



**Weatherford®**

## **SHELL E&P**

**MOFFAT COUNTY, CO  
DEAL GULCH 3-16**

**Plan: PLAN #1**

## **Proposal**

**12 September, 2012**



**Weatherford®**



Project: MOFFAT COUNTY, CO  
Site: DEAL GULCH 3-16  
Well: DEAL GULCH 3-16  
Wellbore: DEAL GULCH 3-16  
Design: Design #1  
Latitude: 40° 23' 17.490 N  
Longitude: 107° 29' 54.560 W  
GL: 7210.00  
KB: WELL @ 7222.00ft (Original Well Elev)  
RIG: Original Well Elev



Weatherford®

#### WELL DETAILS: DEAL GULCH 3-16

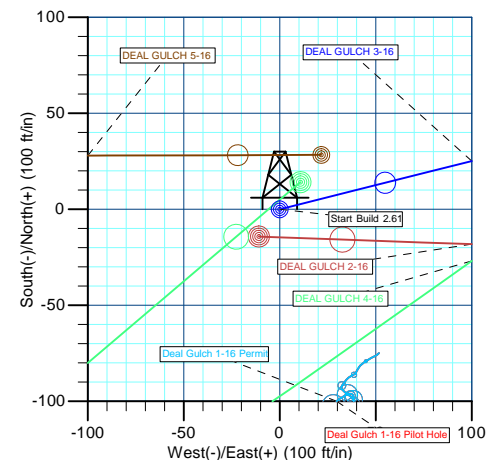
+N/-S	+E/-W	Northing	Ground Level: Easting	7210.00 Latitude	Longitude	Slot
0.00	0.00	1390531.61	2443350.33	40° 23' 17.490 N	107° 29' 54.560 W	

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.61
3755.49	45.78	75.87	3574.59	162.25	644.67	2.61	75.87	43.37	Start 1154.35 hold at 3755.49 MD
4909.84	45.78	75.87	4379.68	364.16	1446.91	0.00	0.00	97.34	Start DLS 8.00 TFO 109.20
6363.99	95.63	197.61	5071.00	-528.29	1901.37	8.00	109.20	1086.18	Start 2852.81 hold at 6363.99 MD
9216.79	95.63	197.61	4791.00	-3234.34	1042.63	0.00	0.00	3398.24	TD at 9216.79

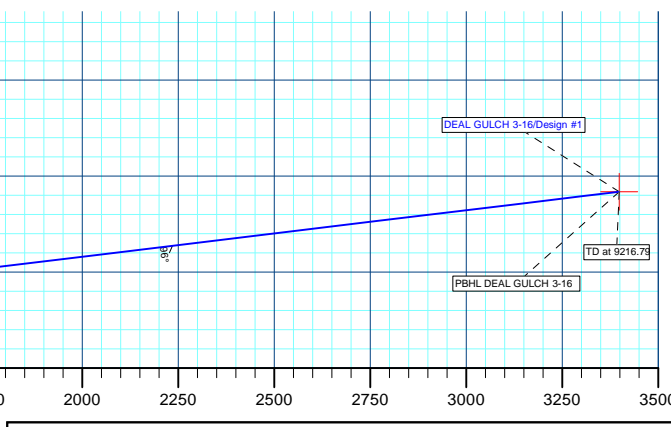
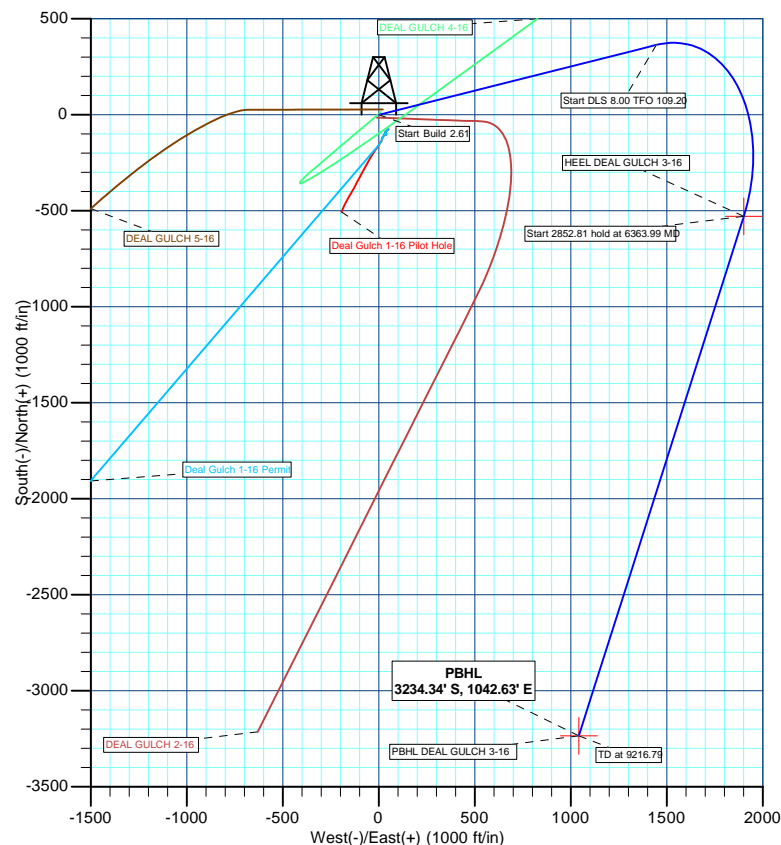
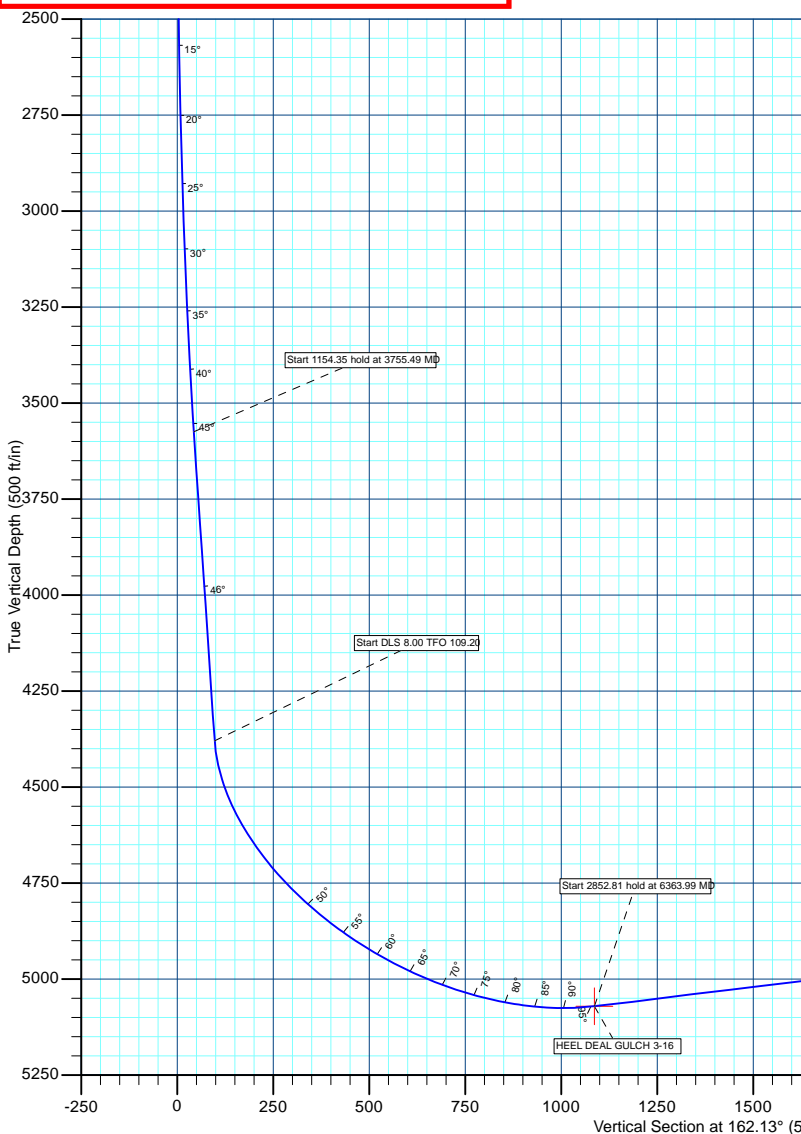
#### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL DEAL GULCH 3-16	4791.00	-3234.34	1042.63	1387274.60	2444319.80	40° 22' 45.528 N	107° 29' 41.087 W	Point
HEEL DEAL GULCH 3-16	5071.00	-528.29	1901.37	1389960.60	2445239.30	40° 23' 12.269 N	107° 29' 29.988 W	Point



Azimuths to True North  
Magnetic North: 10.08°

Magnetic Field  
Strength: 52595.6nT  
Dip Angle: 66.50°  
Date: 9/11/2012  
Model: BGGM2012



Plan: Design #1 (DEAL GULCH 3-16/DEAL GULCH 3-16)

Created By: TRACY WILLIAMS

Date: 12:32, September 12 2012



# **SHELL E&P**

**MOFFAT COUNTY, CO**

**DEAL GULCH 3-16**

**DEAL GULCH 3-16**

**DEAL GULCH 3-16**

**Plan: Design #1**

## **Standard Planning Report**

**12 September, 2012**



**Weatherford®**



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Company:</b>	SHELL E&P	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Project:</b>	MOFFAT COUNTY, CO	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site:</b>	DEAL GULCH 3-16	<b>North Reference:</b>	True
<b>Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DEAL GULCH 3-16		
<b>Design:</b>	Design #1		

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

<b>Site</b>	DEAL GULCH 3-16			
<b>Site Position:</b>		<b>Northing:</b>	1,390,531.61 usft	<b>Latitude:</b> 40° 23' 17.490 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,443,350.33 usft	<b>Longitude:</b> 107° 29' 54.560 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b> -1.29 °

<b>Well</b>	DEAL GULCH 3-16			
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,390,531.61 usft
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	2,443,350.33 usft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	7,210.00 ft

<b>Wellbore</b>	DEAL GULCH 3-16				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2012	9/11/2012	10.08	66.50	52,596

<b>Design</b>	Design #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	162.13

<b>Plan Sections</b>										
<b>Measured Depth</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical Depth</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Dogleg Rate</b>	<b>Build Rate</b>	<b>Turn Rate</b>	<b>TFO</b>	<b>Target</b>
(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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,755.49	45.78	75.87	3,574.59	162.25	644.67	2.61	2.61	0.00	75.87	
4,909.84	45.78	75.87	4,379.68	364.16	1,446.91	0.00	0.00	0.00	0.00	
6,363.99	95.63	197.61	5,071.00	-528.29	1,901.37	8.00	3.43	8.37	109.20	HEEL DEAL GULCH :
9,216.79	95.63	197.61	4,791.00	-3,234.34	1,042.63	0.00	0.00	0.00	0.00	PBHL DEAL GULCH :



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Company:</b>	SHELL E&P	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Project:</b>	MOFFAT COUNTY, CO	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site:</b>	DEAL GULCH 3-16	<b>North Reference:</b>	True
<b>Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DEAL GULCH 3-16		
<b>Design:</b>	Design #1		

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
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.61</b>									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	2.61	75.87	2,099.97	0.56	2.21	0.15	2.61	2.61	0.00
2,200.00	5.22	75.87	2,199.72	2.22	8.82	0.59	2.61	2.61	0.00
2,300.00	7.82	75.87	2,299.07	4.99	19.83	1.33	2.61	2.61	0.00
2,400.00	10.43	75.87	2,397.79	8.86	35.21	2.37	2.61	2.61	0.00
2,500.00	13.04	75.87	2,495.70	13.83	54.93	3.70	2.61	2.61	0.00
2,600.00	15.65	75.87	2,592.57	19.87	78.95	5.31	2.61	2.61	0.00
2,700.00	18.25	75.87	2,688.22	26.99	107.22	7.21	2.61	2.61	0.00
2,800.00	20.86	75.87	2,782.44	35.16	139.68	9.40	2.61	2.61	0.00
2,900.00	23.47	75.87	2,875.04	44.36	176.27	11.86	2.61	2.61	0.00
3,000.00	26.08	75.87	2,965.83	54.59	216.90	14.59	2.61	2.61	0.00
3,100.00	28.68	75.87	3,054.62	65.81	261.50	17.59	2.61	2.61	0.00
3,200.00	31.29	75.87	3,141.23	78.01	309.96	20.85	2.61	2.61	0.00
3,300.00	33.90	75.87	3,225.47	91.16	362.20	24.37	2.61	2.61	0.00
3,400.00	36.51	75.87	3,307.17	105.23	418.10	28.13	2.61	2.61	0.00
3,500.00	39.12	75.87	3,386.17	120.19	477.55	32.13	2.61	2.61	0.00
3,600.00	41.72	75.87	3,462.29	136.01	540.42	36.36	2.61	2.61	0.00
3,700.00	44.33	75.87	3,535.39	152.66	606.59	40.81	2.61	2.61	0.00
<b>Start 1154.35 hold at 3755.49 MD</b>									
3,755.49	45.78	75.87	3,574.59	162.25	644.67	43.37	2.61	2.61	0.00
3,800.00	45.78	75.87	3,605.63	170.04	675.61	45.45	0.00	0.00	0.00
3,900.00	45.78	75.87	3,675.37	187.53	745.10	50.13	0.00	0.00	0.00
4,000.00	45.78	75.87	3,745.12	205.02	814.60	54.80	0.00	0.00	0.00
4,100.00	45.78	75.87	3,814.86	222.51	884.10	59.48	0.00	0.00	0.00
4,200.00	45.78	75.87	3,884.61	240.00	953.59	64.15	0.00	0.00	0.00
4,300.00	45.78	75.87	3,954.35	257.49	1,023.09	68.83	0.00	0.00	0.00
4,400.00	45.78	75.87	4,024.09	274.98	1,092.59	73.50	0.00	0.00	0.00
4,500.00	45.78	75.87	4,093.84	292.47	1,162.08	78.18	0.00	0.00	0.00
4,600.00	45.78	75.87	4,163.58	309.96	1,231.58	82.85	0.00	0.00	0.00
4,700.00	45.78	75.87	4,233.33	327.45	1,301.08	87.53	0.00	0.00	0.00
4,800.00	45.78	75.87	4,303.07	344.95	1,370.58	92.20	0.00	0.00	0.00
<b>Start DLS 8.00 TFO 109.20</b>									



