



Weatherford®

SHELL E&P

**MOFFAT COUNTY, CO
DEAL GULCH 6-16**

Plan: PLAN #1

Proposal

2 OCTOBER, 2012



Weatherford®



Project: MOFFAT COUNTY, CO
Site: DEAL GULCH 6-16
Well: DEAL GULCH 6-16
Wellbore: DEAL GULCH 6-16
Design: Design #2
Latitude: 40° 23' 16.550 N
Longitude: 107° 29' 52.940 W
GL: 7210.00
KB: RIG KB @ 7222.00ft
RIG:



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WELL DETAILS: DEAL GULCH 6-16

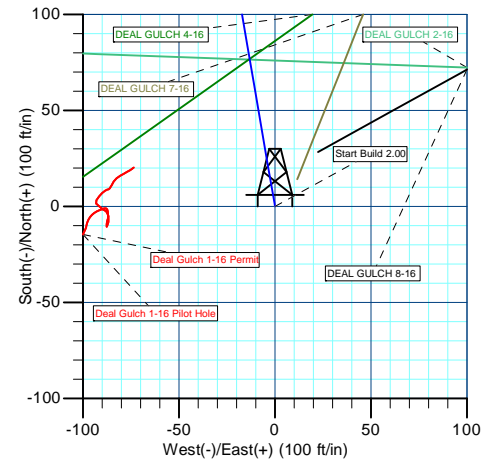
+N/-S	+E/-W	Northing	Ground Level: Easting	7210.00 Latitude	Longitude	Slot
0.00	0.00	1390433.68	2443473.50	40° 23' 16.550 N	107° 29' 52.940 W	

SECTION DETAILS

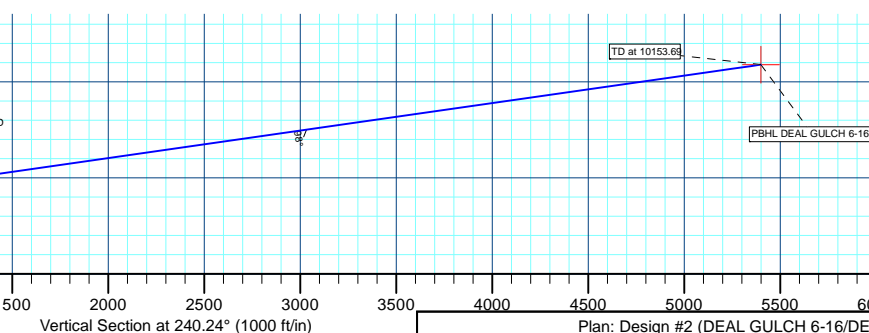
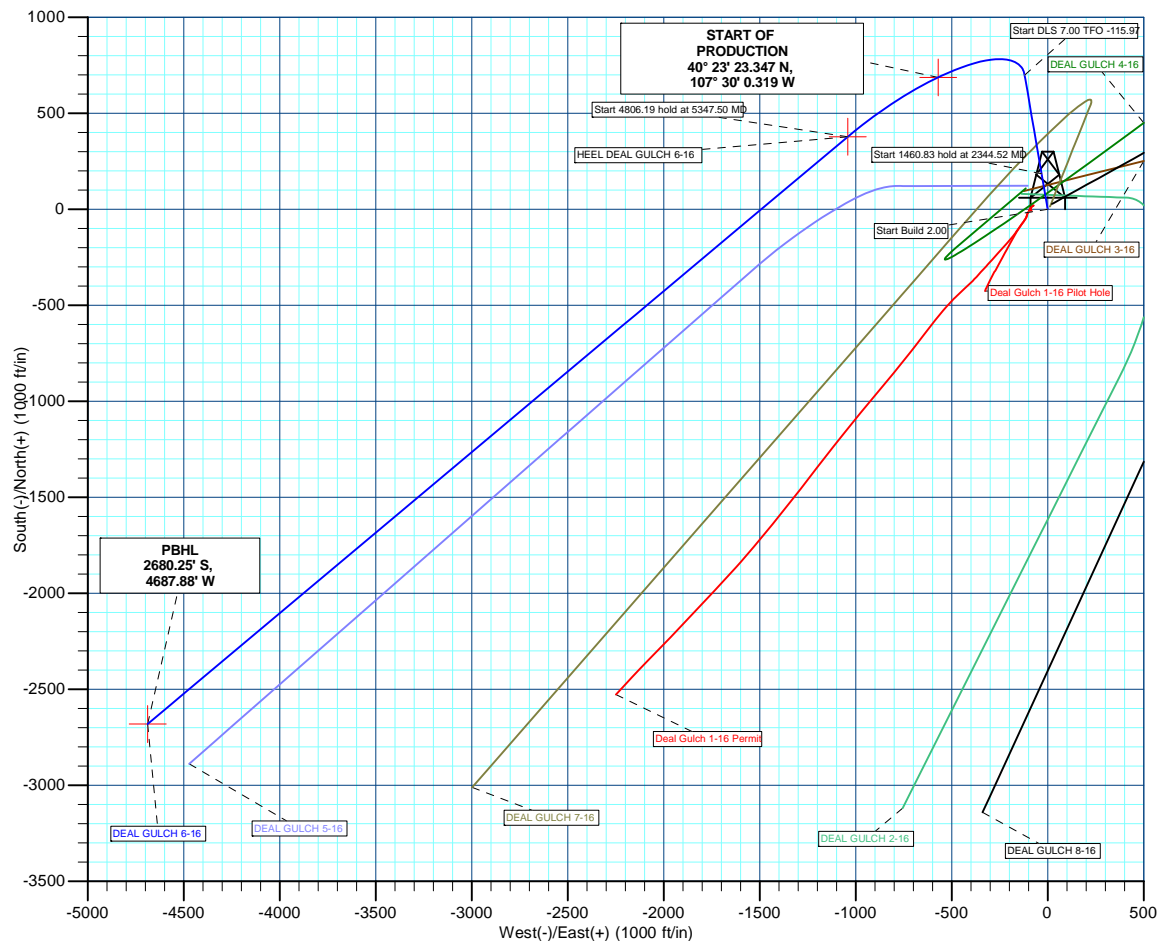
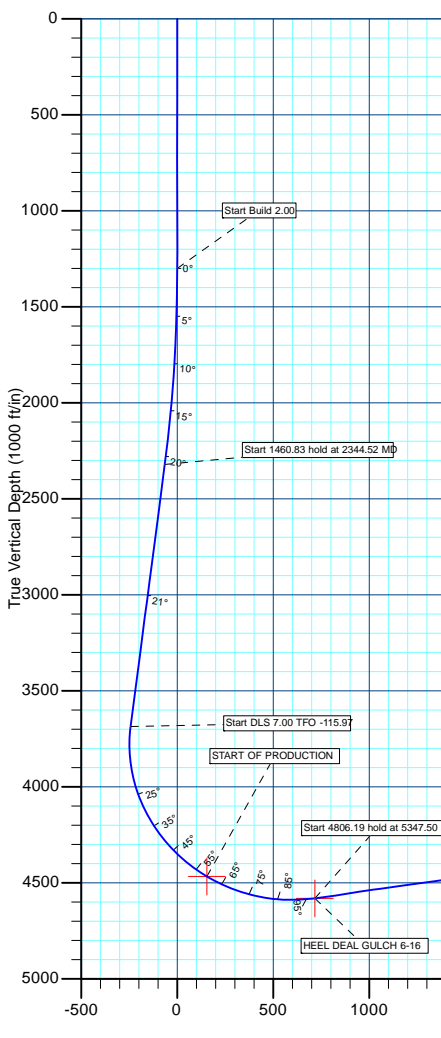
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
2344.52	20.89	350.27	2321.53	185.61	-31.81	2.00	350.27	-64.51	Start 1460.83 hold at 2344.52 MD
3805.35	20.89	350.27	3686.33	699.03	-119.81	0.00	0.00	-242.95	Start DLS 7.00 TFO -115.97
5347.50	98.01	230.01	4581.00	378.32	-1041.55	7.00	-115.97	716.42	Start 4806.19 hold at 5347.50 MD
10153.69	98.01	230.01	3911.00	-2680.25	-4687.88	0.00	0.00	5399.99	TD at 10153.69

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL DEAL GULCH 6-16	3911.00	-2680.25	-4687.88	1387859.74	2438726.44	40° 22' 50.059 N	107° 30' 53.518 W	Point
START OF PRODUCTION	4467.00	687.83	-570.95	1391134.20	2442918.20	40° 23' 23.347 N	107° 30' 0.319 W	Point
HEEL DEAL GULCH 6-16	4581.00	378.32	-1041.55	1390835.38	2442440.74	40° 23' 20.288 N	107° 30' 6.401 W	Point



Azimuths to True North
Magnetic North: 10.08°
Magnetic Field
Strength: 52587.8nT
Dip Angle: 66.50°
Date: 10/2/2012
Model: BGGM2012



Plan: Design #2 (DEAL GULCH 6-16/DEAL GULCH 6-16)

Created By: TRACY WILLIAMS

Date: 10:43, October 12 2012



SHELL E&P

MOFFAT COUNTY, CO

DEAL GULCH 6-16

DEAL GULCH 6-16

DEAL GULCH 6-16

Plan: Design #2

Standard Planning Report

12 October, 2012



Weatherford®



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Company:	SHELL E&P	TVD Reference:	RIG KB @ 7222.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	RIG KB @ 7222.00ft
Site:	DEAL GULCH 6-16	North Reference:	True
Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 6-16		
Design:	Design #2		

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

Site		DEAL GULCH 6-16			
Site Position:		Northing:	1,390,433.68 usft	Latitude:	40° 23' 16.550 N
From:	Lat/Long	Easting:	2,443,473.50 usft	Longitude:	107° 29' 52.940 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.29 °

Well	DEAL GULCH 6-16					
Well Position	+N/-S	0.00 ft	Northing:	1,390,433.68 usft	Latitude:	40° 23' 16.550 N
	+E/-W	0.00 ft	Easting:	2,443,473.50 usft	Longitude:	107° 29' 52.940 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	7,210.00 ft

Wellbore	DEAL GULCH 6-16				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	10/2/2012	10.08	66.50	52,588

Design	Design #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	240.24

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,344.52	20.89	350.27	2,321.53	185.61	-31.81	2.00	2.00	0.00	350.27	
3,805.35	20.89	350.27	3,686.33	699.03	-119.81	0.00	0.00	0.00	0.00	
5,347.50	98.01	230.01	4,581.00	378.32	-1,041.55	7.00	5.00	-7.80	-115.97	HEEL DEAL GULCH I
10,153.69	98.01	230.01	3,911.00	-2,680.25	-4,687.88	0.00	0.00	0.00	0.00	PBHL DEAL GULCH I



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Company:	SHELL E&P	TVD Reference:	RIG KB @ 7222.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	RIG KB @ 7222.00ft
Site:	DEAL GULCH 6-16	North Reference:	True
Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 6-16		
Design:	Design #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	2.00	350.27	1,399.98	1.72	-0.29	-0.60	2.00	2.00	0.00
1,500.00	4.00	350.27	1,499.84	6.88	-1.18	-2.39	2.00	2.00	0.00
1,600.00	6.00	350.27	1,599.45	15.47	-2.65	-5.38	2.00	2.00	0.00
1,700.00	8.00	350.27	1,698.70	27.48	-4.71	-9.55	2.00	2.00	0.00
1,800.00	10.00	350.27	1,797.47	42.90	-7.35	-14.91	2.00	2.00	0.00
1,900.00	12.00	350.27	1,895.62	61.70	-10.58	-21.44	2.00	2.00	0.00
2,000.00	14.00	350.27	1,993.06	83.87	-14.38	-29.15	2.00	2.00	0.00
2,100.00	16.00	350.27	2,089.64	109.38	-18.75	-38.02	2.00	2.00	0.00
2,200.00	18.00	350.27	2,185.27	138.20	-23.69	-48.03	2.00	2.00	0.00
2,300.00	20.00	350.27	2,279.82	170.28	-29.19	-59.18	2.00	2.00	0.00
Start 1460.83 hold at 2344.52 MD									
2,344.52	20.89	350.27	2,321.53	185.61	-31.81	-64.51	2.00	2.00	0.00
2,400.00	20.89	350.27	2,373.36	205.11	-35.16	-71.29	0.00	0.00	0.00
2,500.00	20.89	350.27	2,466.79	240.26	-41.18	-83.50	0.00	0.00	0.00
2,600.00	20.89	350.27	2,560.22	275.40	-47.20	-95.72	0.00	0.00	0.00
2,700.00	20.89	350.27	2,653.64	310.55	-53.23	-107.93	0.00	0.00	0.00
2,800.00	20.89	350.27	2,747.07	345.69	-59.25	-120.14	0.00	0.00	0.00
2,900.00	20.89	350.27	2,840.50	380.84	-65.28	-132.36	0.00	0.00	0.00
3,000.00	20.89	350.27	2,933.92	415.98	-71.30	-144.57	0.00	0.00	0.00
3,100.00	20.89	350.27	3,027.35	451.13	-77.32	-156.79	0.00	0.00	0.00
3,200.00	20.89	350.27	3,120.78	486.28	-83.35	-169.00	0.00	0.00	0.00
3,300.00	20.89	350.27	3,214.20	521.42	-89.37	-181.22	0.00	0.00	0.00
3,400.00	20.89	350.27	3,307.63	556.57	-95.39	-193.43	0.00	0.00	0.00
3,500.00	20.89	350.27	3,401.05	591.71	-101.42	-205.65	0.00	0.00	0.00
3,600.00	20.89	350.27	3,494.48	626.86	-107.44	-217.86	0.00	0.00	0.00
3,700.00	20.89	350.27	3,587.91	662.00	-113.47	-230.08	0.00	0.00	0.00
Start DLS 7.00 TFO -115.97									
3,805.35	20.89	350.27	3,686.33	699.03	-119.81	-242.95	0.00	0.00	0.00
3,850.00	19.71	341.92	3,728.22	714.04	-123.50	-247.20	7.00	-2.63	-18.71
3,900.00	18.91	331.60	3,775.42	729.19	-129.97	-249.10	7.00	-1.61	-20.63
3,950.00	18.71	320.75	3,822.76	742.53	-138.90	-247.97	7.00	-0.40	-21.71
4,000.00	19.13	310.02	3,870.07	754.01	-150.25	-243.81	7.00	0.85	-21.46
4,050.00	20.15	300.04	3,917.18	763.59	-163.98	-236.65	7.00	2.02	-19.97
4,100.00	21.66	291.19	3,963.90	771.24	-180.05	-226.50	7.00	3.03	-17.71
4,150.00	23.58	283.57	4,010.06	776.92	-198.38	-213.40	7.00	3.84	-15.23
4,200.00	25.82	277.12	4,055.49	780.62	-218.91	-197.41	7.00	4.48	-12.90
4,250.00	28.30	271.68	4,100.02	782.32	-241.57	-178.58	7.00	4.96	-10.88
4,300.00	30.96	267.08	4,143.48	782.01	-266.27	-156.99	7.00	5.32	-9.20



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Company:	SHELL E&P	TVD Reference:	RIG KB @ 7222.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	RIG KB @ 7222.00ft
Site:	DEAL GULCH 6-16	North Reference:	True
Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 6-16		
Design:	Design #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,350.00	33.76	263.16	4,185.72	779.70	-292.92	-132.71	7.00	5.60	-7.85
4,400.00	36.67	259.78	4,226.56	775.40	-321.42	-105.83	7.00	5.82	-6.76
4,450.00	39.66	256.83	4,265.87	769.11	-351.66	-76.46	7.00	5.98	-5.89
4,500.00	42.72	254.24	4,303.50	760.87	-383.53	-44.70	7.00	6.11	-5.18
4,550.00	45.83	251.94	4,339.30	750.70	-416.91	-10.67	7.00	6.22	-4.61
4,600.00	48.98	249.86	4,373.14	738.64	-451.67	25.49	7.00	6.30	-4.15
4,650.00	52.16	247.98	4,404.89	724.74	-487.70	63.66	7.00	6.37	-3.76
4,700.00	55.37	246.26	4,434.44	709.05	-524.84	103.70	7.00	6.42	-3.45
4,750.00	58.61	244.66	4,461.68	691.63	-562.97	145.45	7.00	6.47	-3.19
START OF PRODUCTION - START OF PRODUCTION (DEAL GULCH 6-16 DEAL GULCH 6-16)									
4,760.31	59.28	244.34	4,467.00	687.83	-570.95	154.26	7.00	6.49	-3.06
4,800.00	61.86	243.17	4,486.50	672.54	-601.94	188.75	7.00	6.51	-2.96
4,850.00	65.13	241.77	4,508.81	651.85	-641.61	233.46	7.00	6.54	-2.80
4,900.00	68.41	240.44	4,528.54	629.65	-681.83	279.39	7.00	6.56	-2.66
4,950.00	71.70	239.17	4,545.59	606.01	-722.44	326.38	7.00	6.58	-2.54
5,000.00	75.00	237.95	4,559.92	581.02	-763.30	374.25	7.00	6.60	-2.45
5,050.00	78.30	236.76	4,571.47	554.78	-804.25	422.83	7.00	6.61	-2.37
5,100.00	81.61	235.60	4,580.19	527.38	-845.15	471.93	7.00	6.62	-2.32
5,150.00	84.92	234.46	4,586.05	498.92	-885.83	521.38	7.00	6.63	-2.28
5,200.00	88.24	233.34	4,589.03	469.52	-926.15	570.97	7.00	6.63	-2.25
5,250.00	91.55	232.22	4,589.13	439.28	-965.96	620.54	7.00	6.63	-2.24
5,300.00	94.87	231.09	4,586.33	408.31	-1,005.11	669.90	7.00	6.63	-2.25
Start 4806.19 hold at 5347.50 MD - HEEL DEAL GULCH 6-16									
5,347.50	98.01	230.01	4,581.00	378.32	-1,041.55	716.42	7.00	6.63	-2.27
5,400.00	98.01	230.01	4,573.68	344.92	-1,081.38	767.58	0.00	0.00	0.00
5,500.00	98.01	230.01	4,559.74	281.28	-1,157.25	865.03	0.00	0.00	0.00
5,600.00	98.01	230.01	4,545.80	217.64	-1,233.11	962.48	0.00	0.00	0.00
5,700.00	98.01	230.01	4,531.86	154.00	-1,308.98	1,059.92	0.00	0.00	0.00
5,800.00	98.01	230.01	4,517.92	90.36	-1,384.85	1,157.37	0.00	0.00	0.00
5,900.00	98.01	230.01	4,503.98	26.72	-1,460.72	1,254.82	0.00	0.00	0.00
6,000.00	98.01	230.01	4,490.04	-36.91	-1,536.58	1,352.27	0.00	0.00	0.00
6,100.00	98.01	230.01	4,476.10	-100.55	-1,612.45	1,449.72	0.00	0.00	0.00
6,200.00	98.01	230.01	4,462.16	-164.19	-1,688.32	1,547.17	0.00	0.00	0.00
6,300.00	98.01	230.01	4,448.22	-227.83	-1,764.19	1,644.62	0.00	0.00	0.00
6,400.00	98.01	230.01	4,434.28	-291.47	-1,840.05	1,742.07	0.00	0.00	0.00
6,500.00	98.01	230.01	4,420.34	-355.10	-1,915.92	1,839.51	0.00	0.00	0.00
6,600.00	98.01	230.01	4,406.40	-418.74	-1,991.79	1,936.96	0.00	0.00	0.00
6,700.00	98.01	230.01	4,392.46	-482.38	-2,067.65	2,034.41	0.00	0.00	0.00
6,800.00	98.01	230.01	4,378.52	-546.02	-2,143.52	2,131.86	0.00	0.00	0.00
6,900.00	98.01	230.01	4,364.58	-609.66	-2,219.39	2,229.31	0.00	0.00	0.00
7,000.00	98.01	230.01	4,350.64	-673.30	-2,295.26	2,326.76	0.00	0.00	0.00
7,100.00	98.01	230.01	4,336.70	-736.93	-2,371.12	2,424.21	0.00	0.00	0.00
7,200.00	98.01	230.01	4,322.76	-800.57	-2,446.99	2,521.66	0.00	0.00	0.00
7,300.00	98.01	230.01	4,308.82	-864.21	-2,522.86	2,619.10	0.00	0.00	0.00
7,400.00	98.01	230.01	4,294.87	-927.85	-2,598.73	2,716.55	0.00	0.00	0.00
7,500.00	98.01	230.01	4,280.93	-991.49	-2,674.59	2,814.00	0.00	0.00	0.00
7,600.00	98.01	230.01	4,266.99	-1,055.13	-2,750.46	2,911.45	0.00	0.00	0.00
7,700.00	98.01	230.01	4,253.05	-1,118.76	-2,826.33	3,008.90	0.00	0.00	0.00
7,800.00	98.01	230.01	4,239.11	-1,182.40	-2,902.19	3,106.35	0.00	0.00	0.00
7,900.00	98.01	230.01	4,225.17	-1,246.04	-2,978.06	3,203.80	0.00	0.00	0.00
8,000.00	98.01	230.01	4,211.23	-1,309.68	-3,053.93	3,301.25	0.00	0.00	0.00
8,100.00	98.01	230.01	4,197.29	-1,373.32	-3,129.80	3,398.69	0.00	0.00	0.00
8,200.00	98.01	230.01	4,183.35	-1,436.95	-3,205.66	3,496.14	0.00	0.00	0.00
8,300.00	98.01	230.01	4,169.41	-1,500.59	-3,281.53	3,593.59	0.00	0.00	0.00



