.24	3,209.10	11.13	289.233		
2,300.00	2,241.90	2,249.90	2,241.90	9.35	2.53	-109.07	-1,453.35	-2,932.72	3,217.98	3,206.11	11.87	271.194		
2,400.00	2,337.08	2,345.08	2,337.08	9.98	2.64	-108.53	-1,453.35	-2,932.72	3,216.01	3,203.41	12.60	255.241		
2,500.00	2,432.26	2,440.26	2,432.26	10.60	2.74	-107.98	-1,453.35	-2,932.72	3,214.34	3,201.00	13.34	241.041		
2,600.00	2,527.44	2,535.44	2,527.44	11.23	2.85	-107.44	-1,453.35	-2,932.72	3,212.95	3,198.88	14.07	228.330		
2,700.00	2,622.62	2,630.62	2,622.62	11.86	2.96	-106.89	-1,453.35	-2,932.72	3,211.86	3,197.05	14.81	216.892		
2,800.00	2,717.80	2,725.80	2,717.80	12.49	3.06	-106.34	-1,453.35	-2,932.72	3,211.06	3,195.52	15.55	206.551		
2,900.00	2,812.98	2,820.98	2,812.98	13.11	3.17	-105.79	-1,453.35	-2,932.72	3,210.56	3,194.28	16.28	197.163		
3,000.00	2,908.17	2,916.17	2,908.17	13.74	3.28	-105.25	-1,453.35	-2,932.72	3,210.35	3,193.33	17.02	188.606		
3,022.50	2,929.58	2,937.58	2,929.58	13.89	3.30	-105.12	-1,453.35	-2,932.72	3,210.34	3,193.15	17.19	186.783		
3,100.00	3,003.35	3,011.35	3,003.35	14.37	3.38	-104.70	-1,453.35	-2,932.72	3,210.43	3,192.67	17.76	180.777		
3,200.00	3,098.53	3,106.53	3,098.53	15.01	3.49	-104.15	-1,453.35	-2,932.72	3,210.80	3,192.31	18.50	173.593		
3,300.00	3,193.71	3,201.71	3,193.71	15.64	3.60	-103.61	-1,453.35	-2,932.72	3,211.47	3,192.23	19.23	166.979		
3,400.00	3,288.89	3,296.89	3,288.89	16.27	3.71	-103.06	-1,453.35	-2,932.72	3,212.43	3,192.46	19.97	160.873		
3,500.00	3,384.07	3,392.07	3,384.07	16.90	3.81	-102.51	-1,453.35	-2,932.72	3,213.68	3,192.97	20.70	155.222		
3,600.00	3,479.25	3,487.25	3,479.25	17.53	3.92	-101.97	-1,453.35	-2,932.72	3,215.22	3,193.78	21.44	149.980		
3,700.00	3,574.43	3,582.43	3,574.43	18.16	4.03	-101.42	-1,453.35	-2,932.72	3,217.06	3,194.89	22.17	145.105		
3,749.34	3,621.39	3,629.39	3,621.39	18.48	4.08	-101.15	-1,453.35	-2,932.72	3,218.07	3,195.54	22.53	142.824		
3,800.00	3,669.75	3,677.75	3,669.75	18.74	4.13	-100.88	-1,453.35	-2,932.72	3,219.15	3,196.30	22.85	140.877		
3,900.00	3,765.94	3,773.94	3,765.94	19.16	4.24	-100.40	-1,453.35	-2,932.72	3,221.29	3,197.92	23.36	137.878		
4,000.00	3,863.03	3,871.03	3,863.03	19.53	4.35	-99.98	-1,453.35	-2,932.72	3,223.35	3,199.51	23.84	135.207		
4,100.00	3,960.90	3,968.90	3,960.90	19.87	4.46	-99.61	-1,453.35	-2,932.72	3,225.25	3,200.97	24.28	132.843		
4,200.00	4,059.42	4,067.42	4,059.42	20.17	4.57	-99.31	-1,453.35	-2,932.72	3,226.94	3,202.26	24.68	130.764		
4,300.00	4,158.48	4,166.48	4,158.48	20.42	4.68	-99.07	-1,453.35	-2,932.72	3,228.35	3,203.32	25.04	128.950		
4,400.00	4,257.95	4,265.95	4,257.95	20.63	4.79	-98.89	-1,453.35	-2,932.72	3,229.44	3,204.09	25.35	127.384		
4,500.00	4,357.72	4,365.72	4,357.72	20.80	4.91	-98.77	-1,453.35	-2,932.72	3,230.18	3,204.55	25.63	126.048		
4,600.00	4,457.66	4,465.66	4,457.66	20.92	5.02	-98.71	-1,453.35	-2,932.72	3,230.54	3,204.68	25.86	124.929		
4,642.34	4,500.00	4,508.00	4,500.00	20.97	5.07	-98.71	-1,453.35	-2,932.72	3,230.57	3,213.81	16.76	192.788		
4,700.00	4,557.66	4,565.66	4,557.66	21.02	5.13	-98.71	-1,453.35	-2,932.72	3,230.57	3,213.65	16.92	190.985		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWVD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,800.00	4,657.66	4,665.66	4,657.66	21.11	5.24	-98.71	-1,453.35	-2,932.72	3,230.57	3,213.39	17.18	188.014		
4,900.00	4,757.66	4,765.66	4,757.66	21.19	5.36	-98.71	-1,453.35	-2,932.72	3,230.57	3,213.12	17.45	185.111		