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Company:</b>	SHELL E&P	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Project:</b>	MOFFAT COUNTY, CO	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site:</b>	DEAL GULCH 3-16	<b>North Reference:</b>	True
<b>Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DEAL GULCH 3-16		
<b>Design:</b>	Design #1		

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)	
4,909.84	45.78	75.87	4,379.68	364.16	1,446.91	97.34	0.00	0.00	0.00	
4,950.00	44.80	80.18	4,407.94	370.08	1,474.82	100.26	8.00	-2.43	10.73	
5,000.00	43.82	85.73	4,443.73	374.38	1,509.45	106.80	8.00	-1.96	11.11	
5,050.00	43.12	91.46	4,480.03	375.23	1,543.81	116.53	8.00	-1.41	11.45	
5,100.00	42.71	97.30	4,516.66	372.64	1,577.72	129.40	8.00	-0.82	11.69	
5,150.00	42.60	103.21	4,553.45	366.62	1,611.03	145.35	8.00	-0.22	11.81	
5,200.00	42.79	109.10	4,590.22	357.19	1,643.56	164.31	8.00	0.39	11.79	
5,250.00	43.28	114.92	4,626.78	344.41	1,675.17	186.17	8.00	0.98	11.64	
5,300.00	44.06	120.60	4,662.96	328.33	1,705.69	210.84	8.00	1.56	11.37	
5,350.00	45.11	126.10	4,698.58	309.03	1,734.97	238.19	8.00	2.11	11.00	
5,400.00	46.42	131.38	4,733.47	286.62	1,762.89	268.09	8.00	2.61	10.56	
5,450.00	47.96	136.41	4,767.46	261.19	1,789.29	300.39	8.00	3.08	10.07	
5,500.00	49.71	141.19	4,800.39	232.87	1,814.05	334.94	8.00	3.50	9.56	
5,550.00	51.64	145.72	4,832.08	201.80	1,837.05	371.57	8.00	3.87	9.05	
5,600.00	53.74	150.00	4,862.39	168.13	1,858.18	410.10	8.00	4.20	8.56	
5,650.00	55.98	154.05	4,891.18	132.02	1,877.33	450.34	8.00	4.49	8.10	
5,700.00	58.35	157.89	4,918.29	93.66	1,894.42	492.09	8.00	4.74	7.67	
5,750.00	60.83	161.53	4,943.61	53.22	1,909.35	535.16	8.00	4.96	7.28	
5,800.00	63.40	165.00	4,966.99	10.90	1,922.06	579.34	8.00	5.14	6.93	
5,850.00	66.05	168.31	4,988.34	-33.08	1,932.48	624.40	8.00	5.30	6.62	
5,900.00	68.77	171.49	5,007.55	-78.52	1,940.56	670.13	8.00	5.44	6.35	
5,950.00	71.55	174.55	5,024.51	-125.20	1,946.27	716.30	8.00	5.56	6.12	
6,000.00	74.38	177.51	5,039.16	-172.88	1,949.57	762.69	8.00	5.65	5.92	
6,050.00	77.24	180.39	5,051.42	-221.33	1,950.45	809.08	8.00	5.73	5.76	
6,100.00	80.14	183.21	5,061.23	-270.33	1,948.91	855.24	8.00	5.79	5.63	
6,150.00	83.05	185.97	5,068.54	-319.62	1,944.95	900.94	8.00	5.83	5.53	
6,200.00	85.99	188.70	5,073.32	-368.97	1,938.59	945.96	8.00	5.87	5.47	
6,250.00	88.93	191.42	5,075.54	-418.14	1,929.86	990.09	8.00	5.88	5.43	
6,300.00	91.87	194.13	5,075.19	-466.90	1,918.81	1,033.10	8.00	5.89	5.42	
6,350.00	94.81	196.84	5,072.27	-514.99	1,905.49	1,074.78	8.00	5.88	5.43	
Start 2852.81 hold at 6363.99 MD - HEEL DEAL GULCH 3-16										
6,363.99	95.63	197.61	5,071.00	-528.29	1,901.37	1,086.18	8.00	5.87	5.46	
6,400.00	95.63	197.61	5,067.47	-562.45	1,890.53	1,115.37	0.00	0.00	0.00	
6,500.00	95.63	197.61	5,057.65	-657.31	1,860.42	1,196.41	0.00	0.00	0.00	
6,600.00	95.63	197.61	5,047.84	-752.17	1,830.32	1,277.46	0.00	0.00	0.00	
6,700.00	95.63	197.61	5,038.02	-847.02	1,800.22	1,358.50	0.00	0.00	0.00	
6,800.00	95.63	197.61	5,028.21	-941.88	1,770.12	1,439.55	0.00	0.00	0.00	
6,900.00	95.63	197.61	5,018.39	-1,036.73	1,740.02	1,520.59	0.00	0.00	0.00	
7,000.00	95.63	197.61	5,008.58	-1,131.59	1,709.92	1,601.64	0.00	0.00	0.00	
7,100.00	95.63	197.61	4,998.76	-1,226.44	1,679.82	1,682.68	0.00	0.00	0.00	
7,200.00	95.63	197.61	4,988.95	-1,321.30	1,649.71	1,763.73	0.00	0.00	0.00	
7,300.00	95.63	197.61	4,979.13	-1,416.15	1,619.61	1,844.77	0.00	0.00	0.00	
7,400.00	95.63	197.61	4,969.32	-1,511.01	1,589.51	1,925.82	0.00	0.00	0.00	
7,500.00	95.63	197.61	4,959.50	-1,605.87	1,559.41	2,006.86	0.00	0.00	0.00	
7,600.00	95.63	197.61	4,949.69	-1,700.72	1,529.31	2,087.91	0.00	0.00	0.00	
7,700.00	95.63	197.61	4,939.87	-1,795.58	1,499.21	2,168.95	0.00	0.00	0.00	
7,800.00	95.63	197.61	4,930.06	-1,890.43	1,469.10	2,250.00	0.00	0.00	0.00	
7,900.00	95.63	197.61	4,920.24	-1,985.29	1,439.00	2,331.04	0.00	0.00	0.00	
8,000.00	95.63	197.61	4,910.43	-2,080.14	1,408.90	2,412.09	0.00	0.00	0.00	
8,100.00	95.63	197.61	4,900.61	-2,175.00	1,378.80	2,493.13	0.00	0.00	0.00	
8,200.00	95.63	197.61	4,890.80	-2,269.85	1,348.70	2,574.18	0.00	0.00	0.00	
8,300.00	95.63	197.61	4,880.98	-2,364.71	1,318.60	2,655.22	0.00	0.00	0.00	
8,400.00	95.63	197.61	4,871.17	-2,459.56	1,288.50	2,736.27	0.00	0.00	0.00	
8,500.00	95.63	197.61	4,861.35	-2,554.42	1,258.39	2,817.31	0.00	0.00	0.00	



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Company:</b>	SHELL E&P	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Project:</b>	MOFFAT COUNTY, CO	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site:</b>	DEAL GULCH 3-16	<b>North Reference:</b>	True
<b>Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DEAL GULCH 3-16		
<b>Design:</b>	Design #1		

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)	
8,600.00	95.63	197.61	4,851.54	-2,649.28	1,228.29	2,898.36	0.00	0.00	0.00	
8,700.00	95.63	197.61	4,841.72	-2,744.13	1,198.19	2,979.40	0.00	0.00	0.00	
8,800.00	95.63	197.61	4,831.91	-2,838.99	1,168.09	3,060.45	0.00	0.00	0.00	
8,900.00	95.63	197.61	4,822.09	-2,933.84	1,137.99	3,141.49	0.00	0.00	0.00	
9,000.00	95.63	197.61	4,812.28	-3,028.70	1,107.89	3,222.54	0.00	0.00	0.00	
9,100.00	95.63	197.61	4,802.46	-3,123.55	1,077.78	3,303.58	0.00	0.00	0.00	
9,200.00	95.63	197.61	4,792.65	-3,218.41	1,047.68	3,384.63	0.00	0.00	0.00	
TD at 9216.79 - PBHL DEAL GULCH 3-16										
9,216.79	95.63	197.61	4,791.00	-3,234.34	1,042.63	3,398.24	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
PBHL DEAL GULCH 3-1	0.00	0.00	4,791.00	-3,234.34	1,042.63	1,387,274.60	2,444,319.80	40° 22' 45.528 N	107° 29' 41.087 W	
- plan hits target center										
- Point										
HEEL DEAL GULCH 3-1	0.00	0.00	5,071.00	-528.29	1,901.37	1,389,960.60	2,445,239.30	40° 23' 12.269 N	107° 29' 29.988 W	
- plan hits target center										
- Point										

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,000.00	2,000.00	0.00	0.00	Start Build 2.61	
3,755.49	3,574.59	162.25	644.67	Start 1154.35 hold at 3755.49 MD	
4,909.84	4,379.68	364.16	1,446.91	Start DLS 8.00 TFO 109.20	
6,363.99	5,071.00	-528.29	1,901.37	Start 2852.81 hold at 6363.99 MD	
9,216.79	4,791.00	-3,234.34	1,042.63	TD at 9216.79	



# **SHELL E&P**

**MOFFAT COUNTY, CO**

**DEAL GULCH 3-16**

**DEAL GULCH 3-16**

**DEAL GULCH 3-16**

**Design #1**

## **Anticollision Report**

**12 September, 2012**



**Weatherford®**





<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Design #1		
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	9/12/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	9,216.79	Design #1 (DEAL GULCH 3-16)	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 - Design #9	377.92	375.30	90.87	89.22	55.229	CC
Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Design #9	400.00	397.24	90.89	89.16	52.573	ES
Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Design #9	2,400.00	2,397.32	105.68	95.53	10.415	SF
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulc	377.92	375.30	90.87	89.22	55.229	CC
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulc	400.00	397.24	90.89	89.16	52.573	ES
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulc	2,400.00	2,397.32	105.68	95.53	10.415	SF
DEAL GULCH 2-16						
DEAL GULCH 2-16 - DEAL GULCH 2-16 - Design #3	2,000.00	2,000.00	17.83	9.10	2.041	CC, ES, SF
DEAL GULCH 4-16						
DEAL GULCH 4-16 - DEAL GULCH 4-16 - Design #1	2,247.84	2,247.31	11.09	1.27	1.129	Level 2, CC, ES, SF
DEAL GULCH 5-16						
DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1	2,252.78	2,252.24	25.01	15.20	2.550	CC, ES, SF

Offset Design		Deal Gulch 1-16 - Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Design #9											Offset Site Error:		0.67 ft
Survey Program:		177-MWD, 4175-MWD											Offset Well Error:		0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.00	0.00	0.00	0.00	0.00	0.67	145.34	-74.88	51.78	91.08						
100.00	100.00	97.26	97.26	0.10	0.67	145.59	-75.13	51.46	91.06	90.29	0.77	117.713			
200.00	200.00	197.31	197.30	0.32	0.71	146.40	-75.91	50.42	91.13	90.10	1.03	88.439			
300.00	300.00	297.52	297.48	0.55	0.81	147.95	-77.11	48.28	90.98	89.62	1.36	66.931			
377.92	377.92	375.30	375.22	0.72	0.93	149.49	-78.29	46.13	90.87	89.22	1.65	55.229	CC		
400.00	400.00	397.24	397.15	0.77	0.96	149.96	-78.68	45.50	90.89	89.16	1.73	52.573	ES		
500.00	500.00	496.62	496.45	1.00	1.13	152.32	-80.90	42.43	91.36	89.24	2.12	43.099			
600.00	600.00	595.30	595.07	1.22	1.31	154.28	-83.85	40.39	93.10	90.59	2.51	37.044			
700.00	700.00	697.27	697.00	1.45	1.49	155.63	-86.00	38.95	94.41	91.49	2.92	32.384			
800.00	800.00	797.71	797.44	1.67	1.67	156.33	-86.41	37.88	94.34	91.02	3.32	28.403			
813.98	813.98	811.56	811.28	1.70	1.70	156.47	-86.49	37.67	94.33	90.95	3.38	27.901			
900.00	900.00	896.69	896.39	1.90	1.88	157.71	-87.65	35.93	94.74	90.99	3.75	25.264			
1,000.00	1,000.00	995.61	995.24	2.12	2.09	159.68	-90.33	33.44	96.34	92.16	4.18	23.034			
1,100.00	1,100.00	1,095.11	1,094.68	2.35	2.28	161.01	-93.28	32.11	98.68	94.08	4.60	21.446			