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Project:	MOFFAT COUNTY, CO	MD Reference:	RIG KB @ 7222.00ft
Site:	DEAL GULCH 6-16	North Reference:	True
Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 6-16		
Design:	Design #2		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,400.00	98.01	230.01	4,155.47	-1,564.23	-3,357.40	3,691.04	0.00	0.00	0.00	
8,500.00	98.01	230.01	4,141.53	-1,627.87	-3,433.27	3,788.49	0.00	0.00	0.00	
8,600.00	98.01	230.01	4,127.59	-1,691.51	-3,509.13	3,885.94	0.00	0.00	0.00	
8,700.00	98.01	230.01	4,113.65	-1,755.15	-3,585.00	3,983.39	0.00	0.00	0.00	
8,800.00	98.01	230.01	4,099.71	-1,818.78	-3,660.87	4,080.84	0.00	0.00	0.00	
8,900.00	98.01	230.01	4,085.77	-1,882.42	-3,736.73	4,178.29	0.00	0.00	0.00	
9,000.00	98.01	230.01	4,071.83	-1,946.06	-3,812.60	4,275.73	0.00	0.00	0.00	
9,100.00	98.01	230.01	4,057.89	-2,009.70	-3,888.47	4,373.18	0.00	0.00	0.00	
9,200.00	98.01	230.01	4,043.95	-2,073.34	-3,964.34	4,470.63	0.00	0.00	0.00	
9,300.00	98.01	230.01	4,030.01	-2,136.98	-4,040.20	4,568.08	0.00	0.00	0.00	
9,400.00	98.01	230.01	4,016.07	-2,200.61	-4,116.07	4,665.53	0.00	0.00	0.00	
9,500.00	98.01	230.01	4,002.13	-2,264.25	-4,191.94	4,762.98	0.00	0.00	0.00	
9,600.00	98.01	230.01	3,988.19	-2,327.89	-4,267.81	4,860.43	0.00	0.00	0.00	
9,700.00	98.01	230.01	3,974.25	-2,391.53	-4,343.67	4,957.88	0.00	0.00	0.00	
9,800.00	98.01	230.01	3,960.31	-2,455.17	-4,419.54	5,055.32	0.00	0.00	0.00	
9,900.00	98.01	230.01	3,946.37	-2,518.80	-4,495.41	5,152.77	0.00	0.00	0.00	
10,000.00	98.01	230.01	3,932.43	-2,582.44	-4,571.27	5,250.22	0.00	0.00	0.00	
10,100.00	98.01	230.01	3,918.49	-2,646.08	-4,647.14	5,347.67	0.00	0.00	0.00	
TD at 10153.69 - PBHL DEAL GULCH 6-16										
10,153.69	98.01	230.01	3,911.00	-2,680.25	-4,687.88	5,399.99	0.00	0.00	0.00	

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PBHL DEAL GULCH 6-1 - plan hits target center - Point	0.00	0.00	3,911.00	-2,680.25	-4,687.88	1,387,859.74	2,438,726.44	40° 22' 50.059 N	107° 30' 53.518 W	
START OF PRODUCTIC - plan hits target center - Point	0.00	0.00	4,467.00	687.83	-570.95	1,391,134.20	2,442,918.20	40° 23' 23.347 N	107° 30' 0.319 W	
HEEL DEAL GULCH 6-1 - plan hits target center - Point	0.00	0.00	4,581.00	378.32	-1,041.55	1,390,835.38	2,442,440.74	40° 23' 20.288 N	107° 30' 6.401 W	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,760.31	4,467.00	START OF PRODUCTION		0.00		



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Company:	SHELL E&P	TVD Reference:	RIG KB @ 7222.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	RIG KB @ 7222.00ft
Site:	DEAL GULCH 6-16	North Reference:	True
Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 6-16		
Design:	Design #2		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,300.00	1,300.00	0.00	0.00	Start Build 2.00
2,344.52	2,321.53	185.61	-31.81	Start 1460.83 hold at 2344.52 MD
3,805.35	3,686.33	699.03	-119.81	Start DLS 7.00 TFO -115.97
5,347.50	4,581.00	378.32	-1,041.55	Start 4806.19 hold at 5347.50 MD
10,153.69	3,911.00	-2,680.25	-4,687.88	TD at 10153.69



SHELL E&P

MOFFAT COUNTY, CO

DEAL GULCH 6-16

DEAL GULCH 6-16

DEAL GULCH 6-16

Design #2

Anticollision Report

12 October, 2012



Weatherford®



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Reference	Design #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 11,000.00 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	10/12/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	10,153.69	Design #2 (DEAL GULCH 6-16)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
DEAL GULCH 1-16						
Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Deal Gulch 1	0.00	0.00	76.35			
Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Deal Gulch 1	8,500.00	7,797.00	1,577.55	1,425.77	10.394	SF
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulch	0.00	0.00	76.35			
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulch	1,700.00	1,695.23	89.44	82.26	12.454	SF
DEAL GULCH 2-16						
DEAL GULCH 2-16 - DEAL GULCH 2-16 - Design #3	2,069.77	2,060.54	120.55	111.19	12.880	CC, ES
DEAL GULCH 2-16 - DEAL GULCH 2-16 - Design #3	2,200.00	2,185.27	126.22	116.09	12.459	SF
DEAL GULCH 3-16						
DEAL GULCH 3-16 - DEAL GULCH 3-16 - Design #1	2,213.04	2,207.40	102.26	92.06	10.023	CC, ES
DEAL GULCH 3-16 - DEAL GULCH 3-16 - Design #1	2,300.00	2,293.04	105.24	94.67	9.959	SF
DEAL GULCH 4-16						
DEAL GULCH 4-16 - DEAL GULCH 4-16 - Design #1	2,156.44	2,143.74	94.41	84.51	9.534	CC, ES
DEAL GULCH 4-16 - DEAL GULCH 4-16 - Design #1	2,200.00	2,185.27	95.32	85.15	9.369	SF
DEAL GULCH 5-16						
DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1	2,154.06	2,137.41	85.74	75.91	8.722	CC, ES
DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1	10,100.00	9,587.89	809.63	688.59	6.689	SF
DEAL GULCH 7-16						
DEAL GULCH 7-16 - DEAL GULCH 7-16 - Design #1	1,556.80	1,518.41	13.88	7.22	2.085	CC, ES, SF
DEAL GULCH 8-16						
DEAL GULCH 8-16 - DEAL GULCH 8-16 - Design #1	1,550.01	1,509.50	32.08	25.47	4.854	CC, ES
DEAL GULCH 8-16 - DEAL GULCH 8-16 - Design #1	1,600.00	1,558.73	32.64	25.81	4.780	SF

Offset Design	DEAL GULCH 1-16 - Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Deal Gulch 1-16 Permit												Offset Site Error:	0.67 ft
Survey Program:	177-MWD, 4498-MWD, 4363-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.67	-74.62	20.24	-73.57	76.35					
100.00	100.00	96.91	96.91	0.10	0.67	-74.86	19.99	-73.89	76.55	75.78	0.77	98.972		
200.00	200.00	196.37	196.36	0.32	0.71	-75.61	19.23	-74.92	77.35	76.32	1.03	75.120		

