



SHELL E&P

MOFFAT COUNTY, CO

NORTH CASTOR GULCH 6-16

NORTH CASTOR GULCH 6-16

NORTH CASTOR GULCH 6-16

Plan: PLAN 3

Standard Planning Report

08 October, 2012



Weatherford®



Project: MOFFAT COUNTY, CO
Site: NORTH CASTOR GULCH 6-16
Well: NORTH CASTOR GULCH 6-16
Wellbore: NORTH CASTOR GULCH 6-16
Design: PLAN 3
Latitude: 40° 23' 32.974 N
Longitude: 107° 36' 19.043 W
GL: 6987.00
KB: KB @ 7015.00ft

WELLBORE TARGET DETAILS (LAT/LONG)

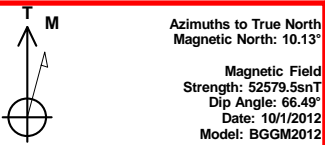
Name	TVD	+N-S	+E-W	Latitude	Longitude	Shape
PBHL - NORTH CASTOR GULCH 6-16	4448.00	-4464.88	-3389.67	40° 22' 48.850 N	107° 37' 2.845 W	Point
STATE OF PRODUCTION (NCG 6-16) PLAN 3	4831.00	-42.56	-951.83	40° 23' 32.553 N	107° 36' 31.345 W	Point
HEEL - NCG 6-16	4908.00	-429.41	-1249.32	40° 23' 28.730 N	107° 36' 35.190 W	Point

WELL DETAILS: NORTH CASTOR GULCH 6-16

+N-S	+E-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0.00	0.00	1392786.40	2413645.13	6987.00	40° 23' 32.974 N	107° 36' 19.043 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	
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.82
4197.81	33.75	287.77	4129.71	104.60	-326.40	2.82	287.77	114.05	Start 226.46 hold at 4197.81 MD
4424.27	33.75	287.77	4317.99	143.00	-446.22	0.00	0.00	155.92	Start DLS 7.00 TFO -78.36
5698.26	95.75	207.94	4908.00	-429.41	-1249.32	7.00	-78.36	1097.44	Start 4591.05 hold at 5698.26 MD
10289.31	95.75	207.94	4448.00	-4464.88	-3389.67	0.00	0.00	5605.80	TD at 10289.31

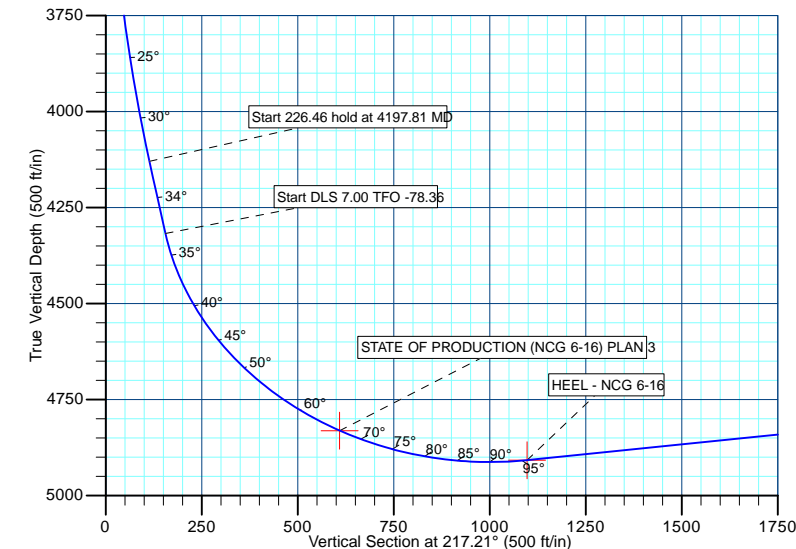
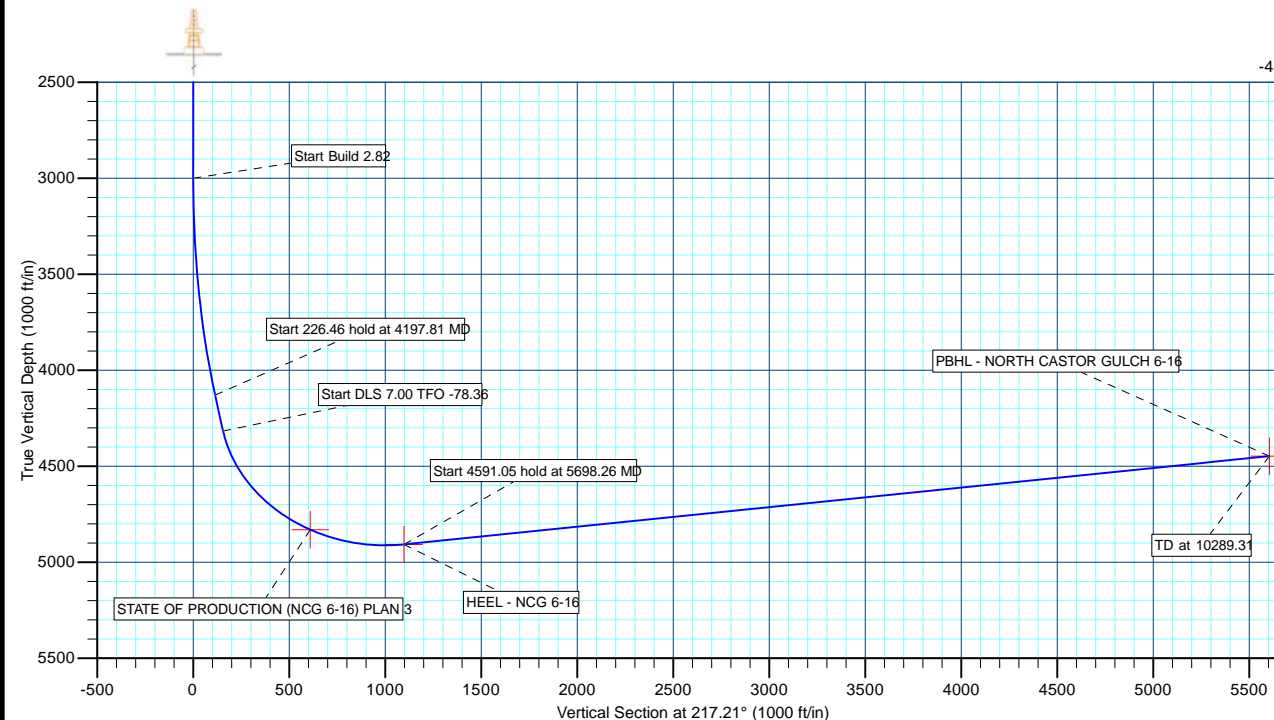
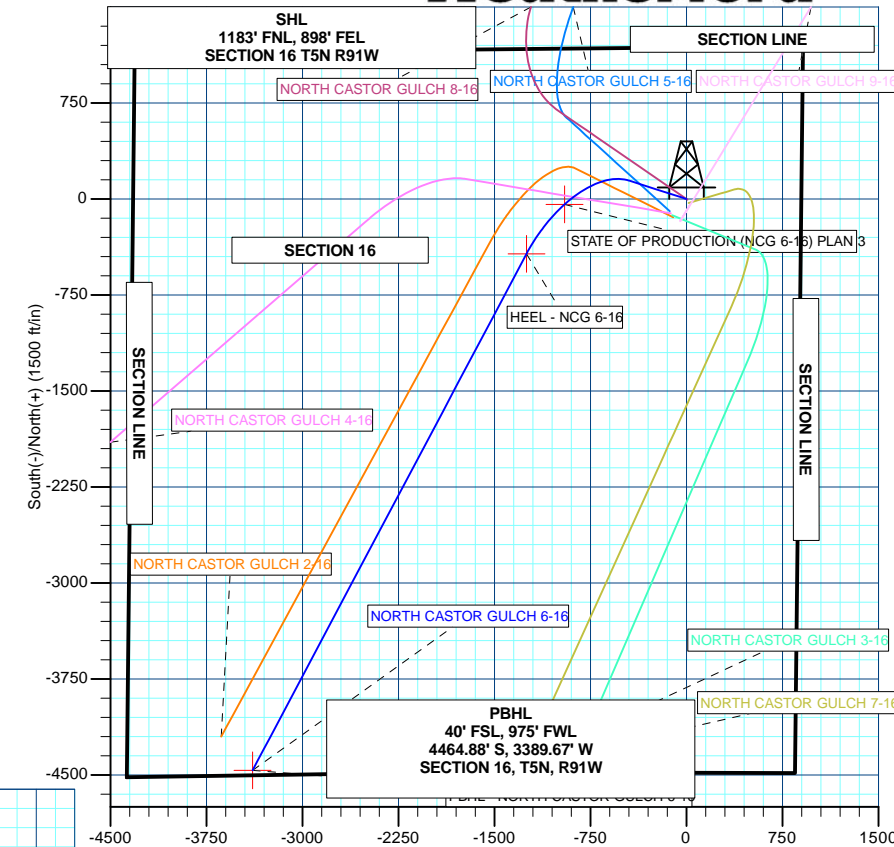


Plan: PLAN 3 (NORTH CASTOR GULCH 6-16/NORTH CASTOR GULCH 6-16)

Created By: MATT MAYDEW Date: 11:44, October 09 2012



Weatherford®





Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Company:	SHELL E&P	TVD Reference:	KB @ 7015.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7015.00ft
Site:	NORTH CASTOR GULCH 6-16	North Reference:	True
Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 6-16		
Design:	PLAN 3		

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	NORTH CASTOR GULCH 6-16				
Site Position:		Northing:	1,392,786.40 usft	Latitude:	40° 23' 32.974 N
From:	Lat/Long	Easting:	2,413,645.13 usft	Longitude:	107° 36' 19.043 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.36 °

Well	NORTH CASTOR GULCH 6-16					
Well Position	+N/-S	0.00 ft	Northing:	1,392,786.40 usft	Latitude:	40° 23' 32.974 N
	+E/-W	0.00 ft	Easting:	2,413,645.13 usft	Longitude:	107° 36' 19.043 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,987.00 ft

Wellbore	NORTH CASTOR GULCH 6-16				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	10/1/2012	10.13	66.49	52,579

Design	PLAN 3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	217.21

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,197.81	33.75	287.77	4,129.71	104.60	-326.40	2.82	2.82	0.00	287.77	
4,424.27	33.75	287.77	4,317.99	143.00	-446.22	0.00	0.00	0.00	0.00	
5,698.26	95.75	207.94	4,908.00	-429.41	-1,249.32	7.00	4.87	-6.27	-78.36	HEEL - NCG 6-16
10,289.31	95.75	207.94	4,448.00	-4,464.88	-3,389.67	0.00	0.00	0.00	0.00	PBHL - NORTH CAS



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Company:	SHELL E&P	TVD Reference:	KB @ 7015.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7015.00ft
Site:	NORTH CASTOR GULCH 6-16	North Reference:	True
Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 6-16		
Design:	PLAN 3		

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
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.82									
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	2.82	287.77	3,099.96	0.75	-2.34	0.82	2.82	2.82	0.00
3,200.00	5.64	287.77	3,199.68	3.00	-9.36	3.27	2.82	2.82	0.00
3,300.00	8.45	287.77	3,298.91	6.74	-21.04	7.35	2.82	2.82	0.00
3,400.00	11.27	287.77	3,397.42	11.97	-37.35	13.05	2.82	2.82	0.00
3,500.00	14.09	287.77	3,494.98	18.67	-58.25	20.36	2.82	2.82	0.00
3,600.00	16.91	287.77	3,591.33	26.82	-83.70	29.25	2.82	2.82	0.00
3,700.00	19.73	287.77	3,686.25	36.41	-113.62	39.70	2.82	2.82	0.00
3,800.00	22.54	287.77	3,779.52	47.42	-147.96	51.70	2.82	2.82	0.00
3,900.00	25.36	287.77	3,870.89	59.80	-186.62	65.21	2.82	2.82	0.00
4,000.00	28.18	287.77	3,960.17	73.55	-229.51	80.20	2.82	2.82	0.00
4,100.00	31.00	287.77	4,047.12	88.62	-276.52	96.62	2.82	2.82	0.00
Start 226.46 hold at 4197.81 MD									
4,197.81	33.75	287.77	4,129.71	104.60	-326.40	114.05	2.82	2.82	0.00
4,200.00	33.75	287.77	4,131.53	104.97	-327.55	114.46	0.00	0.00	0.00
4,300.00	33.75	287.77	4,214.68	121.93	-380.47	132.95	0.00	0.00	0.00
4,400.00	33.75	287.77	4,297.82	138.89	-433.38	151.43	0.00	0.00	0.00
Start DLS 7.00 TFO -78.36									
4,424.27	33.75	287.77	4,317.99	143.00	-446.22	155.92	0.00	0.00	0.00
4,450.00	34.16	284.63	4,339.34	147.01	-460.02	161.07	7.00	1.57	-12.21
4,500.00	35.16	278.73	4,380.48	152.74	-487.84	173.33	7.00	2.01	-11.79
4,550.00	36.44	273.16	4,421.04	155.74	-516.91	188.52	7.00	2.55	-11.15