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



<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Deal Gulch 1-16 - Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Design #9													Offset Site Error:	0.67 ft
Survey Program: 177-MWD, 4175-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		
1,200.00	1,200.00	1,195.19	1,194.71	2.57	2.47	160.22	-95.49	34.34	101.51	96.49	5.02	20.222		
1,300.00	1,300.00	1,296.66	1,296.16	2.80	2.67	159.62	-96.79	35.96	103.26	97.82	5.45	18.964		
1,400.00	1,400.00	1,396.57	1,396.06	3.02	2.86	159.15	-97.48	37.14	104.32	98.46	5.87	17.779		
1,500.00	1,500.00	1,496.14	1,495.61	3.25	3.07	158.91	-98.67	38.05	105.77	99.47	6.30	16.786		
1,600.00	1,600.00	1,596.08	1,595.54	3.47	3.28	158.95	-100.23	38.57	107.41	100.68	6.74	15.940		
1,700.00	1,700.00	1,695.80	1,695.24	3.70	3.50	159.53	-102.23	38.16	109.14	101.96	7.18	15.203		
1,800.00	1,800.00	1,795.36	1,794.77	3.92	3.71	160.20	-104.79	37.72	111.41	103.79	7.62	14.627		
1,900.00	1,900.00	1,899.18	1,898.58	4.14	3.91	160.29	-105.55	37.82	112.13	104.08	8.05	13.936		
2,000.00	2,000.00	1,999.60	1,998.98	4.37	4.11	159.64	-103.68	38.48	110.61	102.14	8.47	13.066		
2,100.00	2,099.97	2,099.41	2,098.77	4.58	4.31	84.63	-102.11	38.65	108.95	100.08	8.88	12.272		
2,200.00	2,199.72	2,199.43	2,198.79	4.80	4.51	88.11	-100.79	38.58	107.24	97.95	9.29	11.542		
2,300.00	2,299.07	2,299.40	2,298.73	5.02	4.71	94.09	-98.71	38.43	105.38	95.67	9.71	10.852		
2,347.59	2,346.14	2,346.37	2,345.70	5.13	4.80	97.82	-97.68	38.32	105.05	95.14	9.92	10.591		
2,400.00	2,397.79	2,397.32	2,396.64	5.26	4.91	102.53	-96.77	38.06	105.68	95.53	10.15	10.415 SF		
2,500.00	2,495.70	2,493.56	2,492.87	5.53	5.12	112.76	-96.02	37.16	111.28	100.69	10.59	10.510		
2,600.00	2,592.57	2,588.84	2,588.13	5.85	5.32	123.41	-96.44	35.53	124.16	113.15	11.01	11.278		
2,700.00	2,688.22	2,683.23	2,682.50	6.23	5.53	133.08	-97.22	33.43	144.51	133.12	11.39	12.690		
2,800.00	2,782.44	2,774.73	2,773.96	6.67	5.73	140.83	-98.63	31.20	172.34	160.61	11.73	14.697		
2,900.00	2,875.04	2,865.86	2,865.03	7.21	5.92	146.87	-100.95	28.80	207.16	195.12	12.04	17.210		
3,000.00	2,965.83	2,957.50	2,956.62	7.84	6.12	151.38	-103.67	27.72	246.73	234.40	12.33	20.011		
3,100.00	3,054.62	3,046.00	3,045.08	8.57	6.30	154.83	-106.14	26.97	290.89	278.28	12.61	23.067		
3,200.00	3,141.23	3,128.13	3,127.17	9.42	6.48	157.44	-108.50	25.87	340.03	327.15	12.89	26.388		
3,300.00	3,225.47	3,213.24	3,212.22	10.38	6.67	159.64	-111.36	24.40	393.99	380.84	13.16	29.941		
3,400.00	3,307.17	3,296.97	3,295.92	11.46	6.84	161.56	-112.98	23.24	451.22	437.82	13.41	33.655		
3,500.00	3,386.17	3,371.07	3,370.00	12.66	7.00	162.98	-113.98	21.92	512.46	498.80	13.66	37.511		
3,600.00	3,462.29	3,439.41	3,438.30	13.97	7.15	163.99	-115.65	20.27	578.22	564.29	13.93	41.497		
3,700.00	3,535.39	3,513.02	3,511.84	15.40	7.31	164.86	-118.27	18.50	647.83	633.62	14.21	45.575		
3,800.00	3,605.63	3,592.56	3,591.34	16.94	7.47	166.00	-120.61	17.56	719.47	704.89	14.59	49.319		
3,900.00	3,675.37	3,680.00	3,678.77	18.51	7.65	167.42	-121.93	17.61	790.60	775.51	15.09	52.382		
4,000.00	3,745.12	3,743.00	3,741.76	20.11	7.78	168.30	-122.24	18.26	860.96	845.33	15.63	55.080		
4,100.00	3,814.86	3,806.00	3,804.75	21.73	7.91	169.02	-123.22	18.53	932.09	915.89	16.20	57.545		
4,200.00	3,884.61	3,859.79	3,858.52	23.36	8.03	169.52	-124.73	18.15	1,004.31	987.53	16.78	59.862		
4,300.00	3,954.35	3,925.29	3,923.98	25.01	8.18	170.04	-127.04	17.25	1,077.20	1,059.83	17.37	62.022		
4,400.00	4,024.09	3,975.34	3,973.96	26.66	8.29	170.36	-129.43	16.43	1,150.62	1,132.65	17.96	64.048		
4,500.00	4,093.84	3,996.00	3,994.57	28.32	8.34	170.46	-130.82	15.96	1,225.61	1,207.06	18.55	66.072		
4,600.00	4,163.58	4,059.00	4,057.15	29.99	8.49	170.62	-137.35	13.08	1,302.15	1,282.94	19.21	67.787		
4,700.00	4,233.33	4,059.00	4,057.15	31.66	8.49	170.62	-137.35	13.08	1,380.24	1,360.46	19.78	69.770		
4,800.00	4,303.07	4,099.55	4,097.14	33.34	8.60	170.65	-143.14	9.86	1,459.82	1,439.39	20.43	71.446		
4,900.00	4,372.81	4,122.00	4,119.21	35.02	8.66	170.66	-146.63	7.61	1,540.80	1,519.74	21.05	73.182		
5,000.00	4,443.73	4,154.83	4,151.33	36.59	8.76	155.61	-152.25	3.81	1,621.18	1,596.63	24.54	66.053		
5,100.00	4,516.66	4,175.00	4,170.97	38.04	8.81	140.11	-156.07	1.21	1,697.81	1,669.58	28.23	60.140		
5,200.00	4,590.22	4,200.00	4,195.20	39.39	8.89	126.13	-160.82	-2.65	1,769.81	1,738.81	31.00	57.089		
5,300.00	4,662.96	4,226.81	4,221.03	40.60	8.98	113.83	-166.28	-7.33	1,836.30	1,803.64	32.66	56.227		
5,400.00	4,733.47	4,250.00	4,243.19	41.66	9.05	103.21	-171.47	-11.78	1,896.59	1,863.30	33.29	56.978		
5,500.00	4,800.39	4,274.57	4,266.46	42.56	9.14	94.42	-177.44	-16.91	1,950.11	1,917.15	32.97	59.150		
5,600.00	4,862.39	4,300.00	4,290.32	43.30	9.23	87.36	-184.12	-22.64	1,996.44	1,964.59	31.85	62.685		
5,700.00	4,918.29	4,321.23	4,310.03	43.89	9.32	81.75	-190.09	-27.77	2,035.19	2,005.08	30.11	67.596		
5,800.00	4,966.99	4,350.00	4,336.45	44.34	9.44	77.67	-198.75	-35.19	2,066.14	2,038.19	27.95	73.919		
5,900.00	5,007.55	4,365.99	4,350.97	44.66	9.51	74.50	-203.83	-39.55	2,089.05	2,063.40	25.65	81.456		
6,000.00	5,039.16	4,400.00	4,381.44	44.86	9.67	72.80	-215.29	-49.39	2,103.97	2,080.27	23.70	88.762		
6,100.00	5,061.23	4,400.00	4,381.44	44.96	9.67	71.29	-215.29	-49.39	2,110.61	2,088.25	22.36	94.382		
6,200.00	5,073.32	4,427.30	4,405.47	44.96	9.81	71.32	-225.12	-57.82	2,109.21	2,086.62	22.59	93.362		

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



<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Deal Gulch 1-16 - Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Design #9													Offset Site Error:	0.67 ft
Survey Program: 177-MWD, 4175-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		
6,300.00	5,075.19	4,450.00	4,425.15	44.89	9.93	72.13	-233.71	-65.19	2,099.93	2,075.68	24.25	86.592		
6,400.00	5,067.47	4,450.00	4,425.15	44.75	9.93	72.76	-233.71	-65.19	2,083.75	2,057.91	25.83	80.660		
6,500.00	5,057.65	4,479.70	4,450.45	44.63	10.11	73.52	-245.51	-75.32	2,069.32	2,042.98	26.34	78.566		
6,600.00	5,047.84	4,500.00	4,467.44	44.55	10.23	74.03	-253.94	-82.55	2,059.38	2,032.43	26.95	76.418		
6,700.00	5,038.02	4,519.32	4,483.38	44.51	10.36	74.52	-262.23	-89.66	2,053.85	2,026.10	27.75	74.017		
6,776.02	5,030.56	4,536.25	4,497.15	44.50	10.47	74.94	-269.70	-96.08	2,052.58	2,024.08	28.51	71.998		
6,800.00	5,028.21	4,550.00	4,508.19	44.50	10.56	75.28	-275.92	-101.41	2,052.74	2,023.89	28.85	71.154		
6,900.00	5,018.39	4,566.45	4,521.24	44.55	10.69	75.68	-283.52	-107.94	2,055.91	2,025.96	29.95	68.650		
7,000.00	5,008.58	4,600.00	4,547.27	44.64	10.94	76.49	-299.58	-121.72	2,063.36	2,031.97	31.39	65.740		
7,100.00	4,998.76	4,623.09	4,564.71	44.79	11.13	77.04	-311.06	-131.57	2,074.87	2,042.05	32.82	63.210		
7,200.00	4,988.95	4,650.00	4,584.55	44.99	11.36	77.66	-324.86	-143.41	2,090.34	2,055.94	34.41	60.751		
7,300.00	4,979.13	4,700.00	4,619.92	45.26	11.83	78.79	-351.67	-166.41	2,109.53	2,073.12	36.41	57.944		
7,400.00	4,969.32	4,731.71	4,641.32	45.60	12.16	79.47	-369.43	-181.65	2,132.15	2,093.90	38.24	55.751		
7,500.00	4,959.50	4,775.88	4,669.72	46.01	12.64	80.39	-395.09	-203.68	2,157.98	2,117.64	40.33	53.504		
7,600.00	4,949.69	4,824.80	4,699.20	46.50	13.22	81.35	-424.72	-229.10	2,186.68	2,144.11	42.57	51.371		
7,700.00	4,939.87	4,878.94	4,729.29	47.09	13.91	82.34	-458.87	-258.40	2,217.92	2,172.98	44.95	49.343		
7,800.00	4,930.06	4,938.73	4,759.32	47.76	14.73	83.34	-498.10	-292.07	2,251.34	2,203.86	47.49	47.411		
7,900.00	4,920.24	5,006.83	4,789.39	48.53	15.74	84.36	-544.45	-331.84	2,286.55	2,236.33	50.22	45.529		
8,000.00	4,910.43	5,085.69	4,822.72	49.38	16.98	85.48	-598.69	-378.39	2,323.00	2,269.80	53.20	43.668		
8,100.00	4,900.61	5,160.71	4,851.79	50.33	18.21	86.46	-651.15	-423.40	2,360.54	2,304.38	56.16	42.031		
8,200.00	4,890.80	5,242.20	4,876.61	51.37	19.63	87.32	-710.04	-473.93	2,398.99	2,339.70	59.28	40.466		
8,300.00	4,880.98	5,329.98	4,895.21	52.48	21.23	88.03	-775.12	-529.77	2,437.94	2,375.38	62.56	38.972		
8,400.00	4,871.17	5,422.87	4,905.51	53.67	22.99	88.53	-845.15	-589.85	2,477.08	2,411.14	65.94	37.565		
8,500.00	4,861.35	5,519.13	4,905.88	54.92	24.85	88.78	-918.17	-652.50	2,516.16	2,446.77	69.39	36.259		
8,600.00	4,851.54	5,613.39	4,897.78	56.24	26.70	88.81	-989.43	-713.64	2,555.11	2,482.29	72.81	35.091		
8,700.00	4,841.72	5,705.50	4,889.01	57.61	28.53	88.82	-1,059.03	-773.35	2,594.04	2,517.81	76.23	34.030		
8,800.00	4,831.91	5,797.61	4,880.24	59.02	30.37	88.82	-1,128.62	-833.05	2,632.97	2,553.29	79.67	33.046		
8,900.00	4,822.09	5,889.72	4,871.46	60.47	32.24	88.83	-1,198.21	-892.75	2,671.90	2,588.75	83.15	32.134		
9,000.00	4,812.28	5,981.83	4,862.69	61.97	34.12	88.84	-1,267.80	-952.45	2,710.83	2,624.18	86.65	31.286		
9,100.00	4,802.46	6,073.94	4,853.92	63.49	36.02	88.84	-1,337.39	-1,012.16	2,749.76	2,659.59	90.17	30.497		
9,200.00	4,792.65	6,166.05	4,845.15	65.04	37.92	88.85	-1,406.98	-1,071.86	2,788.69	2,694.99	93.70	29.762		
9,216.79	4,791.00	6,181.52	4,843.67	65.31	38.24	88.85	-1,418.67	-1,081.89	2,795.23	2,700.93	94.30	29.643		