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



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.67 ft
Survey Program: 177-MWD, 4498-MWD, 4363-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
300.00	300.00	295.60	295.56	0.55	0.81	-76.82	18.04	-77.02	79.13	77.77	1.36	58.264		
400.00	400.00	395.40	395.31	0.77	0.96	-78.33	16.48	-79.80	81.51	79.78	1.73	47.102		
500.00	500.00	495.32	495.16	1.00	1.13	-80.24	14.26	-82.88	84.13	82.00	2.13	39.570		
600.00	600.00	596.40	596.17	1.22	1.31	-82.47	11.23	-84.98	85.73	83.20	2.53	33.922		
700.00	700.00	696.76	696.49	1.45	1.49	-83.97	9.13	-86.40	86.88	83.96	2.93	29.680		
800.00	800.00	796.36	796.08	1.67	1.67	-84.30	8.72	-87.45	87.90	84.56	3.33	26.384		
900.00	900.00	895.65	895.35	1.90	1.87	-85.21	7.49	-89.40	89.73	85.97	3.76	23.862		
1,000.00	1,000.00	995.56	995.19	2.12	2.09	-87.01	4.79	-91.91	92.06	87.86	4.20	21.940		
1,100.00	1,100.00	1,098.91	1,098.48	2.35	2.29	-88.92	1.75	-93.20	93.23	88.61	4.62	20.174		
1,200.00	1,200.00	1,199.84	1,199.36	2.57	2.48	-90.29	-0.45	-90.90	90.93	85.88	5.04	18.040		
1,300.00	1,300.00	1,298.73	1,298.23	2.80	2.67	-91.08	-1.69	-89.37	89.39	83.93	5.46	16.375		
1,400.00	1,399.98	1,398.69	1,398.18	3.02	2.87	-82.97	-2.38	-88.19	88.00	82.13	5.87	14.982		
1,500.00	1,499.84	1,498.17	1,497.65	3.25	3.07	-87.23	-3.58	-87.28	86.74	80.43	6.30	13.762		
1,562.24	1,561.87	1,559.87	1,559.33	3.39	3.20	-91.17	-4.51	-86.89	86.42	79.85	6.57	13.147		
1,600.00	1,599.45	1,597.01	1,596.47	3.48	3.28	-93.99	-5.13	-86.78	86.61	79.88	6.74	12.856		
1,700.00	1,698.70	1,695.23	1,694.67	3.71	3.50	-102.78	-7.10	-87.19	89.44	82.26	7.18	12.454		
1,800.00	1,797.47	1,793.93	1,793.34	3.97	3.71	-113.02	-9.64	-87.63	95.95	88.32	7.63	12.573		
1,900.00	1,895.62	1,894.77	1,894.17	4.26	3.91	-122.97	-10.48	-87.55	105.54	97.47	8.07	13.079		
2,000.00	1,993.06	1,993.05	1,992.43	4.59	4.09	-131.52	-8.68	-86.90	117.60	109.11	8.50	13.842		
2,100.00	2,089.64	2,089.44	2,088.81	4.97	4.29	-139.05	-7.14	-86.72	134.91	126.00	8.92	15.131		
2,200.00	2,185.27	2,185.19	2,184.54	5.40	4.48	-145.44	-5.89	-86.75	157.29	147.97	9.32	16.876		
2,300.00	2,279.82	2,281.74	2,281.08	5.89	4.67	-150.66	-3.99	-86.92	183.63	173.92	9.71	18.917		
2,400.00	2,373.36	2,374.71	2,374.03	6.43	4.86	-154.85	-2.01	-87.17	213.57	203.45	10.12	21.097		
2,500.00	2,466.79	2,465.45	2,464.75	7.01	5.06	-158.03	-0.98	-87.85	245.71	235.13	10.58	23.225		
2,600.00	2,560.22	2,555.78	2,555.08	7.61	5.25	-160.38	-1.09	-89.20	279.67	268.63	11.05	25.318		
2,700.00	2,653.64	2,648.26	2,647.54	8.23	5.45	-162.20	-1.81	-91.07	314.66	303.13	11.52	27.308		
2,800.00	2,747.07	2,738.57	2,737.81	8.86	5.65	-163.57	-2.82	-93.24	350.23	338.23	12.00	29.184		
2,900.00	2,840.50	2,827.83	2,827.02	9.50	5.84	-164.66	-4.81	-95.59	386.99	374.50	12.48	30.997		
3,000.00	2,933.92	2,919.02	2,918.15	10.15	6.04	-165.69	-7.36	-97.34	424.35	411.38	12.97	32.730		
3,100.00	3,027.35	3,013.06	3,012.15	10.80	6.24	-166.72	-10.23	-98.12	461.99	448.55	13.45	34.357		
3,200.00	3,120.78	3,102.81	3,101.87	11.47	6.42	-167.53	-12.53	-99.05	499.32	485.39	13.93	35.856		
3,300.00	3,214.20	3,195.52	3,194.50	12.13	6.63	-168.18	-15.71	-100.68	537.52	523.10	14.42	37.267		
3,400.00	3,307.63	3,290.00	3,297.95	12.80	6.84	-168.84	-17.88	-102.14	574.53	559.60	14.93	38.494		
3,500.00	3,401.05	3,386.85	3,385.78	13.48	7.03	-169.29	-19.16	-103.77	611.00	595.58	15.42	39.631		
3,600.00	3,494.48	3,469.61	3,468.47	14.16	7.22	-169.61	-21.53	-105.85	648.81	632.90	15.91	40.775		
3,700.00	3,587.91	3,567.73	3,566.52	14.84	7.42	-170.02	-24.85	-107.60	687.13	670.71	16.42	41.842		
3,800.00	3,681.33	3,677.52	3,676.29	15.52	7.64	-170.58	-26.81	-107.77	724.05	707.12	16.93	42.760		
3,900.00	3,775.42	3,764.08	3,762.84	16.10	7.82	-151.94	-27.33	-106.92	756.93	739.28	17.66	42.863		
4,000.00	3,870.07	3,845.46	3,844.20	16.60	8.00	-131.13	-29.16	-107.05	784.70	766.42	18.28	42.920		
4,100.00	3,963.90	3,933.00	3,931.68	17.04	8.20	-113.95	-32.21	-108.20	807.20	788.40	18.80	42.944		
4,200.00	4,055.49	3,996.00	3,994.57	17.41	8.34	-101.61	-35.69	-109.40	825.69	806.48	19.20	42.994		
4,300.00	4,143.48	4,059.00	4,057.15	17.74	8.49	-93.64	-42.23	-112.27	842.67	823.09	19.58	43.032		
4,400.00	4,226.56	4,115.68	4,113.01	18.03	8.65	-88.48	-50.51	-117.08	858.00	838.03	19.97	42.961		
4,500.00	4,303.50	4,174.81	4,170.78	18.31	8.82	-85.44	-60.91	-124.12	871.50	851.06	20.44	42.640		
4,600.00	4,373.14	4,237.09	4,230.94	18.61	9.01	-83.94	-74.15	-133.28	884.00	862.95	21.05	41.996		
4,700.00	4,434.44	4,286.76	4,278.23	18.97	9.15	-82.94	-86.50	-142.01	896.12	874.34	21.78	41.151		
4,800.00	4,486.50	4,333.79	4,321.89	19.46	9.27	-82.47	-100.73	-152.18	909.09	886.42	22.67	40.107		
4,900.00	4,528.54	4,385.82	4,368.59	20.10	9.39	-82.65	-119.25	-165.63	923.06	899.32	23.74	38.883		
5,000.00	4,559.92	4,456.91	4,430.10	20.96	9.58	-84.03	-147.59	-187.23	937.48	912.39	25.10	37.355		
5,100.00	4,580.19	4,545.46	4,504.08	22.02	9.92	-86.60	-184.08	-219.36	950.35	923.53	26.82	35.431		
5,200.00	4,589.03	4,598.80	4,546.28	23.27	10.20	-87.86	-208.18	-241.32	964.30	935.78	28.53	33.804		
5,300.00	4,586.33	4,660.60	4,593.90	24.64	10.57	-89.76	-237.64	-267.48	980.54	950.11	30.43	32.223		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.67 ft
Survey Program: 177-MWD, 4498-MWD, 4363-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,400.00	4,573.68	4,721.00	4,638.03	26.10	11.02	-92.19	-268.34	-294.97	999.51	966.82	32.69	30.580		
5,500.00	4,559.74	4,799.04	4,692.02	27.70	11.68	-95.73	-309.86	-333.06	1,023.20	987.81	35.40	28.907		
5,600.00	4,545.80	5,019.09	4,808.47	29.39	14.42	-103.48	-440.73	-463.22	1,047.19	1,007.31	39.88	26.259		
5,700.00	4,531.86	5,058.00	4,823.47	31.18	14.97	-104.51	-465.82	-488.89	1,069.28	1,026.97	42.31	25.271		
5,800.00	4,517.92	5,115.48	4,845.29	33.02	15.81	-105.96	-504.66	-525.19	1,096.36	1,051.38	44.98	24.374		
5,900.00	4,503.98	5,184.00	4,868.24	34.93	16.91	-107.43	-553.84	-567.01	1,127.13	1,079.30	47.84	23.562		
6,000.00	4,490.04	5,267.84	4,891.36	36.88	18.33	-108.87	-617.03	-616.99	1,159.92	1,108.99	50.94	22.771		
6,100.00	4,476.10	5,543.40	4,907.50	38.87	23.50	-110.46	-831.89	-786.17	1,185.77	1,128.43	57.34	20.679		
6,200.00	4,462.16	5,670.16	4,891.48	40.89	25.94	-110.13	-929.20	-865.80	1,203.51	1,141.80	61.71	19.504		
6,300.00	4,448.22	5,754.00	4,882.81	42.95	27.46	-110.02	-992.87	-919.64	1,220.57	1,155.36	65.20	18.720		
6,400.00	4,434.28	5,825.53	4,877.63	45.02	28.79	-110.02	-1,047.94	-964.98	1,239.75	1,171.25	68.50	18.100		
6,500.00	4,420.34	5,940.56	4,866.06	47.12	31.07	-109.86	-1,136.68	-1,037.25	1,258.58	1,185.84	72.73	17.305		
6,600.00	4,406.40	6,017.62	4,857.18	49.23	32.58	-109.69	-1,196.51	-1,084.98	1,277.84	1,201.57	76.26	16.755		
6,700.00	4,392.46	6,104.97	4,848.38	51.36	34.19	-109.56	-1,264.84	-1,138.69	1,298.29	1,218.38	79.91	16.247		
6,800.00	4,378.52	6,190.90	4,842.07	53.51	35.82	-109.52	-1,332.14	-1,191.74	1,319.57	1,236.04	83.53	15.798		
6,900.00	4,364.58	6,283.11	4,833.80	55.66	37.64	-109.41	-1,405.18	-1,247.41	1,341.75	1,254.39	87.36	15.358		
7,000.00	4,350.64	6,404.24	4,823.77	57.83	40.03	-109.32	-1,500.15	-1,321.92	1,362.90	1,271.18	91.72	14.859		
7,100.00	4,336.70	6,506.27	4,813.20	60.01	42.11	-109.16	-1,579.83	-1,384.76	1,383.12	1,287.28	95.84	14.431		
7,200.00	4,322.76	6,641.30	4,797.85	62.19	44.83	-108.93	-1,684.17	-1,469.08	1,401.90	1,301.30	100.60	13.935		
7,300.00	4,308.82	6,768.40	4,781.88	64.39	47.43	-108.71	-1,780.24	-1,550.75	1,417.91	1,312.63	105.27	13.469		
7,400.00	4,294.87	6,903.25	4,763.81	66.59	50.19	-108.46	-1,880.94	-1,638.58	1,432.72	1,322.59	110.13	13.009		
7,500.00	4,280.93	7,015.53	4,751.13	68.80	52.47	-108.40	-1,962.61	-1,714.56	1,445.12	1,330.64	114.47	12.624		
7,600.00	4,266.99	7,107.11	4,741.49	71.01	54.38	-108.38	-2,029.14	-1,776.75	1,457.57	1,339.12	118.45	12.306		
7,700.00	4,253.05	7,206.52	4,730.21	73.23	56.46	-108.31	-2,101.83	-1,843.62	1,470.51	1,347.90	122.61	11.994		
7,800.00	4,239.11	7,335.87	4,715.75	75.45	59.17	-108.26	-2,195.21	-1,931.94	1,482.21	1,354.85	127.36	11.638		
7,900.00	4,225.17	7,456.69	4,699.96	77.68	61.70	-108.15	-2,280.93	-2,015.60	1,491.75	1,359.75	132.00	11.301		
8,000.00	4,211.23	7,526.72	4,692.50	79.91	63.12	-108.16	-2,330.55	-2,064.46	1,501.81	1,366.30	135.52	11.082		
8,100.00	4,197.29	7,599.65	4,686.25	82.15	64.61	-108.20	-2,383.20	-2,114.53	1,514.05	1,374.98	139.07	10.887		
8,200.00	4,183.35	7,709.26	4,675.51	84.39	66.93	-108.20	-2,462.92	-2,188.98	1,526.80	1,383.36	143.44	10.644		
8,300.00	4,169.41	7,797.00	4,665.55	86.63	68.81	-108.16	-2,526.57	-2,248.54	1,539.00	1,391.58	147.42	10.439		
8,400.00	4,155.47	7,797.00	4,665.55	88.88	68.81	-108.16	-2,526.57	-2,248.54	1,555.18	1,405.58	149.60	10.396		
8,500.00	4,141.53	7,797.00	4,665.55	91.13	68.81	-108.16	-2,526.57	-2,248.54	1,577.55	1,425.77	151.78	10.394 SF		
8,600.00	4,127.59	7,797.00	4,665.55	93.38	68.81	-108.16	-2,526.57	-2,248.54	1,605.84	1,451.89	153.95	10.431		
8,700.00	4,113.65	7,797.00	4,665.55	95.63	68.81	-108.16	-2,526.57	-2,248.54	1,639.75	1,483.62	156.13	10.502		
8,800.00	4,099.71	7,797.00	4,665.55	97.89	68.81	-108.16	-2,526.57	-2,248.54	1,678.94	1,520.63	158.31	10.605		
8,900.00	4,085.77	7,797.00	4,665.55	100.15	68.81	-108.16	-2,526.57	-2,248.54	1,723.06	1,562.56	160.50	10.736		
9,000.00	4,071.83	7,797.00	4,665.55	102.41	68.81	-108.16	-2,526.57	-2,248.54	1,771.72	1,609.04	162.68	10.891		
9,100.00	4,057.89	7,797.00	4,665.55	104.67	68.81	-108.16	-2,526.57	-2,248.54	1,824.57	1,659.71	164.86	11.067		
9,200.00	4,043.95	7,797.00	4,665.55	106.93	68.81	-108.16	-2,526.57	-2,248.54	1,881.25	1,714.21	167.05	11.262		
9,300.00	4,030.01	7,797.00	4,665.55	109.20	68.81	-108.16	-2,526.57	-2,248.54	1,941.44	1,772.21	169.23	11.472		
9,400.00	4,016.07	7,797.00	4,665.55	111.46	68.81	-108.16	-2,526.57	-2,248.54	2,004.81	1,833.39	171.42	11.696		
9,500.00	4,002.13	7,797.00	4,665.55	113.73	68.81	-108.16	-2,526.57	-2,248.54	2,071.07	1,897.46	173.60	11.930		
9,600.00	3,988.19	7,797.00	4,665.55	116.00	68.81	-108.16	-2,526.57	-2,248.54	2,139.95	1,964.16	175.79	12.173		
9,700.00	3,974.25	7,797.00	4,665.55	118.27	68.81	-108.16	-2,526.57	-2,248.54	2,211.21	2,033.23	177.97	12.424		
9,800.00	3,960.31	7,797.00	4,665.55	120.54	68.81	-108.16	-2,526.57	-2,248.54	2,284.62	2,104.46	180.16	12.681		
9,900.00	3,946.37	7,797.00	4,665.55	122.81	68.81	-108.16	-2,526.57	-2,248.54	2,360.00	2,177.64	182.35	12.942		
10,000.00	3,932.43	7,797.00	4,665.55	125.09	68.81	-108.16	-2,526.57	-2,248.54	2,437.14	2,252.60	184.54	13.207		
10,100.00	3,918.49	7,797.00	4,665.55	127.36	68.81	-108.16	-2,526.57	-2,248.54	2,515.89	2,329.16	186.73	13.474		
10,153.69	3,911.00	7,797.00	4,665.55	128.58	68.81	-108.16	-2,526.57	-2,248.54	2,558.79	2,370.89	187.90	13.618		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.67 ft
Survey Program: 177-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.67	-74.62	20.24	-73.57	76.35					
100.00	100.00	96.91	96.91	0.10	0.67	-74.86	19.99	-73.89	76.55	75.78	0.77	98.972		
200.00	200.00	196.37	196.36	0.32	0.71	-75.61	19.23	-74.92	77.35	76.32	1.03	75.120		
300.00	300.00	295.60	295.56	0.55	0.81	-76.82	18.04	-77.02	79.13	77.77	1.36	58.264		
400.00	400.00	395.40	395.31	0.77	0.96	-78.33	16.48	-79.80	81.51	79.78	1.73	47.102		
500.00	500.00	495.32	495.16	1.00	1.13	-80.24	14.26	-82.88	84.13	82.00	2.13	39.570		
600.00	600.00	596.40	596.17	1.22	1.31	-82.47	11.23	-84.98	85.73	83.20	2.53	33.922		
700.00	700.00	696.76	696.49	1.45	1.49	-83.97	9.13	-86.40	86.88	83.96	2.93	29.680		
800.00	800.00	796.36	796.08	1.67	1.67	-84.30	8.72	-87.45	87.90	84.56	3.33	26.384		
900.00	900.00	895.65	895.35	1.90	1.87	-85.21	7.49	-89.40	89.73	85.97	3.76	23.862		
1,000.00	1,000.00	995.56	995.19	2.12	2.09	-87.01	4.79	-91.91	92.06	87.86	4.20	21.940		
1,100.00	1,100.00	1,098.91	1,098.48	2.35	2.29	-88.92	1.75	-93.20	93.23	88.61	4.62	20.174		
1,200.00	1,200.00	1,199.84	1,199.36	2.57	2.48	-90.29	-0.45	-90.90	90.93	85.88	5.04	18.040		
1,300.00	1,300.00	1,298.73	1,298.23	2.80	2.67	-91.08	-1.69	-89.37	89.39	83.93	5.46	16.375		
1,400.00	1,399.98	1,398.69	1,398.18	3.02	2.87	-82.97	-2.38	-88.19	88.00	82.13	5.87	14.982		
1,500.00	1,499.84	1,498.17	1,497.65	3.25	3.07	-87.23	-3.58	-87.28	86.74	80.43	6.30	13.762		
1,562.24	1,561.87	1,559.87	1,559.33	3.39	3.20	-91.17	-4.51	-86.89	86.42	79.85	6.57	13.147		
1,600.00	1,599.45	1,597.01	1,596.47	3.48	3.28	-93.99	-5.13	-86.78	86.61	79.88	6.74	12.856		
1,700.00	1,698.70	1,695.23	1,694.67	3.71	3.50	-102.78	-7.10	-87.19	89.44	82.26	7.18	12.454 SF		
1,800.00	1,797.47	1,793.93	1,793.34	3.97	3.71	-113.02	-9.64	-87.63	95.95	88.32	7.63	12.573		
1,900.00	1,895.62	1,894.77	1,894.17	4.26	3.91	-122.97	-10.48	-87.55	105.54	97.47	8.07	13.079		
2,000.00	1,993.06	1,993.05	1,992.43	4.59	4.09	-131.52	-8.68	-86.90	117.60	109.11	8.50	13.842		
2,100.00	2,089.64	2,089.44	2,088.81	4.97	4.29	-139.05	-7.14	-86.72	134.91	126.00	8.92	15.131		
2,200.00	2,185.27	2,185.19	2,184.54	5.40	4.48	-145.44	-5.89	-86.75	157.29	147.97	9.32	16.876		
2,300.00	2,279.82	2,281.74	2,281.08	5.89	4.67	-150.66	-3.99	-86.92	183.63	173.92	9.71	18.917		
2,400.00	2,373.36	2,374.71	2,374.03	6.43	4.86	-154.85	-2.01	-87.17	213.57	203.45	10.12	21.097		
2,500.00	2,466.79	2,465.45	2,464.75	7.01	5.06	-158.03	-0.98	-87.85	245.71	235.13	10.58	23.225		
2,600.00	2,560.22	2,555.78	2,555.08	7.61	5.25	-160.38	-1.09	-89.20	279.67	268.63	11.05	25.318		
2,700.00	2,653.64	2,648.26	2,647.54	8.23	5.45	-162.20	-1.81	-91.07	314.66	303.13	11.52	27.308		
2,800.00	2,747.07	2,738.57	2,737.81	8.86	5.65	-163.57	-2.82	-93.24	350.23	338.23	12.00	29.184		
2,900.00	2,840.50	2,827.83	2,827.02	9.50	5.84	-164.66	-4.81	-95.59	386.99	374.50	12.48	30.997		
3,000.00	2,933.92	2,919.02	2,918.15	10.15	6.04	-165.69	-7.36	-97.34	424.35	411.38	12.97	32.730		
3,100.00	3,027.35	3,013.06	3,012.15	10.80	6.24	-166.72	-10.23	-98.12	461.99	448.55	13.45	34.357		
3,200.00	3,120.78	3,102.81	3,101.87	11.47	6.42	-167.53	-12.53	-99.05	499.32	485.39	13.93	35.856		
3,300.00	3,214.20	3,195.52	3,194.50	12.13	6.63	-168.18	-15.71	-100.68	537.52	523.10	14.42	37.267		
3,400.00	3,307.63	3,299.00	3,297.95	12.80	6.84	-168.84	-17.88	-102.14	574.53	559.60	14.93	38.494		
3,500.00	3,401.05	3,386.85	3,385.78	13.48	7.03	-169.29	-19.16	-103.77	611.00	595.58	15.42	39.631		
3,600.00	3,494.48	3,469.61	3,468.47	14.16	7.22	-169.61	-21.53	-105.85	648.81	632.90	15.91	40.775		
3,700.00	3,587.91	3,567.73	3,566.52	14.84	7.42	-170.02	-24.85	-107.60	687.13	670.71	16.42	41.842		
3,800.00	3,681.33	3,677.52	3,676.29	15.52	7.64	-170.58	-26.81	-107.77	724.05	707.12	16.93	42.760		
3,900.00	3,775.42	3,764.08	3,762.84	16.10	7.82	-171.94	-27.33	-106.92	756.93	739.28	17.66	42.863		
4,000.00	3,870.07	3,845.46	3,844.20	16.60	8.00	-171.13	-29.16	-107.05	784.70	766.42	18.28	42.920		
4,100.00	3,963.90	3,933.00	3,931.68	17.04	8.20	-173.95	-32.21	-108.20	807.20	788.40	18.80	42.944		
4,200.00	4,055.49	3,996.00	3,994.57	17.41	8.34	-171.61	-35.69	-109.40	825.69	806.48	19.20	42.994		
4,300.00	4,143.48	4,059.00	4,057.15	17.74	8.49	-173.64	-42.23	-112.27	842.67	823.09	19.58	43.032		
4,400.00	4,226.56	4,115.68	4,113.01	18.03	8.65	-174.48	-50.51	-117.08	858.00	838.03	19.97	42.961		
4,500.00	4,303.50	4,174.81	4,170.78	18.31	8.82	-175.44	-60.91	-124.12	871.50	851.06	20.44	42.640		
4,600.00	4,373.14	4,237.09	4,230.94	18.61	9.01	-176.94	-74.15	-133.28	884.00	862.95	21.05	41.996		
4,700.00	4,434.44	4,304.95	4,295.93	18.97	9.24	-178.76	-90.16	-144.44	895.48	873.61	21.87	40.947		
4,800.00	4,486.50	4,375.00	4,362.97	19.46	9.48	-180.60	-107.02	-155.77	906.30	883.39	22.91	39.559		
4,900.00	4,528.54	4,432.76	4,418.38	20.10	9.66	-182.56	-120.77	-164.53	917.75	893.64	24.11	38.063		
5,000.00	4,559.92	4,479.17	4,462.96	20.96	9.82	-184.32	-131.89	-171.11	931.57	906.12	25.45	36.606		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.67 ft
Survey Program: 177-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.00	4,580.19	4,516.47	4,498.80	22.02	9.95	-86.77	-140.92	-176.09	948.92	922.05	26.87	35.311		
5,200.00	4,589.03	4,547.48	4,528.62	23.27	10.05	-86.92	-148.45	-180.03	970.52	942.19	28.33	34.253		
5,300.00	4,586.33	4,570.76	4,551.04	24.64	10.13	-86.59	-154.05	-182.95	996.62	966.88	29.74	33.510		
5,400.00	4,573.68	4,584.67	4,564.43	26.10	10.18	-86.59	-157.35	-184.69	1,027.80	996.41	31.39	32.747		
5,500.00	4,559.74	4,596.81	4,576.14	27.70	10.22	-87.31	-160.20	-186.21	1,066.86	1,033.44	33.41	31.930		
5,600.00	4,545.80	4,608.60	4,587.51	29.39	10.26	-88.00	-162.93	-187.68	1,113.43	1,077.94	35.50	31.365		
5,700.00	4,531.86	4,620.05	4,598.56	31.18	10.30	-88.68	-165.57	-189.12	1,166.64	1,129.01	37.63	31.002		
5,800.00	4,517.92	4,630.45	4,608.61	33.02	10.33	-89.29	-167.94	-190.42	1,225.61	1,185.82	39.79	30.802		
5,900.00	4,503.98	4,640.46	4,618.27	34.93	10.37	-89.88	-170.22	-191.66	1,289.56	1,247.59	41.98	30.722		
6,000.00	4,490.04	4,650.36	4,627.84	36.88	10.40	-90.46	-172.47	-192.89	1,357.80	1,313.62	44.18	30.733		
6,100.00	4,476.10	4,660.16	4,637.30	38.87	10.43	-91.03	-174.69	-194.10	1,429.71	1,383.31	46.40	30.810		
6,200.00	4,462.16	4,669.86	4,646.67	40.89	10.47	-91.60	-176.89	-195.30	1,504.76	1,456.13	48.64	30.938		
6,300.00	4,448.22	4,679.45	4,655.94	42.95	10.50	-92.16	-179.06	-196.48	1,582.52	1,531.64	50.88	31.102		
6,400.00	4,434.28	4,689.58	4,665.72	45.02	10.54	-92.75	-181.35	-197.72	1,662.59	1,609.46	53.13	31.290		