5,000.00	4,857.66	4,865.66	4,857.66	21.28	5.47	-98.71	-1,453.35	-2,932.72	3,230.57	3,212.85	17.72	182.274		
5,100.00	4,957.66	4,965.66	4,957.66	21.37	5.58	-98.71	-1,453.35	-2,932.72	3,230.57	3,212.57	18.00	179.503		
5,200.00	5,057.66	5,065.66	5,057.66	21.47	5.69	-98.71	-1,453.35	-2,932.72	3,230.57	3,212.30	18.27	176.797		
5,300.00	5,157.66	5,165.66	5,157.66	21.56	5.81	-98.71	-1,453.35	-2,932.72	3,230.57	3,212.02	18.55	174.152		
5,400.00	5,257.66	5,265.66	5,257.66	21.66	5.92	-98.71	-1,453.35	-2,932.72	3,230.57	3,211.74	18.83	171.570		
5,500.00	5,357.66	5,365.66	5,357.66	21.76	6.03	-98.71	-1,453.35	-2,932.72	3,230.57	3,211.46	19.11	169.047		
5,600.00	5,457.66	5,465.66	5,457.66	21.86	6.14	-98.71	-1,453.35	-2,932.72	3,230.57	3,211.18	19.39	166.584		
5,700.00	5,557.66	5,565.66	5,557.66	21.96	6.25	-98.71	-1,453.35	-2,932.72	3,230.57	3,210.89	19.68	164.177		
5,800.00	5,657.66	5,665.66	5,657.66	22.07	6.37	-98.71	-1,453.35	-2,932.72	3,230.57	3,210.61	19.96	161.827		
5,900.00	5,757.66	5,765.66	5,757.66	22.17	6.48	-98.71	-1,453.35	-2,932.72	3,230.57	3,210.32	20.25	159.531		
5,991.88	5,849.54	5,857.54	5,849.54	22.27	6.58	-98.71	-1,453.35	-2,932.72	3,230.57	3,210.05	20.52	157.469		
6,000.00	5,857.66	5,865.66	5,857.66	22.28	6.59	-98.71	-1,453.35	-2,932.72	3,230.50	3,201.72	28.78	112.240		
6,025.00	5,882.64	5,890.64	5,882.64	22.30	6.62	-98.71	-1,453.35	-2,932.72	3,229.44	3,200.66	28.78	112.197		
6,050.00	5,907.52	5,915.52	5,907.52	22.32	6.65	-98.72	-1,453.35	-2,932.72	3,227.10	3,198.36	28.73	112.316		
6,075.00	5,932.24	5,940.24	5,932.24	22.34	6.68	-98.73	-1,453.35	-2,932.72	3,223.48	3,194.85	28.63	112.594		
6,100.00	5,956.74	5,964.74	5,956.74	22.35	6.70	-98.75	-1,453.35	-2,932.72	3,218.59	3,190.11	28.48	113.031		
6,125.00	5,980.94	5,988.94	5,980.94	22.36	6.73	-98.77	-1,453.35	-2,932.72	3,212.45	3,184.18	28.27	113.629		
6,150.00	6,004.79	6,012.79	6,004.79	22.36	6.76	-98.79	-1,453.35	-2,932.72	3,205.07	3,177.05	28.02	114.389		
6,175.00	6,028.21	6,036.21	6,028.21	22.36	6.78	-98.82	-1,453.35	-2,932.72	3,196.48	3,168.76	27.72	115.313		
6,200.00	6,051.13	6,059.13	6,051.13	22.36	6.81	-98.86	-1,453.35	-2,932.72	3,186.69	3,159.32	27.38	116.404		
6,225.00	6,073.51	6,081.51	6,073.51	22.35	6.83	-98.89	-1,453.35	-2,932.72	3,175.74	3,148.75	26.99	117.663		
6,250.00	6,095.27	6,103.27	6,095.27	22.34	6.86	-98.94	-1,453.35	-2,932.72	3,163.66	3,137.10	26.56	119.093		
6,275.00	6,116.36	6,124.36	6,116.36	22.33	6.88	-98.98	-1,453.35	-2,932.72	3,150.48	3,124.38	26.10	120.694		
6,300.00	6,136.72	6,144.72	6,136.72	22.32	6.91	-99.03	-1,453.35	-2,932.72	3,136.23	3,110.62	25.61	122.463		
6,325.00	6,156.29	6,164.29	6,156.29	22.31	6.93	-99.08	-1,453.35	-2,932.72	3,120.96	3,095.87	25.09	124.395		
6,350.00	6,175.02	6,183.02	6,175.02	22.29	6.95	-99.14	-1,453.35	-2,932.72	3,104.71	3,080.16	24.55	126.476		
6,375.00	6,192.85	6,200.85	6,192.85	22.27	6.97	-99.21	-1,453.35	-2,932.72	3,087.52	3,063.53	23.99	128.684		
6,400.00	6,209.75	6,217.75	6,209.75	22.26	6.99	-99.27	-1,453.35	-2,932.72	3,069.44	3,046.01	23.43	130.980		
6,425.00	6,225.66	6,233.66	6,225.66	22.24	7.01	-99.34	-1,453.35	-2,932.72	3,050.53	3,027.64	22.88	133.305		
6,450.00	6,240.54	6,248.54	6,240.54	22.23	7.02	-99.41	-1,453.35	-2,932.72	3,030.83	3,008.47	22.36	135.568		
6,475.00	6,254.34	6,262.34	6,254.34	22.21	7.04	-99.49	-1,453.35	-2,932.72	3,010.39	2,988.52	21.87	137.634		