# Weatherford International Ltd.

## Anticollision Report



<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Deal Gulch 1-16 - Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulch 1-16 Pilot Hole													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	145.34	-74.88	51.78	91.08					
100.00	100.00	97.26	97.26	0.10	0.67	145.59	-75.13	51.46	91.06	90.29	0.77	117.713		
200.00	200.00	197.31	197.30	0.32	0.71	146.40	-75.91	50.42	91.13	90.10	1.03	88.439		
300.00	300.00	297.52	297.48	0.55	0.81	147.95	-77.11	48.28	90.98	89.62	1.36	66.931		
377.92	377.92	375.30	375.22	0.72	0.93	149.49	-78.29	46.13	90.87	89.22	1.65	55.229 CC		
400.00	400.00	397.24	397.15	0.77	0.96	149.96	-78.68	45.50	90.89	89.16	1.73	52.573 ES		
500.00	500.00	496.62	496.45	1.00	1.13	152.32	-80.90	42.43	91.36	89.24	2.12	43.099		
600.00	600.00	595.30	595.07	1.22	1.31	154.28	-83.85	40.39	93.10	90.59	2.51	37.044		
700.00	700.00	697.27	697.00	1.45	1.49	155.63	-86.00	38.95	94.41	91.49	2.92	32.384		
800.00	800.00	797.71	797.44	1.67	1.67	156.33	-86.41	37.88	94.34	91.02	3.32	28.403		
813.98	813.98	811.56	811.28	1.70	1.70	156.47	-86.49	37.67	94.33	90.95	3.38	27.901		
900.00	900.00	896.69	896.39	1.90	1.88	157.71	-87.65	35.93	94.74	90.99	3.75	25.264		
1,000.00	1,000.00	995.61	995.24	2.12	2.09	159.68	-90.33	33.44	96.34	92.16	4.18	23.034		
1,100.00	1,100.00	1,095.11	1,094.68	2.35	2.28	161.01	-93.28	32.11	98.68	94.08	4.60	21.446		
1,200.00	1,200.00	1,195.19	1,194.71	2.57	2.47	160.22	-95.49	34.34	101.51	96.49	5.02	20.222		
1,300.00	1,300.00	1,296.66	1,296.16	2.80	2.67	159.62	-96.79	35.96	103.26	97.82	5.45	18.964		
1,400.00	1,400.00	1,396.57	1,396.06	3.02	2.86	159.15	-97.48	37.14	104.32	98.46	5.87	17.779		
1,500.00	1,500.00	1,496.14	1,495.61	3.25	3.07	158.91	-98.67	38.05	105.77	99.47	6.30	16.786		
1,600.00	1,600.00	1,596.08	1,595.54	3.47	3.28	158.95	-100.23	38.57	107.41	100.68	6.74	15.940		
1,700.00	1,700.00	1,695.80	1,695.24	3.70	3.50	159.53	-102.23	38.16	109.14	101.96	7.18	15.203		
1,800.00	1,800.00	1,795.36	1,794.77	3.92	3.71	160.20	-104.79	37.72	111.41	103.79	7.62	14.627		
1,900.00	1,900.00	1,899.18	1,898.58	4.14	3.91	160.29	-105.55	37.82	112.13	104.08	8.05	13.936		
2,000.00	2,000.00	1,999.60	1,998.98	4.37	4.11	159.64	-103.68	38.48	110.61	102.14	8.47	13.066		
2,100.00	2,099.97	2,099.41	2,098.77	4.58	4.31	84.63	-102.11	38.65	108.95	100.08	8.88	12.272		
2,200.00	2,199.72	2,199.43	2,198.79	4.80	4.51	88.11	-100.79	38.58	107.24	97.95	9.29	11.542		
2,300.00	2,299.07	2,299.40	2,298.73	5.02	4.71	94.09	-98.71	38.43	105.38	95.67	9.71	10.852		
2,347.59	2,346.14	2,346.37	2,345.70	5.13	4.80	97.82	-97.68	38.32	105.05	95.14	9.92	10.591		
2,400.00	2,397.79	2,397.32	2,396.64	5.26	4.91	102.53	-96.77	38.06	105.68	95.53	10.15	10.415 SF		
2,500.00	2,495.70	2,493.56	2,492.87	5.53	5.12	112.76	-96.02	37.16	111.28	100.69	10.59	10.510		
2,600.00	2,592.57	2,588.84	2,588.13	5.85	5.32	123.41	-96.44	35.53	124.16	113.15	11.01	11.278		
2,700.00	2,688.22	2,683.23	2,682.50	6.23	5.53	133.08	-97.22	33.43	144.51	133.12	11.39	12.690		
2,800.00	2,782.44	2,774.73	2,773.96	6.67	5.73	140.83	-98.63	31.20	172.34	160.61	11.73	14.697		
2,900.00	2,875.04	2,865.86	2,865.03	7.21	5.92	146.87	-100.95	28.80	207.16	195.12	12.04	17.210		
3,000.00	2,965.83	2,957.50	2,956.62	7.84	6.12	151.38	-103.67	27.72	246.73	234.40	12.33	20.011		
3,100.00	3,054.62	3,046.00	3,045.08	8.57	6.30	154.83	-106.14	26.97	290.89	278.28	12.61	23.067		
3,200.00	3,141.23	3,128.13	3,127.17	9.42	6.48	157.44	-108.50	25.87	340.03	327.15	12.89	26.388		
3,300.00	3,225.47	3,213.24	3,212.22	10.38	6.67	159.64	-111.36	24.40	393.99	380.84	13.16	29.941		
3,400.00	3,307.17	3,296.97	3,295.92	11.46	6.84	161.56	-112.98	23.24	451.22	437.82	13.41	33.655		
3,500.00	3,386.17	3,371.07	3,370.00	12.66	7.00	162.98	-113.98	21.92	512.46	498.80	13.66	37.511		
3,600.00	3,462.29	3,439.41	3,438.30	13.97	7.15	163.99	-115.65	20.27	578.22	564.29	13.93	41.497		
3,700.00	3,535.39	3,513.02	3,511.84	15.40	7.31	164.86	-118.27	18.50	647.83	633.62	14.21	45.575		
3,800.00	3,605.63	3,592.56	3,591.34	16.94	7.47	166.00	-120.61	17.56	719.47	704.89	14.59	49.319		
3,900.00	3,675.37	3,660.00	3,678.77	18.51	7.65	167.42	-121.93	17.61	790.60	775.51	15.09	52.382		
4,000.00	3,745.12	3,743.00	3,741.76	20.11	7.78	168.30	-122.24	18.26	860.96	845.33	15.63	55.080		
4,100.00	3,814.86	3,806.00	3,804.75	21.73	7.91	169.02	-123.22	18.53	932.09	915.89	16.20	57.545		
4,200.00	3,884.61	3,859.79	3,858.52	23.36	8.03	169.52	-124.73	18.15	1,004.31	987.53	16.78	59.862		
4,300.00	3,954.35	3,925.29	3,923.98	25.01	8.18	170.04	-127.04	17.25	1,077.20	1,059.83	17.37	62.022		
4,400.00	4,024.09	3,975.34	3,973.96	26.66	8.29	170.36	-129.43	16.43	1,150.62	1,132.65	17.96	64.048		
4,500.00	4,093.84	3,996.00	3,994.57	28.32	8.34	170.46	-130.82	15.96	1,225.61	1,207.06	18.55	66.072		
4,600.00	4,163.58	4,059.00	4,057.15	29.99	8.49	170.62	-137.35	13.08	1,302.15	1,282.94	19.21	67.787		
4,700.00	4,233.33	4,059.00	4,057.15	31.66	8.49	170.62	-137.35	13.08	1,380.24	1,360.46	19.78	69.770		
4,800.00	4,303.07	4,099.55	4,097.14	33.34	8.60	170.65	-143.14	9.86	1,459.82	1,439.39	20.43	71.446		

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



<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Deal Gulch 1-16 - Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulch 1-16 Pilot Hole													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		
4,900.00	4,372.81	4,122.00	4,119.21	35.02	8.66	170.66	-146.63	7.61	1,540.80	1,519.74	21.05	73.182		
5,000.00	4,443.73	4,154.83	4,151.33	36.59	8.76	155.61	-152.25	3.81	1,621.18	1,596.63	24.54	66.056		
5,100.00	4,516.66	4,186.00	4,181.64	38.04	8.85	140.28	-158.26	-0.29	1,697.77	1,669.59	28.18	60.243		
5,200.00	4,590.22	4,216.40	4,211.02	39.39	8.95	126.43	-164.67	-4.71	1,769.43	1,738.52	30.91	57.245		
5,300.00	4,662.96	4,249.00	4,242.37	40.60	9.05	114.25	-172.01	-9.85	1,835.22	1,802.68	32.54	56.394		
5,400.00	4,733.47	4,312.00	4,302.67	41.66	9.27	104.49	-186.99	-20.26	1,893.99	1,861.00	32.99	57.404		
5,500.00	4,800.39	4,410.75	4,397.26	42.56	9.59	97.32	-210.65	-35.91	1,944.07	1,911.62	32.45	59.912		
5,600.00	4,862.39	4,518.62	4,500.87	43.30	9.95	92.10	-236.56	-51.01	1,984.32	1,953.01	31.32	63.361		
5,700.00	4,918.29	4,598.30	4,577.58	43.89	10.22	87.90	-255.67	-61.04	2,014.97	1,985.07	29.89	67.404		
5,800.00	4,966.99	4,667.22	4,644.12	44.34	10.46	84.92	-271.42	-69.62	2,036.91	2,008.58	28.32	71.916		
5,900.00	5,007.55	4,718.00	4,693.17	44.66	10.64	82.80	-282.98	-75.89	2,050.61	2,023.76	26.85	76.363		
6,000.00	5,039.16	4,737.41	4,711.82	44.86	10.72	81.05	-287.66	-78.45	2,057.05	2,031.38	25.67	80.149		
6,100.00	5,061.23	4,750.00	4,723.86	44.96	10.77	80.12	-290.90	-80.26	2,056.69	2,031.54	25.14	81.801		
6,200.00	5,073.32	4,781.00	4,753.27	44.96	10.91	80.59	-299.43	-85.08	2,049.58	2,023.79	25.79	79.470		
6,300.00	5,075.19	4,793.70	4,765.24	44.89	10.96	81.51	-303.12	-87.18	2,035.99	2,008.73	27.26	74.686		
6,400.00	5,067.47	4,813.00	4,783.36	44.75	11.05	82.89	-308.88	-90.50	2,016.92	1,988.12	28.80	70.038		
6,500.00	5,057.65	4,855.27	4,823.05	44.63	11.24	84.08	-321.51	-97.65	2,000.15	1,970.69	29.46	67.898		
6,600.00	5,047.84	4,897.57	4,862.99	44.55	11.43	85.27	-333.80	-104.24	1,987.65	1,957.33	30.32	65.565		
6,700.00	5,038.02	4,928.26	4,892.09	44.51	11.56	86.14	-342.43	-108.78	1,979.75	1,948.50	31.24	63.362		
6,800.00	5,028.21	4,953.79	4,916.38	44.50	11.67	86.86	-349.41	-112.40	1,976.57	1,944.28	32.29	61.222		
6,816.10	5,026.63	4,957.35	4,919.77	44.51	11.68	86.96	-350.35	-112.89	1,976.50	1,944.03	32.47	60.875		
6,900.00	5,018.39	4,974.72	4,936.38	44.55	11.75	87.46	-354.87	-115.27	1,978.21	1,944.79	33.42	59.189		
7,000.00	5,008.58	4,993.18	4,954.08	44.64	11.83	87.98	-359.50	-117.72	1,984.71	1,950.05	34.66	57.267		
7,100.00	4,998.76	5,013.05	4,973.20	44.79	11.91	88.55	-364.25	-120.26	1,996.04	1,960.04	36.00	55.439		
7,200.00	4,988.95	5,033.05	4,992.56	44.99	11.98	89.12	-368.71	-122.61	2,012.11	1,974.68	37.44	53.747		
7,300.00	4,979.13	5,048.68	5,007.75	45.26	12.04	89.57	-371.96	-124.29	2,032.86	1,993.95	38.91	52.251		
7,400.00	4,969.32	5,061.22	5,019.98	45.60	12.09	89.93	-374.42	-125.54	2,058.17	2,017.76	40.41	50.931		
7,500.00	4,959.50	5,066.00	5,024.66	46.01	12.10	90.07	-375.33	-125.99	2,087.92	2,046.02	41.91	49.824		
7,600.00	4,949.69	5,078.63	5,037.02	46.50	12.15	90.43	-377.66	-127.17	2,121.91	2,078.40	43.51	48.770		
7,700.00	4,939.87	5,086.30	5,044.53	47.09	12.17	90.65	-379.06	-127.88	2,159.97	2,114.86	45.11	47.881		
7,800.00	4,930.06	5,093.66	5,051.73	47.76	12.20	90.87	-380.38	-128.57	2,201.88	2,155.14	46.75	47.103		
7,900.00	4,920.24	5,100.71	5,058.64	48.53	12.22	91.07	-381.63	-129.22	2,247.43	2,199.02	48.41	46.426		
8,000.00	4,910.43	5,107.49	5,065.28	49.38	12.25	91.26	-382.82	-129.84	2,296.40	2,246.31	50.09	45.841		
8,100.00	4,900.61	5,114.00	5,071.67	50.33	12.27	91.45	-383.95	-130.44	2,348.59	2,296.79	51.80	45.339		
8,200.00	4,890.80	5,129.00	5,086.38	51.37	12.32	91.88	-386.51	-131.82	2,403.80	2,350.21	53.59	44.856		
8,300.00	4,880.98	5,129.00	5,086.38	52.48	12.32	91.88	-386.51	-131.82	2,461.77	2,406.48	55.28	44.529		
8,400.00	4,871.17	5,129.00	5,086.38	53.67	12.32	91.88	-386.51	-131.82	2,522.37	2,465.37	57.00	44.256		
8,500.00	4,861.35	5,129.00	5,086.38	54.92	12.32	91.88	-386.51	-131.82	2,585.42	2,526.70	58.72	44.029		
8,600.00	4,851.54	5,144.80	5,101.89	56.24	12.37	92.34	-389.15	-133.29	2,650.68	2,590.11	60.57	43.763		
8,700.00	4,841.72	5,150.88	5,107.86	57.61	12.40	92.51	-390.16	-133.86	2,718.05	2,655.69	62.36	43.587		
8,800.00	4,831.91	5,156.89	5,113.76	59.02	12.42	92.68	-391.15	-134.42	2,787.36	2,723.21	64.16	43.445		
8,900.00	4,822.09	5,162.83	5,119.59	60.47	12.44	92.85	-392.13	-134.99	2,858.48	2,792.51	65.96	43.334		
9,000.00	4,812.28	5,168.69	5,125.35	61.97	12.46	93.02	-393.09	-135.55	2,931.26	2,863.48	67.78	43.248		
9,100.00	4,802.46	5,174.49	5,131.04	63.49	12.47	93.19	-394.03	-136.11	3,005.59	2,936.00	69.60	43.185		
9,200.00	4,792.65	5,180.21	5,136.66	65.04	12.49	93.35	-394.96	-136.67	3,081.36	3,009.94	71.42	43.143		
9,216.79	4,791.00	5,181.16	5,137.59	65.31	12.50	93.38	-395.11	-136.76	3,094.22	3,022.49	71.73	43.138		