6,500.00	4,420.34	4,811.00	4,781.48	47.12	11.04	-99.57	-213.15	-215.51	1,744.69	1,688.96	55.73	31.304		
6,600.00	4,406.40	4,813.00	4,783.36	49.23	11.05	-99.68	-213.75	-215.86	1,827.59	1,769.67	57.92	31.553		
6,700.00	4,392.46	4,835.69	4,804.64	51.36	11.16	-100.90	-220.58	-219.77	1,911.90	1,851.79	60.10	31.810		
6,800.00	4,378.52	4,846.36	4,814.67	53.51	11.20	-101.46	-223.75	-221.55	1,997.61	1,935.33	62.28	32.075		
6,900.00	4,364.58	4,856.56	4,824.27	55.66	11.25	-102.00	-226.77	-223.22	2,084.50	2,020.05	64.45	32.343		
7,000.00	4,350.64	4,876.00	4,842.60	57.83	11.34	-103.02	-232.46	-226.29	2,172.47	2,105.89	66.58	32.631		
7,100.00	4,336.70	4,876.00	4,842.60	60.01	11.34	-103.02	-232.46	-226.29	2,261.30	2,192.53	68.77	32.882		
7,200.00	4,322.76	4,876.00	4,842.60	62.19	11.34	-103.02	-232.46	-226.29	2,351.02	2,280.05	70.97	33.128		
7,300.00	4,308.82	4,896.00	4,861.50	64.39	11.42	-104.05	-238.22	-229.36	2,441.41	2,368.35	73.05	33.420		
7,400.00	4,294.87	4,905.58	4,870.58	66.59	11.46	-104.55	-240.95	-230.80	2,532.48	2,457.30	75.18	33.686		
7,500.00	4,280.93	4,914.81	4,879.32	68.80	11.50	-105.02	-243.55	-232.16	2,624.15	2,546.85	77.30	33.947		
7,600.00	4,266.99	4,923.69	4,887.75	71.01	11.54	-105.47	-246.04	-233.47	2,716.35	2,636.94	79.41	34.205		
7,700.00	4,253.05	4,940.00	4,903.25	73.23	11.61	-106.29	-250.55	-235.81	2,809.06	2,727.62	81.44	34.491		
7,800.00	4,239.11	4,940.00	4,903.25	75.45	11.61	-106.29	-250.55	-235.81	2,902.17	2,818.54	83.63	34.703		
7,900.00	4,225.17	4,940.00	4,903.25	77.68	11.61	-106.29	-250.55	-235.81	2,995.73	2,909.91	85.82	34.908		
8,000.00	4,211.23	4,940.00	4,903.25	79.91	11.61	-106.29	-250.55	-235.81	3,089.69	3,001.68	88.01	35.107		
8,100.00	4,197.29	4,959.44	4,921.77	82.15	11.69	-107.25	-255.78	-238.54	3,183.87	3,093.93	89.95	35.398		
8,200.00	4,183.35	4,965.22	4,927.29	84.39	11.71	-107.54	-257.30	-239.33	3,278.44	3,186.39	92.05	35.617		
8,300.00	4,169.41	4,970.75	4,932.58	86.63	11.74	-107.81	-258.73	-240.09	3,373.30	3,279.16	94.14	35.831		
8,400.00	4,155.47	4,976.04	4,937.64	88.88	11.76	-108.07	-260.09	-240.80	3,468.43	3,372.19	96.24	36.039		
8,500.00	4,141.53	4,981.11	4,942.50	91.13	11.78	-108.32	-261.37	-241.48	3,563.80	3,465.47	98.33	36.242		
8,600.00	4,127.59	5,003.00	4,963.52	93.38	11.87	-109.38	-266.76	-244.35	3,659.51	3,559.39	100.12	36.551		
8,700.00	4,113.65	5,003.00	4,963.52	95.63	11.87	-109.38	-266.76	-244.35	3,755.28	3,652.99	102.28	36.714		
8,800.00	4,099.71	5,003.00	4,963.52	97.89	11.87	-109.38	-266.76	-244.35	3,851.26	3,746.81	104.45	36.871		
8,900.00	4,085.77	5,003.00	4,963.52	100.15	11.87	-109.38	-266.76	-244.35	3,947.44	3,840.83	106.62	37.024		
9,000.00	4,071.83	5,003.00	4,963.52	102.41	11.87	-109.38	-266.76	-244.35	4,043.81	3,935.02	108.79	37.172		
9,100.00	4,057.89	5,003.00	4,963.52	104.67	11.87	-109.38	-266.76	-244.35	4,140.35	4,029.40	110.96	37.315		
9,200.00	4,043.95	5,003.00	4,963.52	106.93	11.87	-109.38	-266.76	-244.35	4,237.05	4,123.93	113.13	37.454		
9,300.00	4,030.01	5,003.00	4,963.52	109.20	11.87	-109.38	-266.76	-244.35	4,333.90	4,218.61	115.30	37.589		
9,400.00	4,016.07	5,003.00	4,963.52	111.46	11.87	-109.38	-266.76	-244.35	4,430.89	4,313.42	117.47	37.720		
9,500.00	4,002.13	5,003.00	4,963.52	113.73	11.87	-109.38	-266.76	-244.35	4,528.01	4,408.37	119.64	37.847		
9,600.00	3,988.19	5,003.00	4,963.52	116.00	11.87	-109.38	-266.76	-244.35	4,625.26	4,503.45	121.81	37.970		
9,700.00	3,974.25	5,003.00	4,963.52	118.27	11.87	-109.38	-266.76	-244.35	4,722.62	4,598.63	123.99	38.090		
9,800.00	3,960.31	5,003.00	4,963.52	120.54	11.87	-109.38	-266.76	-244.35	4,820.08	4,693.93	126.16	38.207		
9,900.00	3,946.37	5,003.00	4,963.52	122.81	11.87	-109.38	-266.76	-244.35	4,917.65	4,789.32	128.33	38.320		
10,000.00	3,932.43	5,003.00	4,963.52	125.09	11.87	-109.38	-266.76	-244.35	5,015.32	4,884.81	130.51	38.429		
10,100.00	3,918.49	5,003.00	4,963.52	127.36	11.87	-109.38	-266.76	-244.35	5,113.07	4,980.39	132.68	38.536		
10,153.69	3,911.00	5,003.00	4,963.52	128.58	11.87	-109.38	-266.76	-244.35	5,165.59	5,031.75	133.85	38.592		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
DEAL GULCH 2-16 - DEAL GULCH 2-16 - DEAL GULCH 2-16 - Design #3														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-59.27	80.96	-136.18	158.43					
100.00	100.00	100.00	100.00	0.10	0.10	-59.27	80.96	-136.18	158.43	158.23	0.20	800.983		
200.00	200.00	200.00	200.00	0.32	0.32	-59.27	80.96	-136.18	158.43	157.78	0.65	244.745		
300.00	300.00	300.00	300.00	0.55	0.55	-59.27	80.96	-136.18	158.43	157.33	1.10	144.440		
400.00	400.00	400.00	400.00	0.77	0.77	-59.27	80.96	-136.18	158.43	156.88	1.55	102.451		
500.00	500.00	500.00	500.00	1.00	1.00	-59.27	80.96	-136.18	158.43	156.43	2.00	79.377		
600.00	600.00	600.00	600.00	1.22	1.22	-59.27	80.96	-136.18	158.43	155.98	2.45	64.785		
700.00	700.00	700.00	700.00	1.45	1.45	-59.27	80.96	-136.18	158.43	155.53	2.89	54.726		
800.00	800.00	800.00	800.00	1.67	1.67	-59.27	80.96	-136.18	158.43	155.09	3.34	47.370		
900.00	900.00	900.00	900.00	1.90	1.90	-59.27	80.96	-136.18	158.43	154.64	3.79	41.757		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-59.27	80.96	-136.18	158.43	154.19	4.24	37.334		
1,100.00	1,100.00	1,100.00	1,100.00	2.35	2.35	-59.27	80.96	-136.18	158.43	153.74	4.69	33.758		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-59.27	80.96	-136.18	158.43	153.29	5.14	30.807		
1,300.00	1,300.00	1,300.00	1,300.00	2.80	2.80	-59.27	80.96	-136.18	158.43	152.84	5.59	28.331		
1,400.00	1,399.98	1,399.98	1,399.98	3.02	3.02	-50.05	80.96	-136.18	157.30	151.26	6.04	26.044		
1,500.00	1,499.84	1,499.84	1,499.84	3.25	3.25	-51.59	80.96	-136.18	153.99	147.51	6.48	23.747		
1,600.00	1,599.45	1,599.45	1,599.45	3.48	3.47	-54.30	80.96	-136.18	148.73	141.80	6.93	21.461		
1,700.00	1,698.70	1,698.70	1,698.70	3.71	3.69	-58.39	80.96	-136.18	141.93	134.55	7.38	19.223		
1,800.00	1,797.47	1,797.47	1,797.47	3.97	3.91	-64.16	80.96	-136.18	134.34	126.48	7.86	17.095		
1,900.00	1,895.62	1,895.62	1,895.62	4.26	4.13	-71.94	80.96	-136.18	127.08	118.70	8.37	15.180		
2,000.00	1,993.06	1,993.06	1,993.06	4.59	4.35	-81.89	80.96	-136.18	121.84	112.91	8.94	13.636		
2,069.77	2,060.54	2,060.54	2,060.54	4.85	4.51	-90.00	80.96	-136.18	120.55	111.19	9.36	12.880 CC, ES		
2,100.00	2,089.64	2,089.64	2,089.64	4.97	4.57	-93.73	80.96	-136.18	120.83	111.29	9.54	12.668		
2,200.00	2,185.27	2,185.27	2,185.27	5.40	4.79	-106.45	80.96	-136.18	126.22	116.09	10.13	12.459 SF		
2,300.00	2,279.82	2,279.82	2,279.82	5.89	5.00	-118.61	80.96	-136.18	139.39	128.73	10.66	13.079		
2,400.00	2,373.36	2,373.36	2,373.36	6.43	5.21	-129.22	80.96	-136.18	160.07	148.95	11.11	14.402		
2,500.00	2,466.79	2,466.79	2,466.79	7.01	5.42	-137.53	80.96	-136.18	185.48	173.94	11.54	16.069		
2,600.00	2,560.22	2,561.98	2,561.97	7.61	5.62	-144.12	80.93	-135.51	213.59	201.64	11.95	17.875		
2,700.00	2,653.64	2,657.59	2,657.51	8.23	5.82	-149.89	80.80	-131.85	242.86	230.54	12.32	19.708		
2,800.00	2,747.07	2,752.36	2,752.03	8.86	6.01	-155.03	80.55	-125.08	273.24	260.55	12.68	21.543		
2,900.00	2,840.50	2,846.09	2,845.25	9.50	6.21	-159.70	80.20	-115.32	304.81	291.77	13.05	23.363		
3,000.00	2,933.92	2,938.60	2,936.88	10.15	6.43	-163.99	79.74	-102.70	337.72	324.29	13.42	25.158		
3,100.00	3,027.35	3,029.72	3,026.71	10.80	6.65	-167.95	79.19	-87.38	372.08	358.25	13.83	26.911		
3,200.00	3,120.78	3,119.32	3,114.50	11.47	6.89	-171.62	78.54	-69.55	408.02	393.75	14.26	28.605		
3,300.00	3,214.20	3,207.24	3,200.08	12.13	7.15	-175.04	77.81	-49.38	445.63	430.89	14.74	30.225		
3,400.00	3,307.63	3,293.39	3,283.29	12.80	7.44	-178.23	77.00	-27.09	485.02	469.74	15.28	31.751		
3,500.00	3,401.05	3,377.66	3,364.00	13.48	7.76	-178.80	76.12	-2.88	526.23	510.36	15.86	33.172		
3,600.00	3,494.48	3,459.98	3,442.11	14.16	8.11	-176.03	75.18	23.05	569.31	552.81	16.50	34.494		
3,700.00	3,587.91	3,540.27	3,517.56	14.84	8.49	-173.44	74.19	50.50	614.30	597.10	17.20	35.722		
3,800.00	3,681.33	3,618.49	3,590.29	15.52	8.90	-171.04	73.15	79.26	661.19	643.25	17.93	36.866		
3,900.00	3,775.42	3,693.56	3,659.33	16.10	9.34	-170.56	72.08	108.71	708.69	689.98	18.71	37.885		
4,000.00	3,870.07	3,767.20	3,726.38	16.60	9.81	-149.73	70.97	139.13	755.60	736.12	19.48	38.794		
4,100.00	3,963.90	3,839.86	3,792.45	17.04	10.30	-131.99	69.88	169.35	802.11	781.89	20.22	39.661		
4,200.00	4,055.49	3,906.83	3,853.34	17.41	10.76	-119.01	68.87	197.21	848.89	827.97	20.91	40.588		
4,300.00	4,143.48	3,967.12	3,908.16	17.74	11.19	-109.83	67.96	222.29	896.62	875.05	21.58	41.552		
4,400.00	4,226.56	4,019.83	3,956.09	18.03	11.57	-103.00	67.17	244.21	945.87	923.63	22.25	42.519		
4,500.00	4,303.50	4,064.17	3,996.41	18.31	11.90	-97.43	66.50	262.65	996.99	974.03	22.96	43.415		
4,600.00	4,373.14	4,099.48	4,028.52	18.61	12.16	-92.42	65.97	277.34	1,050.10	1,026.35	23.75	44.212		
4,700.00	4,434.44	4,125.24	4,051.94	18.97	12.36	-87.55	65.58	288.05	1,105.06	1,080.48	24.59	44.943		
4,800.00	4,486.50	4,141.06	4,066.32	19.46	12.48	-82.63	65.34	294.63	1,161.50	1,136.12	25.38	45.762		
4,900.00	4,528.54	4,146.70	4,071.45	20.10	12.52	-77.60	65.25	296.98	1,218.82	1,192.82	26.00	46.883		
5,000.00	4,559.92	4,142.09	4,067.26	20.96	12.49	-72.52	65.32	295.06	1,276.24	1,249.94	26.30	48.528		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design		DEAL GULCH 2-16 - DEAL GULCH 2-16 - DEAL GULCH 2-16 - Design #3											Offset Site Error:		0.00 ft
Survey Program: 0-MWD													Offset Well Error:		0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
5,100.00	4,580.19	4,127.28	4,053.79	22.02	12.37	-67.54	65.55	288.90	1,332.83	1,306.63	26.20	50.874			
5,200.00	4,589.03	4,102.50	4,031.27	23.27	12.19	-62.84	65.92	278.60	1,387.59	1,361.90	25.69	54.007			
5,300.00	4,586.33	4,068.13	4,000.01	24.64	11.93	-58.57	66.44	264.30	1,439.46	1,414.58	24.88	57.863			
5,400.00	4,573.68	4,025.86	3,961.58	26.10	11.62	-55.86	67.08	246.72	1,488.53	1,463.66	24.86	59.865			
5,500.00	4,559.74	3,982.59	3,922.23	27.70	11.30	-54.21	67.73	228.72	1,540.43	1,514.70	25.74	59.852			
5,600.00	4,545.80	3,939.32	3,882.89	29.39	10.99	-52.59	68.38	210.72	1,595.75	1,569.12	26.62	59.939			
5,700.00	4,531.86	3,896.05	3,843.54	31.18	10.68	-50.99	69.03	192.73	1,654.13	1,626.62	27.50	60.144			
5,800.00	4,517.92	3,852.78	3,804.20	33.02	10.38	-49.44	69.68	174.73	1,715.26	1,686.89	28.37	60.459			
5,900.00	4,503.98	3,809.51	3,764.85	34.93	10.09	-47.91	70.34	156.73	1,778.86	1,749.65	29.21	60.890			
6,000.00	4,490.04	3,766.24	3,725.51	36.88	9.80	-46.43	70.99	138.73	1,844.68	1,814.65	30.03	61.421			
6,100.00	4,476.10	3,729.73	3,692.31	38.87	9.56	-45.20	71.54	123.55	1,912.50	1,881.54	30.95	61.789			
6,200.00	4,462.16	3,700.00	3,665.21	40.89	9.37	-44.22	71.98	111.33	1,982.33	1,950.34	31.98	61.977			
6,300.00	4,448.22	3,675.02	3,642.35	42.95	9.23	-43.41	72.35	101.27	2,054.13	2,021.04	33.09	62.077			
6,400.00	4,434.28	3,650.64	3,619.95	45.02	9.09	-42.64	72.70	91.65	2,127.73	2,093.54	34.19	62.240			
6,500.00	4,420.34	3,626.87	3,598.04	47.12	8.95	-41.89	73.03	82.46	2,202.95	2,167.68	35.27	62.456			
6,600.00	4,406.40	3,600.00	3,573.17	49.23	8.79	-41.07	73.40	72.28	2,279.66	2,243.39	36.27	62.852			
6,700.00	4,392.46	3,600.00	3,573.17	51.36	8.79	-41.07	73.40	72.28	2,357.85	2,320.02	37.83	62.327			
6,800.00	4,378.52	3,559.01	3,535.05	53.51	8.59	-39.84	73.94	57.21	2,437.01	2,398.52	38.48	63.326			
6,900.00	4,364.58	3,537.47	3,514.94	55.66	8.48	-39.21	74.22	49.51	2,517.43	2,477.89	39.54	63.673			
7,000.00	4,350.64	3,500.00	3,479.82	57.83	8.29	-38.14	74.70	36.47	2,598.99	2,558.78	40.21	64.632			
7,100.00	4,336.70	7,046.50	5,144.85	60.01	39.72	-106.01	-1,900.30	-143.27	2,640.05	2,554.73	85.32	30.943			
7,200.00	4,322.76	7,138.00	5,140.51	62.19	41.32	-105.94	-1,981.95	-184.33	2,680.30	2,591.36	88.94	30.136			
7,300.00	4,308.82	7,229.50	5,136.16	64.39	42.94	-105.88	-2,063.60	-225.39	2,720.55	2,627.97	92.58	29.387			
7,400.00	4,294.87	7,320.99	5,131.81	66.59	44.57	-105.81	-2,145.25	-266.45	2,760.81	2,664.57	96.23	28.688			
7,500.00	4,280.93	7,412.49	5,127.47	68.80	46.22	-105.75	-2,226.91	-307.51	2,801.06	2,701.15	99.91	28.037			
7,600.00	4,266.99	7,503.99	5,123.12	71.01	47.89	-105.69	-2,308.56	-348.57	2,841.32	2,737.73	103.59	27.427			
7,700.00	4,253.05	7,595.49	5,118.78	73.23	49.56	-105.64	-2,390.21	-389.64	2,881.58	2,774.29	107.30	26.857			
7,800.00	4,239.11	7,686.99	5,114.43	75.45	51.24	-105.58	-2,471.86	-430.70	2,921.85	2,810.84	111.01	26.321			
7,900.00	4,225.17	7,778.49	5,110.08	77.68	52.93	-105.53	-2,553.52	-471.76	2,962.11	2,847.38	114.73	25.818			
8,000.00	4,211.23	7,869.99	5,105.74	79.91	54.63	-105.47	-2,635.17	-512.82	3,002.38	2,883.92	118.46	25.345			
8,100.00	4,197.29	7,961.48	5,101.39	82.15	56.34	-105.42	-2,716.82	-553.88	3,042.65	2,920.45	122.20	24.898			
8,200.00	4,183.35	8,052.98	5,097.04	84.39	58.05	-105.37	-2,798.47	-594.94	3,082.93	2,956.97	125.95	24.477			
8,300.00	4,169.41	8,144.48	5,092.70	86.63	59.77	-105.32	-2,880.12	-636.00	3,123.20	2,993.49	129.71	24.079			
8,400.00	4,155.47	8,235.98	5,088.35	88.88	61.49	-105.27	-2,961.78	-677.06	3,163.48	3,030.01	133.47	23.702			
8,500.00	4,141.53	8,327.48	5,084.00	91.13	63.22	-105.23	-3,043.43	-718.13	3,203.76	3,066.52	137.24	23.345			
8,600.00	4,127.59	8,411.76	5,080.00	93.38	64.82	-105.18	-3,118.64	-755.95	3,244.04	3,103.16	140.89	23.026			
8,700.00	4,113.65	8,411.76	5,080.00	95.63	64.82	-105.18	-3,118.64	-755.95	3,285.80	3,142.70	143.10	22.962			
8,800.00	4,099.71	8,411.76	5,080.00	97.89	64.82	-105.18	-3,118.64	-755.95	3,330.04	3,184.73	145.31	22.917			
8,900.00	4,085.77	8,411.76	5,080.00	100.15	64.82	-105.18	-3,118.64	-755.95	3,376.66	3,229.14	147.52	22.889			
9,000.00	4,071.83	8,411.76	5,080.00	102.41	64.82	-105.18	-3,118.64	-755.95	3,425.56	3,275.83	149.73	22.878			
9,100.00	4,057.89	8,411.76	5,080.00	104.67	64.82	-105.18	-3,118.64	-755.95	3,476.66	3,324.71	151.95	22.881			
9,200.00	4,043.95	8,411.76	5,080.00	106.93	64.82	-105.18	-3,118.64	-755.95	3,529.85	3,375.69	154.16	22.897			
9,300.00	4,030.01	8,411.76	5,080.00	109.20	64.82	-105.18	-3,118.64	-755.95	3,585.04	3,428.66	156.38	22.926			
9,400.00	4,016.07	8,411.76	5,080.00	111.46	64.82	-105.18	-3,118.64	-755.95	3,642.14	3,483.54	158.59	22.965			
9,500.00	4,002.13	8,411.76	5,080.00	113.73	64.82	-105.18	-3,118.64	-755.95	3,701.06	3,540.25	160.81	23.015			
9,600.00	3,988.19	8,411.76	5,080.00	116.00	64.82	-105.18	-3,118.64	-755.95	3,761.71	3,598.69	163.03	23.074			
9,700.00	3,974.25	8,411.76	5,080.00	118.27	64.82	-105.18	-3,118.64	-755.95	3,824.02	3,658.78	165.24	23.142			
9,800.00	3,960.31	8,411.76	5,080.00	120.54	64.82	-105.18	-3,118.64	-755.95	3,887.91	3,720.45	167.46	23.217			
9,900.00	3,946.37	8,411.76	5,080.00	122.81	64.82	-105.18	-3,118.64	-755.95	3,953.29	3,783.61	169.68	23.299			
10,000.00	3,932.43	8,411.76	5,080.00	125.09	64.82	-105.18	-3,118.64	-755.95	4,020.09	3,848.19	171.90	23.386			
10,100.00	3,918.49	8,411.76	5,080.00	127.36	64.82	-105.18	-3,118.64	-755.95	4,088.25	3,914.14	174.12	23.480			
10,200.00	3,904.55	8,411.76	5,080.00	129.63	64.82	-105.18	-3,118.64	-755.95	4,156.41	3,980.09	176.34	23.573			
10,300.00	3,890.61	8,411.76	5,080.00	131.90	64.82	-105.18	-3,118.64	-755.95	4,224.57	4,046.04	178.56	23.666			
10,400.00	3,876.67	8,411.76	5,080.00	134.17	64.82	-105.18	-3,118.64	-755.95	4,292.73	4,111.99	180.78	23.759			
10,500.00	3,862.73	8,411.76	5,080.00	136.44	64.82	-105.18	-3,118.64	-755.95	4,360.89	4,177.94	183.00	23.852			
10,600.00	3,848.79	8,411.76	5,080.00	138.71	64.82	-105.18	-3,118.64	-755.95	4,429.05	4,243.89	185.22	23.945			
10,700.00	3,834.85	8,411.76	5,080.00	140.98	64.82	-105.18	-3,118.64	-755.95	4,497.21	4,309.84	187.44	24.038			
10,800.00	3,820.91	8,411.76	5,080.00	143.25	64.82	-105.18	-3,118.64	-755.95	4,565.37	4,375.79	189.66	24.131			
10,900.00	3,806.97	8,411.76	5,080.00	145.52	64.82	-105.18	-3,118.64	-755.95	4,633.53	4,441.74	191.88	24.224			
11,000.00	3,793.03	8,411.76	5,080.00	147.79	64.82	-105.18	-3,118.64	-755.95	4,701.69	4,507.69	194.10	24.317			
11,100.00	3,779.09	8,411.76	5,080.00	150.06	64.82	-105.18	-3,118.64	-755.95	4,769.85	4,573.64	196.32	24.410			
11,200.00	3,765.15	8,411.76	5,080.00	152.33	64.82	-105.18	-3,118.64	-755.95	4,838.01	4,639.59	198.54	24.503			
11,300.00	3,751.21	8,411.76	5,080.00	154.60	64.82	-105.18	-3,118.64	-755.95	4,906.17	4,705.54	200.76	24.596			
11,400.00	3,737.27	8,411.76	5,080.00	156.87	64.82	-105.18	-3,118.64	-755.95	4,974.33	4,771.49	202.98	24.689			
11,500.00	3,723.33	8,411.76	5,080.00	159.14	64.82	-105.18	-3,118.64	-755.95	5,042.49	4,837.44	205.20	24.782			
11,600.00	3,709.39	8,411.76	5,080.00	161.41	64.82	-105.18	-3,118.64	-755.95	5,110.65	4,903.39	207.42	24.875			
11,700.00	3,695.45	8,411.76	5,080.00	163.68	64.82	-105.18	-3,118.64	-755.95	5,178.81	4,969.34	209.64	24.968			
11,800.00	3,681.51	8,411.76	5,080.00	165.95	64.82	-105.18	-3,118.64	-755.95	5,246.97	5,035.29	211.86	25.061			
11,900.00	3,667.57	8,411.76	5,080.00	168.22	64.82	-105.18	-3,118.64	-755.95	5,315.13	5,101.24	214.08	25.154			
12,000.00	3,653.63	8,411.76	5,080.00	170.49	64.82	-105.18	-3,118.64	-755.95	5,383.29	5,167.19	216.30	25.247			
12,100.00	3,639.69	8,411.76	5,080.00	172.76	64.82	-105.18	-3,118.64	-755.95	5,451.45	5,233.14	218.52	25.340			
12,200.00	3,625.75	8,411.76	5,080.00	175.03	6										