6,500.00	6,267.04	6,275.04	6,267.04	22.19	7.05	-99.57	-1,453.35	-2,932.72	2,989.28	2,967.83	21.46	139.316		
6,525.00	6,278.59	6,286.59	6,278.59	22.18	7.07	-99.66	-1,453.35	-2,932.72	2,967.56	2,946.42	21.14	140.365		
6,550.00	6,288.97	6,296.97	6,288.97	22.17	7.08	-99.75	-1,453.35	-2,932.72	2,945.28	2,924.31	20.97	140.475		
6,575.00	6,298.14	6,306.14	6,298.14	22.15	7.09	-99.84	-1,453.35	-2,932.72	2,922.51	2,901.53	20.98	139.322		
6,600.00	6,306.08	6,314.08	6,306.08	22.15	7.10	-99.93	-1,453.35	-2,932.72	2,899.30	2,878.08	21.22	136.640		
6,625.00	6,312.77	6,320.77	6,312.77	22.14	7.10	-100.03	-1,453.35	-2,932.72	2,875.73	2,854.00	21.73	132.357		
6,650.00	6,318.19	6,326.19	6,318.19	22.14	7.11	-100.13	-1,453.35	-2,932.72	2,851.86	2,829.36	22.50	126.753		
6,675.00	6,322.33	6,330.33	6,322.33	22.14	7.11	-100.24	-1,453.35	-2,932.72	2,827.75	2,804.30	23.45	120.590		
6,700.00	6,325.17	6,333.17	6,325.17	22.16	7.12	-100.34	-1,453.35	-2,932.72	2,803.47	2,779.12	24.35	115.126		
6,725.00	6,326.71	6,334.71	6,326.71	22.18	7.12	-100.45	-1,453.35	-2,932.72	2,779.09	2,754.24	24.85	111.841		
6,741.88	6,327.00	6,335.00	6,327.00	22.20	7.12	-100.53	-1,453.35	-2,932.72	2,762.60	2,737.81	24.79	111.427		
6,800.00	6,327.00	6,335.00	6,327.00	22.32	7.12	-100.79	-1,453.35	-2,932.72	2,705.86	2,680.19	25.67	105.397		
6,900.00	6,327.00	6,335.00	6,327.00	22.85	7.12	-101.27	-1,453.35	-2,932.72	2,608.39	2,580.98	27.41	95.170		
7,000.00	6,327.00	6,335.00	6,327.00	24.01	7.12	-101.79	-1,453.35	-2,932.72	2,511.11	2,481.74	29.36	85.516		
7,100.00	6,327.00	6,335.00	6,327.00	25.74	7.12	-102.35	-1,453.35	-2,932.72	2,414.05	2,382.56	31.49	76.663		
7,200.00	6,327.00	6,335.00	6,327.00	27.78	7.12	-102.96	-1,453.35	-2,932.72	2,317.24	2,283.50	33.74	68.674		
7,300.00	6,327.00	6,335.00	6,327.00	30.01	7.12	-103.62	-1,453.35	-2,932.72	2,220.72	2,184.62	36.09	61.526		
7,400.00	6,327.00	6,335.00	6,327.00	32.34	7.12	-104.34	-1,453.35	-2,932.72	2,124.51	2,085.99	38.52	55.151		
7,500.00	6,327.00	6,335.00	6,327.00	34.76	7.12	-105.13	-1,453.35	-2,932.72	2,028.68	1,987.67	41.01	49.469		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
7,600.00	6,327.00	6,335.00	6,327.00	37.24	7.12	-105.99	-1,453.35	-2,932.72	1,933.27	1,889.72	43.54	44.398		
7,700.00	6,327.00	6,335.00	6,327.00	39.76	7.12	-106.95	-1,453.35	-2,932.72	1,838.34	1,792.22	46.12	39.862		
7,800.00	6,327.00	6,335.00	6,327.00	42.33	7.12	-108.01	-1,453.35	-2,932.72	1,743.98	1,695.26	48.72	35.795		
7,900.00	6,327.00	6,335.00	6,327.00	44.92	7.12	-109.19	-1,453.35	-2,932.72	1,650.29	1,598.93	51.35	32.137		
8,000.00	6,327.00	6,335.00	6,327.00	47.54	7.12	-110.51	-1,453.35	-2,932.72	1,557.38	1,503.37	54.00	28.838		
8,100.00	6,327.00	6,335.00	6,327.00	50.18	7.12	-112.00	-1,453.35	-2,932.72	1,465.40	1,408.73	56.67	25.857		
8,200.00	6,327.00	6,335.00	6,327.00	52.84	7.12	-113.69	-1,453.35	-2,932.72	1,374.54	1,315.19	59.36	23.157		
8,300.00	6,327.00	6,335.00	6,327.00	55.51	7.12	-115.61	-1,453.35	-2,932.72	1,285.05	1,222.99	62.06	20.708		
8,400.00	6,327.00	6,335.00	6,327.00	58.19	7.12	-117.82	-1,453.35	-2,932.72	1,197.21	1,132.45	64.76	18.486		
8,500.00	6,327.00	6,335.00	6,327.00	60.89	7.12	-120.37	-1,453.35	-2,932.72	1,111.44	1,043.96	67.48	16.470		
8,600.00	6,327.00	6,335.00	6,327.00	63.60	7.12	-123.34	-1,453.35	-2,932.72	1,028.24	958.03	70.21	14.645		