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Company:	SHELL E&P	TVD Reference:	KB @ 7015.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7015.00ft
Site:	NORTH CASTOR GULCH 6-16	North Reference:	True
Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 6-16		
Design:	PLAN 3		

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)
4,600.00	37.96	267.94	4,460.88	156.01	-547.11	206.57	7.00	3.04	-10.43
4,650.00	39.69	263.09	4,499.84	153.53	-578.34	227.43	7.00	3.47	-9.70
4,700.00	41.61	258.59	4,537.78	148.32	-610.48	251.00	7.00	3.84	-8.98
4,750.00	43.70	254.44	4,574.55	140.40	-643.40	277.22	7.00	4.17	-8.31
4,800.00	45.92	250.60	4,610.03	129.80	-676.99	305.97	7.00	4.44	-7.68
4,850.00	48.26	247.05	4,644.08	116.56	-711.12	337.15	7.00	4.68	-7.11
4,900.00	50.70	243.75	4,676.57	100.73	-745.66	370.65	7.00	4.89	-6.60
4,950.00	53.23	240.68	4,707.37	82.36	-780.48	406.34	7.00	5.06	-6.14
5,000.00	55.84	237.81	4,736.39	61.52	-815.46	444.08	7.00	5.21	-5.75
5,050.00	58.50	235.11	4,763.49	38.30	-850.46	483.74	7.00	5.33	-5.40
5,100.00	61.22	232.56	4,788.60	12.78	-885.35	525.17	7.00	5.44	-5.10
5,150.00	63.99	230.14	4,811.61	-14.95	-920.01	568.21	7.00	5.53	-4.83
STATE OF PRODUCTION - STATE OF PRODUCTION (NCG 6-16) PLAN 3									
5,196.38	66.59	228.00	4,831.00	-42.56	-951.83	609.44	7.00	5.60	-4.62
5,200.00	66.79	227.84	4,832.43	-44.78	-954.30	612.70	7.00	5.64	-4.52
5,250.00	69.63	225.63	4,850.99	-76.60	-988.09	658.48	7.00	5.67	-4.42
5,300.00	72.49	223.50	4,867.22	-110.30	-1,021.26	705.38	7.00	5.72	-4.26
5,350.00	75.37	221.43	4,881.07	-145.74	-1,053.69	753.22	7.00	5.77	-4.13
5,400.00	78.27	219.42	4,892.46	-182.80	-1,085.25	801.82	7.00	5.80	-4.02
5,450.00	81.19	217.46	4,901.38	-221.33	-1,115.83	851.00	7.00	5.83	-3.94
5,500.00	84.12	215.52	4,907.77	-261.19	-1,145.31	900.57	7.00	5.85	-3.87
5,550.00	87.05	213.60	4,911.62	-302.24	-1,173.59	950.36	7.00	5.86	-3.83
5,600.00	89.98	211.70	4,912.91	-344.32	-1,200.55	1,000.18	7.00	5.87	-3.81
5,650.00	92.92	209.79	4,911.65	-387.27	-1,226.10	1,049.84	7.00	5.87	-3.81
Start 4591.05 hold at 5698.26 MD - HEEL - NCG 6-16									
5,698.26	95.75	207.94	4,908.00	-429.41	-1,249.32	1,097.44	7.00	5.87	-3.83
5,700.00	95.75	207.94	4,907.83	-430.94	-1,250.14	1,099.15	0.00	0.00	0.00
5,800.00	95.75	207.94	4,897.81	-518.84	-1,296.76	1,197.35	0.00	0.00	0.00
5,900.00	95.75	207.94	4,887.79	-606.74	-1,343.38	1,295.55	0.00	0.00	0.00
6,000.00	95.75	207.94	4,877.77	-694.63	-1,390.00	1,393.75	0.00	0.00	0.00
6,100.00	95.75	207.94	4,867.75	-782.53	-1,436.62	1,491.95	0.00	0.00	0.00
6,200.00	95.75	207.94	4,857.73	-870.43	-1,483.24	1,590.15	0.00	0.00	0.00
6,300.00	95.75	207.94	4,847.71	-958.33	-1,529.86	1,688.35	0.00	0.00	0.00
6,400.00	95.75	207.94	4,837.69	-1,046.23	-1,576.48	1,786.55	0.00	0.00	0.00
6,500.00	95.75	207.94	4,827.67	-1,134.13	-1,623.10	1,884.75	0.00	0.00	0.00
6,600.00	95.75	207.94	4,817.65	-1,222.03	-1,669.72	1,982.94	0.00	0.00	0.00
6,700.00	95.75	207.94	4,807.63	-1,309.93	-1,716.34	2,081.14	0.00	0.00	0.00
6,800.00	95.75	207.94	4,797.61	-1,397.82	-1,762.96	2,179.34	0.00	0.00	0.00
6,900.00	95.75	207.94	4,787.59	-1,485.72	-1,809.58	2,277.54	0.00	0.00	0.00
7,000.00	95.75	207.94	4,777.57	-1,573.62	-1,856.20	2,375.74	0.00	0.00	0.00
7,100.00	95.75	207.94	4,767.55	-1,661.52	-1,902.82	2,473.94	0.00	0.00	0.00
7,200.00	95.75	207.94	4,757.53	-1,749.42	-1,949.44	2,572.14	0.00	0.00	0.00
7,300.00	95.75	207.94	4,747.51	-1,837.32	-1,996.06	2,670.34	0.00	0.00	0.00
7,400.00	95.75	207.94	4,737.49	-1,925.22	-2,042.68	2,768.54	0.00	0.00	0.00
7,500.00	95.75	207.94	4,727.47	-2,013.12	-2,089.30	2,866.74	0.00	0.00	0.00
7,600.00	95.75	207.94	4,717.45	-2,101.01	-2,135.92	2,964.93	0.00	0.00	0.00
7,700.00	95.75	207.94	4,707.44	-2,188.91	-2,182.54	3,063.13	0.00	0.00	0.00
7,800.00	95.75	207.94	4,697.42	-2,276.81	-2,229.16	3,161.33	0.00	0.00	0.00
7,900.00	95.75	207.94	4,687.40	-2,364.71	-2,275.78	3,259.53	0.00	0.00	0.00
8,000.00	95.75	207.94	4,677.38	-2,452.61	-2,322.40	3,357.73	0.00	0.00	0.00
8,100.00	95.75	207.94	4,667.36	-2,540.51	-2,369.02	3,455.93	0.00	0.00	0.00
8,200.00	95.75	207.94	4,657.34	-2,628.41	-2,415.64	3,554.13	0.00	0.00	0.00
8,300.00	95.75	207.94	4,647.32	-2,716.31	-2,462.26	3,652.33	0.00	0.00	0.00
8,400.00	95.75	207.94	4,637.30	-2,804.20	-2,508.88	3,750.53	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Company:	SHELL E&P	TVD Reference:	KB @ 7015.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7015.00ft
Site:	NORTH CASTOR GULCH 6-16	North Reference:	True
Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 6-16		
Design:	PLAN 3		

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)	
8,500.00	95.75	207.94	4,627.28	-2,892.10	-2,555.50	3,848.72	0.00	0.00	0.00	
8,600.00	95.75	207.94	4,617.26	-2,980.00	-2,602.12	3,946.92	0.00	0.00	0.00	
8,700.00	95.75	207.94	4,607.24	-3,067.90	-2,648.74	4,045.12	0.00	0.00	0.00	
8,800.00	95.75	207.94	4,597.22	-3,155.80	-2,695.36	4,143.32	0.00	0.00	0.00	
8,900.00	95.75	207.94	4,587.20	-3,243.70	-2,741.98	4,241.52	0.00	0.00	0.00	
9,000.00	95.75	207.94	4,577.18	-3,331.60	-2,788.60	4,339.72	0.00	0.00	0.00	
9,100.00	95.75	207.94	4,567.16	-3,419.50	-2,835.22	4,437.92	0.00	0.00	0.00	
9,200.00	95.75	207.94	4,557.14	-3,507.39	-2,881.84	4,536.12	0.00	0.00	0.00	
9,300.00	95.75	207.94	4,547.12	-3,595.29	-2,928.46	4,634.32	0.00	0.00	0.00	
9,400.00	95.75	207.94	4,537.10	-3,683.19	-2,975.08	4,732.51	0.00	0.00	0.00	
9,500.00	95.75	207.94	4,527.08	-3,771.09	-3,021.70	4,830.71	0.00	0.00	0.00	
9,600.00	95.75	207.94	4,517.07	-3,858.99	-3,068.32	4,928.91	0.00	0.00	0.00	
9,700.00	95.75	207.94	4,507.05	-3,946.89	-3,114.94	5,027.11	0.00	0.00	0.00	
9,800.00	95.75	207.94	4,497.03	-4,034.79	-3,161.56	5,125.31	0.00	0.00	0.00	
9,900.00	95.75	207.94	4,487.01	-4,122.68	-3,208.18	5,223.51	0.00	0.00	0.00	
10,000.00	95.75	207.94	4,476.99	-4,210.58	-3,254.80	5,321.71	0.00	0.00	0.00	
10,100.00	95.75	207.94	4,466.97	-4,298.48	-3,301.42	5,419.91	0.00	0.00	0.00	
10,200.00	95.75	207.94	4,456.95	-4,386.38	-3,348.04	5,518.11	0.00	0.00	0.00	
TD at 10289.31 - PBHL - NORTH CASTOR GULCH 6-16										
10,289.31	95.75	207.94	4,448.00	-4,464.88	-3,389.67	5,605.80	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 - NORTH CASTO - plan hits target center - Point	0.00	0.00	4,448.00	-4,464.88	-3,389.67	1,388,403.26	2,410,150.43	40° 22' 48.850 N	107° 37' 2.845 W	
STATE OF PRODUCTIC - plan hits target center - Point	0.00	0.00	4,831.00	-42.56	-951.83	1,392,766.45	2,412,692.56	40° 23' 32.553 N	107° 36' 31.345 W	
HEEL - NCG 6-16 - plan hits target center - Point	0.00	0.00	4,908.00	-429.41	-1,249.32	1,392,386.78	2,412,385.97	40° 23' 28.730 N	107° 36' 35.190 W	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
5,196.38	4,831.00	STATE OF PRODUCTION		0.00		



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Company:	SHELL E&P	TVD Reference:	KB @ 7015.00ft
Project:	MOFFAT COUNTY, CO	MD Reference:	KB @ 7015.00ft
Site:	NORTH CASTOR GULCH 6-16	North Reference:	True
Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	NORTH CASTOR GULCH 6-16		
Design:	PLAN 3		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,000.00	3,000.00	0.00	0.00	Start Build 2.82
4,197.81	4,129.71	104.60	-326.40	Start 226.46 hold at 4197.81 MD
4,424.27	4,317.99	143.00	-446.22	Start DLS 7.00 TFO -78.36
5,698.26	4,908.00	-429.41	-1,249.32	Start 4591.05 hold at 5698.26 MD
10,289.31	4,448.00	-4,464.88	-3,389.67	TD at 10289.31