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference													Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-52.81	95.12	-125.35	157.36					
100.00	100.00	100.00	100.00	0.10	0.10	-52.81	95.12	-125.35	157.36	157.16	0.20	795.560		
200.00	200.00	200.00	200.00	0.32	0.32	-52.81	95.12	-125.35	157.36	156.71	0.65	243.088		
300.00	300.00	300.00	300.00	0.55	0.55	-52.81	95.12	-125.35	157.36	156.26	1.10	143.462		
400.00	400.00	400.00	400.00	0.77	0.77	-52.81	95.12	-125.35	157.36	155.81	1.55	101.758		
500.00	500.00	500.00	500.00	1.00	1.00	-52.81	95.12	-125.35	157.36	155.36	2.00	78.839		
600.00	600.00	600.00	600.00	1.22	1.22	-52.81	95.12	-125.35	157.36	154.91	2.45	64.347		
700.00	700.00	700.00	700.00	1.45	1.45	-52.81	95.12	-125.35	157.36	154.46	2.89	54.355		
800.00	800.00	800.00	800.00	1.67	1.67	-52.81	95.12	-125.35	157.36	154.01	3.34	47.049		
900.00	900.00	900.00	900.00	1.90	1.90	-52.81	95.12	-125.35	157.36	153.56	3.79	41.475		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-52.81	95.12	-125.35	157.36	153.11	4.24	37.081		
1,100.00	1,100.00	1,100.00	1,100.00	2.35	2.35	-52.81	95.12	-125.35	157.36	152.66	4.69	33.529		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-52.81	95.12	-125.35	157.36	152.21	5.14	30.598		
1,300.00	1,300.00	1,300.00	1,300.00	2.80	2.80	-52.81	95.12	-125.35	157.36	151.77	5.59	28.139		
1,400.00	1,399.98	1,399.98	1,399.98	3.02	3.02	-43.54	95.12	-125.35	156.09	150.05	6.04	25.843		
1,500.00	1,499.84	1,499.84	1,499.84	3.25	3.25	-44.94	95.12	-125.35	152.33	145.85	6.48	23.495		
1,600.00	1,599.45	1,599.45	1,599.45	3.48	3.47	-47.44	95.12	-125.35	146.29	139.36	6.93	21.118		
1,700.00	1,698.70	1,698.70	1,698.70	3.71	3.69	-51.27	95.12	-125.35	138.31	130.94	7.38	18.751		
1,800.00	1,797.47	1,797.47	1,797.47	3.97	3.91	-56.80	95.12	-125.35	129.04	121.20	7.84	16.451		
1,900.00	1,895.62	1,895.62	1,895.62	4.26	4.13	-64.53	95.12	-125.35	119.54	111.19	8.35	14.317		
2,000.00	1,993.06	1,993.06	1,993.06	4.59	4.35	-74.93	95.12	-125.35	111.54	102.63	8.92	12.512		
2,100.00	2,089.64	2,094.17	2,094.14	4.97	4.57	-88.53	95.61	-123.40	105.64	96.11	9.54	11.077		
2,200.00	2,185.27	2,194.44	2,194.19	5.40	4.78	-104.82	97.22	-117.01	102.32	92.18	10.13	10.099		
2,213.04	2,197.66	2,207.40	2,207.09	5.46	4.81	-107.12	97.51	-115.87	102.26	92.06	10.20	10.023 CC, ES		
2,300.00	2,279.82	2,293.04	2,292.17	5.89	5.00	-123.00	99.88	-106.43	105.24	94.67	10.57	9.959 SF		
2,400.00	2,273.36	2,389.72	2,387.68	6.43	5.23	-140.81	103.54	-91.92	117.24	106.42	10.82	10.837		
2,500.00	2,466.79	2,485.02	2,481.09	7.01	5.49	-155.94	108.13	-73.65	136.80	125.75	11.05	12.382		
2,600.00	2,560.22	2,578.75	2,572.08	7.61	5.78	-168.18	113.62	-51.86	162.28	150.90	11.39	14.252		
2,700.00	2,653.64	2,670.61	2,660.25	8.23	6.12	-178.04	119.91	-26.87	192.57	180.68	11.89	16.195		
2,800.00	2,747.07	2,760.35	2,745.27	8.86	6.50	173.92	126.91	0.97	226.92	214.36	12.56	18.066		
2,900.00	2,840.50	2,847.75	2,826.87	9.50	6.93	167.27	134.55	31.29	264.90	251.53	13.37	19.810		
3,000.00	2,933.92	2,932.64	2,904.88	10.15	7.41	161.68	142.71	63.74	306.20	291.91	14.29	21.426		
3,100.00	3,027.35	3,014.87	2,979.17	10.80	7.95	156.92	151.32	97.93	350.60	335.32	15.29	22.932		
3,200.00	3,120.78	3,094.36	3,049.67	11.47	8.53	152.82	160.28	133.53	397.95	381.61	16.34	24.348		
3,300.00	3,214.20	3,171.04	3,116.38	12.13	9.17	149.26	169.50	170.18	448.09	430.64	17.45	25.683		
3,400.00	3,307.63	3,244.88	3,179.34	12.80	9.85	146.13	178.92	207.60	500.88	482.31	18.57	26.974		
3,500.00	3,401.05	3,315.88	3,238.62	13.48	10.55	143.36	188.45	245.49	556.19	536.49	19.70	28.238		
3,600.00	3,494.48	3,384.06	3,294.33	14.16	11.29	140.91	198.04	283.60	613.89	593.05	20.83	29.468		
3,700.00	3,587.91	3,449.46	3,346.59	14.84	12.05	138.71	207.64	321.72	673.84	651.87	21.97	30.671		
3,800.00	3,681.33	3,512.14	3,395.56	15.52	12.82	136.74	217.18	359.65	735.94	712.85	23.09	31.871		
3,900.00	3,775.42	3,569.86	3,439.66	16.10	13.58	157.76	226.27	395.77	801.28	777.52	23.76	33.729		
4,000.00	3,870.07	3,619.29	3,476.63	16.60	14.25	-177.50	234.28	427.58	871.09	846.82	24.27	35.892		
4,100.00	3,963.90	3,659.85	3,506.42	17.04	14.83	-154.62	241.00	454.29	944.89	920.15	24.74	38.193		
4,200.00	4,055.49	3,700.00	3,535.39	17.41	15.40	-136.04	247.78	481.24	1,022.07	996.73	25.34	40.340		
4,300.00	4,143.48	3,714.08	3,545.43	17.74	15.62	-119.13	250.19	490.81	1,101.67	1,075.77	25.90	42.541		
4,400.00	4,226.56	3,728.26	3,555.48	18.03	15.83	-104.73	252.64	500.51	1,182.88	1,156.17	26.71	44.282		
4,500.00	4,303.50	3,734.48	3,559.86	18.31	15.93	-91.76	253.71	504.79	1,264.64	1,237.13	27.51	45.978		
4,600.00	4,373.14	3,733.35	3,559.07	18.61	15.91	-80.25	253.52	504.01	1,345.88	1,317.92	27.95	48.145		
4,700.00	4,434.44	3,725.52	3,553.54	18.97	15.79	-70.31	252.16	498.63	1,425.57	1,397.74	27.82	51.234		
4,800.00	4,486.50	3,711.64	3,543.69	19.46	15.58	-62.01	249.77	489.14	1,502.69	1,475.61	27.09	55.473		
4,900.00	4,528.54	3,700.00	3,535.39	20.10	15.40	-55.59	247.78	481.24	1,576.35	1,550.30	26.05	60.521		
5,000.00	4,559.92	3,668.28	3,512.54	20.96	14.95	-49.85	242.41	459.90	1,645.56	1,621.16	24.40	67.435		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference													Warning	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.00	4,580.19	3,639.97	3,491.88	22.02	14.54	-45.60	237.69	441.13	1,709.63	1,686.80	22.83	74.896		
5,200.00	4,589.03	3,600.00	3,462.29	23.27	13.97	-42.11	231.13	415.07	1,767.84	1,746.66	21.17	83.491		
5,300.00	4,586.33	3,572.75	3,441.85	24.64	13.61	-39.89	226.74	397.61	1,819.46	1,799.40	20.05	90.740		
5,400.00	4,573.68	3,535.28	3,413.36	26.10	13.12	-38.54	220.79	374.00	1,865.44	1,845.55	19.89	93.786		
5,500.00	4,559.74	3,500.00	3,386.17	27.70	12.66	-37.76	215.31	352.20	1,913.13	1,892.52	20.61	92.838		
5,600.00	4,545.80	3,462.78	3,357.09	29.39	12.21	-36.95	209.64	329.67	1,963.51	1,942.17	21.34	91.993		
5,700.00	4,531.86	3,428.12	3,329.66	31.18	11.80	-36.20	204.47	309.11	2,016.45	1,994.31	22.14	91.097		
5,800.00	4,517.92	3,400.00	3,307.17	33.02	11.46	-35.60	200.35	292.75	2,071.80	2,048.77	23.03	89.946		
5,900.00	4,503.98	3,361.82	3,276.29	34.93	11.05	-34.80	194.87	270.98	2,129.39	2,105.59	23.80	89.481		
6,000.00	4,490.04	3,330.13	3,250.36	36.88	10.71	-34.15	190.42	253.31	2,189.11	2,164.46	24.65	88.796		
6,100.00	4,476.10	3,300.00	3,225.47	38.87	10.38	-33.53	186.28	236.85	2,250.84	2,225.31	25.53	88.179		
6,200.00	4,462.16	3,269.52	3,200.05	40.89	10.09	-32.92	182.17	220.54	2,314.43	2,288.03	26.40	87.673		
6,300.00	4,448.22	3,240.54	3,175.68	42.95	9.81	-32.35	178.35	205.34	2,379.79	2,352.50	27.28	87.226		
6,400.00	4,434.28	3,200.00	3,141.23	45.02	9.42	-31.57	173.13	184.61	2,446.86	2,418.87	27.98	87.445		
6,500.00	4,420.34	3,200.00	3,141.23	47.12	9.42	-31.57	173.13	184.61	2,515.43	2,486.15	29.29	85.893		
6,600.00	4,406.40	3,158.57	3,105.63	49.23	9.07	-30.79	167.96	164.07	2,585.33	2,555.37	29.96	86.293		
6,700.00	4,392.46	3,132.82	3,083.29	51.36	8.85	-30.31	164.83	151.63	2,656.69	2,625.83	30.86	86.096		
6,800.00	4,378.52	3,100.00	3,054.62	53.51	8.57	-29.72	160.93	136.14	2,729.35	2,697.72	31.64	86.275		
6,900.00	4,364.58	3,100.00	3,054.62	55.66	8.57	-29.72	160.93	136.14	2,803.27	2,770.37	32.91	85.191		
7,000.00	4,350.64	3,059.88	3,019.25	57.83	8.28	-29.01	156.31	117.78	2,878.12	2,844.56	33.56	85.764		
7,100.00	4,336.70	3,036.93	2,998.86	60.01	8.11	-28.61	153.74	107.56	2,954.14	2,919.68	34.46	85.725		
7,200.00	4,322.76	3,000.00	2,965.83	62.19	7.84	-27.99	149.71	91.55	3,031.25	2,996.11	35.14	86.264		
7,300.00	4,308.82	3,000.00	2,965.83	64.39	7.84	-27.99	149.71	91.55	3,109.14	3,072.77	36.37	85.484		
7,400.00	4,294.87	3,000.00	2,965.83	66.59	7.84	-27.99	149.71	91.55	3,188.27	3,150.66	37.60	84.784		
7,500.00	4,280.93	2,951.34	2,921.90	68.80	7.53	-27.19	144.61	71.28	3,267.65	3,229.57	38.07	85.828		
7,600.00	4,266.99	2,931.40	2,903.75	71.01	7.41	-26.87	142.59	63.24	3,348.11	3,309.14	38.97	85.904		
7,700.00	4,253.05	2,900.00	2,875.04	73.23	7.21	-26.38	139.48	50.92	3,429.38	3,389.69	39.69	86.400		
7,800.00	4,239.11	2,900.00	2,875.04	75.45	7.21	-26.38	139.48	50.92	3,511.26	3,470.37	40.89	85.878		
7,900.00	4,225.17	2,900.00	2,875.04	77.68	7.21	-26.38	139.48	50.92	3,594.06	3,551.97	42.08	85.405		
8,000.00	4,211.23	2,856.81	2,835.25	79.91	6.98	-25.72	135.38	34.61	3,677.04	3,634.45	42.59	86.343		
8,100.00	4,197.29	2,839.37	2,819.10	82.15	6.88	-25.47	133.78	28.25	3,760.85	3,717.36	43.49	86.477		
8,200.00	4,183.35	2,800.00	2,782.44	84.39	6.67	-24.90	130.28	14.33	3,845.41	3,801.36	44.05	87.306		
8,300.00	4,169.41	2,800.00	2,782.44	86.63	6.67	-24.90	130.28	14.33	3,930.16	3,884.95	45.20	86.943		
8,400.00	4,155.47	2,800.00	2,782.44	88.88	6.67	-24.90	130.28	14.33	4,015.61	3,969.25	46.36	86.613		
8,500.00	4,141.53	2,800.00	2,782.44	91.13	6.67	-24.90	130.28	14.33	4,101.72	4,054.20	47.52	86.312		
8,600.00	4,127.59	2,758.69	2,743.70	93.38	6.49	-24.32	126.78	0.42	4,187.87	4,139.86	48.01	87.233		
8,700.00	4,113.65	2,743.75	2,729.63	95.63	6.42	-24.12	125.55	-4.44	4,274.69	4,225.77	48.91	87.391		
8,800.00	4,099.71	2,700.00	2,688.22	97.89	6.23	-23.54	122.11	-18.13	4,362.21	4,312.86	49.35	88.391		
8,900.00	4,085.77	2,700.00	2,688.22	100.15	6.23	-23.54	122.11	-18.13	4,449.64	4,399.17	50.48	88.154		
9,000.00	4,071.83	2,700.00	2,688.22	102.41	6.23	-23.54	122.11	-18.13	4,537.59	4,485.99	51.60	87.936		
9,100.00	4,057.89	2,700.00	2,688.22	104.67	6.23	-23.54	122.11	-18.13	4,626.03	4,573.30	52.73	87.737		
9,200.00	4,043.95	2,700.00	2,688.22	106.93	6.23	-23.54	122.11	-18.13	4,714.93	4,661.08	53.85	87.554		
9,300.00	4,030.01	2,661.43	2,651.49	109.20	6.08	-23.04	119.24	-29.53	4,803.78	4,749.45	54.33	88.414		
9,400.00	4,016.07	2,648.83	2,639.44	111.46	6.03	-22.89	118.33	-33.12	4,893.17	4,837.93	55.24	88.585		
9,500.00	4,002.13	2,636.52	2,627.65	113.73	5.99	-22.74	117.47	-36.56	4,982.86	4,926.72	56.14	88.757		
9,600.00	3,988.19	2,600.00	2,592.57	116.00	5.85	-22.30	114.99	-46.40	5,073.04	5,016.40	56.64	89.565		
9,700.00	3,974.25	2,600.00	2,592.57	118.27	5.85	-22.30	114.99	-46.40	5,163.16	5,105.43	57.73	89.429		
9,800.00	3,960.31	2,600.00	2,592.57	120.54	5.85	-22.30	114.99	-46.40	5,253.65	5,194.82	58.83	89.304		
9,900.00	3,946.37	2,600.00	2,592.57	122.81	5.85	-22.30	114.99	-46.40	5,344.47	5,284.54	59.92	89.189		
10,000.00	3,932.43	2,600.00	2,592.57	125.09	5.85	-22.30	114.99	-46.40	5,435.61	5,374.59	61.02	89.083		
10,100.00	3,918.49	2,600.00	2,592.57	127.36	5.85	-22.30	114.99	-46.40	5,527.06	5,464.95	62.11	88.985		
10,153.69	3,911.00	2,562.62	2,556.49	128.58	5.73	-21.86	112.61	-55.88	5,575.86	5,513.80	62.05	89.858		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-46.34	109.29	-114.52	158.30					
100.00	100.00	100.00	100.00	0.10	0.10	-46.34	109.29	-114.52	158.30	158.10	0.20	800.323		
200.00	200.00	200.00	200.00	0.32	0.32	-46.34	109.29	-114.52	158.30	157.65	0.65	244.543		
300.00	300.00	300.00	300.00	0.55	0.55	-46.34	109.29	-114.52	158.30	157.20	1.10	144.321		
400.00	400.00	400.00	400.00	0.77	0.77	-46.34	109.29	-114.52	158.30	156.75	1.55	102.367		
500.00	500.00	500.00	500.00	1.00	1.00	-46.34	109.29	-114.52	158.30	156.30	2.00	79.311		
600.00	600.00	600.00	600.00	1.22	1.22	-46.34	109.29	-114.52	158.30	155.85	2.45	64.732		
700.00	700.00	700.00	700.00	1.45	1.45	-46.34	109.29	-114.52	158.30	155.40	2.89	54.681		
800.00	800.00	800.00	800.00	1.67	1.67	-46.34	109.29	-114.52	158.30	154.95	3.34	47.331		
900.00	900.00	900.00	900.00	1.90	1.90	-46.34	109.29	-114.52	158.30	154.51	3.79	41.723		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-46.34	109.29	-114.52	158.30	154.06	4.24	37.303		
1,100.00	1,100.00	1,100.00	1,100.00	2.35	2.35	-46.34	109.29	-114.52	158.30	153.61	4.69	33.730		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-46.34	109.29	-114.52	158.30	153.16	5.14	30.782		
1,300.00	1,300.00	1,300.00	1,300.00	2.80	2.80	-46.34	109.29	-114.52	158.30	152.71	5.59	28.307		
1,400.00	1,399.98	1,399.98	1,399.98	3.02	3.02	-37.01	109.29	-114.52	156.90	150.86	6.04	25.979		
1,500.00	1,499.84	1,499.84	1,499.84	3.25	3.25	-38.24	109.29	-114.52	152.75	146.27	6.48	23.562		
1,600.00	1,599.45	1,599.45	1,599.45	3.48	3.47	-40.44	109.29	-114.52	146.00	139.08	6.92	21.086		
1,700.00	1,698.70	1,698.70	1,698.70	3.71	3.69	-43.87	109.29	-114.52	136.93	129.57	7.37	18.584		
1,800.00	1,797.47	1,797.47	1,797.47	3.97	3.91	-48.93	109.29	-114.52	126.07	118.24	7.83	16.106		
1,900.00	1,895.62	1,895.62	1,895.62	4.26	4.13	-56.26	109.29	-114.52	114.32	106.00	8.32	13.738		
2,000.00	1,993.06	1,993.06	1,993.06	4.59	4.35	-66.67	109.29	-114.52	103.32	94.44	8.88	11.634		
2,100.00	2,089.64	2,089.64	2,089.64	4.97	4.57	-80.70	109.29	-114.52	95.77	86.25	9.52	10.061		
2,156.44	2,143.74	2,143.74	2,143.74	5.21	4.69	-90.00	109.29	-114.52	94.41	84.51	9.90	9.534 CC, ES		
2,200.00	2,185.27	2,185.27	2,185.27	5.40	4.79	-97.54	109.29	-114.52	95.32	85.15	10.17	9.369 SF		
2,300.00	2,279.82	2,279.82	2,279.82	5.89	5.00	-114.46	109.29	-114.52	104.89	94.17	10.72	9.787		
2,400.00	2,373.36	2,373.36	2,373.36	6.43	5.21	-128.73	109.29	-114.52	124.42	113.29	11.13	11.183		
2,500.00	2,466.79	2,466.79	2,466.79	7.01	5.42	-139.11	109.29	-114.52	150.10	138.61	11.49	13.059		
2,600.00	2,560.22	2,557.02	2,557.01	7.61	5.61	-146.14	108.92	-114.96	179.77	167.91	11.86	15.154		
2,700.00	2,653.64	2,644.49	2,644.43	8.23	5.78	-150.73	106.91	-117.32	213.69	201.43	12.26	17.435		
2,800.00	2,747.07	2,730.65	2,730.40	8.86	5.93	-153.72	103.22	-121.66	250.93	238.25	12.68	19.793		
2,900.00	2,840.50	2,815.37	2,814.72	9.50	6.10	-155.61	97.95	-127.87	290.87	277.74	13.13	22.154		
3,000.00	2,933.92	2,900.00	2,898.68	10.15	6.27	-156.77	91.06	-135.98	333.17	319.56	13.61	24.480		
3,100.00	3,027.35	2,980.05	2,977.76	10.80	6.44	-157.40	83.05	-145.40	377.59	363.48	14.11	26.761		
3,200.00	3,120.78	3,059.83	3,056.20	11.47	6.63	-157.68	73.64	-156.49	424.02	409.38	14.63	28.978		
3,300.00	3,214.20	3,137.81	3,132.45	12.13	6.83	-157.72	63.06	-168.94	472.35	457.17	15.17	31.129		
3,400.00	3,307.63	3,213.94	3,206.43	12.80	7.05	-157.58	51.42	-182.63	522.52	506.78	15.73	33.214		
3,500.00	3,401.05	3,288.18	3,278.07	13.48	7.29	-157.33	38.84	-197.44	574.46	558.16	16.31	35.227		
3,600.00	3,494.48	3,360.49	3,347.35	14.16	7.55	-156.99	25.43	-213.23	628.14	611.24	16.90	37.165		
3,700.00	3,587.91	3,430.86	3,414.24	14.84	7.82	-156.59	11.28	-229.89	683.49	665.98	17.51	39.044		
3,800.00	3,681.33	3,500.00	3,479.41	15.52	8.12	-156.15	-3.67	-247.48	740.47	722.35	18.12	40.859		
3,900.00	3,775.42	3,567.90	3,542.85	16.10	8.45	-135.65	-19.34	-265.92	795.52	776.35	19.17	41.491		
4,000.00	3,870.07	3,638.95	3,608.59	16.60	8.83	-113.14	-36.79	-286.46	843.97	823.93	20.04	42.107		
4,100.00	3,963.90	3,711.93	3,675.39	17.04	9.24	-94.17	-55.81	-308.85	885.35	864.64	20.71	42.749		
4,200.00	4,055.49	3,786.33	3,742.68	17.41	9.72	-80.64	-76.34	-333.02	919.38	898.17	21.21	43.351		
4,300.00	4,143.48	3,861.67	3,809.97	17.74	10.24	-71.69	-98.29	-358.86	945.91	924.33	21.58	43.823		
4,400.00	4,226.56	3,937.49	3,876.75	18.03	10.81	-66.01	-121.55	-386.23	964.92	943.02	21.90	44.051		
4,500.00	4,303.50	4,022.89	3,950.97	18.31	11.49	-62.79	-148.88	-418.41	976.28	953.97	22.32	43.746		
4,600.00	4,373.14	4,116.28	4,032.01	18.61	12.28	-61.57	-178.93	-453.78	978.93	955.98	22.95	42.657		
4,700.00	4,434.44	4,391.14	4,286.97	18.97	13.82	-68.67	-245.82	-527.01	966.19	941.02	25.17	38.387		
4,800.00	4,486.50	4,564.62	4,459.22	19.46	14.23	-77.28	-261.27	-535.57	936.57	909.52	27.05	34.626		
4,900.00	4,528.54	4,644.62	4,538.95	20.10	14.29	-83.07	-261.07	-529.41	903.73	875.20	28.53	31.679		
5,000.00	4,559.92	4,676.89	4,570.90	20.96	14.29	-86.41	-259.68	-525.13	873.85	843.94	29.91	29.219		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.00	4,580.19	4,683.47	4,577.40	22.02	14.29	-88.00	-259.30	-524.14	849.66	818.35	31.31	27.139		
5,200.00	4,589.03	4,675.10	4,569.13	23.27	14.29	-88.37	-259.77	-525.40	832.39	799.67	32.72	25.443		
5,300.00	4,586.33	4,657.40	4,551.62	24.64	14.29	-87.87	-260.61	-527.84	822.46	788.39	34.07	24.142		
5,373.29	4,578.64	4,641.84	4,536.19	25.70	14.29	-86.96	-261.16	-529.73	820.42	785.22	35.20	23.307		
5,400.00	4,573.68	4,634.91	4,529.30	26.10	14.29	-86.61	-261.34	-530.50	820.36	784.82	35.54	23.084		