8,700.00	6,327.00	6,335.00	6,327.00	66.31	7.12	-126.83	-1,453.35	-2,932.72	948.29	875.34	72.94	13.000		
8,800.00	6,327.00	6,335.00	6,327.00	69.04	7.12	-130.94	-1,453.35	-2,932.72	872.48	796.80	75.68	11.528		
8,900.00	6,327.00	6,335.00	6,327.00	71.77	7.12	-135.80	-1,453.35	-2,932.72	802.00	723.57	78.43	10.226		
9,000.00	6,327.00	6,335.00	6,327.00	74.51	7.12	-141.55	-1,453.35	-2,932.72	738.36	657.18	81.18	9.095		
9,100.00	6,327.00	6,335.00	6,327.00	77.25	7.12	-148.29	-1,453.35	-2,932.72	683.49	599.55	83.94	8.143		
9,200.00	6,327.00	6,335.00	6,327.00	80.00	7.12	-156.09	-1,453.35	-2,932.72	639.63	552.94	86.70	7.378		
9,300.00	6,327.00	6,335.00	6,327.00	82.75	7.12	-164.84	-1,453.35	-2,932.72	609.19	519.72	89.46	6.809		
9,400.00	6,327.00	6,335.00	6,327.00	85.50	7.12	-174.26	-1,453.35	-2,932.72	594.21	501.98	92.23	6.443		
9,440.11	6,327.00	6,335.00	6,327.00	86.61	7.12	-178.13	-1,453.35	-2,932.72	592.85	499.51	93.34	6.352 CC, ES		
9,500.00	6,327.00	6,335.00	6,327.00	88.26	7.12	-176.10	-1,453.35	-2,932.72	595.87	500.87	95.00	6.272 SF		
9,600.00	6,327.00	6,335.00	6,327.00	91.02	7.12	-166.77	-1,453.35	-2,932.72	614.03	516.26	97.77	6.280		
9,700.00	6,327.00	6,335.00	6,327.00	93.79	7.12	-158.19	-1,453.35	-2,932.72	647.31	546.76	100.55	6.438		
9,800.00	6,327.00	6,335.00	6,327.00	96.56	7.12	-150.61	-1,453.35	-2,932.72	693.53	590.21	103.32	6.712		
9,900.00	6,327.00	6,335.00	6,327.00	99.33	7.12	-144.06	-1,453.35	-2,932.72	750.31	644.21	106.10	7.071		
10,000.00	6,327.00	6,335.00	6,327.00	102.10	7.12	-138.50	-1,453.35	-2,932.72	815.44	706.55	108.89	7.489		
10,100.00	6,327.00	6,335.00	6,327.00	104.88	7.12	-133.80	-1,453.35	-2,932.72	887.08	775.41	111.67	7.944		
10,199.66	6,327.00	6,335.00	6,327.00	107.64	7.12	-129.84	-1,453.35	-2,932.72	963.52	849.08	114.44	8.419		

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWVD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	19.00	0.00	0.00	-136.66	-765.00	-722.01	1,052.09					
100.00	100.00	81.00	100.00	0.09	0.09	-136.66	-765.00	-722.01	1,051.92	1,051.73	0.18	5,736.188		
200.00	200.00	181.00	200.00	0.32	0.20	-136.66	-765.00	-722.01	1,051.92	1,051.40	0.52	2,020.860		
300.00	300.00	281.00	300.00	0.54	0.32	-136.66	-765.00	-722.01	1,051.92	1,051.06	0.86	1,226.473		
400.00	400.00	381.00	400.00	0.77	0.43	-136.66	-765.00	-722.01	1,051.92	1,050.72	1.19	880.395		
500.00	500.00	481.00	500.00	0.99	0.54	-136.66	-765.00	-722.01	1,051.92	1,050.38	1.53	686.643		
600.00	599.98	580.98	599.98	1.19	0.65	-136.58	-765.00	-722.01	1,051.00	1,049.16	1.84	570.381		
700.00	699.84	680.84	699.84	1.38	0.77	-136.33	-765.00	-722.01	1,048.28	1,046.14	2.14	489.405		
800.00	799.45	780.45	799.45	1.59	0.88	-135.92	-765.00	-722.01	1,043.79	1,041.33	2.46	423.632		
900.00	898.70	879.70	898.70	1.84	0.99	-135.34	-765.00	-722.01	1,037.61	1,034.79	2.82	368.588		
1,000.00	997.47	978.47	997.47	2.14	1.10	-134.59	-765.00	-722.01	1,029.82	1,026.62	3.20	321.445		
1,100.00	1,095.62	1,076.62	1,095.62	2.49	1.21	-133.66	-765.00	-722.01	1,020.57	1,016.93	3.64	280.497		
1,200.00	1,193.06	1,174.06	1,193.06	2.89	1.32	-132.54	-765.00	-722.01	1,010.02	1,005.89	4.13	244.715		
1,300.00	1,289.64	1,270.64	1,289.64	3.36	1.43	-131.22	-765.00	-722.01	998.37	993.69	4.68	213.439		
1,393.00	1,378.61	1,359.61	1,378.61	3.86	1.53	-129.81	-765.00	-722.01	986.76	981.51	5.25	187.972		
1,400.00	1,385.27	1,366.27	1,385.27	3.90	1.54	-129.69	-765.00	-722.01	985.86	980.57	5.29	186.192		