SHELL E&P

**MOFFAT COUNTY, CO
NORTH CASTOR GULCH 6-16
NORTH CASTOR GULCH 6-16**

**NORTH CASTOR GULCH 6-16
PLAN 3**

Anticollision Report

09 October, 2012





Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Reference	PLAN 3		
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 1,611.13 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	10/8/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	10,289.31	PLAN 3 (NORTH CASTOR 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						
NORTH CASTOR GULCH 2-16						
NORTH CASTOR GULCH 2-16 - NORTH CASTOR GUL	4,876.66	4,734.79	175.80	149.12	6.591	CC
NORTH CASTOR GULCH 2-16 - NORTH CASTOR GUL	4,900.00	4,752.80	176.52	148.73	6.351	ES
NORTH CASTOR GULCH 2-16 - NORTH CASTOR GUL	5,000.00	4,829.28	197.01	165.23	6.199	SF
NORTH CASTOR GULCH 3-16						
NORTH CASTOR GULCH 3-16 - NORTH CASTOR GUL	2,571.80	2,563.42	159.95	148.82	14.377	CC
NORTH CASTOR GULCH 3-16 - NORTH CASTOR GUL	2,600.00	2,591.03	160.05	148.80	14.227	ES
NORTH CASTOR GULCH 3-16 - NORTH CASTOR GUL	2,800.00	2,783.36	168.56	156.35	13.808	SF
NORTH CASTOR GULCH 4-16						
NORTH CASTOR GULCH 4-16 - NORTH CASTOR GUL	1,900.00	1,893.00	164.28	156.03	19.910	CC, ES
NORTH CASTOR GULCH 4-16 - NORTH CASTOR GUL	5,500.00	5,013.90	547.92	511.09	14.874	SF
NORTH CASTOR GULCH 5-16						
NORTH CASTOR GULCH 5-16 - NORTH CASTOR GUL	1,941.73	1,934.73	161.11	152.67	19.091	CC
NORTH CASTOR GULCH 5-16 - NORTH CASTOR GUL	2,000.00	1,992.52	161.17	152.47	18.530	ES
NORTH CASTOR GULCH 5-16 - NORTH CASTOR GUL	4,800.00	4,642.98	346.11	317.18	11.963	SF
NORTH CASTOR GULCH 7-16						
NORTH CASTOR GULCH 7-16 - NORTH CASTOR GUL	2,734.89	2,734.89	35.97	23.96	2.996	CC
NORTH CASTOR GULCH 7-16 - NORTH CASTOR GUL	2,800.00	2,799.85	36.07	23.78	2.934	ES
NORTH CASTOR GULCH 7-16 - NORTH CASTOR GUL	2,900.00	2,899.44	37.05	24.32	2.912	SF
NORTH CASTOR GULCH 8-16						
NORTH CASTOR GULCH 8-16 - NORTH CASTOR GUL	2,742.45	2,742.75	0.48	-11.54	0.040	Level 1, CC, ES, SF
NORTH CASTOR GULCH 9-16						
NORTH CASTOR GULCH 9-16 - NORTH CASTOR GUL	2,500.00	2,500.00	54.05	43.10	4.936	CC, ES
NORTH CASTOR GULCH 9-16 - NORTH CASTOR GUL	2,600.00	2,599.03	54.93	43.56	4.831	SF

Offset Design		NORTH CASTOR GULCH 2-16 - NORTH CASTOR GULCH 2-16 - NORTH CASTOR GULCH 2-16 - PL										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	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	0.00	-144.35	-143.10	-102.64	176.51						

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 2-16 - NORTH CASTOR GULCH 2-16 - NORTH CASTOR GULCH 2-16 - PL													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		
100.00	100.00	88.00	88.00	0.08	0.08	-144.35	-143.10	-102.64	176.10	175.94	0.16	1,073.869		
200.00	200.00	188.00	188.00	0.31	0.29	-144.35	-143.10	-102.64	176.10	175.51	0.60	294.547		
300.00	300.00	288.00	288.00	0.53	0.52	-144.35	-143.10	-102.64	176.10	175.06	1.05	168.132		
400.00	400.00	388.00	388.00	0.76	0.74	-144.35	-143.10	-102.64	176.10	174.61	1.50	117.642		
500.00	500.00	488.00	488.00	0.98	0.97	-144.35	-143.10	-102.64	176.10	174.16	1.95	90.473		
600.00	600.00	588.00	588.00	1.20	1.19	-144.35	-143.10	-102.64	176.10	173.71	2.40	73.499		
700.00	700.00	688.00	688.00	1.43	1.42	-144.35	-143.10	-102.64	176.10	173.26	2.85	61.888		
800.00	800.00	788.00	788.00	1.65	1.64	-144.35	-143.10	-102.64	176.10	172.81	3.30	53.444		
900.00	900.00	888.00	888.00	1.88	1.87	-144.35	-143.10	-102.64	176.10	172.36	3.74	47.029		
1,000.00	1,000.00	988.00	988.00	2.10	2.09	-144.35	-143.10	-102.64	176.10	171.91	4.19	41.988		
1,100.00	1,100.00	1,088.00	1,088.00	2.33	2.32	-144.35	-143.10	-102.64	176.10	171.46	4.64	37.923		
1,200.00	1,200.00	1,188.00	1,188.00	2.55	2.54	-144.35	-143.10	-102.64	176.10	171.01	5.09	34.576		
1,300.00	1,300.00	1,288.00	1,288.00	2.78	2.76	-144.35	-143.10	-102.64	176.10	170.56	5.54	31.772		
1,400.00	1,400.00	1,388.00	1,388.00	3.00	2.99	-144.35	-143.10	-102.64	176.10	170.11	5.99	29.388		
1,500.00	1,500.00	1,488.00	1,488.00	3.23	3.21	-144.35	-143.10	-102.64	176.10	169.66	6.44	27.338		
1,600.00	1,600.00	1,588.00	1,588.00	3.45	3.44	-144.35	-143.10	-102.64	176.10	169.21	6.89	25.554		
1,700.00	1,700.00	1,688.00	1,688.00	3.68	3.66	-144.35	-143.10	-102.64	176.10	168.76	7.34	23.989		
1,800.00	1,800.00	1,788.00	1,788.00	3.90	3.89	-144.35	-143.10	-102.64	176.10	168.31	7.79	22.605		
1,900.00	1,900.00	1,888.00	1,888.00	4.13	4.11	-144.35	-143.10	-102.64	176.10	167.86	8.24	21.372		
2,000.00	2,000.00	1,988.00	1,988.00	4.35	4.34	-144.35	-143.10	-102.64	176.10	167.41	8.69	20.266		
2,100.00	2,100.00	2,087.07	2,087.06	4.58	4.55	-143.88	-142.44	-103.96	176.35	167.22	9.12	19.330		
2,200.00	2,200.00	2,185.86	2,185.72	4.80	4.76	-142.32	-140.26	-108.32	177.24	167.68	9.56	18.545		
2,300.00	2,300.00	2,284.19	2,283.70	5.03	4.98	-139.74	-136.58	-115.69	179.04	169.05	9.99	17.918		
2,400.00	2,400.00	2,381.84	2,380.67	5.25	5.20	-136.22	-131.45	-125.97	182.21	171.78	10.43	17.472		
2,500.00	2,500.00	2,478.60	2,476.31	5.48	5.45	-131.93	-124.90	-139.07	187.29	176.43	10.87	17.235		
2,600.00	2,600.00	2,574.26	2,570.32	5.70	5.71	-127.08	-117.02	-154.85	194.90	183.59	11.31	17.235		
2,700.00	2,700.00	2,668.62	2,662.43	5.92	6.00	-121.92	-107.88	-173.17	205.61	193.86	11.76	17.486		
2,800.00	2,800.00	2,761.52	2,752.41	6.15	6.32	-116.71	-97.55	-193.84	219.90	207.68	12.22	17.990		
2,900.00	2,900.00	2,852.80	2,840.04	6.37	6.67	-111.68	-86.15	-216.68	238.05	225.34	12.71	18.727		
3,000.00	3,000.00	2,942.32	2,925.15	6.60	7.07	-106.98	-73.75	-241.49	260.21	246.98	13.23	19.666		
3,100.00	3,099.96	3,030.72	3,008.30	6.82	7.51	-30.32	-60.35	-268.32	284.29	270.52	13.77	20.640		
3,200.00	3,199.68	3,120.03	3,091.35	7.03	8.01	-26.63	-45.68	-297.70	307.88	293.67	14.21	21.659		
3,300.00	3,298.91	3,216.49	3,180.67	7.25	8.59	-23.51	-29.40	-330.29	328.98	314.32	14.66	22.439		
3,400.00	3,397.42	3,314.11	3,271.06	7.49	9.21	-21.10	-12.93	-363.27	346.30	331.21	15.09	22.947		
3,500.00	3,494.98	3,412.63	3,362.29	7.75	9.86	-19.20	3.69	-396.55	359.49	343.98	15.51	23.182		
3,600.00	3,591.33	3,511.82	3,454.13	8.06	10.53	-17.71	20.43	-430.06	368.35	352.44	15.91	23.152		
3,700.00	3,686.25	3,611.44	3,546.38	8.42	11.23	-16.54	37.23	-463.71	372.71	356.41	16.30	22.865		
3,800.00	3,779.52	3,711.25	3,638.81	8.85	11.93	-15.63	54.07	-497.43	372.48	355.80	16.68	22.331		
3,900.00	3,870.89	3,811.02	3,731.18	9.37	12.65	-14.95	70.91	-531.13	367.59	350.54	17.05	21.559		
4,000.00	3,960.17	3,910.49	3,823.29	9.98	13.38	-14.47	87.69	-564.74	358.01	340.60	17.42	20.557		
4,100.00	4,047.12	4,009.43	3,914.90	10.71	14.11	-14.20	104.38	-598.16	343.73	325.95	17.78	19.331		
4,200.00	4,131.53	4,107.59	4,005.80	11.57	14.84	-14.13	120.95	-631.32	324.75	306.59	18.16	17.881		
4,300.00	4,214.68	4,205.32	4,096.29	12.51	15.57	-14.02	137.43	-664.33	303.54	284.68	18.87	16.088		
4,400.00	4,297.82	4,303.04	4,186.78	13.52	16.31	-13.89	153.92	-697.35	282.33	262.75	19.59	14.413		
4,500.00	4,380.48	4,400.32	4,276.85	14.52	17.05	-4.42	170.33	-730.21	259.70	239.95	19.76	13.146		
4,600.00	4,460.88	4,495.34	4,364.84	15.58	17.78	9.80	186.36	-762.31	233.01	213.49	19.52	11.937		
4,700.00	4,537.78	4,586.65	4,449.39	16.70	18.48	26.61	201.77	-793.16	205.09	185.05	20.04	10.236		
4,800.00	4,610.03	4,672.90	4,529.26	17.88	19.14	46.15	216.32	-822.29	182.56	159.59	22.97	7.947		
4,876.66	4,661.61	4,734.79	4,586.56	18.83	19.62	61.88	226.77	-843.20	175.80	149.12	26.67	6.591 CC		
4,900.00	4,676.57	4,752.80	4,603.24	19.12	19.76	66.53	229.80	-849.28	176.52	148.73	27.79	6.351 ES		
5,000.00	4,736.39	4,829.28	4,674.05	20.42	20.34	85.06	242.34	-875.32	197.01	165.23	31.78	6.199 SF		
5,100.00	4,788.60	4,916.80	4,754.64	21.76	20.97	101.58	250.51	-908.34	239.85	206.22	33.63	7.132		