5,500.00	4,559.74	4,615.78	4,510.27	27.70	14.28	-85.31	-261.68	-532.37	829.29	792.01	37.28	22.243		
5,600.00	4,545.80	4,600.00	4,494.54	29.39	14.27	-84.23	-261.76	-533.63	849.54	810.44	39.10	21.726		
5,700.00	4,531.86	4,586.91	4,481.47	31.18	14.26	-83.34	-261.68	-534.49	880.43	839.46	40.98	21.486		
5,800.00	4,517.92	4,575.76	4,470.34	33.02	14.25	-82.57	-261.52	-535.10	920.96	878.06	42.90	21.468		
5,900.00	4,503.98	4,566.19	4,460.78	34.93	14.24	-81.92	-261.31	-535.51	969.97	925.11	44.86	21.621		
6,000.00	4,490.04	4,550.00	4,444.61	36.88	14.22	-80.81	-260.81	-536.01	1,026.33	979.58	46.74	21.956		
6,100.00	4,476.10	4,550.00	4,444.61	38.87	14.22	-80.81	-260.81	-536.01	1,088.76	1,039.89	48.87	22.278		
6,200.00	4,462.16	4,550.00	4,444.61	40.89	14.22	-80.81	-260.81	-536.01	1,156.49	1,105.47	51.02	22.669		
6,300.00	4,448.22	4,550.00	4,444.61	42.95	14.22	-80.81	-260.81	-536.01	1,228.63	1,175.45	53.18	23.105		
6,400.00	4,434.28	4,533.39	4,428.01	45.02	14.19	-79.68	-260.09	-536.24	1,304.20	1,249.14	55.06	23.686		
6,500.00	4,420.34	4,528.79	4,423.42	47.12	14.18	-79.36	-259.86	-536.26	1,382.95	1,325.79	57.15	24.196		
6,600.00	4,406.40	4,524.63	4,419.27	49.23	14.17	-79.08	-259.63	-536.26	1,464.26	1,405.00	59.26	24.709		
6,700.00	4,392.46	4,520.85	4,415.50	51.36	14.17	-78.82	-259.42	-536.24	1,547.73	1,486.36	61.37	25.218		
6,800.00	4,378.52	4,517.40	4,412.05	53.51	14.16	-78.59	-259.21	-536.21	1,633.04	1,569.54	63.50	25.718		
6,900.00	4,364.58	4,500.00	4,394.70	55.66	14.13	-77.41	-258.04	-535.89	1,720.09	1,654.77	65.32	26.334		
7,000.00	4,350.64	4,500.00	4,394.70	57.83	14.13	-77.41	-258.04	-535.89	1,808.25	1,740.73	67.51	26.783		
7,100.00	4,336.70	4,500.00	4,394.70	60.01	14.13	-77.41	-258.04	-535.89	1,897.57	1,827.86	69.71	27.219		
7,200.00	4,322.76	4,500.00	4,394.70	62.19	14.13	-77.41	-258.04	-535.89	1,987.92	1,916.00	71.92	27.642		
7,300.00	4,308.82	4,500.00	4,394.70	64.39	14.13	-77.41	-258.04	-535.89	2,079.15	2,005.02	74.13	28.049		
7,400.00	4,294.87	4,500.00	4,394.70	66.59	14.13	-77.41	-258.04	-535.89	2,171.15	2,094.82	76.34	28.442		
7,500.00	4,280.93	4,500.00	4,394.70	68.80	14.13	-77.41	-258.04	-535.89	2,263.83	2,185.28	78.55	28.821		
7,600.00	4,266.99	4,500.00	4,394.70	71.01	14.13	-77.41	-258.04	-535.89	2,357.11	2,276.35	80.76	29.185		
7,700.00	4,253.05	4,500.00	4,394.70	73.23	14.13	-77.41	-258.04	-535.89	2,450.92	2,367.94	82.98	29.535		
7,800.00	4,239.11	4,500.00	4,394.70	75.45	14.13	-77.41	-258.04	-535.89	2,545.20	2,460.00	85.20	29.872		
7,900.00	4,225.17	4,500.00	4,394.70	77.68	14.13	-77.41	-258.04	-535.89	2,639.90	2,552.48	87.42	30.196		
8,000.00	4,211.23	4,500.00	4,394.70	79.91	14.13	-77.41	-258.04	-535.89	2,734.98	2,645.33	89.65	30.508		
8,100.00	4,197.29	4,500.00	4,394.70	82.15	14.13	-77.41	-258.04	-535.89	2,830.40	2,738.53	91.87	30.807		
8,200.00	4,183.35	4,500.00	4,394.70	84.39	14.13	-77.41	-258.04	-535.89	2,926.12	2,832.02	94.10	31.096		
8,300.00	4,169.41	4,500.00	4,394.70	86.63	14.13	-77.41	-258.04	-535.89	3,022.12	2,925.79	96.33	31.373		
8,400.00	4,155.47	4,500.00	4,394.70	88.88	14.13	-77.41	-258.04	-535.89	3,118.38	3,019.82	98.56	31.640		
8,500.00	4,141.53	4,500.00	4,394.70	91.13	14.13	-77.41	-258.04	-535.89	3,214.86	3,114.07	100.79	31.897		
8,600.00	4,127.59	4,500.00	4,394.70	93.38	14.13	-77.41	-258.04	-535.89	3,311.55	3,208.53	103.02	32.144		
8,700.00	4,113.65	4,500.00	4,394.70	95.63	14.13	-77.41	-258.04	-535.89	3,408.43	3,303.17	105.25	32.383		
8,800.00	4,099.71	4,500.00	4,394.70	97.89	14.13	-77.41	-258.04	-535.89	3,505.48	3,398.00	107.49	32.613		
8,900.00	4,085.77	4,500.00	4,394.70	100.15	14.13	-77.41	-258.04	-535.89	3,602.70	3,492.98	109.72	32.835		
9,000.00	4,071.83	4,500.00	4,394.70	102.41	14.13	-77.41	-258.04	-535.89	3,700.07	3,588.11	111.96	33.049		
9,100.00	4,057.89	4,500.00	4,394.70	104.67	14.13	-77.41	-258.04	-535.89	3,797.57	3,683.38	114.19	33.256		
9,200.00	4,043.95	4,478.69	4,373.47	106.93	14.08	-75.98	-256.32	-535.08	3,894.86	3,779.21	115.66	33.676		
9,300.00	4,030.01	4,477.92	4,372.70	109.20	14.08	-75.92	-256.25	-535.04	3,992.59	3,874.73	117.85	33.878		
9,400.00	4,016.07	4,477.18	4,371.97	111.46	14.07	-75.88	-256.18	-535.00	4,090.42	3,970.37	120.05	34.073		
9,500.00	4,002.13	4,476.47	4,371.26	113.73	14.07	-75.83	-256.12	-534.97	4,188.35	4,066.10	122.25	34.261		
9,600.00	3,988.19	4,475.78	4,370.58	116.00	14.07	-75.78	-256.06	-534.93	4,286.38	4,161.93	124.45	34.444		
9,700.00	3,974.25	4,475.13	4,369.93	118.27	14.07	-75.74	-256.00	-534.90	4,384.50	4,257.85	126.64	34.620		
9,800.00	3,960.31	4,474.50	4,369.30	120.54	14.07	-75.70	-255.94	-534.87	4,482.70	4,353.85	128.84	34.791		
9,900.00	3,946.37	4,473.89	4,368.70	122.81	14.07	-75.66	-255.88	-534.83	4,580.97	4,449.93	131.05	34.957		
10,000.00	3,932.43	4,473.30	4,368.12	125.09	14.06	-75.62	-255.83	-534.80	4,679.32	4,546.08	133.25	35.118		
10,100.00	3,918.49	4,472.74	4,367.55	127.36	14.06	-75.58	-255.78	-534.77	4,777.74	4,642.29	135.45	35.274		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design DEAL GULCH 4-16 - DEAL GULCH 4-16 - DEAL GULCH 4-16 - Design #1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,153.69	3,911.00	4,472.45	4,367.26	128.58	14.06	-75.56	-255.75	-534.76	4,830.61	4,693.98	136.63	35.355		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
DEAL GULCH 5-16 - DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-40.03	123.46	-103.69	161.22					
100.00	100.00	100.00	100.00	0.10	0.10	-40.03	123.46	-103.69	161.22	161.02	0.20	815.094		
200.00	200.00	200.00	200.00	0.32	0.32	-40.03	123.46	-103.69	161.22	160.57	0.65	249.057		
300.00	300.00	300.00	300.00	0.55	0.55	-40.03	123.46	-103.69	161.22	160.12	1.10	146.984		
400.00	400.00	400.00	400.00	0.77	0.77	-40.03	123.46	-103.69	161.22	159.67	1.55	104.256		
500.00	500.00	500.00	500.00	1.00	1.00	-40.03	123.46	-103.69	161.22	159.23	2.00	80.775		
600.00	600.00	600.00	600.00	1.22	1.22	-40.03	123.46	-103.69	161.22	158.78	2.45	65.927		
700.00	700.00	700.00	700.00	1.45	1.45	-40.03	123.46	-103.69	161.22	158.33	2.89	55.690		
800.00	800.00	800.00	800.00	1.67	1.67	-40.03	123.46	-103.69	161.22	157.88	3.34	48.205		
900.00	900.00	900.00	900.00	1.90	1.90	-40.03	123.46	-103.69	161.22	157.43	3.79	42.493		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-40.03	123.46	-103.69	161.22	156.98	4.24	37.992		
1,100.00	1,100.00	1,100.00	1,100.00	2.35	2.35	-40.03	123.46	-103.69	161.22	156.53	4.69	34.353		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-40.03	123.46	-103.69	161.22	156.08	5.14	31.350		
1,300.00	1,300.00	1,300.00	1,300.00	2.80	2.80	-40.03	123.46	-103.69	161.22	155.63	5.59	28.830		
1,400.00	1,399.98	1,399.98	1,399.98	3.02	3.02	-30.63	123.46	-103.69	159.72	153.68	6.04	26.445		
1,500.00	1,499.84	1,499.84	1,499.84	3.25	3.25	-31.66	123.46	-103.69	155.24	148.75	6.48	23.947		
1,600.00	1,599.45	1,599.45	1,599.45	3.48	3.47	-33.51	123.46	-103.69	147.88	140.96	6.92	21.366		
1,700.00	1,698.70	1,698.70	1,698.70	3.71	3.69	-36.42	123.46	-103.69	137.87	130.51	7.36	18.730		
1,800.00	1,797.47	1,797.47	1,797.47	3.97	3.91	-40.80	123.46	-103.69	125.58	117.77	7.81	16.080		
1,900.00	1,895.62	1,895.62	1,895.62	4.26	4.13	-47.35	123.46	-103.69	111.73	103.44	8.29	13.482		
2,000.00	1,993.06	1,993.06	1,993.06	4.59	4.35	-57.16	123.46	-103.69	97.69	88.86	8.83	11.065		
2,100.00	2,089.64	2,087.04	2,087.02	4.97	4.55	-71.25	123.45	-105.01	87.44	77.99	9.45	9.249		
2,154.06	2,141.47	2,137.41	2,137.36	5.20	4.66	-80.61	123.45	-106.98	85.74	75.91	9.83	8.722 CC, ES		
2,200.00	2,185.27	2,180.00	2,179.88	5.40	4.74	-88.95	123.44	-109.34	87.08	76.95	10.14	8.592		
2,300.00	2,279.82	2,271.89	2,271.48	5.89	4.94	-105.84	123.42	-116.58	99.51	88.76	10.75	9.257		
2,400.00	2,373.36	2,362.66	2,361.69	6.43	5.14	-118.59	123.39	-126.61	123.20	111.93	11.27	10.929		
2,500.00	2,466.79	2,452.96	2,451.07	7.01	5.35	-126.59	123.35	-139.42	153.51	141.72	11.79	13.021		
2,600.00	2,560.22	2,542.71	2,539.47	7.61	5.58	-131.25	123.31	-154.94	187.54	175.19	12.35	15.187		
2,700.00	2,653.64	2,631.76	2,626.66	8.23	5.84	-133.86	123.25	-173.06	223.98	211.02	12.96	17.279		
2,800.00	2,747.07	2,719.95	2,712.39	8.86	6.12	-135.21	123.19	-193.67	262.26	248.62	13.63	19.236		
2,900.00	2,840.50	2,807.11	2,796.47	9.50	6.44	-135.74	123.13	-216.63	302.10	287.73	14.36	21.034		
3,000.00	2,933.92	2,893.11	2,878.71	10.15	6.80	-135.73	123.05	-241.78	343.39	328.25	15.14	22.675		
3,100.00	3,027.35	2,977.81	2,958.94	10.80	7.20	-135.38	122.97	-268.95	386.12	370.14	15.98	24.165		
3,200.00	3,120.78	3,066.30	3,042.15	11.47	7.65	-134.85	122.88	-299.06	429.85	412.98	16.87	25.480		
3,300.00	3,214.20	3,156.15	3,126.61	12.13	8.14	-134.40	122.79	-329.70	473.64	455.85	17.78	26.631		
3,400.00	3,307.63	3,246.00	3,211.07	12.80	8.66	-134.03	122.70	-360.33	517.45	498.73	18.72	27.645		
3,500.00	3,401.05	3,335.84	3,295.53	13.48	9.19	-133.72	122.61	-390.97	561.27	541.61	19.66	28.542		
3,600.00	3,494.48	3,425.69	3,379.99	14.16	9.73	-133.45	122.53	-421.60	605.11	584.48	20.63	29.338		
3,700.00	3,587.91	3,515.54	3,464.45	14.84	10.29	-133.22	122.44	-452.24	648.95	627.36	21.60	30.047		
3,800.00	3,681.33	3,605.38	3,548.92	15.52	10.86	-133.01	122.35	-482.88	692.81	670.23	22.58	30.681		
3,900.00	3,775.42	3,697.37	3,635.39	16.10	11.46	-114.59	122.25	-514.24	731.87	708.01	23.87	30.664		
4,000.00	3,870.07	3,793.24	3,725.52	16.60	12.09	-93.83	122.16	-546.93	759.93	735.02	24.91	30.504		
4,100.00	3,963.90	3,891.59	3,817.97	17.04	12.74	-76.30	122.06	-580.47	776.57	750.87	25.70	30.215		
4,200.00	4,055.49	3,990.93	3,911.36	17.41	13.40	-64.01	121.96	-614.34	781.65	755.41	26.23	29.796		
4,300.00	4,143.48	4,089.80	4,004.30	17.74	14.07	-56.26	121.86	-648.05	775.19	748.67	26.52	29.227		
4,400.00	4,226.56	4,186.71	4,095.41	18.03	14.73	-51.84	121.76	-681.10	757.50	730.88	26.61	28.462		
4,500.00	4,303.50	4,280.23	4,183.32	18.31	15.37	-49.94	121.67	-712.99	729.08	702.49	26.59	27.424		
4,600.00	4,373.14	4,368.95	4,266.73	18.61	15.98	-50.18	121.58	-743.24	690.72	664.14	26.58	25.989		
4,700.00	4,434.44	4,451.56	4,344.38	18.97	16.56	-52.48	121.50	-771.41	643.52	616.72	26.80	24.013		
4,800.00	4,486.50	4,526.83	4,415.14	19.46	17.08	-56.98	121.43	-797.07	588.98	561.46	27.51	21.407		
4,900.00	4,528.54	4,577.76	4,462.88	20.10	17.44	-62.52	121.03	-814.79	529.79	501.17	28.62	18.510		
5,000.00	4,559.92	4,619.18	4,501.10	20.96	17.75	-69.21	119.32	-830.65	470.28	440.04	30.24	15.553		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
DEAL GULCH 5-16 - DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.00	4,580.19	4,659.39	4,537.55	22.02	18.07	-77.27	116.32	-847.39	413.27	380.94	32.32	12.786		
5,200.00	4,589.03	4,700.00	4,573.58	23.27	18.43	-86.36	111.98	-865.59	362.97	328.36	34.60	10.489		
5,300.00	4,586.33	4,734.60	4,603.62	24.64	18.76	-94.61	107.23	-882.09	325.70	289.02	36.68	8.879		
5,400.00	4,573.68	4,769.81	4,633.49	26.10	19.11	-101.49	101.43	-899.80	309.57	270.77	38.80	7.979		
5,410.40	4,572.23	4,773.80	4,636.82	26.26	19.15	-102.17	100.71	-901.86	309.42	270.33	39.09	7.915		
5,500.00	4,559.74	4,812.30	4,668.53	27.70	19.56	-108.63	93.14	-922.34	320.03	279.29	40.74	7.855		
5,600.00	4,545.80	4,866.38	4,711.40	29.39	20.17	-117.16	80.57	-952.79	353.26	311.35	41.91	8.429		
5,700.00	4,531.86	4,936.81	4,764.04	31.18	21.04	-126.87	60.91	-995.22	401.27	359.42	41.85	9.588		
5,800.00	4,517.92	5,030.61	4,827.91	33.02	22.31	-137.05	29.18	-1,056.08	455.99	415.59	40.41	11.285		
5,900.00	4,503.98	5,157.59	4,901.68	34.93	24.24	-146.52	-23.14	-1,145.02	510.21	472.12	38.09	13.394		
6,000.00	4,490.04	5,328.63	4,975.17	36.88	27.16	-153.96	-108.57	-1,273.28	556.61	520.45	36.16	15.391		
6,100.00	4,476.10	5,547.49	5,021.46	38.87	31.23	-158.21	-237.32	-1,443.27	587.15	551.04	36.12	16.256		
6,200.00	4,462.16	5,734.06	5,017.35	40.89	34.80	-158.90	-357.82	-1,585.22	596.96	558.65	38.31	15.583		
6,300.00	4,448.22	5,833.91	5,008.37	42.95	36.76	-158.88	-423.37	-1,660.01	602.38	562.09	40.30	14.949		
6,400.00	4,434.28	5,933.76	4,999.40	45.02	38.77	-158.86	-488.92	-1,734.79	607.81	565.50	42.30	14.368		
6,500.00	4,420.34	6,033.61	4,990.43	47.12	40.80	-158.83	-554.47	-1,809.58	613.23	568.91	44.33	13.834		
6,600.00	4,406.40	6,133.47	4,981.45	49.23	42.86	-158.81	-620.02	-1,884.36	618.66	572.29	46.37	13.342		
6,700.00	4,392.46	6,233.32	4,972.48	51.36	44.94	-158.79	-685.57	-1,959.15	624.09	575.66	48.42	12.888		
6,800.00	4,378.52	6,333.17	4,963.50	53.51	47.04	-158.77	-751.13	-2,033.94	629.51	579.02	50.49	12.468		
6,900.00	4,364.58	6,433.02	4,954.53	55.66	49.16	-158.76	-816.68	-2,108.72	634.94	582.38	52.57	12.079		
7,000.00	4,350.64	6,532.88	4,945.56	57.83	51.30	-158.74	-882.23	-2,183.51	640.37	585.72	54.65	11.717		
7,100.00	4,336.70	6,632.73	4,936.58	60.01	53.44	-158.72	-947.78	-2,258.30	645.79	589.05	56.75	11.381		
7,200.00	4,322.76	6,732.58	4,927.61	62.19	55.60	-158.70	-1,013.33	-2,333.08	651.22	592.37	58.85	11.066		
7,300.00	4,308.82	6,832.43	4,918.64	64.39	57.78	-158.68	-1,078.88	-2,407.87	656.65	595.69	60.96	10.773		
7,400.00	4,294.87	6,932.29	4,909.66	66.59	59.95	-158.66	-1,144.43	-2,482.66	662.08	599.01	63.07	10.497		
7,500.00	4,280.93	7,032.14	4,900.69	68.80	62.14	-158.65	-1,209.99	-2,557.44	667.50	602.31	65.19	10.239		
7,600.00	4,266.99	7,131.99	4,891.71	71.01	64.34	-158.63	-1,275.54	-2,632.23	672.93	605.61	67.32	9.996		
7,700.00	4,253.05	7,231.84	4,882.74	73.23	66.54	-158.61	-1,341.09	-2,707.02	678.36	608.91	69.45	9.768		
7,800.00	4,239.11	7,331.70	4,873.77	75.45	68.75	-158.60	-1,406.64	-2,781.80	683.78	612.20	71.58	9.552		
7,900.00	4,225.17	7,431.55	4,864.79	77.68	70.96	-158.58	-1,472.19	-2,856.59	689.21	615.49	73.72	9.349		
8,000.00	4,211.23	7,531.40	4,855.82	79.91	73.18	-158.56	-1,537.74	-2,931.37	694.64	618.78	75.86	9.156		
8,100.00	4,197.29	7,631.25	4,846.84	82.15	75.41	-158.55	-1,603.29	-3,006.16	700.07	622.05	78.01	8.974		
8,200.00	4,183.35	7,731.11	4,837.87	84.39	77.63	-158.53	-1,668.84	-3,080.95	705.49	625.33	80.16	8.801		
8,300.00	4,169.41	7,830.96	4,828.90	86.63	79.86	-158.52	-1,734.40	-3,155.73	710.92	628.60	82.32	8.636		
8,400.00	4,155.47	7,930.81	4,819.92	88.88	82.10	-158.50	-1,799.95	-3,230.52	716.35	631.87	84.48	8.480		
8,500.00	4,141.53	8,030.66	4,810.95	91.13	84.34	-158.49	-1,865.50	-3,305.31	721.78	635.14	86.64	8.331		
8,600.00	4,127.59	8,130.51	4,801.98	93.38	86.58	-158.47	-1,931.05	-3,380.09	727.20	638.41	88.80	8.189		
8,700.00	4,113.65	8,230.37	4,793.00	95.63	88.82	-158.46	-1,996.60	-3,454.88	732.63	641.67	90.96	8.054		
8,800.00	4,099.71	8,330.22	4,784.03	97.89	91.07	-158.44	-2,062.15	-3,529.67	738.06	644.93	93.13	7.925		
8,900.00	4,085.77	8,430.07	4,775.05	100.15	93.32	-158.43	-2,127.70	-3,604.45	743.49	648.19	95.30	7.801		
9,000.00	4,071.83	8,529.92	4,766.08	102.41	95.57	-158.42	-2,193.25	-3,679.24	748.92	651.44	97.47	7.683		
9,100.00	4,057.89	8,629.78	4,757.11	104.67	97.82	-158.40	-2,258.81	-3,754.02	754.34	654.69	99.65	7.570		
9,200.00	4,043.95	8,729.63	4,748.13	106.93	100.08	-158.39	-2,324.36	-3,828.81	759.77	657.95	101.83	7.461		
9,300.00	4,030.01	8,829.48	4,739.16	109.20	102.33	-158.38	-2,389.91	-3,903.60	765.20	661.20	104.00	7.357		
9,400.00	4,016.07	8,929.33	4,730.19	111.46	104.59	-158.36	-2,455.46	-3,978.38	770.63	664.44	106.18	7.257		
9,500.00	4,002.13	9,029.19	4,721.21	113.73	106.85	-158.35	-2,521.01	-4,053.17	776.06	667.69	108.37	7.161		
9,600.00	3,988.19	9,129.04	4,712.24	116.00	109.11	-158.34	-2,586.56	-4,127.96	781.48	670.93	110.55	7.069		
9,700.00	3,974.25	9,228.89	4,703.26	118.27	111.37	-158.32	-2,652.11	-4,202.74	786.91	674.18	112.74	6.980		
9,800.00	3,960.31	9,328.74	4,694.29	120.54	113.64	-158.31	-2,717.66	-4,277.53	792.34	677.42	114.92	6.894		
9,900.00	3,946.37	9,428.60	4,685.32	122.81	115.90	-158.30	-2,783.22	-4,352.32	797.77	680.66	117.11	6.812		
10,000.00	3,932.43	9,528.45	4,676.34	125.09	118.17	-158.29	-2,848.77	-4,427.10	803.20	683.89	119.30	6.732		
10,100.00	3,918.49	9,587.89	4,671.00	127.36	119.52	-158.28	-2,887.79	-4,471.62	809.63	688.59	121.05	6.689 SF		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design DEAL GULCH 5-16 - DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
10,153.69	3,911.00	9,587.89	4,671.00	128.58	119.52	-158.28	-2,887.79	-4,471.62	816.97	695.34	121.63	6.717	