1,500.00	1,480.45	1,461.45	1,480.45	4.47	1.64	-128.05	-765.00	-722.01	973.51	967.55	5.96	163.399		
1,600.00	1,575.63	1,556.63	1,575.63	5.06	1.75	-126.37	-765.00	-722.01	961.98	955.33	6.64	144.787		
1,700.00	1,670.81	1,651.81	1,670.81	5.66	1.86	-124.65	-765.00	-722.01	951.29	943.95	7.35	129.454		
1,800.00	1,765.99	1,746.99	1,765.99	6.26	1.96	-122.89	-765.00	-722.01	941.49	933.42	8.07	116.703		
1,900.00	1,861.18	1,842.18	1,861.18	6.88	2.07	-121.09	-765.00	-722.01	932.59	923.79	8.80	106.004		
2,000.00	1,956.36	1,937.36	1,956.36	7.49	2.18	-119.27	-765.00	-722.01	924.62	915.08	9.54	96.952		
2,100.00	2,051.54	2,032.54	2,051.54	8.11	2.28	-117.41	-765.00	-722.01	917.61	907.33	10.28	89.237		
2,200.00	2,146.72	2,127.72	2,146.72	8.73	2.39	-115.52	-765.00	-722.01	911.58	900.55	11.03	82.621		
2,300.00	2,241.90	2,222.90	2,241.90	9.35	2.50	-113.62	-765.00	-722.01	906.54	894.76	11.79	76.917		
2,400.00	2,337.08	2,318.08	2,337.08	9.98	2.61	-111.69	-765.00	-722.01	902.52	889.99	12.54	71.976		
2,500.00	2,432.26	2,413.26	2,432.26	10.60	2.71	-109.75	-765.00	-722.01	899.53	886.24	13.29	67.681		
2,600.00	2,527.44	2,508.44	2,527.44	11.23	2.82	-107.80	-765.00	-722.01	897.58	883.54	14.04	63.934		
2,700.00	2,622.62	2,603.62	2,622.62	11.86	2.93	-105.84	-765.00	-722.01	896.67	881.89	14.78	60.660		
2,736.57	2,657.43	2,638.43	2,657.43	12.09	2.97	-105.12	-765.00	-722.01	896.60	881.55	15.05	59.566		
2,800.00	2,717.80	2,698.80	2,717.80	12.49	3.03	-103.88	-765.00	-722.01	896.81	881.29	15.52	57.792		
2,900.00	2,812.98	2,793.98	2,812.98	13.11	3.14	-101.92	-765.00	-722.01	898.00	881.76	16.25	55.278		
3,000.00	2,908.17	2,889.17	2,908.17	13.74	3.25	-99.98	-765.00	-722.01	900.23	883.27	16.96	53.072		
3,100.00	3,003.35	2,984.35	3,003.35	14.37	3.35	-98.04	-765.00	-722.01	903.50	885.84	17.67	51.137		
3,200.00	3,098.53	3,079.53	3,098.53	15.01	3.46	-96.12	-765.00	-722.01	907.80	889.44	18.36	49.441		
3,300.00	3,193.71	3,174.71	3,193.71	15.64	3.57	-94.22	-765.00	-722.01	913.10	894.06	19.04	47.956		
3,400.00	3,288.89	3,269.89	3,288.89	16.27	3.67	-92.34	-765.00	-722.01	919.40	899.69	19.70	46.658		
3,500.00	3,384.07	3,365.07	3,384.07	16.90	3.78	-90.49	-765.00	-722.01	926.67	906.31	20.35	45.527		
3,600.00	3,479.25	3,460.25	3,479.25	17.53	3.89	-88.67	-765.00	-722.01	934.89	913.90	20.99	44.544		
3,700.00	3,574.43	3,555.43	3,574.43	18.16	4.00	-86.88	-765.00	-722.01	944.03	922.43	21.61	43.695		
3,749.34	3,621.39	3,602.39	3,621.39	18.48	4.05	-86.02	-765.00	-722.01	948.88	926.98	21.90	43.320		
3,800.00	3,669.75	3,650.75	3,669.75	18.74	4.10	-85.16	-765.00	-722.01	953.93	931.78	22.15	43.063		
3,900.00	3,765.94	3,746.94	3,765.94	19.16	4.21	-83.63	-765.00	-722.01	963.60	941.07	22.53	42.770		
4,000.00	3,863.03	3,844.03	3,863.03	19.53	4.32	-82.32	-765.00	-722.01	972.62	949.74	22.88	42.516		
4,100.00	3,960.90	3,941.90	3,960.90	19.87	4.43	-81.22	-765.00	-722.01	980.76	957.56	23.19	42.283		
4,200.00	4,059.42	4,040.42	4,059.42	20.17	4.54	-80.31	-765.00	-722.01	987.81	964.33	23.49	42.057		
4,300.00	4,158.48	4,139.48	4,158.48	20.42	4.65	-79.59	-765.00	-722.01	993.62	969.86	23.76	41.827		
4,400.00	4,257.95	4,238.95	4,257.95	20.63	4.76	-79.07	-765.00	-722.01	998.05	974.05	24.00	41.583		
4,500.00	4,357.72	4,338.72	4,357.72	20.80	4.88	-78.72	-765.00	-722.01	1,001.02	976.79	24.23	41.318		
4,600.00	4,457.66	4,438.66	4,457.66	20.92	4.99	-78.56	-765.00	-722.01	1,002.45	978.02	24.43	41.028		