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 2-16 - NORTH CASTOR GULCH 2-16 - NORTH CASTOR GULCH 2-16 - PL													Offset Site Error:	0.00 ft
Survey Program: 0-MWID													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	4,832.43	5,014.15	4,842.67	23.14	21.68	114.84	249.79	-949.78	295.45	262.23	33.22	8.894		
5,300.00	4,867.22	5,125.83	4,940.01	24.55	22.51	125.47	236.29	-1,002.66	357.29	326.08	31.21	11.448		
5,400.00	4,892.46	5,258.98	5,048.55	25.97	23.53	134.04	202.84	-1,071.85	420.89	392.69	28.20	14.924		
5,500.00	4,907.77	5,424.91	5,168.32	27.38	24.85	140.86	136.09	-1,164.79	482.18	457.40	24.78	19.457		
5,600.00	4,912.91	5,640.07	5,290.62	28.76	26.73	145.89	12.52	-1,290.50	536.00	514.36	21.65	24.763		
5,700.00	4,907.83	5,920.38	5,381.72	30.10	29.50	148.82	-197.58	-1,449.78	574.81	555.05	19.77	29.082		
5,800.00	4,897.81	6,142.35	5,393.92	31.44	31.88	149.77	-388.34	-1,561.53	587.63	565.39	22.24	26.419		
5,900.00	4,887.79	6,242.05	5,391.60	32.85	33.06	150.06	-475.91	-1,609.14	594.82	570.75	24.06	24.718		
6,000.00	4,877.77	6,341.75	5,389.28	34.31	34.31	150.34	-563.48	-1,656.74	602.02	576.08	25.93	23.214		
6,100.00	4,867.75	6,441.45	5,386.96	35.83	35.63	150.62	-651.04	-1,704.35	609.23	581.39	27.84	21.886		
6,200.00	4,857.73	6,541.15	5,384.64	37.39	37.01	150.88	-738.61	-1,751.96	616.46	586.69	29.76	20.711		
6,300.00	4,847.71	6,640.84	5,382.33	38.99	38.45	151.15	-826.18	-1,799.56	623.70	591.99	31.71	19.670		
6,400.00	4,837.69	6,740.54	5,380.01	40.62	39.94	151.40	-913.74	-1,847.17	630.95	597.29	33.66	18.744		
6,500.00	4,827.67	6,840.24	5,377.69	42.28	41.48	151.65	-1,001.31	-1,894.77	638.21	602.59	35.62	17.918		
6,600.00	4,817.65	6,939.94	5,375.37	43.97	43.05	151.90	-1,088.87	-1,942.38	645.49	607.91	37.58	17.176		
6,700.00	4,807.63	7,039.63	5,373.05	45.69	44.66	152.13	-1,176.44	-1,989.99	652.78	613.24	39.54	16.509		
6,800.00	4,797.61	7,139.33	5,370.74	47.42	46.30	152.37	-1,264.01	-2,037.59	660.08	618.58	41.50	15.906		
6,900.00	4,787.59	7,239.03	5,368.42	49.18	47.97	152.60	-1,351.57	-2,085.20	667.39	623.93	43.45	15.359		
7,000.00	4,777.57	7,338.73	5,366.10	50.95	49.66	152.82	-1,439.14	-2,132.80	674.71	629.30	45.40	14.860		
7,100.00	4,767.55	7,438.42	5,363.78	52.74	51.38	153.04	-1,526.71	-2,180.41	682.04	634.69	47.35	14.405		
7,200.00	4,757.53	7,538.12	5,361.46	54.54	53.11	153.25	-1,614.27	-2,228.02	689.38	640.09	49.28	13.988		
7,300.00	4,747.51	7,637.82	5,359.14	56.35	54.87	153.46	-1,701.84	-2,275.62	696.73	645.51	51.21	13.604		
7,400.00	4,737.49	7,737.52	5,356.83	58.18	56.64	153.67	-1,789.41	-2,323.23	704.08	650.94	53.14	13.250		
7,500.00	4,727.47	7,837.21	5,354.51	60.01	58.42	153.87	-1,876.97	-2,370.83	711.45	656.40	55.05	12.923		
7,600.00	4,717.46	7,936.91	5,352.19	61.86	60.22	154.06	-1,964.54	-2,418.44	718.83	661.86	56.96	12.619		
7,700.00	4,707.44	8,036.61	5,349.87	63.71	62.03	154.26	-2,052.11	-2,466.05	726.21	667.34	58.86	12.337		
7,800.00	4,697.42	8,136.31	5,347.55	65.57	63.85	154.45	-2,139.67	-2,513.65	733.60	672.84	60.76	12.074		
7,900.00	4,687.40	8,236.00	5,345.24	67.44	65.69	154.63	-2,227.24	-2,561.26	741.00	678.36	62.64	11.829		
8,000.00	4,677.38	8,335.70	5,342.92	69.32	67.53	154.81	-2,314.81	-2,608.86	748.41	683.88	64.52	11.599		
8,100.00	4,667.36	8,435.40	5,340.60	71.20	69.38	154.99	-2,402.37	-2,656.47	755.82	689.43	66.39	11.384		
8,200.00	4,657.34	8,535.10	5,338.28	73.09	71.24	155.16	-2,489.94	-2,704.08	763.24	694.99	68.26	11.182		
8,300.00	4,647.32	8,634.79	5,335.96	74.98	73.10	155.33	-2,577.51	-2,751.68	770.67	700.56	70.11	10.992		
8,400.00	4,637.30	8,734.49	5,333.64	76.88	74.98	155.50	-2,665.07	-2,799.29	778.11	706.14	71.96	10.813		
8,500.00	4,627.28	8,834.19	5,331.33	78.78	76.85	155.67	-2,752.64	-2,846.89	785.55	711.74	73.80	10.644		
8,600.00	4,617.26	8,933.89	5,329.01	80.68	78.74	155.83	-2,840.21	-2,894.50	793.00	717.36	75.64	10.484		
8,700.00	4,607.24	9,033.58	5,326.69	82.59	80.63	155.99	-2,927.77	-2,942.11	800.45	722.98	77.47	10.333		
8,800.00	4,597.22	9,133.28	5,324.37	84.51	82.53	156.14	-3,015.34	-2,989.71	807.91	728.62	79.29	10.189		
8,900.00	4,587.20	9,232.98	5,322.05	86.42	84.43	156.30	-3,102.91	-3,037.32	815.37	734.27	81.11	10.053		
9,000.00	4,577.18	9,332.68	5,319.74	88.34	86.33	156.45	-3,190.47	-3,084.92	822.85	739.93	82.91	9.924		
9,100.00	4,567.16	9,432.37	5,317.42	90.26	88.24	156.59	-3,278.04	-3,132.53	830.32	745.61	84.72	9.801		
9,200.00	4,557.14	9,532.07	5,315.10	92.19	90.15	156.74	-3,365.61	-3,180.14	837.81	751.29	86.51	9.684		
9,300.00	4,547.12	9,631.77	5,312.78	94.12	92.07	156.88	-3,453.17	-3,227.74	845.29	756.99	88.30	9.573		
9,400.00	4,537.10	9,731.47	5,310.46	96.05	93.99	157.02	-3,540.74	-3,275.35	852.79	762.70	90.09	9.466		
9,500.00	4,527.08	9,831.17	5,308.14	97.98	95.91	157.16	-3,628.31	-3,322.95	860.28	768.42	91.87	9.364		
9,600.00	4,517.07	9,930.86	5,305.83	99.91	97.84	157.29	-3,715.87	-3,370.56	867.79	774.14	93.64	9.267		
9,700.00	4,507.05	10,030.56	5,303.51	101.85	99.76	157.42	-3,803.44	-3,418.17	875.29	779.88	95.41	9.174		
9,800.00	4,497.03	10,130.26	5,301.19	103.79	101.70	157.55	-3,891.00	-3,465.77	882.80	785.63	97.17	9.085		
9,900.00	4,487.01	10,229.96	5,298.87	105.73	103.63	157.68	-3,978.57	-3,513.38	890.32	791.39	98.93	8.999		
10,000.00	4,476.99	10,329.65	5,296.55	107.67	105.56	157.81	-4,066.14	-3,560.98	897.84	797.16	100.69	8.917		
10,100.00	4,466.97	10,429.35	5,294.24	109.61	107.50	157.93	-4,153.70	-3,608.59	905.37	802.93	102.43	8.839		
10,200.00	4,456.95	10,482.48	5,293.00	111.56	108.54	158.00	-4,200.37	-3,633.96	914.08	810.25	103.83	8.804		
10,289.31	4,448.00	10,482.48	5,293.00	113.30	108.54	158.00	-4,200.37	-3,633.96	929.57	824.84	104.72	8.876		

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 3-16 - NORTH CASTOR GULCH 3-16 - NORTH CASTOR GULCH 3-16 - PL													Offset Site Error:	0.00 ft
Survey Program: 0-MWID													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	-138.59	-126.91	-111.92	169.64					
100.00	100.00	88.00	88.00	0.08	0.08	-138.59	-126.91	-111.92	169.21	169.05	0.16	1,031.848		
200.00	200.00	188.00	188.00	0.31	0.29	-138.59	-126.91	-111.92	169.21	168.61	0.60	283.022		
300.00	300.00	288.00	288.00	0.53	0.52	-138.59	-126.91	-111.92	169.21	168.16	1.05	161.553		
400.00	400.00	388.00	388.00	0.76	0.74	-138.59	-126.91	-111.92	169.21	167.72	1.50	113.039		
500.00	500.00	488.00	488.00	0.98	0.97	-138.59	-126.91	-111.92	169.21	167.27	1.95	86.933		
600.00	600.00	588.00	588.00	1.20	1.19	-138.59	-126.91	-111.92	169.21	166.82	2.40	70.623		
700.00	700.00	688.00	688.00	1.43	1.42	-138.59	-126.91	-111.92	169.21	166.37	2.85	59.466		
800.00	800.00	788.00	788.00	1.65	1.64	-138.59	-126.91	-111.92	169.21	165.92	3.30	51.353		
900.00	900.00	888.00	888.00	1.88	1.87	-138.59	-126.91	-111.92	169.21	165.47	3.74	45.188		
1,000.00	1,000.00	988.00	988.00	2.10	2.09	-138.59	-126.91	-111.92	169.21	165.02	4.19	40.345		
1,100.00	1,100.00	1,088.00	1,088.00	2.33	2.32	-138.59	-126.91	-111.92	169.21	164.57	4.64	36.439		
1,200.00	1,200.00	1,188.00	1,188.00	2.55	2.54	-138.59	-126.91	-111.92	169.21	164.12	5.09	33.223		
1,300.00	1,300.00	1,288.00	1,288.00	2.78	2.76	-138.59	-126.91	-111.92	169.21	163.67	5.54	30.529		
1,400.00	1,400.00	1,388.00	1,388.00	3.00	2.99	-138.59	-126.91	-111.92	169.21	163.22	5.99	28.238		
1,500.00	1,500.00	1,488.00	1,488.00	3.23	3.21	-138.59	-126.91	-111.92	169.21	162.77	6.44	26.268		
1,600.00	1,600.00	1,588.00	1,588.00	3.45	3.44	-138.59	-126.91	-111.92	169.21	162.32	6.89	24.554		
1,700.00	1,700.00	1,688.00	1,688.00	3.68	3.66	-138.59	-126.91	-111.92	169.21	161.87	7.34	23.051		
1,800.00	1,800.00	1,788.00	1,788.00	3.90	3.89	-138.59	-126.91	-111.92	169.21	161.42	7.79	21.721		
1,900.00	1,900.00	1,888.00	1,888.00	4.13	4.11	-138.59	-126.91	-111.92	169.21	160.97	8.24	20.536		
2,000.00	2,000.00	1,988.00	1,988.00	4.35	4.34	-138.59	-126.91	-111.92	169.21	160.52	8.69	19.473		
2,100.00	2,100.00	2,089.70	2,089.69	4.58	4.55	-139.04	-127.44	-110.63	168.77	159.64	9.13	18.495		
2,200.00	2,200.00	2,191.41	2,191.27	4.80	4.75	-140.66	-129.34	-106.01	167.27	157.72	9.54	17.526		
2,300.00	2,300.00	2,292.64	2,292.13	5.03	4.95	-143.50	-132.59	-98.11	165.00	155.03	9.96	16.560		
2,400.00	2,400.00	2,393.14	2,391.91	5.25	5.17	-147.61	-137.16	-87.02	162.48	152.09	10.39	15.643		
2,500.00	2,500.00	2,492.68	2,490.25	5.48	5.40	-153.00	-142.99	-72.84	160.49	149.67	10.81	14.842		
2,571.80	2,571.80	2,563.42	2,559.80	5.64	5.59	-157.64	-147.92	-60.85	159.95	148.82	11.13	14.377 CC		
2,600.00	2,600.00	2,591.03	2,586.84	5.70	5.66	-159.62	-150.02	-55.74	160.05	148.80	11.25	14.227 ES		
2,700.00	2,700.00	2,687.99	2,681.39	5.92	5.95	-167.22	-158.19	-35.89	162.34	150.63	11.71	13.866		
2,800.00	2,800.00	2,783.36	2,773.64	6.15	6.28	-175.39	-167.40	-13.49	168.56	156.35	12.21	13.808 SF		
2,900.00	2,900.00	2,876.99	2,863.36	6.37	6.66	176.37	-177.58	11.25	179.63	166.87	12.77	14.068		
3,000.00	3,000.00	2,968.73	2,950.37	6.60	7.08	168.58	-188.63	38.11	196.08	182.68	13.40	14.629		
3,100.00	3,099.96	3,059.99	3,036.11	6.82	7.54	-126.20	-200.52	67.01	219.11	205.15	13.96	15.697		
3,200.00	3,199.68	3,151.02	3,121.53	7.03	8.04	-132.57	-212.49	96.12	248.87	234.49	14.39	17.297		
3,300.00	3,298.91	3,239.91	3,204.94	7.25	8.55	-137.98	-224.18	124.54	285.03	270.27	14.76	19.312		
3,400.00	3,397.42	3,326.44	3,286.13	7.49	9.07	-142.49	-235.57	152.21	327.21	312.13	15.08	21.699		
3,500.00	3,494.98	3,410.41	3,364.93	7.75	9.58	-146.18	-246.61	179.06	375.00	359.64	15.36	24.421		
3,600.00	3,591.33	3,491.62	3,441.12	8.06	10.09	-149.18	-257.29	205.02	428.00	412.40	15.60	27.442		
3,700.00	3,686.25	3,569.86	3,514.54	8.42	10.59	-151.60	-267.58	230.04	485.82	470.02	15.81	30.732		
3,800.00	3,779.52	3,644.94	3,584.99	8.85	11.08	-153.54	-277.46	254.05	548.15	532.15	16.00	34.268		
3,900.00	3,870.89	3,716.70	3,652.32	9.37	11.55	-155.08	-286.90	276.99	614.66	598.49	16.17	38.020		
4,000.00	3,960.17	3,784.94	3,716.36	9.98	12.00	-156.26	-295.87	298.81	685.07	668.74	16.33	41.952		
4,100.00	4,047.12	3,849.51	3,776.95	10.71	12.44	-157.14	-304.37	319.45	759.13	742.63	16.50	46.019		
4,200.00	4,131.53	3,910.26	3,833.95	11.57	12.85	-157.77	-312.36	338.88	836.57	819.89	16.68	50.158		
4,300.00	4,214.68	3,969.13	3,889.18	12.51	13.25	-159.47	-320.10	357.70	915.73	898.70	17.02	53.792		
4,400.00	4,297.82	4,027.99	3,944.42	13.52	13.65	-160.91	-327.84	376.52	995.15	977.76	17.39	57.215		
4,500.00	4,380.48	4,086.32	3,999.15	14.52	14.05	-148.16	-335.51	395.17	1,074.48	1,055.50	18.98	56.607		
4,600.00	4,460.88	4,142.38	4,051.75	15.58	14.44	-133.06	-342.89	413.09	1,152.65	1,131.40	21.25	54.240		
4,700.00	4,537.78	4,195.29	4,101.40	16.70	14.80	-120.39	-349.85	430.01	1,229.18	1,205.60	23.58	52.125		
4,800.00	4,610.03	4,244.25	4,147.35	17.88	15.14	-109.88	-356.29	445.67	1,303.75	1,277.97	25.78	50.580		
4,900.00	4,676.57	4,288.55	4,188.91	19.12	15.45	-101.16	-362.11	459.83	1,376.11	1,348.39	27.71	49.655		
5,000.00	4,736.39	4,327.52	4,225.48	20.42	15.72	-93.87	-367.24	472.29	1,446.05	1,416.73	29.32	49.320		