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	39.33	14.17	11.61	42.18					
100.00	100.00	62.00	62.00	0.10	0.06	39.33	14.17	11.61	18.31	18.16	0.16	116.337		
200.00	200.00	162.00	162.00	0.32	0.23	39.33	14.17	11.61	18.31	17.76	0.56	32.856		
300.00	300.00	262.00	262.00	0.55	0.46	39.33	14.17	11.61	18.31	17.31	1.01	18.188		
400.00	400.00	362.00	362.00	0.77	0.68	39.33	14.17	11.61	18.31	16.86	1.46	12.574		
500.00	500.00	462.00	462.00	1.00	0.91	39.33	14.17	11.61	18.31	16.41	1.91	9.609		
600.00	600.00	562.00	562.00	1.22	1.13	39.33	14.17	11.61	18.31	15.96	2.36	7.775		
700.00	700.00	662.00	662.00	1.45	1.36	39.33	14.17	11.61	18.31	15.51	2.81	6.529		
800.00	800.00	762.00	762.00	1.67	1.58	39.33	14.17	11.61	18.31	15.06	3.25	5.627		
900.00	900.00	862.00	862.00	1.90	1.81	39.33	14.17	11.61	18.31	14.61	3.70	4.944		
1,000.00	1,000.00	962.00	962.00	2.12	2.03	39.33	14.17	11.61	18.31	14.16	4.15	4.409		
1,100.00	1,100.00	1,062.00	1,062.00	2.35	2.26	39.33	14.17	11.61	18.31	13.71	4.60	3.979		
1,200.00	1,200.00	1,162.00	1,162.00	2.57	2.48	39.33	14.17	11.61	18.31	13.26	5.05	3.625		
1,300.00	1,300.00	1,262.00	1,262.00	2.80	2.71	39.33	14.17	11.61	18.31	12.81	5.50	3.329		
1,400.00	1,399.98	1,361.98	1,361.98	3.02	2.93	53.46	14.17	11.61	17.22	11.27	5.95	2.894		
1,500.00	1,499.84	1,461.84	1,461.84	3.25	3.16	70.08	14.17	11.61	14.72	8.32	6.40	2.300		
1,556.80	1,556.46	1,518.41	1,518.41	3.38	3.28	87.72	14.22	11.63	13.88	7.22	6.66	2.085 CC, ES, SF		
1,600.00	1,599.45	1,561.36	1,561.35	3.48	3.38	102.35	14.78	11.85	14.52	7.67	6.85	2.120		
1,700.00	1,698.70	1,660.89	1,660.80	3.71	3.60	126.37	18.36	13.28	20.17	12.88	7.29	2.768		
1,800.00	1,797.47	1,760.54	1,760.18	3.97	3.83	136.67	25.16	16.00	29.33	21.61	7.72	3.797		
1,900.00	1,895.62	1,860.25	1,859.30	4.26	4.06	140.37	35.18	19.99	40.51	32.33	8.17	4.955		
2,000.00	1,993.06	1,959.99	1,958.01	4.59	4.30	141.20	48.39	25.27	53.29	44.63	8.66	6.155		
2,100.00	2,089.64	2,059.68	2,056.13	4.97	4.57	140.71	64.78	31.81	67.57	58.38	9.18	7.357		
2,200.00	2,185.27	2,159.30	2,153.49	5.40	4.87	139.60	84.31	39.61	83.36	73.58	9.78	8.527		
2,300.00	2,279.82	2,258.06	2,249.43	5.89	5.21	138.61	106.10	48.30	100.91	90.48	10.43	9.672		
2,400.00	2,373.36	2,356.10	2,344.62	6.43	5.56	138.83	127.89	57.00	120.59	109.45	11.14	10.824		
2,500.00	2,466.79	2,454.09	2,439.76	7.01	5.93	139.17	149.67	65.70	140.53	128.63	11.91	11.804		
2,600.00	2,560.22	2,552.08	2,534.90	7.61	6.32	139.42	171.45	74.40	160.48	147.78	12.70	12.638		
2,700.00	2,653.64	2,650.07	2,630.04	8.23	6.72	139.62	193.23	83.09	180.42	166.91	13.51	13.352		
2,800.00	2,747.07	2,748.06	2,725.18	8.86	7.14	139.78	215.02	91.79	200.37	186.02	14.35	13.966		
2,900.00	2,840.50	2,846.04	2,820.32	9.50	7.56	139.91	236.80	100.48	220.32	205.12	15.20	14.497		
3,000.00	2,933.92	2,944.03	2,915.46	10.15	7.98	140.01	258.58	109.18	240.27	224.21	16.06	14.960		
3,100.00	3,027.35	3,042.02	3,010.61	10.80	8.42	140.11	280.36	117.87	260.22	243.28	16.94	15.365		
3,200.00	3,120.78	3,140.01	3,105.75	11.47	8.86	140.18	302.14	126.57	280.17	262.35	17.82	15.722		
3,300.00	3,214.20	3,238.00	3,200.89	12.13	9.30	140.25	323.93	135.26	300.12	281.41	18.71	16.038		
3,400.00	3,307.63	3,335.99	3,296.03	12.80	9.75	140.31	345.71	143.96	320.07	300.46	19.61	16.319		
3,500.00	3,401.05	3,433.98	3,391.17	13.48	10.20	140.36	367.49	152.65	340.03	319.51	20.52	16.570		
3,600.00	3,494.48	3,531.97	3,486.31	14.16	10.65	140.41	389.27	161.35	359.98	338.55	21.43	16.796		
3,700.00	3,587.91	3,629.96	3,581.45	14.84	11.11	140.45	411.05	170.04	379.93	357.58	22.35	17.000		
3,800.00	3,681.33	3,727.94	3,676.59	15.52	11.57	140.49	432.84	178.74	399.89	376.62	23.27	17.185		
3,900.00	3,775.42	3,825.48	3,771.30	16.10	12.03	158.77	454.52	187.40	421.08	397.18	23.90	17.617		
4,000.00	3,870.07	3,921.11	3,864.14	16.60	12.48	178.73	475.77	195.88	445.25	420.75	24.50	18.171		
4,100.00	3,963.90	4,013.39	3,953.74	17.04	12.92	-164.89	496.29	204.07	473.20	448.18	25.02	18.913		
4,200.00	4,055.49	4,100.96	4,038.76	17.41	13.34	-153.69	515.75	211.84	506.12	480.76	25.36	19.960		
4,300.00	4,143.48	4,182.50	4,117.93	17.74	13.73	-146.47	533.88	219.08	545.24	519.79	25.45	21.421		
4,400.00	4,226.56	4,265.82	4,199.00	18.03	14.09	-142.03	551.80	225.92	591.34	566.00	25.34	23.338		
4,500.00	4,303.50	4,367.31	4,299.35	18.31	14.37	-139.70	566.44	227.70	642.29	617.29	25.00	25.688		
4,600.00	4,373.14	4,440.91	4,412.46	18.61	14.53	-138.24	571.75	219.76	696.18	671.69	24.49	28.428		
4,700.00	4,434.44	4,611.69	4,540.97	18.97	14.52	-137.39	563.23	197.85	751.29	727.39	23.90	31.433		
4,800.00	4,486.50	4,767.02	4,686.91	19.46	14.28	-136.96	533.13	154.83	805.60	782.23	23.37	34.478		
4,900.00	4,528.54	4,956.71	4,848.07	20.10	13.80	-136.68	468.53	79.50	856.39	833.27	23.12	37.042		
5,000.00	4,559.92	5,190.32	5,008.90	20.96	13.33	-135.98	351.94	-41.92	900.01	876.22	23.78	37.845		