4,642.34	4,500.00	4,481.00	4,500.00	20.97	5.04	-78.54	-765.00	-722.01	1,002.59	983.87	18.72	53.554		
4,700.00	4,557.66	4,538.66	4,557.66	21.02	5.10	-78.54	-765.00	-722.01	1,002.59	983.73	18.87	53.142		

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

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWVD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,800.00	4,657.66	4,638.66	4,657.66	21.11	5.21	-78.54	-765.00	-722.01	1,002.59	983.48	19.11	52.458		
4,900.00	4,757.66	4,738.66	4,757.66	21.19	5.33	-78.54	-765.00	-722.01	1,002.59	983.23	19.36	51.784		
5,000.00	4,857.66	4,838.66	4,857.66	21.28	5.44	-78.54	-765.00	-722.01	1,002.59	982.98	19.61	51.121		
5,100.00	4,957.66	4,938.66	4,957.66	21.37	5.55	-78.54	-765.00	-722.01	1,002.59	982.73	19.87	50.470		
5,200.00	5,057.66	5,038.66	5,057.66	21.47	5.66	-78.54	-765.00	-722.01	1,002.59	982.47	20.12	49.830		
5,300.00	5,157.66	5,138.66	5,157.66	21.56	5.78	-78.54	-765.00	-722.01	1,002.59	982.22	20.38	49.201		
5,400.00	5,257.66	5,238.66	5,257.66	21.66	5.89	-78.54	-765.00	-722.01	1,002.59	981.96	20.64	48.583		
5,500.00	5,357.66	5,338.66	5,357.66	21.76	6.00	-78.54	-765.00	-722.01	1,002.59	981.70	20.90	47.975		
5,600.00	5,457.66	5,438.66	5,457.66	21.86	6.11	-78.54	-765.00	-722.01	1,002.59	981.43	21.16	47.379		
5,700.00	5,557.66	5,538.66	5,557.66	21.96	6.22	-78.54	-765.00	-722.01	1,002.59	981.17	21.43	46.793		
5,800.00	5,657.66	5,638.66	5,657.66	22.07	6.34	-78.54	-765.00	-722.01	1,002.59	980.90	21.69	46.218		
5,900.00	5,757.66	5,738.66	5,757.66	22.17	6.45	-78.54	-765.00	-722.01	1,002.59	980.63	21.96	45.653		
5,991.88	5,849.54	5,830.54	5,849.54	22.27	6.55	-78.54	-765.00	-722.01	1,002.59	980.39	22.21	45.143		
6,000.00	5,857.66	5,838.66	5,857.66	22.28	6.56	-78.54	-765.00	-722.01	1,002.53	975.10	27.42	36.559		
6,025.00	5,882.64	5,863.64	5,882.64	22.30	6.59	-78.53	-765.00	-722.01	1,001.46	974.07	27.40	36.554		
6,050.00	5,907.52	5,888.52	5,907.52	22.32	6.62	-78.51	-765.00	-722.01	999.11	971.79	27.32	36.574		
6,075.00	5,932.24	5,913.24	5,932.24	22.34	6.65	-78.47	-765.00	-722.01	995.48	968.29	27.19	36.618		
6,100.00	5,956.74	5,937.74	5,956.74	22.35	6.67	-78.42	-765.00	-722.01	990.58	963.58	27.00	36.687		
6,125.00	5,980.94	5,961.94	5,980.94	22.36	6.70	-78.36	-765.00	-722.01	984.42	957.66	26.76	36.782		
6,150.00	6,004.79	5,985.79	6,004.79	22.36	6.73	-78.29	-765.00	-722.01	977.02	950.55	26.48	36.904		
6,175.00	6,028.21	6,009.21	6,028.21	22.36	6.75	-78.20	-765.00	-722.01	968.41	942.27	26.14	37.053		
6,200.00	6,051.13	6,032.13	6,051.13	22.36	6.78	-78.10	-765.00	-722.01	958.60	932.86	25.75	37.231		
6,225.00	6,073.51	6,054.51	6,073.51	22.35	6.80	-77.98	-765.00	-722.01	947.63	922.32	25.31	37.440		
6,250.00	6,095.27	6,076.27	6,095.27	22.34	6.83	-77.85	-765.00	-722.01	935.53	910.70	24.83	37.680		
6,275.00	6,116.36	6,097.36	6,116.36	22.33	6.85	-77.70	-765.00	-722.01	922.32	898.02	24.30	37.954		
6,300.00	6,136.72	6,117.72	6,136.72	22.32	6.88	-77.53	-765.00	-722.01	908.06	884.33	23.73	38.262		
6,325.00	6,156.29	6,137.29	6,156.29	22.31	6.90	-77.35	-765.00	-722.01	892.78	869.65	23.13	38.605		
6,350.00	6,175.02	6,156.02	6,175.02	22.29	6.92	-77.14	-765.00	-722.01	876.52	854.04	22.49	38.982		
6,375.00	6,192.85	6,173.85	6,192.85	22.27	6.94	-76.92	-765.00	-722.01	859.34	837.52	21.82	39.390		
6,400.00	6,209.75	6,190.75	6,209.75	22.26	6.96	-76.68	-765.00	-722.01	841.27	820.15	21.13	39.822		