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 3-16 - NORTH CASTOR GULCH 3-16 - NORTH CASTOR GULCH 3-16 - PL												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	4,788.60	4,360.58	4,256.50	21.76	15.95	-87.72	-371.59	482.86	1,513.36	1,482.81	30.55	49.541	
5,200.00	4,832.43	4,387.24	4,281.51	23.14	16.14	-82.48	-375.09	491.38	1,577.83	1,546.45	31.37	50.292	



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 4-16 - NORTH CASTOR GULCH 4-16 - NORTH CASTOR GULCH 4-16 - PL													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	-132.85	-111.73	-120.44	164.43					
100.00	100.00	93.00	93.00	0.08	0.09	-132.85	-111.73	-120.44	164.28	164.11	0.17	973.748		
200.00	200.00	193.00	193.00	0.31	0.30	-132.85	-111.73	-120.44	164.28	163.67	0.61	269.703		
300.00	300.00	293.00	293.00	0.53	0.53	-132.85	-111.73	-120.44	164.28	163.22	1.06	155.180		
400.00	400.00	393.00	393.00	0.76	0.75	-132.85	-111.73	-120.44	164.28	162.77	1.51	108.926		
500.00	500.00	493.00	493.00	0.98	0.98	-132.85	-111.73	-120.44	164.28	162.32	1.96	83.915		
600.00	600.00	593.00	593.00	1.20	1.20	-132.85	-111.73	-120.44	164.28	161.87	2.41	68.244		
700.00	700.00	693.00	693.00	1.43	1.43	-132.85	-111.73	-120.44	164.28	161.42	2.86	57.506		
800.00	800.00	793.00	793.00	1.65	1.65	-132.85	-111.73	-120.44	164.28	160.97	3.31	49.687		
900.00	900.00	893.00	893.00	1.88	1.88	-132.85	-111.73	-120.44	164.28	160.52	3.76	43.740		
1,000.00	1,000.00	993.00	993.00	2.10	2.10	-132.85	-111.73	-120.44	164.28	160.08	4.21	39.064		
1,100.00	1,100.00	1,093.00	1,093.00	2.33	2.33	-132.85	-111.73	-120.44	164.28	159.63	4.65	35.292		
1,200.00	1,200.00	1,193.00	1,193.00	2.55	2.55	-132.85	-111.73	-120.44	164.28	159.18	5.10	32.184		
1,300.00	1,300.00	1,293.00	1,293.00	2.78	2.78	-132.85	-111.73	-120.44	164.28	158.73	5.55	29.579		
1,400.00	1,400.00	1,393.00	1,393.00	3.00	3.00	-132.85	-111.73	-120.44	164.28	158.28	6.00	27.364		
1,500.00	1,500.00	1,493.00	1,493.00	3.23	3.23	-132.85	-111.73	-120.44	164.28	157.83	6.45	25.458		
1,600.00	1,600.00	1,593.00	1,593.00	3.45	3.45	-132.85	-111.73	-120.44	164.28	157.38	6.90	23.800		
1,700.00	1,700.00	1,693.00	1,693.00	3.68	3.67	-132.85	-111.73	-120.44	164.28	156.93	7.35	22.345		
1,800.00	1,800.00	1,793.00	1,793.00	3.90	3.90	-132.85	-111.73	-120.44	164.28	156.48	7.80	21.057		
1,900.00	1,900.00	1,893.00	1,893.00	4.13	4.12	-132.85	-111.73	-120.44	164.28	156.03	8.25	19.910 CC, ES		
2,000.00	2,000.00	1,989.82	1,989.81	4.35	4.33	-132.47	-111.50	-121.82	165.18	156.49	8.68	19.023		
2,100.00	2,100.00	2,086.21	2,086.08	4.58	4.53	-131.22	-110.73	-126.40	168.19	159.08	9.11	18.470		
2,200.00	2,200.00	2,182.17	2,181.71	4.80	4.74	-129.21	-109.44	-134.13	173.48	163.95	9.53	18.201		
2,300.00	2,300.00	2,277.50	2,276.41	5.03	4.96	-126.60	-107.63	-144.93	181.29	171.32	9.96	18.201		
2,400.00	2,400.00	2,372.00	2,369.87	5.25	5.19	-123.57	-105.33	-158.70	191.87	181.47	10.40	18.455		
2,500.00	2,500.00	2,465.47	2,461.81	5.48	5.44	-120.33	-102.55	-175.30	205.47	194.63	10.84	18.949		
2,600.00	2,600.00	2,557.74	2,551.98	5.70	5.72	-117.04	-99.32	-194.58	222.28	210.97	11.31	19.660		
2,700.00	2,700.00	2,648.64	2,640.15	5.92	6.03	-113.85	-95.68	-216.37	242.41	230.61	11.79	20.558		
2,800.00	2,800.00	2,738.03	2,726.13	6.15	6.38	-110.86	-91.64	-240.47	265.88	253.58	12.30	21.608		
2,900.00	2,900.00	2,825.77	2,809.74	6.37	6.76	-108.12	-87.25	-266.69	292.69	279.84	12.85	22.774		
3,000.00	3,000.00	2,911.74	2,890.84	6.60	7.19	-105.64	-82.55	-294.82	322.75	309.31	13.44	24.023		
3,100.00	3,099.96	3,000.00	2,973.17	6.82	7.68	-30.83	-77.30	-326.18	353.99	340.46	13.53	26.167		
3,200.00	3,199.68	3,081.22	3,048.03	7.03	8.19	-28.96	-72.10	-357.23	384.16	370.22	13.93	27.571		
3,300.00	3,298.91	3,165.51	3,124.75	7.25	8.78	-27.46	-66.34	-391.66	413.09	398.75	14.34	28.806		
3,400.00	3,397.42	3,249.53	3,200.17	7.49	9.42	-26.29	-60.23	-428.18	440.64	425.90	14.74	29.891		
3,500.00	3,494.98	3,333.30	3,274.25	7.75	10.12	-25.40	-53.77	-466.75	466.69	451.55	15.14	30.825		
3,600.00	3,591.33	3,416.83	3,346.95	8.06	10.88	-24.72	-46.98	-507.32	491.18	475.64	15.54	31.604		
3,700.00	3,686.25	3,500.00	3,418.11	8.42	11.69	-24.23	-39.88	-549.77	514.05	498.10	15.95	32.227		
3,800.00	3,779.52	3,583.28	3,488.08	8.85	12.58	-23.89	-32.42	-594.31	535.26	518.88	16.38	32.676		
3,900.00	3,870.89	3,666.22	3,556.44	9.37	13.53	-23.69	-24.67	-640.63	554.80	537.96	16.84	32.952		
4,000.00	3,960.17	3,749.00	3,623.27	9.98	14.53	-23.61	-16.61	-688.79	572.63	555.30	17.33	33.047		
4,100.00	4,047.12	3,845.08	3,699.77	10.71	15.76	-23.71	-7.01	-746.14	587.82	569.87	17.94	32.763		
4,200.00	4,131.53	3,944.38	3,778.79	11.57	17.05	-24.05	2.91	-805.44	598.60	579.94	18.66	32.078		
4,300.00	4,214.68	4,043.84	3,857.95	12.51	18.36	-24.58	12.85	-864.83	607.30	587.60	19.70	30.833		
4,400.00	4,297.82	4,143.30	3,937.11	13.52	19.69	-25.10	22.79	-924.23	616.05	595.26	20.79	29.629		
4,500.00	4,380.48	4,243.00	4,016.46	14.52	21.03	-18.15	32.75	-983.76	622.73	601.11	21.62	28.800		
4,600.00	4,460.88	4,342.71	4,095.81	15.58	22.38	-8.82	42.72	-1,043.30	622.29	600.40	21.89	28.424		
4,700.00	4,537.78	4,440.98	4,174.03	16.70	23.72	0.31	52.54	-1,101.98	614.83	593.22	21.61	28.447		
4,800.00	4,610.03	4,536.35	4,249.93	17.88	25.02	9.33	62.07	-1,158.93	601.28	580.29	20.99	28.648		
4,900.00	4,676.57	4,627.40	4,322.40	19.12	26.27	18.38	71.17	-1,213.31	583.17	562.57	20.60	28.308		
5,000.00	4,736.39	4,712.78	4,390.35	20.42	27.45	27.53	79.70	-1,264.29	562.78	541.45	21.34	26.378		
5,100.00	4,788.60	4,791.20	4,452.76	21.76	28.53	36.56	87.54	-1,311.12	543.14	519.40	23.74	22.880		