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



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.00	4,580.19	5,467.43	5,129.42	22.02	14.40	-134.06	173.22	-213.96	932.02	905.49	26.54	35.123		
5,200.00	4,589.03	5,764.50	5,159.76	23.27	17.96	-130.34	-44.91	-410.90	949.03	917.11	31.92	29.729		
5,300.00	4,586.33	5,875.39	5,148.72	24.64	19.65	-128.49	-128.05	-483.44	959.32	923.69	35.63	26.923		
5,400.00	4,573.68	5,974.08	5,138.69	26.10	21.26	-127.72	-202.04	-547.97	973.30	934.38	38.91	25.011		
5,500.00	4,559.74	6,072.81	5,128.66	27.70	22.95	-127.34	-276.06	-612.53	987.77	945.77	42.01	23.515		
5,600.00	4,545.80	6,171.55	5,118.62	29.39	24.71	-126.97	-350.09	-677.09	1,002.29	957.08	45.21	22.171		
5,700.00	4,531.86	6,270.29	5,108.59	31.18	26.53	-126.61	-424.12	-741.66	1,016.84	968.34	48.50	20.964		
5,800.00	4,517.92	6,369.02	5,098.55	33.02	28.39	-126.26	-498.14	-806.22	1,031.44	979.56	51.88	19.881		
5,900.00	4,503.98	6,467.76	5,088.52	34.93	30.28	-125.92	-572.17	-870.78	1,046.07	990.74	55.32	18.908		
6,000.00	4,490.04	6,566.50	5,078.49	36.88	32.21	-125.59	-646.20	-935.34	1,060.73	1,001.90	58.83	18.030		
6,100.00	4,476.10	6,665.24	5,068.45	38.87	34.16	-125.27	-720.23	-999.91	1,075.43	1,013.04	62.39	17.237		
6,200.00	4,462.16	6,763.97	5,058.42	40.89	36.13	-124.96	-794.25	-1,064.47	1,090.16	1,024.17	66.00	16.519		
6,300.00	4,448.22	6,862.71	5,048.38	42.95	38.13	-124.66	-868.28	-1,129.03	1,104.92	1,035.28	69.64	15.865		
6,400.00	4,434.28	6,961.45	5,038.35	45.02	40.13	-124.36	-942.31	-1,193.59	1,119.71	1,046.38	73.33	15.270		
6,500.00	4,420.34	7,060.18	5,028.31	47.12	42.15	-124.08	-1,016.33	-1,258.16	1,134.53	1,057.48	77.05	14.725		
6,600.00	4,406.40	7,158.92	5,018.28	49.23	44.18	-123.80	-1,090.36	-1,322.72	1,149.38	1,068.58	80.80	14.225		
6,700.00	4,392.46	7,257.66	5,008.25	51.36	46.22	-123.52	-1,164.39	-1,387.28	1,164.25	1,079.67	84.58	13.765		
6,800.00	4,378.52	7,356.40	4,998.21	53.51	48.27	-123.26	-1,238.41	-1,451.85	1,179.15	1,090.76	88.39	13.341		
6,900.00	4,364.58	7,455.13	4,988.18	55.66	50.33	-123.00	-1,312.44	-1,516.41	1,194.07	1,101.85	92.22	12.948		
7,000.00	4,350.64	7,553.87	4,978.14	57.83	52.39	-122.75	-1,386.47	-1,580.97	1,209.02	1,112.94	96.07	12.585		
7,100.00	4,336.70	7,652.61	4,968.11	60.01	54.46	-122.50	-1,460.50	-1,645.53	1,223.98	1,124.04	99.94	12.247		
7,200.00	4,322.76	7,751.34	4,958.07	62.19	56.54	-122.26	-1,534.52	-1,710.10	1,238.97	1,135.14	103.84	11.932		
7,300.00	4,308.82	7,850.08	4,948.04	64.39	58.62	-122.02	-1,608.55	-1,774.66	1,253.98	1,146.24	107.75	11.638		
7,400.00	4,294.87	7,948.82	4,938.01	66.59	60.70	-121.79	-1,682.58	-1,839.22	1,269.02	1,157.34	111.67	11.363		
7,500.00	4,280.93	8,047.56	4,927.97	68.80	62.79	-121.57	-1,756.60	-1,903.78	1,284.07	1,168.45	115.62	11.106		
7,600.00	4,266.99	8,146.29	4,917.94	71.01	64.88	-121.35	-1,830.63	-1,968.35	1,299.14	1,179.56	119.58	10.865		
7,700.00	4,253.05	8,245.03	4,907.90	73.23	66.98	-121.14	-1,904.66	-2,032.91	1,314.22	1,190.68	123.55	10.637		
7,800.00	4,239.11	8,343.77	4,897.87	75.45	69.08	-120.93	-1,978.68	-2,097.47	1,329.33	1,201.80	127.53	10.424		
7,900.00	4,225.17	8,442.50	4,887.84	77.68	71.18	-120.72	-2,052.71	-2,162.04	1,344.45	1,212.92	131.53	10.222		
8,000.00	4,211.23	8,541.24	4,877.80	79.91	73.28	-120.52	-2,126.74	-2,226.60	1,359.59	1,224.05	135.54	10.031		
8,100.00	4,197.29	8,639.98	4,867.77	82.15	75.39	-120.33	-2,200.77	-2,291.16	1,374.74	1,235.19	139.56	9.851		
8,200.00	4,183.35	8,738.72	4,857.73	84.39	77.49	-120.14	-2,274.79	-2,355.72	1,389.91	1,246.33	143.59	9.680		
8,300.00	4,169.41	8,837.45	4,847.70	86.63	79.60	-119.95	-2,348.82	-2,420.29	1,405.10	1,257.47	147.63	9.518		
8,400.00	4,155.47	8,936.19	4,837.66	88.88	81.72	-119.76	-2,422.85	-2,484.85	1,420.30	1,268.62	151.68	9.364		
8,500.00	4,141.53	9,034.93	4,827.63	91.13	83.83	-119.59	-2,496.87	-2,549.41	1,435.51	1,279.78	155.73	9.218		
8,600.00	4,127.59	9,133.66	4,817.60	93.38	85.94	-119.41	-2,570.90	-2,613.97	1,450.74	1,290.93	159.80	9.078		
8,700.00	4,113.65	9,232.40	4,807.56	95.63	88.06	-119.24	-2,644.93	-2,678.54	1,465.97	1,302.10	163.88	8.946		
8,800.00	4,099.71	9,331.14	4,797.53	97.89	90.18	-119.07	-2,718.95	-2,743.10	1,481.23	1,313.27	167.96	8.819		
8,900.00	4,085.77	9,429.88	4,787.49	100.15	92.29	-118.90	-2,792.98	-2,807.66	1,496.49	1,324.44	172.05	8.698		
9,000.00	4,071.83	9,528.61	4,777.46	102.41	94.41	-118.74	-2,867.01	-2,872.23	1,511.77	1,335.62	176.14	8.583		
9,100.00	4,057.89	9,627.35	4,767.42	104.67	96.53	-118.58	-2,941.04	-2,936.79	1,527.05	1,346.81	180.25	8.472		
9,200.00	4,043.95	9,720.09	4,758.00	106.93	98.53	-118.44	-3,010.57	-2,997.43	1,542.36	1,358.13	184.23	8.372		
9,300.00	4,030.01	9,720.09	4,758.00	109.20	98.53	-118.44	-3,010.57	-2,997.43	1,561.18	1,374.91	186.27	8.381		
9,400.00	4,016.07	9,720.09	4,758.00	111.46	98.53	-118.44	-3,010.57	-2,997.43	1,586.09	1,397.78	188.31	8.423		
9,500.00	4,002.13	9,720.09	4,758.00	113.73	98.53	-118.44	-3,010.57	-2,997.43	1,616.81	1,426.45	190.35	8.494		
9,600.00	3,988.19	9,720.09	4,758.00	116.00	98.53	-118.44	-3,010.57	-2,997.43	1,653.02	1,460.62	192.40	8.592		
9,700.00	3,974.25	9,720.09	4,758.00	118.27	98.53	-118.44	-3,010.57	-2,997.43	1,694.36	1,499.92	194.44	8.714		
9,800.00	3,960.31	9,720.09	4,758.00	120.54	98.53	-118.44	-3,010.57	-2,997.43	1,740.47	1,543.99	196.48	8.858		
9,900.00	3,946.37	9,720.09	4,758.00	122.81	98.53	-118.44	-3,010.57	-2,997.43	1,790.99	1,592.46	198.53	9.021		
10,000.00	3,932.43	9,720.09	4,758.00	125.09	98.53	-118.44	-3,010.57	-2,997.43	1,845.55	1,644.98	200.57	9.202		
10,100.00	3,918.49	9,720.09	4,758.00	127.36	98.53	-118.44	-3,010.57	-2,997.43	1,903.79	1,701.18	202.61	9.396		
10,153.69	3,911.00	9,720.09	4,758.00	128.58	98.53	-118.44	-3,010.57	-2,997.43	1,936.48	1,732.77	203.71	9.506		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference														
Offset				Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	38.38	28.33	22.44	53.17					
100.00	100.00	61.00	61.00	0.10	0.06	38.38	28.33	22.44	36.14	35.99	0.16	230.976		
200.00	200.00	161.00	161.00	0.32	0.23	38.38	28.33	22.44	36.14	35.59	0.56	65.103		
300.00	300.00	261.00	261.00	0.55	0.46	38.38	28.33	22.44	36.14	35.14	1.00	35.974		
400.00	400.00	361.00	361.00	0.77	0.68	38.38	28.33	22.44	36.14	34.69	1.45	24.854		
500.00	500.00	461.00	461.00	1.00	0.91	38.38	28.33	22.44	36.14	34.24	1.90	18.985		
600.00	600.00	561.00	561.00	1.22	1.13	38.38	28.33	22.44	36.14	33.79	2.35	15.359		
700.00	700.00	661.00	661.00	1.45	1.36	38.38	28.33	22.44	36.14	33.34	2.80	12.895		
800.00	800.00	761.00	761.00	1.67	1.58	38.38	28.33	22.44	36.14	32.89	3.25	11.113		
900.00	900.00	861.00	861.00	1.90	1.80	38.38	28.33	22.44	36.14	32.44	3.70	9.764		
1,000.00	1,000.00	961.00	961.00	2.12	2.03	38.38	28.33	22.44	36.14	31.99	4.15	8.706		
1,100.00	1,100.00	1,061.00	1,061.00	2.35	2.25	38.38	28.33	22.44	36.14	31.54	4.60	7.856		
1,200.00	1,200.00	1,161.00	1,161.00	2.57	2.48	38.38	28.33	22.44	36.14	31.09	5.05	7.156		
1,300.00	1,300.00	1,261.00	1,261.00	2.80	2.70	38.38	28.33	22.44	36.14	30.64	5.50	6.572		
1,400.00	1,399.98	1,360.98	1,360.98	3.02	2.93	50.25	28.33	22.44	35.00	29.05	5.95	5.884		
1,500.00	1,499.84	1,460.18	1,460.17	3.25	3.15	57.72	28.64	22.99	32.53	26.14	6.39	5.091		
1,550.01	1,549.69	1,509.50	1,509.48	3.36	3.26	64.17	29.35	24.27	32.08	25.47	6.61	4.854 CC, ES		
1,600.00	1,599.45	1,558.73	1,558.65	3.48	3.36	72.10	30.46	26.28	32.64	25.81	6.83	4.780 SF		
1,700.00	1,698.70	1,656.84	1,656.50	3.71	3.58	89.25	33.91	32.50	37.90	30.62	7.28	5.205		
1,800.00	1,797.47	1,754.29	1,753.38	3.97	3.80	103.14	38.94	41.58	49.35	41.60	7.75	6.368		
1,900.00	1,895.62	1,850.85	1,848.99	4.26	4.04	112.20	45.49	53.41	66.45	58.21	8.24	8.065		
2,000.00	1,993.06	1,946.31	1,943.01	4.59	4.31	117.69	53.50	67.87	88.36	79.61	8.76	10.088		
2,100.00	2,089.64	2,040.49	2,035.17	4.97	4.60	121.00	62.89	84.81	114.56	105.24	9.32	12.288		
2,200.00	2,185.27	2,133.20	2,125.22	5.40	4.92	122.98	73.56	104.07	144.71	134.77	9.94	14.556		
2,300.00	2,279.82	2,224.28	2,212.96	5.89	5.29	124.14	85.41	125.46	178.59	167.97	10.62	16.817		
2,400.00	2,373.36	2,313.72	2,298.31	6.43	5.69	125.03	98.35	148.82	215.74	204.36	11.38	18.957		
2,500.00	2,466.79	2,400.00	2,379.82	7.01	6.12	125.36	112.06	173.56	254.66	242.46	12.20	20.868		
2,600.00	2,560.22	2,489.04	2,463.00	7.61	6.63	125.12	127.44	201.34	295.05	281.94	13.11	22.512		
2,700.00	2,653.64	2,574.73	2,542.08	8.23	7.18	124.53	143.43	230.18	336.92	322.87	14.05	23.974		
2,800.00	2,747.07	2,658.94	2,618.81	8.86	7.77	123.71	160.25	260.54	380.30	365.25	15.05	25.274		
2,900.00	2,840.50	2,741.58	2,693.08	9.50	8.40	122.77	177.80	292.23	425.19	409.12	16.08	26.444		
3,000.00	2,933.92	2,822.55	2,764.81	10.15	9.06	121.74	196.01	325.09	471.64	454.50	17.14	27.514		
3,100.00	3,027.35	2,904.07	2,835.97	10.80	9.78	120.66	215.28	359.88	519.61	501.36	18.25	28.476		
3,200.00	3,120.78	2,991.11	2,911.64	11.47	10.58	119.64	236.12	397.49	568.10	548.69	19.41	29.275		
3,300.00	3,214.20	3,078.14	2,987.31	12.13	11.40	118.77	256.96	435.11	616.71	596.13	20.58	29.972		
3,400.00	3,307.63	3,165.18	3,062.98	12.80	12.23	118.03	277.80	472.73	665.41	643.65	21.76	30.586		
3,500.00	3,401.05	3,252.22	3,138.65	13.48	13.07	117.39	298.64	510.35	714.18	691.24	22.94	31.128		
3,600.00	3,494.48	3,339.26	3,214.32	14.16	13.92	116.83	319.48	547.96	763.02	738.88	24.14	31.611		
3,700.00	3,587.91	3,426.30	3,289.99	14.84	14.78	116.34	340.32	585.58	811.90	786.56	25.34	32.042		
3,800.00	3,681.33	3,513.33	3,365.67	15.52	15.64	115.90	361.16	623.20	860.83	834.28	26.54	32.429		
3,900.00	3,775.42	3,598.27	3,439.51	16.10	16.49	136.01	381.50	659.91	912.66	885.36	27.30	33.429		
4,000.00	3,870.07	3,677.75	3,508.61	16.60	17.28	159.28	400.53	694.26	970.63	942.84	27.79	34.929		
4,100.00	3,963.90	3,750.57	3,571.92	17.04	18.01	-179.85	417.96	725.73	1,034.32	1,006.23	28.10	36.810		
4,200.00	4,055.49	3,815.64	3,628.50	17.41	18.67	-163.14	433.55	753.86	1,103.30	1,074.99	28.32	38.961		
4,300.00	4,143.48	3,872.01	3,677.50	17.74	19.24	-149.58	447.04	778.22	1,177.06	1,148.49	28.58	41.191		
4,400.00	4,226.56	3,918.82	3,718.20	18.03	19.71	-137.55	458.25	798.45	1,254.98	1,225.94	29.05	43.205		
4,500.00	4,303.50	3,955.39	3,749.99	18.31	20.08	-125.84	467.01	814.25	1,336.32	1,306.39	29.93	44.644		
4,600.00	4,373.14	3,981.16	3,772.40	18.61	20.34	-113.76	473.18	825.39	1,420.18	1,388.86	31.32	45.339		
4,700.00	4,434.44	3,998.65	3,787.62	18.97	20.51	-101.40	477.33	832.94	1,505.56	1,472.61	32.95	45.689		
4,800.00	4,486.50	4,005.41	3,793.53	19.46	20.57	-89.11	478.85	835.84	1,591.36	1,557.19	34.16	46.580		
4,900.00	4,528.54	3,991.24	3,781.16	20.10	20.45	-77.02	475.59	829.75	1,676.42	1,642.19	34.23	48.972		
5,000.00	4,559.92	3,971.13	3,763.68	20.96	20.24	-66.88	470.78	821.06	1,759.47	1,726.26	33.21	52.981		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.00	4,580.19	3,940.53	3,737.07	22.02	19.93	-58.62	463.45	807.83	1,839.30	1,807.89	31.41	58.552		
5,200.00	4,589.03	3,899.36	3,701.28	23.27	19.52	-52.15	453.59	790.04	1,914.67	1,885.39	29.27	65.403		
5,300.00	4,586.33	3,848.22	3,656.82	24.64	19.00	-47.24	441.35	767.94	1,984.38	1,957.24	27.15	73.096		
5,400.00	4,573.68	3,789.09	3,605.41	26.10	18.40	-44.66	427.19	742.38	2,048.51	2,022.14	26.38	77.658		
5,500.00	4,559.74	3,728.94	3,553.11	27.70	17.80	-43.32	412.79	716.38	2,112.84	2,086.09	26.75	78.992		
5,600.00	4,545.80	3,668.79	3,500.82	29.39	17.19	-42.03	398.38	690.39	2,178.19	2,151.04	27.15	80.217		
5,700.00	4,531.86	3,608.64	3,448.53	31.18	16.59	-40.79	383.98	664.39	2,244.49	2,216.90	27.58	81.369		
5,800.00	4,517.92	3,548.50	3,396.24	33.02	15.99	-39.60	369.58	638.40	2,311.64	2,283.61	28.03	82.471		
5,900.00	4,503.98	3,487.73	3,344.07	34.93	15.40	-38.49	355.19	612.41	2,378.89	2,350.87	28.50	83.514		
6,000.00	4,490.04	3,428.26	3,292.78	36.88	14.82	-37.46	340.92	586.42	2,446.24	2,418.21	29.00	84.501		
6,100.00	4,476.10	3,368.79	3,242.49	38.87	14.26	-36.50	326.28	560.43	2,513.75	2,485.71	29.52	85.434		
6,200.00	4,462.16	3,309.31	3,192.20	40.89	13.71	-35.61	311.59	534.44	2,581.32	2,552.26	30.06	86.314		
6,300.00	4,448.22	3,249.84	3,141.91	42.95	13.17	-34.78	296.85	508.45	2,648.95	2,618.85	30.62	87.141		
6,400.00	4,434.28	3,190.37	3,091.62	45.02	12.64	-34.00	282.16	482.46	2,716.64	2,685.50	31.20	87.916		
6,500.00	4,420.34	3,130.90	3,041.33	47.12	12.12	-33.27	267.52	456.47	2,784.38	2,750.00	31.80	88.639		
6,600.00	4,406.40	3,071.42	2,991.04	49.23	11.61	-32.59	252.93	430.48	2,852.07	2,816.59	32.42	89.311		
6,700.00	4,392.46	3,011.95	2,940.75	51.36	11.11	-31.96	238.39	404.49	2,919.71	2,882.19	33.06	90.034		
6,800.00	4,378.52	2,952.48	2,890.46	53.51	10.62	-31.38	223.90	378.50	2,987.30	2,948.66	33.72	90.707		
6,900.00	4,364.58	2,893.01	2,840.17	55.66	10.14	-30.84	209.46	352.51	3,054.84	3,015.00	34.40	91.330		
7,000.00	4,350.64	2,833.53	2,789.88	57.83	9.67	-30.34	195.07	326.52	3,122.43	3,081.51	35.09	91.903		
7,100.00	4,336.70	2,774.06	2,739.59	60.01	9.21	-30.87	180.73	299.53	3,189.96	3,148.00	35.79	92.526		
7,200.00	4,322.76	2,714.59	2,689.30	62.19	8.76	-31.44	166.44	272.54	3,257.46	3,214.50	36.50	93.199		
7,300.00	4,308.82	2,655.12	2,639.01	64.39	8.32	-32.04	152.20	245.55	3,324.95	3,280.00	37.22	93.822		
7,400.00	4,294.87	2,595.64	2,589.72	66.59	7.89	-32.66	138.01	218.56	3,392.40	3,346.50	37.95	94.395		
7,500.00	4,280.93	2,536.17	2,534.43	68.80	7.47	-33.30	123.87	191.57	3,459.91	3,412.50	38.68	94.918		
7,600.00	4,266.99	2,476.70	2,480.14	71.01	7.06	-33.96	109.78	164.58	3,527.38	3,478.50	39.41	95.391		
7,700.00	4,253.05	2,417.23	2,420.85	73.23	6.66	-34.64	95.94	137.59	3,594.81	3,543.50	40.14	95.814		
7,800.00	4,239.11	2,357.76	2,371.56	75.45	6.27	-35.34	82.25	110.60	3,662.20	3,609.00	40.87	96.187		
7,900.00	4,225.17	2,298.28	2,312.27	77.68	5.88	-36.05	68.61	83.61	3,729.55	3,674.50	41.60	96.510		
8,000.00	4,211.23	2,238.81	2,252.98	79.91	5.50	-36.77	55.12	59.62	3,796.86	3,739.00	42.33	96.783		
8,100.00	4,197.29	2,179.34	2,193.69	82.15	5.13	-37.50	41.73	50.63	3,864.13	3,804.50	43.06	97.006		
8,200.00	4,183.35	2,119.87	2,134.22	84.39	4.76	-38.24	28.34	41.64	3,931.36	3,869.50	43.79	97.179		
8,300.00	4,169.41	2,060.39	2,074.74	86.63	4.40	-39.00	15.05	32.65	4,000.00	3,935.50	44.52	97.302		
8,400.00	4,155.47	2,000.92	2,015.27	88.88	4.04	-39.77	1.46	23.66	4,068.51	3,999.50	45.25	97.375		
8,500.00	4,141.53	1,941.45	1,955.79	91.13	3.69	-40.55	-12.13	14.67	4,137.00	4,065.50	45.98	97.398		
8,600.00	4,127.59	1,881.98	1,896.32	93.38	3.34	-41.34	-28.74	5.68	4,206.41	4,131.50	46.71	97.371		
8,700.00	4,113.65	1,822.51	1,836.85	95.63	2.99	-42.14	-45.35	-4.31	4,275.82	4,198.50	47.44	97.294		
8,800.00	4,099.71	1,763.04	1,777.38	97.89	2.64	-42.95	-62.06	-20.82	4,345.23	4,264.50	48.17	97.167		
8,900.00	4,085.77	1,703.57	1,717.91	100.15	2.30	-43.77	-78.77	-37.33	4,414.64	4,330.50	48.90	96.990		
9,000.00	4,071.83	1,644.10	1,658.44	102.41	1.95	-44.60	-95.48	-54.04	4,484.05	4,396.50	49.63	96.763		
9,100.00	4,057.89	1,584.63	1,598.97	104.67	1.61	-45.44	-112.19	-70.75	4,553.46	4,463.50	50.36	96.486		
9,200.00	4,043.95	1,525.16	1,539.50	106.93	1.27	-46.29	-128.90	-87.46	4,622.87	4,530.50	51.09	96.159		
9,300.00	4,030.01	1,465.69	1,480.03	109.20	0.93	-47.14	-145.61	-104.17	4,692.28	4,596.50	51.82	95.782		
9,400.00	4,016.07	1,406.22	1,420.56	111.46	0.60	-48.00	-162.32	-120.88	4,761.69	4,561.50	52.55	95.355		
9,500.00	4,002.13	1,346.75	1,361.09	113.73	0.26	-48.87	-179.03	-137.59	4,831.10	4,525.50	53.28	94.878		
9,600.00	3,988.19	1,287.28	1,301.62	116.00	0.00	-49.75	-195.74	-154.30	4,900.51	4,488.50	54.01	94.351		
9,700.00	3,974.25	1,227.81	1,242.15	118.27	-0.36	-50.63	-212.45	-171.01	4,970.02	4,450.50	54.74	93.774		
9,800.00	3,960.31	1,168.34	1,182.68	120.54	-0.71	-51.52	-229.16	-187.72	5,039.43	4,411.50	55.47	93.147		
9,900.00	3,946.37	1,108.87	1,123.21	122.81	-1.07	-52.42	-245.87	-204.43	5,108.84	4,371.50	56.20	92.470		
10,000.00	3,932.43	1,049.40	1,063.74	125.09	-1.42	-53.33	-262.58	-221.14	5,178.25	4,330.50	56.93	91.743		
10,100.00	3,918.49	989.93	1,004.27	127.36	-1.78	-54.25	-279.29	-237.85	5,247.66	4,288.50	57.66	90.966		
10,153.69	3,911.00	930.46	944.80	128.58	-2.14	-55.17	-296.00	-254.56	5,317.07	4,245.50	58.39	90.139		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RIG KB @ 7222.00ft

Offset Depths are relative to Offset Datum

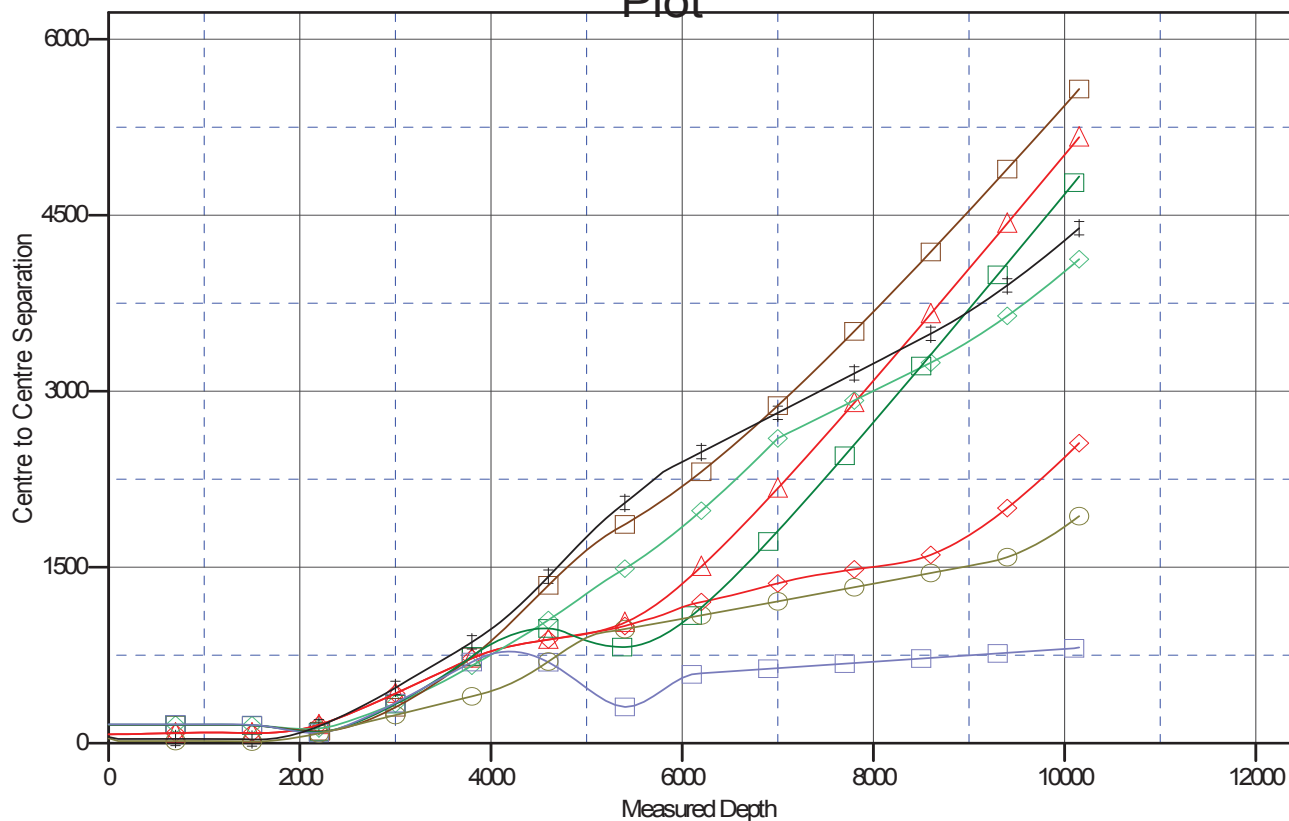
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: DEAL GULCH 6-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.29°

Ladder Plot



LEGEND

Permit, Deal Gulch 1-16 Permit V0

Pilot Hole, Deal Gulch 1-16 Pilot Hole V0

12-16, Design #3 V0

DEAL GULCH 3-16, DEAL GULCH 3-16, Design #1 V0

DEAL GULCH 4-16, DEAL GULCH 4-16, Design #1 V0

DEAL GULCH 5-16, DEAL GULCH 5-16, Design #1 V0

DEAL GULCH 7-16, DEAL GULCH 7-16, Design #1 V0

DEAL GULCH 8-16, DEAL GULCH 8-16, Design #1 V0



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	RIG KB @ 7222.00ft
Reference Site:	DEAL GULCH 6-16	MD Reference:	RIG KB @ 7222.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RIG KB @ 7222.00ft

Offset Depths are relative to Offset Datum

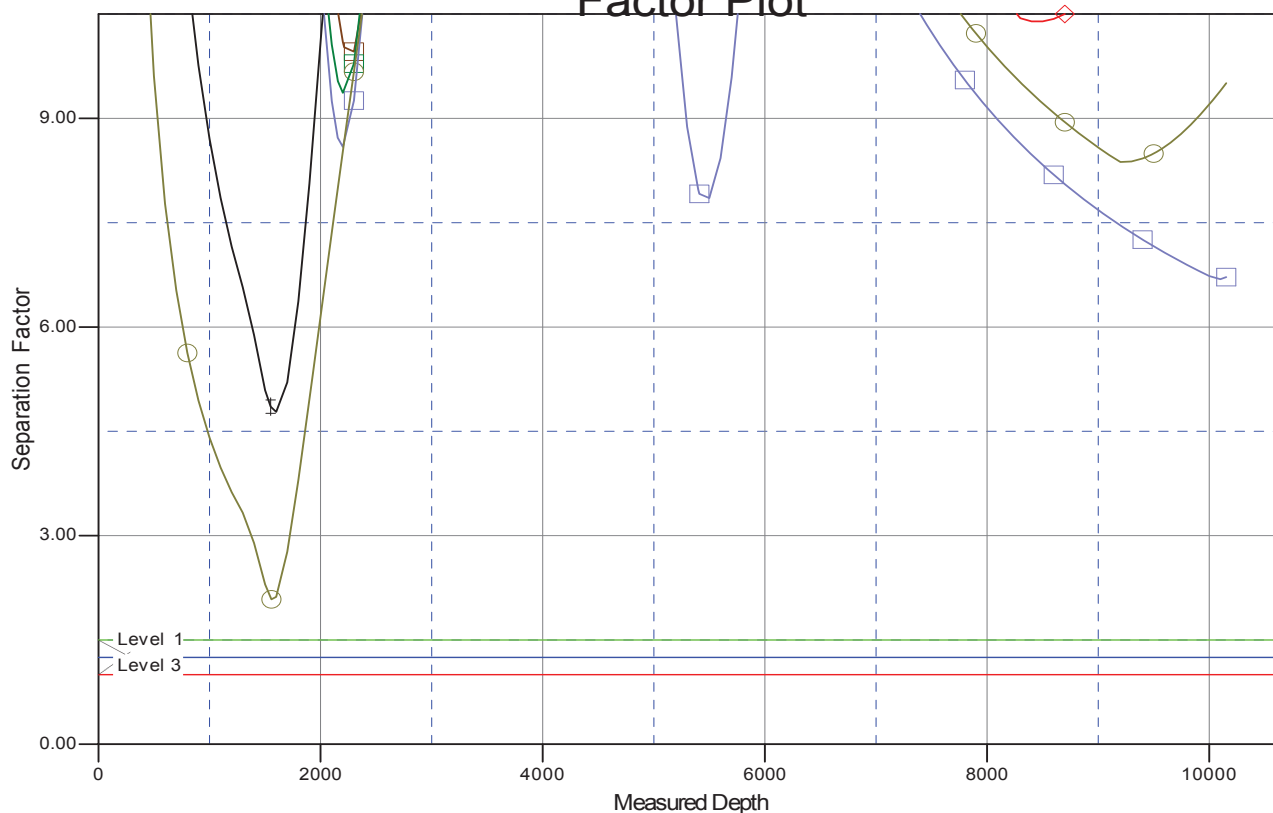
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: DEAL GULCH 6-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.29°

Separation Factor Plot



LEGEND

Permit, Deal Gulch 1-16 Permit V0

Plot Hole, Deal Gulch 1-16 Pilot Hole V0

12-16, Design #3 V0

DEAL GULCH 3-16, DEAL GULCH 3-16, Design #1 V0

DEAL GULCH 4-16, DEAL GULCH 4-16, Design #1 V0

DEAL GULCH 5-16, DEAL GULCH 5-16, Design #1 V0

DEAL GULCH 7-16, DEAL GULCH 7-16, Design #1 V0

DEAL GULCH 8-16, DEAL GULCH 8-16, Design #1 V0