<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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	-142.60	-14.17	-10.83	17.83					
100.00	100.00	100.00	100.00	0.10	0.10	-142.60	-14.17	-10.83	17.83	17.64	0.20	90.165		
200.00	200.00	200.00	200.00	0.32	0.32	-142.60	-14.17	-10.83	17.83	17.19	0.65	27.551		
300.00	300.00	300.00	300.00	0.55	0.55	-142.60	-14.17	-10.83	17.83	16.74	1.10	16.259		
400.00	400.00	400.00	400.00	0.77	0.77	-142.60	-14.17	-10.83	17.83	16.29	1.55	11.533		
500.00	500.00	500.00	500.00	1.00	1.00	-142.60	-14.17	-10.83	17.83	15.84	2.00	8.935		
600.00	600.00	600.00	600.00	1.22	1.22	-142.60	-14.17	-10.83	17.83	15.39	2.45	7.293		
700.00	700.00	700.00	700.00	1.45	1.45	-142.60	-14.17	-10.83	17.83	14.94	2.89	6.160		
800.00	800.00	800.00	800.00	1.67	1.67	-142.60	-14.17	-10.83	17.83	14.49	3.34	5.332		
900.00	900.00	900.00	900.00	1.90	1.90	-142.60	-14.17	-10.83	17.83	14.04	3.79	4.701		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-142.60	-14.17	-10.83	17.83	13.59	4.24	4.203		
1,100.00	1,100.00	1,100.00	1,100.00	2.35	2.35	-142.60	-14.17	-10.83	17.83	13.14	4.69	3.800		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-142.60	-14.17	-10.83	17.83	12.69	5.14	3.468		
1,300.00	1,300.00	1,300.00	1,300.00	2.80	2.80	-142.60	-14.17	-10.83	17.83	12.24	5.59	3.189		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	-142.60	-14.17	-10.83	17.83	11.79	6.04	2.952		
1,500.00	1,500.00	1,500.00	1,500.00	3.25	3.25	-142.60	-14.17	-10.83	17.83	11.34	6.49	2.747		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	-142.60	-14.17	-10.83	17.83	10.89	6.94	2.569		
1,700.00	1,700.00	1,700.00	1,700.00	3.70	3.70	-142.60	-14.17	-10.83	17.83	10.44	7.39	2.413		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	-142.60	-14.17	-10.83	17.83	9.99	7.84	2.275		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	-142.60	-14.17	-10.83	17.83	9.54	8.29	2.151		
2,000.00	2,000.00	2,000.00	2,000.00	4.37	4.37	-142.60	-14.17	-10.83	17.83	9.10	8.74	2.041 CC, ES, SF		
2,100.00	2,099.97	2,099.97	2,099.97	4.58	4.59	145.63	-14.17	-10.83	19.67	10.49	9.17	2.144		
2,200.00	2,199.72	2,199.72	2,199.72	4.80	4.82	154.21	-14.17	-10.83	25.59	16.01	9.58	2.670		
2,300.00	2,299.07	2,299.07	2,299.07	5.02	5.04	161.97	-14.17	-10.83	36.16	26.18	9.98	3.624		
2,400.00	2,397.79	2,397.79	2,397.79	5.26	5.26	167.35	-14.17	-10.83	51.48	41.14	10.35	4.975		
2,500.00	2,495.70	2,495.70	2,495.70	5.53	5.48	170.84	-14.17	-10.83	71.48	60.78	10.70	6.680		
2,600.00	2,592.57	2,595.49	2,595.47	5.85	5.69	172.79	-14.22	-9.24	94.60	83.58	11.02	8.583		
2,700.00	2,688.22	2,695.89	2,695.74	6.23	5.90	173.54	-14.41	-4.14	119.05	107.73	11.32	10.518		
2,800.00	2,782.44	2,796.83	2,796.30	6.67	6.11	173.68	-14.72	4.52	144.74	133.13	11.61	12.469		
2,900.00	2,875.04	2,898.33	2,897.04	7.21	6.33	173.46	-15.17	16.80	171.64	159.74	11.89	14.429		
3,000.00	2,965.83	3,000.40	2,997.86	7.84	6.57	173.02	-15.75	32.73	199.73	187.54	12.19	16.390		
3,100.00	3,054.62	3,103.09	3,098.64	8.57	6.84	172.44	-16.46	52.37	229.00	216.51	12.49	18.337		
3,200.00	3,141.23	3,206.40	3,199.27	9.42	7.15	171.78	-17.31	75.76	259.43	246.62	12.81	20.252		
3,300.00	3,225.47	3,310.39	3,299.62	10.38	7.50	171.05	-18.29	102.95	291.01	277.85	13.16	22.114		
3,400.00	3,307.17	3,415.07	3,399.59	11.46	7.91	170.28	-19.42	133.98	323.73	310.18	13.55	23.892		
3,500.00	3,386.17	3,520.49	3,499.04	12.66	8.39	169.48	-20.68	168.89	357.57	343.58	13.99	25.555		
3,600.00	3,462.29	3,626.68	3,597.86	13.97	8.95	168.67	-22.09	207.73	392.50	378.00	14.50	27.070		
3,700.00	3,535.39	3,733.16	3,695.43	15.40	9.58	167.84	-23.63	250.33	428.50	413.42	15.08	28.420		
3,800.00	3,605.63	3,825.47	3,779.36	16.94	10.20	167.27	-25.02	288.72	466.81	451.00	15.81	29.522		
3,900.00	3,675.37	3,917.53	3,863.07	18.51	10.83	166.92	-26.41	327.01	505.77	489.01	16.76	30.180		
4,000.00	3,745.12	4,009.59	3,946.78	20.11	11.50	166.62	-27.80	365.30	544.74	527.00	17.74	30.714		
4,100.00	3,814.86	4,101.64	4,030.48	21.73	12.18	166.35	-29.19	403.59	583.72	564.98	18.74	31.149		
4,200.00	3,884.61	4,193.70	4,114.19	23.36	12.88	166.13	-30.58	441.88	622.71	602.95	19.77	31.502		
4,300.00	3,954.35	4,285.76	4,197.90	25.01	13.60	165.92	-31.96	480.17	661.71	640.90	20.82	31.790		
4,400.00	4,024.09	4,377.82	4,281.60	26.66	14.32	165.74	-33.35	518.46	700.72	678.84	21.88	32.025		
4,500.00	4,093.84	4,450.00	4,347.31	28.32	14.88	165.59	-34.90	548.29	740.38	717.51	22.87	32.379		
4,600.00	4,163.58	4,500.00	4,393.17	29.99	15.21	165.33	-36.66	567.84	784.09	760.30	23.79	32.956		
4,700.00	4,233.33	4,550.00	4,439.22	31.66	15.52	164.94	-45.20	586.14	832.10	807.31	24.79	33.561		
4,800.00	4,303.07	4,600.00	4,485.31	33.34	15.82	164.42	-54.50	603.14	884.15	858.28	25.87	34.174		
4,900.00	4,372.81	4,650.00	4,531.25	35.02	16.11	163.80	-66.52	618.77	940.02	913.00	27.03	34.779		
5,000.00	4,443.73	4,684.35	4,562.63	36.59	16.29	162.59	-76.34	628.68	996.51	966.24	30.27	32.919		
5,100.00	4,516.66	4,726.81	4,601.14	38.04	16.52	140.34	-90.19	639.98	1,049.15	1,015.88	33.27	31.533		

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





<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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		
5,200.00	4,590.22	4,769.56	4,639.49	39.39	16.73	128.70	-106.03	650.25	1,097.12	1,061.68	35.44	30.960		
5,300.00	4,662.96	4,800.00	4,666.48	40.60	16.88	117.97	-118.44	656.88	1,140.01	1,103.36	36.65	31.104		
5,400.00	4,733.47	4,850.00	4,710.14	41.66	17.11	108.78	-140.82	666.49	1,177.00	1,140.00	37.00	31.815		
5,500.00	4,800.39	4,900.00	4,752.82	42.56	17.33	101.17	-165.60	674.51	1,208.14	1,171.64	36.50	33.100		
5,600.00	4,862.39	4,950.00	4,794.35	43.30	17.54	95.16	-192.69	680.88	1,233.23	1,197.92	35.31	34.926		
5,700.00	4,918.29	4,985.06	4,822.70	43.89	17.68	90.40	-213.01	684.36	1,251.96	1,218.40	33.56	37.305		
5,800.00	4,966.99	5,028.12	4,856.58	44.34	17.85	87.09	-239.39	687.51	1,264.49	1,232.92	31.58	40.046		
5,900.00	5,007.55	5,071.04	4,889.22	44.66	18.02	85.00	-267.20	689.40	1,270.82	1,241.16	29.67	42.835		
6,000.00	5,039.16	5,113.76	4,920.49	44.86	18.19	84.00	-296.28	690.05	1,271.10	1,242.87	28.24	45.017		
6,100.00	5,061.23	5,150.00	4,946.01	44.96	18.33	83.88	-322.00	689.63	1,265.59	1,238.01	27.59	45.879		
6,200.00	5,073.32	5,200.00	4,979.61	44.96	18.53	85.10	-358.97	687.59	1,254.54	1,226.39	28.16	44.554		
6,300.00	5,075.19	5,250.00	5,011.21	44.89	18.73	87.35	-397.52	683.87	1,238.55	1,208.87	29.68	41.731		
6,400.00	5,067.47	5,280.62	5,029.53	44.75	18.85	89.28	-421.85	680.76	1,218.50	1,187.40	31.10	39.176		
6,500.00	5,057.65	5,324.50	5,054.36	44.63	19.04	90.64	-457.60	675.22	1,201.92	1,169.94	31.98	37.583		
6,600.00	5,047.84	5,372.46	5,079.50	44.55	19.25	92.04	-497.75	667.72	1,190.53	1,157.40	33.13	35.935		
6,700.00	5,038.02	5,424.73	5,104.41	44.51	19.50	93.47	-542.62	657.87	1,184.08	1,149.54	34.54	34.282		
6,794.39	5,028.76	5,478.12	5,127.09	44.50	19.78	94.79	-589.47	646.02	1,182.18	1,146.08	36.09	32.753		
6,800.00	5,028.21	5,481.42	5,128.40	44.50	19.79	94.87	-592.39	645.23	1,182.18	1,145.99	36.19	32.667		
6,900.00	5,018.39	5,550.00	5,153.04	44.55	20.18	96.36	-653.82	627.33	1,184.41	1,146.25	38.16	31.035		
7,000.00	5,008.58	5,607.77	5,169.95	44.64	20.54	97.43	-706.29	610.11	1,190.17	1,150.05	40.11	29.670		
7,100.00	4,998.76	5,676.74	5,185.41	44.79	21.01	98.46	-769.43	587.12	1,199.03	1,156.70	42.34	28.322		
7,200.00	4,988.95	5,750.00	5,196.09	44.99	21.58	99.26	-836.60	559.97	1,210.53	1,165.82	44.70	27.079		
7,300.00	4,979.13	5,822.64	5,200.76	45.26	22.19	99.74	-902.80	530.50	1,224.27	1,177.13	47.14	25.972		
7,400.00	4,969.32	5,901.21	5,199.26	45.60	22.93	99.93	-973.38	496.05	1,239.99	1,190.28	49.70	24.948		
7,500.00	4,959.50	5,999.83	5,194.57	46.01	23.94	100.03	-1,061.39	451.80	1,256.39	1,203.81	52.59	23.892		
7,600.00	4,949.69	6,098.46	5,189.89	46.50	25.07	100.13	-1,149.40	407.54	1,272.80	1,217.22	55.58	22.900		
7,700.00	4,939.87	6,197.08	5,185.20	47.09	26.32	100.22	-1,237.41	363.28	1,289.21	1,230.55	58.66	21.976		
7,800.00	4,930.06	6,295.70	5,180.52	47.76	27.66	100.31	-1,325.42	319.02	1,305.63	1,243.80	61.83	21.118		
7,900.00	4,920.24	6,394.32	5,175.83	48.53	29.08	100.40	-1,413.43	274.76	1,322.05	1,256.99	65.05	20.323		
8,000.00	4,910.43	6,492.95	5,171.15	49.38	30.56	100.49	-1,501.44	230.51	1,338.47	1,270.13	68.33	19.587		
8,100.00	4,900.61	6,591.57	5,166.46	50.33	32.10	100.57	-1,589.45	186.25	1,354.89	1,283.23	71.66	18.906		
8,200.00	4,890.80	6,690.19	5,161.78	51.37	33.69	100.65	-1,677.46	141.99	1,371.32	1,296.31	75.01	18.282		
8,300.00	4,880.98	6,788.81	5,157.09	52.48	35.32	100.73	-1,765.47	97.73	1,387.75	1,309.32	78.42	17.696		
8,400.00	4,871.17	6,887.44	5,152.41	53.67	36.98	100.81	-1,853.48	53.47	1,404.18	1,322.32	81.86	17.154		
8,500.00	4,861.35	6,986.06	5,147.72	54.92	38.67	100.89	-1,941.49	9.22	1,420.61	1,335.30	85.31	16.652		
8,600.00	4,851.54	7,084.68	5,143.04	56.24	40.38	100.96	-2,029.49	-35.04	1,437.05	1,348.26	88.79	16.184		
8,700.00	4,841.72	7,183.30	5,138.35	57.61	42.12	101.04	-2,117.50	-79.30	1,453.49	1,361.19	92.29	15.748		
8,800.00	4,831.91	7,281.93	5,133.67	59.02	43.87	101.11	-2,205.51	-123.56	1,469.93	1,374.12	95.81	15.342		
8,900.00	4,822.09	7,380.55	5,128.99	60.47	45.65	101.18	-2,293.52	-167.81	1,486.37	1,387.03	99.35	14.962		
9,000.00	4,812.28	7,479.17	5,124.30	61.97	47.43	101.25	-2,381.53	-212.07	1,502.82	1,399.93	102.89	14.606		
9,100.00	4,802.46	7,577.79	5,119.62	63.49	49.23	101.32	-2,469.54	-256.33	1,519.27	1,412.82	106.45	14.272		
9,200.00	4,792.65	7,676.42	5,114.93	65.04	51.05	101.38	-2,557.55	-300.59	1,535.72	1,425.69	110.02	13.958		
9,216.79	4,791.00	7,692.98	5,114.14	65.31	51.35	101.39	-2,572.33	-308.02	1,538.48	1,427.86	110.62	13.907		