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 4-16 - NORTH CASTOR GULCH 4-16 - NORTH CASTOR GULCH 4-16 - PL													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	4,832.43	4,861.50	4,508.71	23.14	29.51	45.02	94.56	-1,353.10	527.99	500.61	27.38	19.286		
5,300.00	4,867.22	4,922.63	4,557.37	24.55	30.36	52.27	100.67	-1,389.60	521.45	490.22	31.23	16.698		
5,307.16	4,869.35	4,926.63	4,560.55	24.65	30.41	52.73	101.07	-1,391.99	521.41	489.93	31.49	16.560		
5,400.00	4,892.46	4,973.69	4,598.00	25.97	31.06	57.70	105.78	-1,420.09	527.28	492.80	34.48	15.292		
5,500.00	4,907.77	5,013.90	4,630.00	27.38	31.62	60.82	109.79	-1,444.10	547.92	511.09	36.84	14.874 SF		
5,600.00	4,912.91	5,042.67	4,652.90	28.76	32.02	61.30	112.67	-1,461.28	583.81	545.41	38.40	15.202		
5,700.00	4,907.83	5,059.58	4,666.36	30.10	32.26	58.98	114.36	-1,471.38	633.46	594.02	39.44	16.061		
5,800.00	4,897.81	5,070.66	4,675.17	31.44	32.41	60.17	115.47	-1,477.99	694.04	652.80	41.24	16.829		
5,900.00	4,887.79	5,081.74	4,683.99	32.85	32.57	61.36	116.57	-1,484.61	762.79	719.71	43.08	17.706		
6,000.00	4,877.77	5,092.82	4,692.81	34.31	32.72	62.55	117.68	-1,491.23	837.72	792.76	44.96	18.633		
6,100.00	4,867.75	5,103.90	4,701.63	35.83	32.88	63.72	118.79	-1,497.85	917.30	870.44	46.87	19.572		
6,200.00	4,857.73	5,114.98	4,710.45	37.39	33.03	64.89	119.90	-1,504.46	1,000.44	951.63	48.80	20.499		
6,300.00	4,847.71	5,126.06	4,719.27	38.99	33.19	66.05	121.00	-1,511.08	1,086.31	1,035.54	50.76	21.399		
6,400.00	4,837.69	5,137.14	4,728.09	40.62	33.34	67.20	122.11	-1,517.70	1,174.31	1,121.57	52.74	22.265		
6,500.00	4,827.67	5,148.22	4,736.91	42.28	33.50	68.34	123.22	-1,524.31	1,264.00	1,209.26	54.74	23.092		
6,600.00	4,817.65	5,159.30	4,745.73	43.97	33.65	69.47	124.32	-1,530.93	1,355.04	1,298.30	56.74	23.880		
6,700.00	4,807.63	5,170.38	4,754.54	45.69	33.80	70.59	125.43	-1,537.55	1,447.18	1,388.42	58.76	24.628		
6,800.00	4,797.61	5,181.46	4,763.36	47.42	33.96	71.70	126.54	-1,544.16	1,540.23	1,479.44	60.79	25.339		
6,900.00	4,787.59	5,192.54	4,772.18	49.18	34.11	72.81	127.65	-1,550.78	1,632.30	1,570.49	62.81	26.050		



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design		NORTH CASTOR GULCH 5-16 - NORTH CASTOR GULCH 5-16 - NORTH CASTOR GULCH 5-16 - PL											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	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	0.00	-126.37	-95.54	-129.72	161.26					
100.00	100.00	93.00	93.00	0.08	0.09	-126.37	-95.54	-129.72	161.11	160.94	0.17	954.925		
200.00	200.00	193.00	193.00	0.31	0.30	-126.37	-95.54	-129.72	161.11	160.50	0.61	264.490		
300.00	300.00	293.00	293.00	0.53	0.53	-126.37	-95.54	-129.72	161.11	160.05	1.06	152.180		
400.00	400.00	393.00	393.00	0.76	0.75	-126.37	-95.54	-129.72	161.11	159.60	1.51	106.821		
500.00	500.00	493.00	493.00	0.98	0.98	-126.37	-95.54	-129.72	161.11	159.15	1.96	82.292		
600.00	600.00	593.00	593.00	1.20	1.20	-126.37	-95.54	-129.72	161.11	158.70	2.41	66.925		
700.00	700.00	693.00	693.00	1.43	1.43	-126.37	-95.54	-129.72	161.11	158.25	2.86	56.394		
800.00	800.00	793.00	793.00	1.65	1.65	-126.37	-95.54	-129.72	161.11	157.80	3.31	48.727		
900.00	900.00	893.00	893.00	1.88	1.88	-126.37	-95.54	-129.72	161.11	157.35	3.76	42.895		
1,000.00	1,000.00	993.00	993.00	2.10	2.10	-126.37	-95.54	-129.72	161.11	156.90	4.21	38.309		
1,100.00	1,100.00	1,093.00	1,093.00	2.33	2.33	-126.37	-95.54	-129.72	161.11	156.45	4.65	34.610		
1,200.00	1,200.00	1,193.00	1,193.00	2.55	2.55	-126.37	-95.54	-129.72	161.11	156.00	5.10	31.562		
1,300.00	1,300.00	1,293.00	1,293.00	2.78	2.78	-126.37	-95.54	-129.72	161.11	155.55	5.55	29.007		
1,400.00	1,400.00	1,393.00	1,393.00	3.00	3.00	-126.37	-95.54	-129.72	161.11	155.10	6.00	26.835		
1,500.00	1,500.00	1,493.00	1,493.00	3.23	3.23	-126.37	-95.54	-129.72	161.11	154.65	6.45	24.966		
1,600.00	1,600.00	1,593.00	1,593.00	3.45	3.45	-126.37	-95.54	-129.72	161.11	154.20	6.90	23.340		
1,700.00	1,700.00	1,693.00	1,693.00	3.68	3.67	-126.37	-95.54	-129.72	161.11	153.75	7.35	21.913		
1,800.00	1,800.00	1,793.00	1,793.00	3.90	3.90	-126.37	-95.54	-129.72	161.11	153.30	7.80	20.650		
1,900.00	1,900.00	1,893.00	1,893.00	4.13	4.12	-126.37	-95.54	-129.72	161.11	152.85	8.25	19.525		
1,941.73	1,941.73	1,934.73	1,934.73	4.22	4.22	-126.37	-95.54	-129.72	161.11	152.67	8.44	19.091 CC		
2,000.00	2,000.00	1,992.52	1,992.52	4.35	4.35	-126.26	-95.33	-129.95	161.17	152.47	8.70	18.530 ES		
2,100.00	2,100.00	2,091.31	2,091.25	4.58	4.56	-125.16	-93.20	-132.30	161.84	152.71	9.14	17.714		
2,200.00	2,200.00	2,189.75	2,189.47	4.80	4.78	-122.92	-88.81	-137.15	163.43	153.85	9.58	17.066		
2,300.00	2,300.00	2,287.64	2,286.86	5.03	5.00	-119.64	-82.20	-144.45	166.31	156.30	10.02	16.603		
2,400.00	2,400.00	2,384.74	2,383.07	5.25	5.24	-115.48	-73.44	-154.12	171.01	160.55	10.46	16.350		
2,500.00	2,500.00	2,480.84	2,477.81	5.48	5.49	-110.66	-62.62	-166.07	178.13	167.23	10.90	16.335		
2,600.00	2,600.00	2,575.75	2,570.79	5.70	5.76	-105.46	-49.84	-180.17	188.25	176.90	11.36	16.577		
2,700.00	2,700.00	2,669.28	2,661.75	5.92	6.06	-100.18	-35.24	-196.30	201.87	190.05	11.82	17.077		
2,800.00	2,800.00	2,761.28	2,750.48	6.15	6.40	-95.05	-18.94	-214.29	219.29	206.99	12.31	17.821		
2,900.00	2,900.00	2,851.59	2,836.78	6.37	6.77	-90.27	-1.08	-234.01	240.67	227.85	12.82	18.776		
3,000.00	3,000.00	2,940.08	2,920.49	6.60	7.18	-85.93	18.18	-255.27	265.99	252.62	13.37	19.901		
3,100.00	3,099.96	3,027.37	3,002.15	6.82	7.63	-9.76	38.86	-278.11	292.82	279.06	13.77	21.272		
3,200.00	3,199.68	3,118.04	3,086.08	7.03	8.15	-6.26	61.90	-303.54	318.40	304.20	14.20	22.428		
3,300.00	3,298.91	3,214.00	3,174.75	7.25	8.74	-3.18	86.54	-330.74	340.61	325.99	14.61	23.308		
3,400.00	3,397.42	3,310.99	3,264.36	7.49	9.36	-0.52	111.43	-358.23	358.82	343.81	15.01	23.912		
3,500.00	3,494.98	3,408.77	3,354.71	7.75	10.01	1.89	136.54	-385.95	372.87	357.50	15.37	24.254		
3,600.00	3,591.33	3,507.11	3,445.57	8.06	10.68	4.17	161.78	-413.82	382.68	366.96	15.72	24.349		
3,700.00	3,686.25	3,605.76	3,536.73	8.42	11.37	6.42	187.10	-441.78	388.21	372.17	16.04	24.207		
3,800.00	3,779.52	3,704.49	3,627.96	8.85	12.07	8.71	212.45	-469.76	389.48	373.13	16.34	23.833		
3,900.00	3,870.89	3,803.06	3,719.03	9.37	12.78	11.13	237.75	-497.70	386.55	369.91	16.64	23.224		
4,000.00	3,960.17	3,901.23	3,809.75	9.98	13.50	13.78	262.96	-525.52	379.57	362.60	16.97	22.368		
4,100.00	4,047.12	3,998.77	3,899.87	10.71	14.22	16.76	287.99	-553.17	368.72	351.36	17.36	21.237		
4,200.00	4,131.53	4,095.43	3,989.18	11.57	14.94	20.19	312.81	-580.56	354.30	336.40	17.90	19.790		
4,300.00	4,214.68	4,191.61	4,078.05	12.51	15.66	23.90	337.50	-607.82	339.06	320.14	18.92	17.919		
4,400.00	4,297.82	4,287.78	4,166.91	13.52	16.38	27.91	362.19	-635.08	325.42	305.24	20.18	16.128		
4,500.00	4,380.48	4,383.15	4,255.03	14.52	17.10	40.70	386.67	-662.11	314.84	292.85	21.99	14.320		
4,575.80	4,441.70	4,453.23	4,319.78	15.32	17.63	52.46	404.66	-681.97	311.94	288.18	23.76	13.128		
4,600.00	4,460.88	4,475.07	4,339.97	15.58	17.80	56.13	410.27	-688.16	312.28	287.93	24.35	12.825		
4,700.00	4,537.78	4,562.12	4,420.40	16.70	18.46	70.43	432.61	-712.83	321.68	294.85	26.84	11.987		
4,800.00	4,610.03	4,642.98	4,495.11	17.88	19.08	82.75	453.37	-735.75	346.11	317.18	28.93	11.963 SF		
4,900.00	4,676.57	4,716.45	4,563.00	19.12	19.65	92.61	472.23	-756.58	386.64	356.31	30.33	12.749		