6,425.00	6,225.66	6,206.66	6,225.66	22.24	6.98	-76.41	-765.00	-722.01	822.39	801.96	20.43	40.262		
6,450.00	6,240.54	6,221.54	6,240.54	22.23	6.99	-76.12	-765.00	-722.01	802.73	782.99	19.73	40.681		
6,475.00	6,254.34	6,235.34	6,254.34	22.21	7.01	-75.80	-765.00	-722.01	782.36	763.29	19.07	41.027		
6,500.00	6,267.04	6,248.04	6,267.04	22.19	7.02	-75.46	-765.00	-722.01	761.34	742.86	18.47	41.215		
6,525.00	6,278.59	6,259.59	6,278.59	22.18	7.03	-75.08	-765.00	-722.01	739.72	721.73	18.00	41.107		
6,550.00	6,288.97	6,269.97	6,288.97	22.17	7.05	-74.67	-765.00	-722.01	717.59	699.88	17.71	40.514		
6,575.00	6,298.14	6,279.14	6,298.14	22.15	7.06	-74.22	-765.00	-722.01	695.00	677.28	17.71	39.233		
6,600.00	6,306.08	6,287.08	6,306.08	22.15	7.07	-73.74	-765.00	-722.01	672.01	653.92	18.09	37.147		
6,625.00	6,312.77	6,293.77	6,312.77	22.14	7.07	-73.21	-765.00	-722.01	648.71	629.83	18.89	34.350		
6,650.00	6,318.19	6,299.19	6,318.19	22.14	7.08	-72.63	-765.00	-722.01	625.16	605.10	20.06	31.163		
6,675.00	6,322.33	6,303.33	6,322.33	22.14	7.08	-72.00	-765.00	-722.01	601.44	579.97	21.47	28.007		
6,700.00	6,325.17	6,306.17	6,325.17	22.16	7.09	-71.32	-765.00	-722.01	577.63	554.73	22.90	25.220		
6,725.00	6,326.71	6,307.71	6,326.71	22.18	7.09	-70.57	-765.00	-722.01	553.79	529.67	24.12	22.955		
6,741.88	6,327.00	6,308.00	6,327.00	22.20	7.09	-70.03	-765.00	-722.01	537.73	512.97	24.76	21.715		
6,800.00	6,327.00	6,308.00	6,327.00	22.32	7.09	-67.89	-765.00	-722.01	482.82	457.18	25.64	18.829		
6,900.00	6,327.00	6,308.00	6,327.00	22.85	7.09	-62.80	-765.00	-722.01	390.54	363.16	27.38	14.265		
7,000.00	6,327.00	6,308.00	6,327.00	24.01	7.09	-54.69	-765.00	-722.01	303.19	273.85	29.33	10.336		
7,100.00	6,327.00	6,308.00	6,327.00	25.74	7.09	-40.61	-765.00	-722.01	226.55	195.09	31.46	7.201		
7,200.00	6,327.00	6,308.00	6,327.00	27.78	7.09	-15.73	-765.00	-722.01	175.29	141.58	33.71	5.200		
7,252.99	6,327.00	6,308.00	6,327.00	28.95	7.09	1.87	-765.00	-722.01	167.10	132.14	34.96	4.780 CC, ES, SF		
7,300.00	6,327.00	6,308.00	6,327.00	30.01	7.09	17.58	-765.00	-722.01	173.58	137.52	36.06	4.813		
7,400.00	6,327.00	6,308.00	6,327.00	32.34	7.09	43.21	-765.00	-722.01	222.56	184.07	38.49	5.782		

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

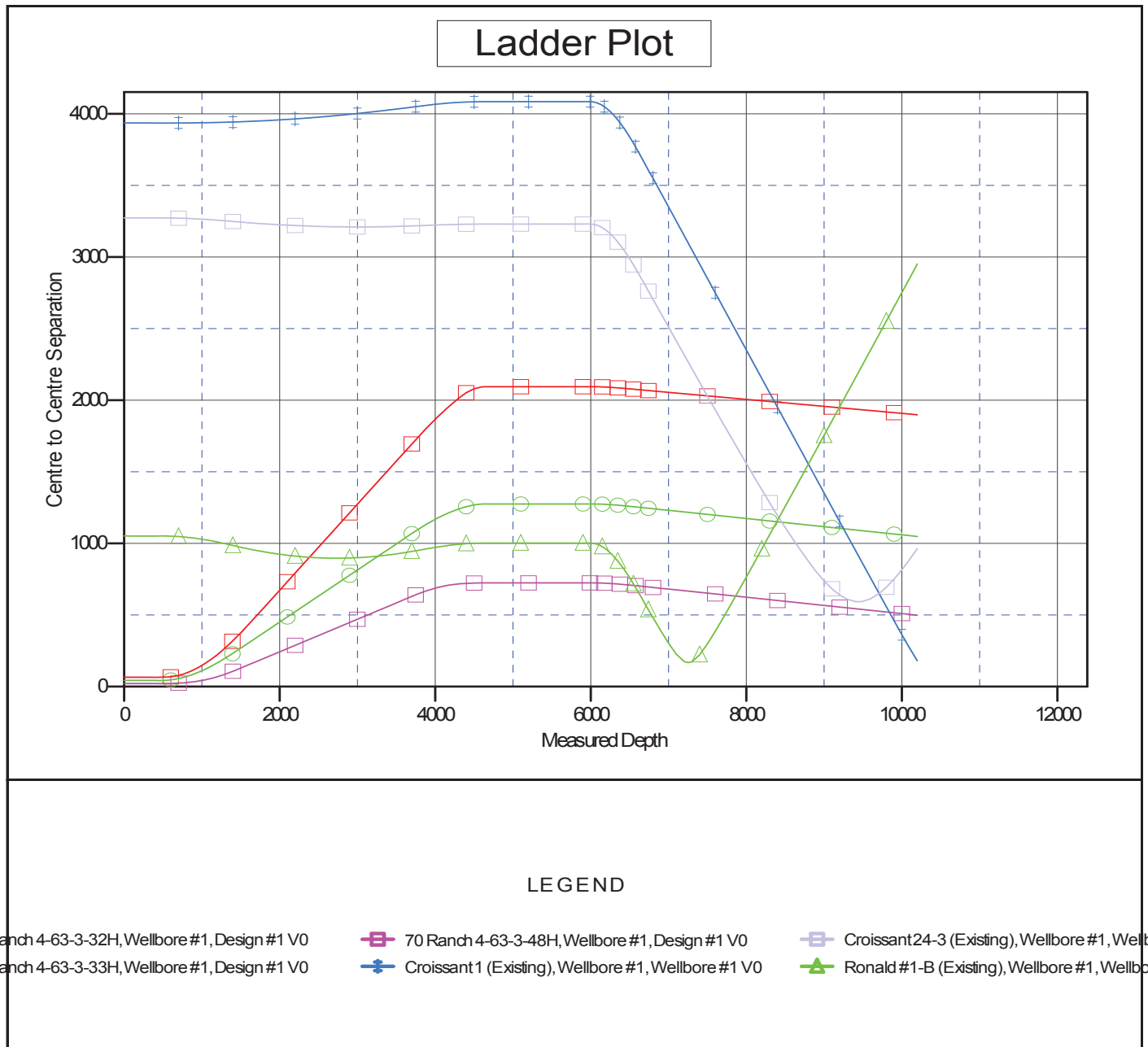
Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	Survey Calculation 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 #2	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 8000-MWD													Offset Well Error:	0.00 usft
Sec.3-T4N-R63W - Ronald #1-B (Existing) - Wellbore #1 - Wellbore #1														
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
7,500.00	6,327.00	6,308.00	6,327.00	34.76	7.09	57.79	-765.00	-722.01	298.22	257.24	40.98	7.278		
7,600.00	6,327.00	6,308.00	6,327.00	37.24	7.09	66.15	-765.00	-722.01	385.15	341.63	43.51	8.851		
7,700.00	6,327.00	6,308.00	6,327.00	39.76	7.09	71.37	-765.00	-722.01	477.22	431.14	46.09	10.355		
7,800.00	6,327.00	6,308.00	6,327.00	42.33	7.09	74.88	-765.00	-722.01	571.97	523.27	48.69	11.747		
7,900.00	6,327.00	6,308.00	6,327.00	44.92	7.09	77.38	-765.00	-722.01	668.24	616.92	51.32	13.021		
8,000.00	6,327.00	6,308.00	6,327.00	47.54	7.09	79.26	-765.00	-722.01	765.47	711.50	53.97	14.182		
8,100.00	6,327.00	6,308.00	6,327.00	50.18	7.09	80.71	-765.00	-722.01	863.34	806.70	56.64	15.242		