<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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	37.40	14.17	10.83	17.83					
100.00	100.00	100.00	100.00	0.10	0.10	37.40	14.17	10.83	17.83	17.64	0.20	90.165		
200.00	200.00	200.00	200.00	0.32	0.32	37.40	14.17	10.83	17.83	17.19	0.65	27.550		
300.00	300.00	300.00	300.00	0.55	0.55	37.40	14.17	10.83	17.83	16.74	1.10	16.259		
400.00	400.00	400.00	400.00	0.77	0.77	37.40	14.17	10.83	17.83	16.29	1.55	11.533		
500.00	500.00	500.00	500.00	1.00	1.00	37.40	14.17	10.83	17.83	15.84	2.00	8.935		
600.00	600.00	600.00	600.00	1.22	1.22	37.40	14.17	10.83	17.83	15.39	2.45	7.293		
700.00	700.00	700.00	700.00	1.45	1.45	37.40	14.17	10.83	17.83	14.94	2.89	6.160		
800.00	800.00	800.00	800.00	1.67	1.67	37.40	14.17	10.83	17.83	14.49	3.34	5.332		
900.00	900.00	900.00	900.00	1.90	1.90	37.40	14.17	10.83	17.83	14.04	3.79	4.701		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	37.40	14.17	10.83	17.83	13.59	4.24	4.203		
1,100.00	1,100.00	1,100.00	1,100.00	2.35	2.35	37.40	14.17	10.83	17.83	13.14	4.69	3.800		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	37.40	14.17	10.83	17.83	12.69	5.14	3.468		
1,300.00	1,300.00	1,300.00	1,300.00	2.80	2.80	37.40	14.17	10.83	17.83	12.24	5.59	3.189		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	37.40	14.17	10.83	17.83	11.79	6.04	2.952		
1,500.00	1,500.00	1,500.00	1,500.00	3.25	3.25	37.40	14.17	10.83	17.83	11.34	6.49	2.747		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	37.40	14.17	10.83	17.83	10.89	6.94	2.569		
1,700.00	1,700.00	1,700.00	1,700.00	3.70	3.70	37.40	14.17	10.83	17.83	10.44	7.39	2.413		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	37.40	14.17	10.83	17.83	9.99	7.84	2.275		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	37.40	14.17	10.83	17.83	9.54	8.29	2.151		
2,000.00	2,000.00	2,000.00	2,000.00	4.37	4.37	37.40	14.17	10.83	17.83	9.10	8.74	2.041		
2,100.00	2,099.97	2,099.97	2,099.97	4.58	4.59	-43.54	14.17	10.83	16.12	6.94	9.17	1.756		
2,200.00	2,199.72	2,199.72	2,199.72	4.80	4.82	-66.40	14.17	10.83	12.12	2.51	9.61	1.261	Level 3	
2,247.84	2,247.31	2,247.31	2,247.31	4.90	4.93	-90.00	14.17	10.83	11.09	1.27	9.83	1.129	Level 2, CC, ES, SF	
2,300.00	2,299.07	2,299.07	2,299.07	5.02	5.04	-120.08	14.17	10.83	12.85	2.82	10.03	1.281	Level 3	
2,400.00	2,397.79	2,397.79	2,397.79	5.26	5.26	-153.21	14.17	10.83	24.95	14.58	10.37	2.407		
2,500.00	2,495.70	2,495.70	2,495.70	5.53	5.48	-165.06	14.17	10.83	44.10	33.40	10.70	4.121		
2,600.00	2,592.57	2,590.76	2,590.74	5.85	5.68	-170.96	13.23	9.73	69.57	58.57	11.00	6.323		
2,700.00	2,688.22	2,682.69	2,682.57	6.23	5.85	-174.89	10.36	6.35	102.39	91.12	11.27	9.084		
2,800.00	2,782.44	2,770.90	2,770.49	6.67	6.01	-177.59	5.80	0.98	142.28	130.75	11.52	12.347		
2,900.00	2,875.04	2,854.86	2,853.94	7.21	6.18	-179.55	-0.19	-6.06	188.88	177.12	11.76	16.059		
3,000.00	2,965.83	2,934.15	2,932.45	7.84	6.34	178.98	-7.30	-14.44	241.79	229.80	11.99	20.174		
3,100.00	3,054.62	3,008.43	3,005.71	8.57	6.50	177.82	-15.26	-23.80	300.60	288.40	12.20	24.647		
3,200.00	3,141.23	3,077.51	3,073.53	9.42	6.67	176.87	-23.77	-33.82	364.87	352.47	12.40	29.430		
3,300.00	3,225.47	3,141.26	3,135.81	10.38	6.84	176.06	-32.57	-44.17	434.15	421.56	12.59	34.481		
3,400.00	3,307.17	3,200.00	3,192.92	11.46	7.00	175.33	-41.47	-54.66	508.02	495.23	12.78	39.747		
3,500.00	3,386.17	3,252.67	3,243.87	12.66	7.17	174.66	-50.11	-64.83	586.02	573.05	12.98	45.166		
3,600.00	3,462.29	3,300.00	3,289.44	13.97	7.32	174.00	-58.39	-74.58	667.76	654.59	13.16	50.723		
3,700.00	3,535.39	3,343.11	3,330.75	15.40	7.48	173.31	-66.37	-83.96	752.80	739.42	13.38	56.281		
3,800.00	3,605.63	3,381.11	3,367.01	16.94	7.62	172.86	-73.73	-92.63	840.56	826.82	13.74	61.185		
3,900.00	3,675.37	3,416.95	3,401.07	18.51	7.76	172.72	-80.96	-101.14	929.23	914.94	14.28	65.060		
4,000.00	3,745.12	3,451.22	3,433.49	20.11	7.91	172.59	-88.14	-109.59	1,018.42	1,003.58	14.84	68.619		
4,100.00	3,814.86	3,484.01	3,464.39	21.73	8.05	172.47	-95.24	-117.95	1,108.10	1,092.69	15.41	71.912		
4,200.00	3,884.61	3,515.40	3,493.85	23.36	8.19	172.34	-102.26	-126.21	1,198.25	1,182.26	15.99	74.951		
4,300.00	3,954.35	3,545.47	3,521.96	25.01	8.34	172.23	-109.18	-134.35	1,288.83	1,272.25	16.57	77.761		
4,400.00	4,024.09	3,575.21	3,549.70	26.66	8.48	172.11	-116.09	-142.46	1,379.94	1,362.26	17.15	80.591		
4,500.00	4,093.84	3,604.96	3,574.39	28.32	8.61	171.99	-122.99	-150.56	1,472.05	1,453.27	17.73	83.421		
4,600.00	4,163.58	3,634.71	3,600.14	29.99	8.75	171.87	-129.88	-158.66	1,565.16	1,544.98	18.31	86.251		
4,700.00	4,233.33	3,664.46	3,629.87	31.66	8.89	171.75	-136.77	-166.76	1,658.27	1,636.79	18.89	89.081		
4,800.00	4,303.07	3,694.21	3,659.28	33.34	9.03	171.63	-143.66	-174.86	1,751.38	1,728.80	19.47	91.911		
4,900.00	4,372.81	3,723.96	3,688.93	35.02	9.17	171.51	-150.55	-182.96	1,844.49	1,820.81	20.05	94.741		
5,000.00	4,443.73	3,753.71	3,719.68	36.59	9.30	171.39	-157.44	-191.06	1,937.60	1,912.82	20.63	97.571		