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 5-16 - NORTH CASTOR GULCH 5-16 - NORTH CASTOR GULCH 5-16 - PL												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	
5,000.00	4,736.39	4,781.44	4,623.06	20.42	20.15	99.86	488.91	-775.00	442.27	411.27	31.01	14.263	
5,100.00	4,788.60	4,836.99	4,674.38	21.76	20.58	104.48	503.17	-790.74	510.82	479.63	31.19	16.380	
5,200.00	4,832.43	4,882.25	4,716.20	23.14	20.93	106.29	514.79	-803.57	589.72	558.50	31.22	18.886	
5,300.00	4,867.22	4,916.56	4,747.90	24.55	21.19	104.59	523.60	-813.29	676.53	644.90	31.63	21.388	
5,400.00	4,892.46	4,939.41	4,769.01	25.97	21.37	97.39	529.47	-819.77	769.00	736.07	32.93	23.351	
5,500.00	4,907.77	4,950.45	4,779.21	27.38	21.45	79.86	532.30	-822.90	865.08	830.58	34.50	25.075	
5,600.00	4,912.91	4,949.52	4,778.36	28.76	21.45	47.50	532.06	-822.63	962.88	932.48	30.40	31.674	
5,700.00	4,907.83	4,936.63	4,766.45	30.10	21.35	16.06	528.75	-818.98	1,060.64	1,040.25	20.39	52.006	
5,800.00	4,897.81	4,918.02	4,749.26	31.44	21.20	13.60	523.98	-813.71	1,157.94	1,137.80	20.14	57.487	
5,900.00	4,887.79	4,899.42	4,732.06	32.85	21.06	11.40	519.20	-808.43	1,255.39	1,235.43	19.97	62.870	
6,000.00	4,877.77	4,880.81	4,714.87	34.31	20.92	9.42	514.42	-803.16	1,352.96	1,333.09	19.87	68.080	
6,100.00	4,867.75	4,862.20	4,697.67	35.83	20.77	7.65	509.64	-797.88	1,450.62	1,430.76	19.86	73.049	
6,200.00	4,857.73	4,843.59	4,680.48	37.39	20.63	6.05	504.87	-792.61	1,548.35	1,528.43	19.92	77.721	



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 7-16 - NORTH CASTOR GULCH 7-16 - NORTH CASTOR GULCH 7-16 - PL													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	150.48	-31.30	17.72	35.97					
100.00	100.00	100.00	100.00	0.08	0.08	150.48	-31.30	17.72	35.97	35.81	0.16	222.256		
200.00	200.00	200.00	200.00	0.31	0.31	150.48	-31.30	17.72	35.97	35.36	0.61	58.833		
300.00	300.00	300.00	300.00	0.53	0.53	150.48	-31.30	17.72	35.97	34.91	1.06	33.904		
400.00	400.00	400.00	400.00	0.76	0.76	150.48	-31.30	17.72	35.97	34.46	1.51	23.813		
500.00	500.00	500.00	500.00	0.98	0.98	150.48	-31.30	17.72	35.97	34.01	1.96	18.351		
600.00	600.00	600.00	600.00	1.20	1.20	150.48	-31.30	17.72	35.97	33.56	2.41	14.928		
700.00	700.00	700.00	700.00	1.43	1.43	150.48	-31.30	17.72	35.97	33.11	2.86	12.581		
800.00	800.00	800.00	800.00	1.65	1.65	150.48	-31.30	17.72	35.97	32.66	3.31	10.871		
900.00	900.00	900.00	900.00	1.88	1.88	150.48	-31.30	17.72	35.97	32.21	3.76	9.571		
1,000.00	1,000.00	1,000.00	1,000.00	2.10	2.10	150.48	-31.30	17.72	35.97	31.76	4.21	8.548		
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	150.48	-31.30	17.72	35.97	31.31	4.66	7.723		
1,200.00	1,200.00	1,200.00	1,200.00	2.55	2.55	150.48	-31.30	17.72	35.97	30.86	5.11	7.043		
1,300.00	1,300.00	1,300.00	1,300.00	2.78	2.78	150.48	-31.30	17.72	35.97	30.41	5.56	6.473		
1,400.00	1,400.00	1,400.00	1,400.00	3.00	3.00	150.48	-31.30	17.72	35.97	29.96	6.01	5.989		
1,500.00	1,500.00	1,500.00	1,500.00	3.23	3.23	150.48	-31.30	17.72	35.97	29.51	6.46	5.572		
1,600.00	1,600.00	1,600.00	1,600.00	3.45	3.45	150.48	-31.30	17.72	35.97	29.06	6.90	5.209		
1,700.00	1,700.00	1,700.00	1,700.00	3.68	3.68	150.48	-31.30	17.72	35.97	28.61	7.35	4.891		
1,800.00	1,800.00	1,800.00	1,800.00	3.90	3.90	150.48	-31.30	17.72	35.97	28.16	7.80	4.609		
1,900.00	1,900.00	1,900.00	1,900.00	4.13	4.13	150.48	-31.30	17.72	35.97	27.71	8.25	4.358		
2,000.00	2,000.00	2,000.00	2,000.00	4.35	4.35	150.48	-31.30	17.72	35.97	27.27	8.70	4.133		
2,100.00	2,100.00	2,100.00	2,100.00	4.58	4.58	150.48	-31.30	17.72	35.97	26.82	9.15	3.930		
2,200.00	2,200.00	2,200.00	2,200.00	4.80	4.80	150.48	-31.30	17.72	35.97	26.37	9.60	3.746		
2,300.00	2,300.00	2,300.00	2,300.00	5.03	5.03	150.48	-31.30	17.72	35.97	25.92	10.05	3.578		
2,400.00	2,400.00	2,400.00	2,400.00	5.25	5.25	150.48	-31.30	17.72	35.97	25.47	10.50	3.425		
2,500.00	2,500.00	2,500.00	2,500.00	5.48	5.48	150.48	-31.30	17.72	35.97	25.02	10.95	3.285		
2,600.00	2,600.00	2,600.00	2,600.00	5.70	5.70	150.48	-31.30	17.72	35.97	24.57	11.40	3.155		
2,700.00	2,700.00	2,700.00	2,700.00	5.92	5.92	150.48	-31.30	17.72	35.97	24.12	11.85	3.035		
2,734.89	2,734.89	2,734.89	2,734.89	6.00	6.00	150.48	-31.30	17.72	35.97	23.96	12.01	2.996 CC		
2,800.00	2,800.00	2,799.85	2,799.85	6.15	6.14	149.81	-31.18	18.14	36.07	23.78	12.29	2.934 ES		
2,900.00	2,900.00	2,899.44	2,899.37	6.37	6.35	144.60	-30.19	21.46	37.05	24.32	12.72	2.912 SF		
3,000.00	3,000.00	2,998.67	2,998.35	6.60	6.56	135.18	-28.24	28.07	39.85	26.69	13.16	3.028		
3,100.00	3,099.96	3,097.02	3,096.17	6.82	6.78	-164.70	-25.35	37.85	48.08	34.51	13.57	3.544		
3,200.00	3,199.68	3,193.56	3,191.79	7.03	7.00	-175.39	-21.59	50.59	65.27	51.34	13.94	4.684		
3,300.00	3,298.91	3,287.50	3,284.36	7.25	7.23	177.44	-17.05	65.94	91.34	77.07	14.27	6.400		
3,400.00	3,397.42	3,378.13	3,373.10	7.49	7.48	172.98	-11.86	83.50	125.55	110.98	14.57	8.615		
3,500.00	3,494.98	3,464.80	3,457.41	7.75	7.74	170.15	-6.15	102.80	167.23	152.39	14.84	11.266		
3,600.00	3,591.33	3,547.03	3,536.79	8.06	8.01	168.25	-0.08	123.37	215.81	200.73	15.08	14.313		
3,700.00	3,686.25	3,624.41	3,610.89	8.42	8.29	166.87	6.23	144.71	270.79	255.50	15.28	17.721		
3,800.00	3,779.52	3,700.00	3,682.68	8.85	8.59	165.77	12.94	167.40	331.69	316.23	15.46	21.455		
3,900.00	3,870.89	3,763.54	3,742.53	9.37	8.87	164.85	18.99	187.88	397.98	382.38	15.60	25.508		
4,000.00	3,960.17	3,825.01	3,799.96	9.98	9.17	163.97	25.20	208.89	469.25	453.52	15.73	29.826		
4,100.00	4,047.12	3,881.02	3,851.87	10.71	9.46	163.07	31.16	229.07	545.02	529.16	15.86	34.371		
4,200.00	4,131.53	3,933.89	3,900.48	11.57	9.75	162.14	37.05	249.00	624.83	608.83	16.00	39.405		
4,300.00	4,214.68	3,988.88	3,950.84	12.51	10.07	162.34	43.31	270.17	706.49	690.03	16.46	42.926		
4,400.00	4,297.82	4,046.57	4,003.68	13.52	10.42	162.50	49.88	292.39	788.16	771.22	16.94	46.527		
4,500.00	4,380.48	4,102.88	4,055.24	14.52	10.77	176.81	56.29	314.08	870.72	853.90	16.83	51.750		
4,600.00	4,460.88	4,154.05	4,102.11	15.58	11.10	-165.07	62.11	333.79	955.78	938.59	17.20	55.584		
4,700.00	4,537.78	4,199.20	4,143.45	16.70	11.39	-147.96	67.25	351.17	1,042.52	1,023.73	18.79	55.494		
4,800.00	4,610.03	4,237.65	4,178.67	17.88	11.65	-131.98	71.63	365.98	1,130.16	1,108.60	21.56	52.423		
4,900.00	4,676.57	4,285.50	4,222.64	19.12	11.95	-118.55	76.47	384.22	1,217.89	1,193.22	24.67	49.373		
5,000.00	4,736.39	4,350.40	4,283.10	20.42	12.30	-108.37	79.06	407.61	1,304.48	1,277.09	27.40	47.617		

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 7-16 - NORTH CASTOR GULCH 7-16 - NORTH CASTOR GULCH 7-16 - PL												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	4,788.60	4,428.69	4,356.87	21.76	12.68	-100.86	75.80	433.51	1,389.16	1,359.56	29.59	46.939	
5,200.00	4,832.43	4,542.96	4,464.89	23.14	13.16	-96.80	58.60	466.30	1,471.01	1,439.82	31.19	47.158	
5,300.00	4,867.22	4,790.36	4,690.84	24.55	13.92	-99.03	-27.34	514.28	1,547.87	1,516.05	31.82	48.651	
5,400.00	4,892.46	5,752.52	5,162.47	25.97	19.22	-103.29	-790.08	373.81	1,603.30	1,568.26	35.04	45.750	