8,200.00	6,327.00	6,308.00	6,327.00	52.84	7.09	81.86	-765.00	-722.01	961.64	902.31	59.33	16.209		
8,300.00	6,327.00	6,308.00	6,327.00	55.51	7.09	82.80	-765.00	-722.01	1,060.26	998.24	62.03	17.094		
8,400.00	6,327.00	6,308.00	6,327.00	58.19	7.09	83.58	-765.00	-722.01	1,159.12	1,094.39	64.73	17.906		
8,500.00	6,327.00	6,308.00	6,327.00	60.89	7.09	84.23	-765.00	-722.01	1,258.16	1,190.71	67.45	18.653		
8,600.00	6,327.00	6,308.00	6,327.00	63.60	7.09	84.79	-765.00	-722.01	1,357.34	1,287.16	70.18	19.341		
8,700.00	6,327.00	6,308.00	6,327.00	66.31	7.09	85.28	-765.00	-722.01	1,456.63	1,383.72	72.91	19.978		
8,800.00	6,327.00	6,308.00	6,327.00	69.04	7.09	85.70	-765.00	-722.01	1,556.01	1,480.36	75.65	20.567		
8,900.00	6,327.00	6,308.00	6,327.00	71.77	7.09	86.07	-765.00	-722.01	1,655.47	1,577.07	78.40	21.116		
9,000.00	6,327.00	6,308.00	6,327.00	74.51	7.09	86.40	-765.00	-722.01	1,754.99	1,673.84	81.15	21.626		
9,100.00	6,327.00	6,308.00	6,327.00	77.25	7.09	86.70	-765.00	-722.01	1,854.56	1,770.65	83.91	22.102		
9,200.00	6,327.00	6,308.00	6,327.00	80.00	7.09	86.96	-765.00	-722.01	1,954.17	1,867.50	86.67	22.548		
9,300.00	6,327.00	6,308.00	6,327.00	82.75	7.09	87.20	-765.00	-722.01	2,053.82	1,964.39	89.43	22.965		
9,400.00	6,327.00	6,308.00	6,327.00	85.50	7.09	87.42	-765.00	-722.01	2,153.51	2,061.31	92.20	23.357		
9,500.00	6,327.00	6,308.00	6,327.00	88.26	7.09	87.61	-765.00	-722.01	2,253.22	2,158.25	94.97	23.726		
9,600.00	6,327.00	6,308.00	6,327.00	91.02	7.09	87.79	-765.00	-722.01	2,352.95	2,255.21	97.74	24.073		
9,700.00	6,327.00	6,308.00	6,327.00	93.79	7.09	87.96	-765.00	-722.01	2,452.71	2,352.20	100.52	24.401		
9,800.00	6,327.00	6,308.00	6,327.00	96.56	7.09	88.11	-765.00	-722.01	2,552.49	2,449.20	103.29	24.711		
9,900.00	6,327.00	6,308.00	6,327.00	99.33	7.09	88.25	-765.00	-722.01	2,652.28	2,546.21	106.07	25.004		
10,000.00	6,327.00	6,308.00	6,327.00	102.10	7.09	88.38	-765.00	-722.01	2,752.09	2,643.24	108.86	25.282		
10,100.00	6,327.00	6,308.00	6,327.00	104.88	7.09	88.51	-765.00	-722.01	2,851.91	2,740.28	111.64	25.546		
10,199.66	6,327.00	6,308.00	6,327.00	107.64	7.09	88.62	-765.00	-722.01	2,951.41	2,837.00	114.41	25.796		

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well 70 Ranch 4-63-3-49H
Project:	Weld Co., CO	TVD Reference:	WELL @ 4559.00usft
Reference Site:	Sec.3-T4N-R63W	MD Reference:	WELL @ 4559.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	70 Ranch 4-63-3-49H	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 #2	Offset TVD Reference:	Reference Datum

Reference Depths are relative to WELL @ 4559.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: 70 Ranch 4-63-3-49H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.70°

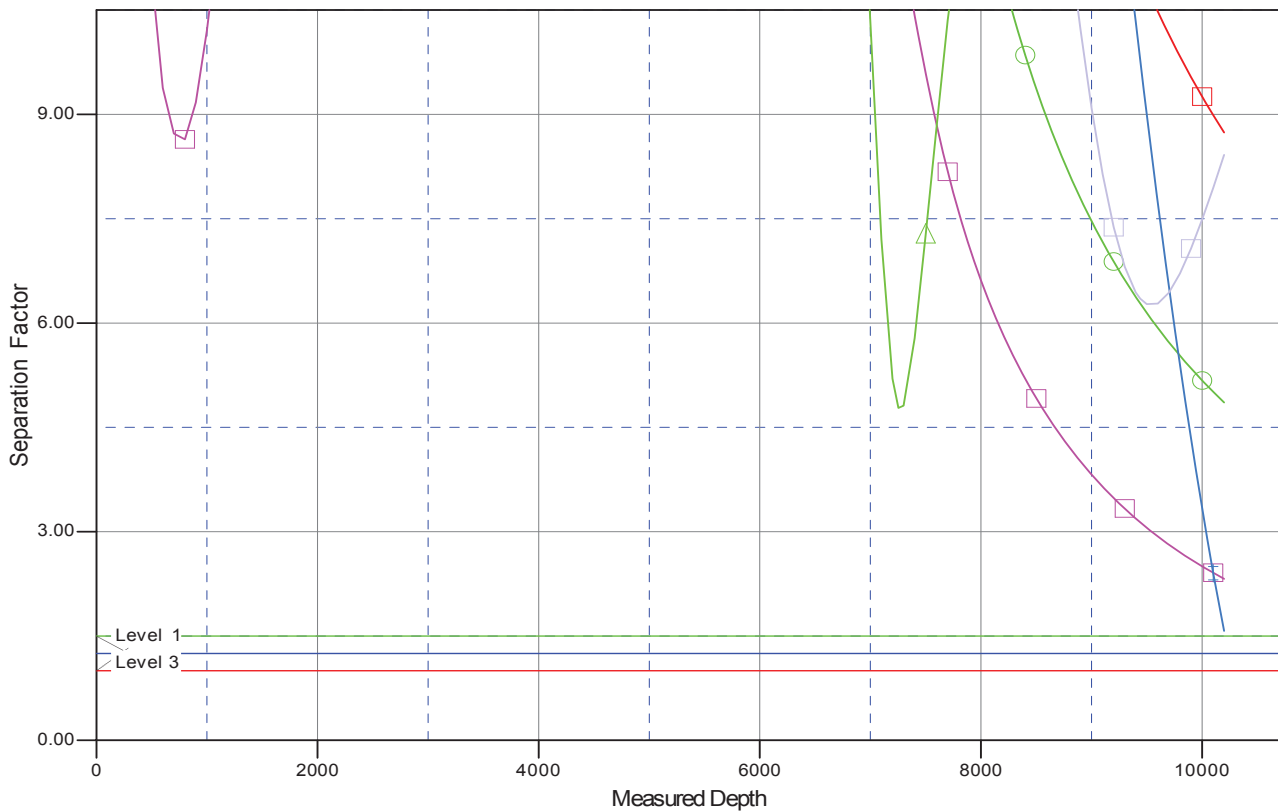


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Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Reference Datum

Reference Depths are relative to WELL @ 4559.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: 70 Ranch 4-63-3-49H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.70°

Separation Factor Plot



LEGEND

Ranch 4-63-3-32H, Wellbore #1, Design #1 V0 70 Ranch 4-63-3-48H, Wellbore #1, Design #1 V0 Croissant 24-3 (Existing), Wellbore #1, Wellbore #1 V0
Ranch 4-63-3-33H, Wellbore #1, Design #1 V0 Croissant 1 (Existing), Wellbore #1, Wellbore #1 V0 Ronald #1-B (Existing), Wellbore #1, Wellbore #1 V0