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





<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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	4,516.66	7,065.15	5,234.67	38.04	44.80	-151.76	821.20	1,267.40	901.69	837.98	63.70	14.155		
5,200.00	4,590.22	7,107.94	5,233.89	39.39	45.77	-156.12	846.38	1,301.98	877.66	811.65	66.02	13.295		
5,295.90	4,660.01	7,138.76	5,233.32	40.55	46.47	-161.67	864.52	1,326.90	869.64	803.72	65.91	13.194		
5,300.00	4,662.96	7,139.84	5,233.30	40.60	46.50	-161.93	865.16	1,327.78	869.65	803.79	65.87	13.203		
5,400.00	4,733.47	7,160.25	5,232.93	41.66	46.96	-168.89	877.17	1,344.27	879.46	815.78	63.68	13.811		
5,500.00	4,800.39	7,168.76	5,232.78	42.56	47.15	-176.87	882.17	1,351.15	907.10	847.07	60.03	15.111		
5,600.00	4,862.39	7,165.21	5,232.84	43.30	47.07	174.00	880.08	1,348.28	950.85	895.27	55.58	17.109		
5,700.00	4,918.29	7,149.66	5,233.13	43.89	46.72	163.43	870.93	1,335.71	1,007.69	956.54	51.15	19.702		
5,800.00	4,966.99	7,122.42	5,233.62	44.34	46.10	151.29	854.90	1,313.69	1,074.03	1,026.31	47.72	22.508		
5,900.00	5,007.55	7,084.02	5,234.32	44.66	45.23	138.00	832.31	1,282.65	1,146.25	1,100.18	46.06	24.884		
6,000.00	5,039.16	7,035.20	5,235.21	44.86	44.12	124.73	803.58	1,243.19	1,221.02	1,174.97	46.04	26.519		
6,100.00	5,061.23	6,976.92	5,236.28	44.96	42.81	112.96	769.29	1,196.08	1,295.45	1,248.63	46.82	27.669		
6,200.00	5,073.32	6,910.32	5,237.49	44.96	41.31	103.64	730.10	1,142.24	1,367.14	1,319.30	47.84	28.575		
6,300.00	5,075.19	6,836.67	5,238.83	44.89	39.66	96.98	686.76	1,082.71	1,434.15	1,385.04	49.10	29.206		
6,400.00	5,067.47	6,757.72	5,240.27	44.75	37.91	94.09	640.31	1,018.89	1,495.41	1,445.66	49.75	30.060		
6,500.00	5,057.65	6,677.75	5,241.73	44.63	36.14	94.29	593.25	954.25	1,555.30	1,506.53	48.77	31.893		
6,600.00	5,047.84	6,597.78	5,243.19	44.55	34.40	94.47	546.19	889.60	1,615.19	1,567.22	47.97	33.668		
6,700.00	5,038.02	6,517.81	5,244.65	44.51	32.67	94.65	499.14	824.96	1,675.10	1,627.74	47.36	35.367		
6,800.00	5,028.21	6,437.84	5,246.11	44.50	30.96	94.81	452.08	760.32	1,735.02	1,688.10	46.92	36.980		
6,900.00	5,018.39	6,357.88	5,247.57	44.55	29.28	94.96	405.03	695.68	1,794.95	1,748.32	46.62	38.498		
7,000.00	5,008.58	6,277.91	5,249.03	44.64	27.62	95.10	357.97	631.03	1,854.88	1,808.41	46.47	39.915		
7,100.00	4,998.76	6,197.94	5,250.48	44.79	26.00	95.23	310.91	566.39	1,914.82	1,868.38	46.44	41.228		
7,200.00	4,988.95	6,117.97	5,251.94	44.99	24.43	95.36	263.86	501.75	1,974.77	1,928.22	46.55	42.420		
7,300.00	4,979.13	6,038.00	5,253.40	45.26	22.91	95.47	216.80	437.11	2,034.72	1,987.94	46.78	43.492		
7,400.00	4,969.32	5,958.03	5,254.86	45.60	21.45	95.58	169.75	372.46	2,094.68	2,047.55	47.13	44.442		
7,500.00	4,959.50	5,878.06	5,256.32	46.01	20.05	95.69	122.69	307.82	2,154.64	2,107.04	47.60	45.268		
7,600.00	4,949.69	5,783.04	5,256.01	46.50	18.52	95.74	66.85	230.96	2,214.46	2,166.43	48.03	46.104		
7,700.00	4,939.87	5,674.40	5,243.04	47.09	16.94	95.40	3.95	143.45	2,273.38	2,224.91	48.47	46.900		
7,800.00	4,930.06	5,568.51	5,216.65	47.76	15.66	94.68	-55.37	59.88	2,331.42	2,282.28	49.14	47.449		
7,900.00	4,920.24	5,468.62	5,179.74	48.53	14.73	93.68	-108.59	-16.07	2,388.85	2,338.79	50.05	47.725		
8,000.00	4,910.43	5,376.96	5,136.07	49.38	14.14	92.53	-154.39	-82.32	2,446.05	2,394.84	51.21	47.765		
8,100.00	4,900.61	5,294.58	5,089.29	50.33	13.83	91.33	-192.57	-138.31	2,503.45	2,450.90	52.54	47.645		
8,200.00	4,890.80	5,221.58	5,042.30	51.37	13.70	90.13	-223.71	-184.63	2,561.39	2,507.38	54.01	47.426		
8,300.00	4,880.98	5,157.45	4,997.01	52.48	13.68	89.00	-248.78	-222.46	2,620.21	2,564.66	55.55	47.171		
8,400.00	4,871.17	5,100.00	4,953.51	53.67	13.72	87.93	-269.28	-253.88	2,680.12	2,622.99	57.13	46.912		
8,500.00	4,861.35	5,050.00	4,913.58	54.92	13.78	86.95	-285.53	-279.19	2,741.30	2,682.56	58.75	46.663		
8,600.00	4,851.54	5,009.26	4,879.72	56.24	13.85	86.13	-297.63	-298.34	2,803.86	2,743.47	60.39	46.429		
8,700.00	4,841.72	4,971.51	4,847.37	57.61	13.92	85.35	-307.91	-314.86	2,867.85	2,805.81	62.04	46.226		
8,800.00	4,831.91	4,938.22	4,818.12	59.02	13.98	84.64	-316.19	-328.42	2,933.29	2,869.59	63.70	46.047		
8,900.00	4,822.09	4,908.74	4,791.70	60.47	14.03	84.01	-322.92	-339.62	3,000.20	2,934.82	65.37	45.894		
9,000.00	4,812.28	4,882.52	4,767.81	61.97	14.08	83.44	-328.41	-348.93	3,068.53	3,001.48	67.05	45.764		
9,100.00	4,802.46	4,850.00	4,737.73	63.49	14.13	82.72	-334.56	-359.62	3,138.28	3,069.58	68.70	45.680		
9,200.00	4,792.65	4,838.07	4,726.57	65.04	14.15	82.46	-336.63	-363.30	3,209.34	3,138.91	70.43	45.565		
9,216.79	4,791.00	4,834.76	4,723.46	65.31	14.15	82.38	-337.19	-364.30	3,221.41	3,150.69	70.72	45.552		



<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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	37.40	28.33	21.67	35.67					
100.00	100.00	100.00	100.00	0.10	0.10	37.40	28.33	21.67	35.67	35.47	0.20	180.330		
200.00	200.00	200.00	200.00	0.32	0.32	37.40	28.33	21.67	35.67	35.02	0.65	55.101		
300.00	300.00	300.00	300.00	0.55	0.55	37.40	28.33	21.67	35.67	34.57	1.10	32.519		
400.00	400.00	400.00	400.00	0.77	0.77	37.40	28.33	21.67	35.67	34.12	1.55	23.066		
500.00	500.00	500.00	500.00	1.00	1.00	37.40	28.33	21.67	35.67	33.67	2.00	17.871		
600.00	600.00	600.00	600.00	1.22	1.22	37.40	28.33	21.67	35.67	33.22	2.45	14.586		
700.00	700.00	700.00	700.00	1.45	1.45	37.40	28.33	21.67	35.67	32.77	2.89	12.321		
800.00	800.00	800.00	800.00	1.67	1.67	37.40	28.33	21.67	35.67	32.32	3.34	10.665		
900.00	900.00	900.00	900.00	1.90	1.90	37.40	28.33	21.67	35.67	31.87	3.79	9.401		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	37.40	28.33	21.67	35.67	31.42	4.24	8.405		
1,100.00	1,100.00	1,100.00	1,100.00	2.35	2.35	37.40	28.33	21.67	35.67	30.98	4.69	7.600		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	37.40	28.33	21.67	35.67	30.53	5.14	6.936		
1,300.00	1,300.00	1,300.00	1,300.00	2.80	2.80	37.40	28.33	21.67	35.67	30.08	5.59	6.378		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	37.40	28.33	21.67	35.67	29.63	6.04	5.904		
1,500.00	1,500.00	1,500.00	1,500.00	3.25	3.25	37.40	28.33	21.67	35.67	29.18	6.49	5.495		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	37.40	28.33	21.67	35.67	28.73	6.94	5.139		
1,700.00	1,700.00	1,700.00	1,700.00	3.70	3.70	37.40	28.33	21.67	35.67	28.28	7.39	4.826		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	37.40	28.33	21.67	35.67	27.83	7.84	4.550		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	37.40	28.33	21.67	35.67	27.38	8.29	4.303		
2,000.00	2,000.00	2,000.00	2,000.00	4.37	4.37	37.40	28.33	21.67	35.67	26.93	8.74	4.082		
2,100.00	2,099.97	2,100.61	2,100.59	4.58	4.58	-43.44	28.33	19.90	32.94	23.77	9.16	3.595		
2,200.00	2,199.72	2,200.30	2,200.14	4.80	4.78	-63.42	28.31	14.67	26.74	17.17	9.57	2.794		
2,252.78	2,252.22	2,252.24	2,251.92	4.91	4.89	-83.92	28.30	10.57	25.01	15.20	9.80	2.550 CC, ES, SF		
2,300.00	2,299.07	2,298.19	2,297.65	5.02	4.99	-105.74	28.29	6.16	27.05	17.05	10.00	2.706		
2,400.00	2,397.79	2,393.44	2,392.20	5.26	5.21	-138.97	28.26	-5.31	45.27	34.94	10.33	4.381		
2,500.00	2,495.70	2,485.32	2,483.00	5.53	5.43	-153.34	28.21	-19.34	76.72	66.07	10.64	7.208		
2,600.00	2,592.57	2,573.19	2,569.37	5.85	5.67	-159.97	28.17	-35.48	117.06	106.12	10.94	10.699		
2,700.00	2,688.22	2,656.52	2,650.79	6.23	5.92	-163.49	28.11	-53.23	164.77	153.55	11.22	14.684		
2,800.00	2,782.44	2,734.92	2,726.89	6.67	6.18	-165.54	28.06	-72.08	219.05	207.57	11.48	19.084		
2,900.00	2,875.04	2,808.09	2,797.41	7.21	6.45	-166.80	28.00	-91.55	279.32	267.60	11.72	23.826		
3,000.00	2,965.83	2,875.84	2,862.26	7.84	6.73	-167.57	27.94	-111.18	345.07	333.12	11.95	28.881		
3,100.00	3,054.62	2,938.09	2,921.41	8.57	7.01	-168.02	27.89	-130.56	415.80	403.64	12.16	34.206		
3,200.00	3,141.23	2,996.84	2,976.85	9.42	7.29	-168.27	27.83	-150.02	491.04	478.69	12.36	39.739		
3,300.00	3,225.47	3,055.84	3,032.31	10.38	7.60	-168.40	27.77	-170.14	569.84	557.28	12.56	45.364		
3,400.00	3,307.17	3,113.57	3,086.58	11.46	7.91	-168.44	27.71	-189.83	651.34	638.58	12.76	51.045		
3,500.00	3,386.17	3,167.55	3,137.32	12.66	8.21	-168.35	27.66	-208.23	735.38	722.41	12.97	56.699		
3,600.00	3,462.29	3,217.66	3,184.43	13.97	8.49	-168.13	27.61	-225.32	821.77	808.58	13.20	62.278		
3,700.00	3,535.39	3,263.79	3,227.80	15.40	8.76	-167.77	27.56	-241.05	910.35	896.90	13.45	67.681		
3,800.00	3,605.63	3,306.28	3,267.74	16.94	9.01	-167.80	27.52	-255.53	1,000.75	986.92	13.83	72.340		
3,900.00	3,675.37	3,348.12	3,307.08	18.51	9.26	-168.38	27.48	-269.80	1,091.46	1,077.11	14.35	76.054		
4,000.00	3,745.12	3,389.97	3,346.42	20.11	9.51	-168.87	27.44	-284.07	1,182.19	1,167.31	14.88	79.451		
4,100.00	3,814.86	3,431.82	3,385.76	21.73	9.77	-169.29	27.40	-298.34	1,272.93	1,257.51	15.42	82.551		
4,200.00	3,884.61	3,473.67	3,425.10	23.36	10.03	-169.65	27.35	-312.61	1,363.69	1,347.72	15.97	85.396		
4,300.00	3,954.35	3,515.52	3,464.44	25.01	10.29	-169.98	27.31	-326.88	1,454.45	1,437.92	16.53	88.012		
4,400.00	4,024.09	3,557.37	3,503.78	26.66	10.56	-170.26	27.27	-341.15	1,545.22	1,528.13	17.09	90.419		
4,500.00	4,093.84	3,599.22	3,543.13	28.32	10.82	-170.51	27.23	-355.42	1,635.99	1,618.33	17.66	92.647		
4,600.00	4,163.58	3,641.07	3,582.47	29.99	11.09	-170.73	27.19	-369.69	1,726.77	1,708.54	18.23	94.701		
4,700.00	4,233.33	3,682.92	3,621.81	31.66	11.36	-170.94	27.14	-383.96	1,817.56	1,798.74	18.81	96.611		
4,800.00	4,303.07	3,724.77	3,661.15	33.34	11.64	-171.12	27.10	-398.23	1,908.34	1,888.95	19.40	98.384		
4,900.00	4,372.81	3,766.62	3,700.49	35.02	11.91	-171.29	27.06	-412.50	1,999.13	1,979.15	19.98	100.035		
5,000.00	4,443.73	3,809.61	3,740.91	36.59	12.19	167.67	27.02	-427.16	2,089.28	2,068.26	21.02	99.408		

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



<b>Company:</b>	SHELL E&P	<b>Local Co-ordinate Reference:</b>	Well DEAL GULCH 3-16
<b>Project:</b>	MOFFAT COUNTY, CO	<b>TVD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Reference Site:</b>	DEAL GULCH 3-16	<b>MD Reference:</b>	WELL @ 7222.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	DEAL GULCH 3-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DEAL GULCH 3-16	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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	4,516.66	3,854.90	3,783.48	38.04	12.49	147.55	26.97	-442.61	2,176.87	2,150.90	25.97	83.828		
5,200.00	4,590.22	3,901.61	3,827.40	39.39	12.80	130.71	26.93	-458.53	2,260.48	2,230.07	30.42	74.317		
5,300.00	4,662.96	3,948.84	3,871.79	40.60	13.12	116.68	26.88	-474.64	2,338.94	2,305.71	33.23	70.397		
5,400.00	4,733.47	3,995.67	3,915.81	41.66	13.43	105.11	26.83	-490.60	2,411.28	2,376.81	34.47	69.947		
5,500.00	4,800.39	4,041.18	3,958.59	42.56	13.74	95.73	26.79	-506.12	2,476.75	2,442.32	34.42	71.947		
5,600.00	4,862.39	4,084.49	3,999.31	43.30	14.04	88.26	26.74	-520.89	2,534.73	2,501.40	33.34	76.033		
5,700.00	4,918.29	4,124.75	4,037.16	43.89	14.31	82.42	26.70	-534.62	2,584.78	2,553.32	31.46	82.150		
5,800.00	4,966.99	4,161.19	4,071.42	44.34	14.56	77.96	26.67	-547.04	2,626.55	2,597.47	29.08	90.315		
5,900.00	5,007.55	4,193.09	4,101.41	44.66	14.77	74.67	26.63	-557.92	2,659.81	2,633.27	26.53	100.245		
6,000.00	5,039.16	4,219.84	4,126.55	44.86	14.96	72.38	26.61	-567.04	2,684.40	2,660.13	24.27	110.590		
6,100.00	5,061.23	4,240.91	4,146.36	44.96	15.10	70.97	26.59	-574.23	2,700.25	2,677.36	22.90	117.937		
6,200.00	5,073.32	4,255.89	4,160.44	44.96	15.21	70.35	26.57	-579.33	2,707.35	2,684.37	22.98	117.816		
6,300.00	5,075.19	4,264.49	4,168.52	44.89	15.26	70.49	26.56	-582.27	2,705.72	2,681.03	24.69	109.567		
6,400.00	5,067.47	4,266.97	4,170.85	44.75	15.28	70.98	26.56	-583.11	2,696.24	2,669.69	26.56	101.525		
6,500.00	5,057.65	4,268.10	4,171.92	44.63	15.29	71.01	26.56	-583.50	2,687.93	2,661.18	26.75	100.493		
6,600.00	5,047.84	4,269.23	4,172.98	44.55	15.30	71.03	26.56	-583.88	2,683.31	2,656.18	27.13	98.891		
6,673.93	5,040.58	4,270.07	4,173.77	44.51	15.30	71.05	26.56	-584.17	2,682.30	2,654.74	27.55	97.350		
6,700.00	5,038.02	4,270.37	4,174.05	44.51	15.30	71.06	26.56	-584.27	2,682.42	2,654.72	27.70	96.823		
6,800.00	5,028.21	4,271.50	4,175.11	44.50	15.31	71.08	26.56	-584.66	2,685.26	2,656.81	28.44	94.414		
6,900.00	5,018.39	4,272.63	4,176.18	44.55	15.32	71.11	26.55	-585.04	2,691.80	2,662.48	29.33	91.790		
7,000.00	5,008.58	4,273.76	4,177.24	44.64	15.33	71.13	26.55	-585.43	2,702.04	2,671.70	30.34	89.066		
7,100.00	4,998.76	4,274.89	4,178.31	44.79	15.34	71.15	26.55	-585.82	2,715.92	2,684.46	31.46	86.333		
7,200.00	4,988.95	4,276.03	4,179.37	44.99	15.34	71.18	26.55	-586.20	2,733.39	2,700.72	32.67	83.660		
7,300.00	4,979.13	4,277.16	4,180.43	45.26	15.35	71.20	26.55	-586.59	2,754.38	2,720.42	33.97	81.094		
7,400.00	4,969.32	4,278.29	4,181.50	45.60	15.36	71.23	26.55	-586.97	2,778.82	2,743.49	35.32	78.665		
7,500.00	4,959.50	4,279.42	4,182.56	46.01	15.37	71.25	26.55	-587.36	2,806.60	2,769.86	36.74	76.391		
7,600.00	4,949.69	4,280.56	4,183.63	46.50	15.37	71.27	26.55	-587.75	2,837.64	2,799.44	38.20	74.278		
7,700.00	4,939.87	4,281.69	4,184.69	47.09	15.38	71.30	26.54	-588.13	2,871.83	2,832.12	39.71	72.326		
7,800.00	4,930.06	4,282.82	4,185.76	47.76	15.39	71.32	26.54	-588.52	2,909.05	2,867.81	41.25	70.531		
7,900.00	4,920.24	4,283.95	4,186.82	48.53	15.40	71.35	26.54	-588.90	2,949.20	2,906.38	42.81	68.885		
8,000.00	4,910.43	4,285.09	4,187.89	49.38	15.41	71.37	26.54	-589.29	2,992.15	2,947.74	44.41	67.379		
8,100.00	4,900.61	4,286.22	4,188.95	50.33	15.41	71.40	26.54	-589.68	3,037.78	2,991.76	46.02	66.004		
8,200.00	4,890.80	4,287.35	4,190.01	51.37	15.42	71.42	26.54	-590.06	3,085.99	3,038.33	47.66	64.750		
8,300.00	4,880.98	4,288.48	4,191.08	52.48	15.43	71.44	26.54	-590.45	3,136.64	3,087.32	49.31	63.607		
8,400.00	4,871.17	4,289.61	4,192.14	53.67	15.44	71.47	26.54	-590.83	3,189.62	3,138.64	50.98	62.565		
8,500.00	4,861.35	4,290.75	4,193.21	54.92	15.44	71.49	26.54	-591.22	3,244.82	3,192.15	52.66	61.615		
8,600.00	4,851.54	4,291.88	4,194.27	56.24	15.45	71.52	26.53	-591.61	3,302.12	3,247.76	54.36	60.750		
8,700.00	4,841.72	4,293.01	4,195.34	57.61	15.46	71.54	26.53	-591.99	3,361.42	3,305.36	56.06	59.962		
8,800.00	4,831.91	4,294.14	4,196.40	59.02	15.47	71.57	26.53	-592.38	3,422.62	3,364.85	57.77	59.243		
8,900.00	4,822.09	4,295.28	4,197.47	60.47	15.48	71.59	26.53	-592.77	3,485.61	3,426.12	59.49	58.587		
9,000.00	4,812.28	4,296.41	4,198.53	61.97	15.48	71.61	26.53	-593.15	3,550.30	3,489.08	61.22	57.988		
9,100.00	4,802.46	4,297.54	4,199.59	63.49	15.49	71.64	26.53	-593.54	3,616.60	3,553.64	62.96	57.442		
9,200.00	4,792.65	4,298.67	4,200.66	65.04	15.50	71.66	26.53	-593.92	3,684.42	3,619.71	64.70	56.943		
9,216.79	4,791.00	4,298.86	4,200.84	65.31	15.50	71.67	26.53	-593.99	3,695.95	3,630.95	65.00	56.863		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 3-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 3-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 3-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 3-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 7222.00ft (Original Well Elev)

Offset Depths are relative to Offset Datum

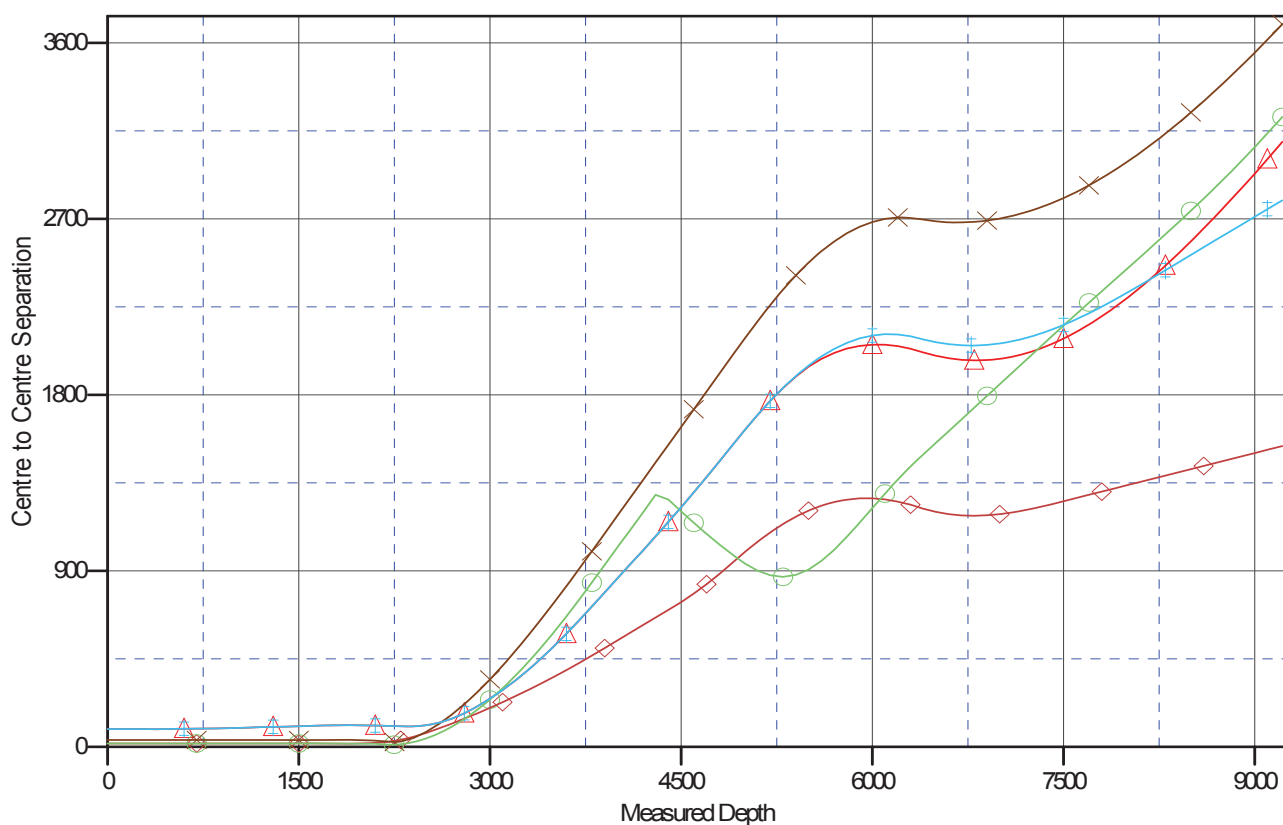
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: DEAL GULCH 3-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.29°

## Ladder Plot



### LEGEND

12-16, Design #3 V0

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

Deal Gulch 1-16, Deal Gulch 1-16

PilotHole, Deal Gulch 1-16 PilotHole V0

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 3-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 3-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 3-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 3-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 7222.00ft (Original Well Elev)

Offset Depths are relative to Offset Datum

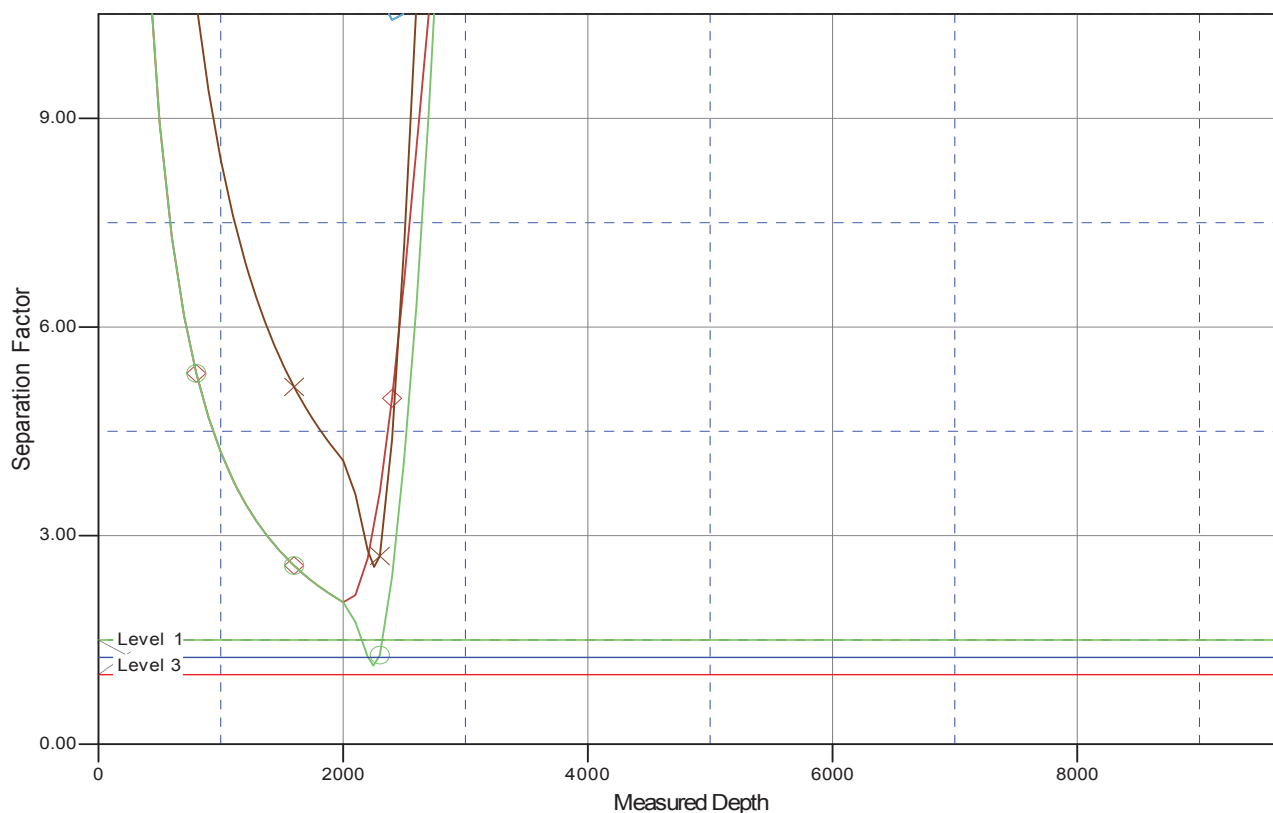
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: DEAL GULCH 3-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.29°

## Separation Factor Plot



### LEGEND

12-16, Design #3 V0

PilotHole, Deal Gulch 1-16 PilotHole 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 1-16, Deal Gulch 1-16 I