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 8-16 - NORTH CASTOR GULCH 8-16 - NORTH CASTOR GULCH 8-16 - PL													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	121.89	-5.48	8.80	10.37					
100.00	100.00	100.00	100.00	0.08	0.08	121.89	-5.48	8.80	10.37	10.20	0.16	64.050		
200.00	200.00	200.00	200.00	0.31	0.31	121.89	-5.48	8.80	10.37	9.75	0.61	16.954		
300.00	300.00	300.00	300.00	0.53	0.53	121.89	-5.48	8.80	10.37	9.30	1.06	9.770		
400.00	400.00	400.00	400.00	0.76	0.76	121.89	-5.48	8.80	10.37	8.85	1.51	6.863		
500.00	500.00	500.00	500.00	0.98	0.98	121.89	-5.48	8.80	10.37	8.41	1.96	5.289		
600.00	600.00	600.00	600.00	1.20	1.20	121.89	-5.48	8.80	10.37	7.96	2.41	4.302		
700.00	700.00	700.00	700.00	1.43	1.43	121.89	-5.48	8.80	10.37	7.51	2.86	3.625		
800.00	800.00	800.00	800.00	1.65	1.65	121.89	-5.48	8.80	10.37	7.06	3.31	3.133		
900.00	900.00	900.00	900.00	1.88	1.88	121.89	-5.48	8.80	10.37	6.61	3.76	2.758		
1,000.00	1,000.00	1,000.00	1,000.00	2.10	2.10	121.89	-5.48	8.80	10.37	6.16	4.21	2.463		
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	121.89	-5.48	8.80	10.37	5.71	4.66	2.226		
1,200.00	1,200.00	1,200.00	1,200.00	2.55	2.55	121.89	-5.48	8.80	10.37	5.26	5.11	2.030		
1,300.00	1,300.00	1,300.00	1,300.00	2.78	2.78	121.89	-5.48	8.80	10.37	4.81	5.56	1.866		
1,400.00	1,400.00	1,400.00	1,400.00	3.00	3.00	121.89	-5.48	8.80	10.37	4.36	6.01	1.726		
1,500.00	1,500.00	1,500.00	1,500.00	3.23	3.23	121.89	-5.48	8.80	10.37	3.91	6.46	1.606		
1,600.00	1,600.00	1,600.00	1,600.00	3.45	3.45	121.89	-5.48	8.80	10.37	3.46	6.90	1.501		
1,700.00	1,700.00	1,700.00	1,700.00	3.68	3.68	121.89	-5.48	8.80	10.37	3.01	7.35	1.409 Level 3		
1,800.00	1,800.00	1,800.00	1,800.00	3.90	3.90	121.89	-5.48	8.80	10.37	2.56	7.80	1.328 Level 3		
1,900.00	1,900.00	1,900.00	1,900.00	4.13	4.13	121.89	-5.48	8.80	10.37	2.11	8.25	1.256 Level 3		
2,000.00	2,000.00	2,000.00	2,000.00	4.35	4.35	121.89	-5.48	8.80	10.37	1.66	8.70	1.191 Level 2		
2,100.00	2,100.00	2,100.00	2,100.00	4.58	4.58	121.89	-5.48	8.80	10.37	1.21	9.15	1.133 Level 2		
2,200.00	2,200.00	2,200.00	2,200.00	4.80	4.80	121.89	-5.48	8.80	10.37	0.76	9.60	1.079 Level 2		
2,300.00	2,300.00	2,300.00	2,300.00	5.03	5.03	121.89	-5.48	8.80	10.37	0.31	10.05	1.031 Level 2		
2,400.00	2,400.00	2,400.00	2,400.00	5.25	5.25	121.89	-5.48	8.80	10.37	-0.14	10.50	0.987 Level 1		
2,500.00	2,500.00	2,500.00	2,500.00	5.48	5.48	121.89	-5.48	8.80	10.37	-0.59	10.95	0.947 Level 1		
2,600.00	2,600.00	2,600.32	2,600.30	5.70	5.70	121.36	-4.48	7.35	8.62	-2.78	11.40	0.756 Level 1		
2,700.00	2,700.00	2,700.40	2,700.23	5.92	5.91	116.41	-1.50	3.03	3.39	-8.45	11.84	0.286 Level 1		
2,742.45	2,742.45	2,742.75	2,742.46	6.02	6.01	43.55	0.35	0.33	0.48	-11.54	12.02	0.040 Level 1, CC, ES, SF		
2,800.00	2,800.00	2,800.00	2,799.45	6.15	6.13	-50.34	3.42	-4.13	5.39	-6.89	12.28	0.439 Level 1		
2,900.00	2,900.00	2,898.85	2,897.57	6.37	6.36	-53.88	10.24	-14.03	17.54	4.81	12.74	1.377 Level 3		
3,000.00	3,000.00	2,996.77	2,994.29	6.60	6.60	-54.62	18.88	-26.59	33.11	19.91	13.20	2.508		
3,100.00	3,099.96	3,093.97	3,089.73	6.82	6.86	18.01	29.31	-41.74	49.73	36.16	13.57	3.665		
3,200.00	3,199.68	3,190.83	3,184.15	7.03	7.15	19.40	41.52	-59.48	65.09	51.14	13.96	4.664		
3,300.00	3,298.91	3,287.35	3,277.48	7.25	7.47	21.27	55.48	-79.77	79.27	64.94	14.33	5.532		
3,400.00	3,397.42	3,383.56	3,369.62	7.49	7.83	23.46	71.17	-102.55	92.35	77.65	14.70	6.282		
3,500.00	3,494.98	3,479.47	3,460.49	7.75	8.24	25.91	88.54	-127.79	104.43	89.35	15.08	6.925		
3,600.00	3,591.33	3,575.08	3,550.02	8.06	8.71	28.58	107.56	-155.42	115.63	100.14	15.49	7.465		
3,700.00	3,686.25	3,670.41	3,638.12	8.42	9.23	31.48	128.21	-185.42	126.08	110.13	15.96	7.902		
3,800.00	3,779.52	3,765.48	3,724.72	8.85	9.82	34.59	150.44	-217.71	135.95	119.43	16.52	8.229		
3,900.00	3,870.89	3,860.29	3,809.75	9.37	10.48	37.90	174.22	-252.27	145.39	128.16	17.23	8.439		
4,000.00	3,960.17	3,954.87	3,893.14	9.98	11.21	41.39	199.52	-289.02	154.61	136.47	18.14	8.523		
4,100.00	4,047.12	4,049.23	3,974.81	10.71	12.02	45.05	226.30	-327.93	163.79	144.48	19.31	8.482		
4,200.00	4,131.53	4,143.38	4,054.72	11.57	12.90	48.86	254.53	-368.94	173.15	152.35	20.79	8.327		
4,300.00	4,214.68	4,237.39	4,132.83	12.51	13.86	52.39	284.18	-412.03	184.45	161.84	22.61	8.157		
4,400.00	4,297.82	4,331.17	4,209.00	13.52	14.90	54.91	315.20	-457.09	198.84	174.35	24.49	8.119		
4,500.00	4,380.48	4,423.88	4,282.50	14.52	16.00	63.82	347.23	-503.63	218.35	192.01	26.35	8.287		
4,600.00	4,460.88	4,513.09	4,351.46	15.58	17.13	74.14	379.32	-550.24	248.70	220.57	28.13	8.841		
4,700.00	4,537.78	4,600.00	4,416.92	16.70	18.30	82.93	411.73	-597.33	290.11	260.39	29.72	9.762		
4,800.00	4,610.03	4,675.21	4,472.15	17.88	19.37	89.48	440.68	-639.38	342.15	311.30	30.85	11.090		
4,900.00	4,676.57	4,745.71	4,522.67	19.12	20.42	94.05	468.54	-679.87	404.10	372.51	31.59	12.792		
5,000.00	4,736.39	4,807.86	4,566.21	20.42	21.37	96.48	493.69	-716.41	474.91	442.98	31.93	14.872		

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 8-16 - NORTH CASTOR GULCH 8-16 - NORTH CASTOR GULCH 8-16 - PL												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)		
5,100.00	4,788.60	4,860.92	4,602.61	21.76	22.23	96.60	515.58	-748.22	553.37	521.34	32.03	17.278	
5,200.00	4,832.43	4,904.34	4,631.86	23.14	22.93	93.93	533.78	-774.65	638.15	606.06	32.10	19.883	
5,300.00	4,867.22	4,937.69	4,653.99	24.55	23.49	87.45	547.92	-795.20	727.90	695.51	32.38	22.479	
5,400.00	4,892.46	4,960.69	4,669.08	25.97	23.88	75.43	557.76	-809.49	821.20	788.58	32.62	25.176	
5,500.00	4,907.77	4,973.17	4,677.21	27.38	24.09	56.36	563.13	-817.29	916.66	885.62	31.04	29.529	
5,600.00	4,912.91	4,975.07	4,678.45	28.76	24.12	33.01	563.95	-818.48	1,012.87	987.19	25.68	39.447	
5,700.00	4,907.83	4,966.41	4,672.82	30.10	23.97	12.89	560.22	-813.06	1,108.45	1,088.71	19.74	56.155	
5,800.00	4,897.81	4,952.69	4,663.85	31.44	23.74	10.96	554.33	-804.51	1,203.63	1,183.96	19.68	61.173	
5,900.00	4,887.79	4,938.97	4,654.83	32.85	23.51	9.11	548.47	-795.99	1,299.38	1,279.76	19.63	66.208	
6,000.00	4,877.77	4,925.25	4,645.77	34.31	23.28	7.34	542.63	-787.51	1,395.58	1,375.98	19.60	71.200	
6,100.00	4,867.75	4,911.53	4,636.65	35.83	23.05	5.64	536.82	-779.06	1,492.14	1,472.52	19.61	76.077	
6,200.00	4,857.73	4,900.00	4,628.95	37.39	22.85	4.27	531.95	-771.99	1,588.99	1,569.22	19.77	80.370	



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 9-16 - NORTH CASTOR GULCH 9-16 - NORTH CASTOR GULCH 9-16 - PL													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	150.56	-47.07	26.56	54.05					
100.00	100.00	100.00	100.00	0.08	0.08	150.56	-47.07	26.56	54.05	53.89	0.16	333.977		
200.00	200.00	200.00	200.00	0.31	0.31	150.56	-47.07	26.56	54.05	53.44	0.61	88.406		
300.00	300.00	300.00	300.00	0.53	0.53	150.56	-47.07	26.56	54.05	52.99	1.06	50.946		
400.00	400.00	400.00	400.00	0.76	0.76	150.56	-47.07	26.56	54.05	52.54	1.51	35.783		
500.00	500.00	500.00	500.00	0.98	0.98	150.56	-47.07	26.56	54.05	52.09	1.96	27.576		
600.00	600.00	600.00	600.00	1.20	1.20	150.56	-47.07	26.56	54.05	51.64	2.41	22.431		
700.00	700.00	700.00	700.00	1.43	1.43	150.56	-47.07	26.56	54.05	51.19	2.86	18.904		
800.00	800.00	800.00	800.00	1.65	1.65	150.56	-47.07	26.56	54.05	50.74	3.31	16.336		
900.00	900.00	900.00	900.00	1.88	1.88	150.56	-47.07	26.56	54.05	50.29	3.76	14.382		
1,000.00	1,000.00	1,000.00	1,000.00	2.10	2.10	150.56	-47.07	26.56	54.05	49.84	4.21	12.845		
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	150.56	-47.07	26.56	54.05	49.39	4.66	11.605		
1,200.00	1,200.00	1,200.00	1,200.00	2.55	2.55	150.56	-47.07	26.56	54.05	48.94	5.11	10.584		
1,300.00	1,300.00	1,300.00	1,300.00	2.78	2.78	150.56	-47.07	26.56	54.05	48.49	5.56	9.728		
1,400.00	1,400.00	1,400.00	1,400.00	3.00	3.00	150.56	-47.07	26.56	54.05	48.04	6.01	8.999		
1,500.00	1,500.00	1,500.00	1,500.00	3.23	3.23	150.56	-47.07	26.56	54.05	47.59	6.46	8.373		
1,600.00	1,600.00	1,600.00	1,600.00	3.45	3.45	150.56	-47.07	26.56	54.05	47.14	6.90	7.828		
1,700.00	1,700.00	1,700.00	1,700.00	3.68	3.68	150.56	-47.07	26.56	54.05	46.69	7.35	7.349		
1,800.00	1,800.00	1,800.00	1,800.00	3.90	3.90	150.56	-47.07	26.56	54.05	46.24	7.80	6.926		
1,900.00	1,900.00	1,900.00	1,900.00	4.13	4.13	150.56	-47.07	26.56	54.05	45.79	8.25	6.549		
2,000.00	2,000.00	2,000.00	2,000.00	4.35	4.35	150.56	-47.07	26.56	54.05	45.35	8.70	6.210		
2,100.00	2,100.00	2,100.00	2,100.00	4.58	4.58	150.56	-47.07	26.56	54.05	44.90	9.15	5.905		
2,200.00	2,200.00	2,200.00	2,200.00	4.80	4.80	150.56	-47.07	26.56	54.05	44.45	9.60	5.629		
2,300.00	2,300.00	2,300.00	2,300.00	5.03	5.03	150.56	-47.07	26.56	54.05	44.00	10.05	5.377		
2,400.00	2,400.00	2,400.00	2,400.00	5.25	5.25	150.56	-47.07	26.56	54.05	43.55	10.50	5.147		
2,500.00	2,500.00	2,500.00	2,500.00	5.48	5.48	150.56	-47.07	26.56	54.05	43.10	10.95	4.936 CC, ES		
2,600.00	2,600.00	2,599.03	2,599.01	5.70	5.67	152.11	-48.54	25.69	54.93	43.56	11.37	4.831 SF		
2,700.00	2,700.00	2,697.82	2,697.66	5.92	5.84	156.44	-52.95	23.09	57.81	46.04	11.77	4.913		
2,800.00	2,800.00	2,796.14	2,795.61	6.15	6.02	162.68	-60.24	18.78	63.25	51.08	12.17	5.199		
2,900.00	2,900.00	2,895.30	2,894.19	6.37	6.21	169.15	-69.50	13.32	71.00	58.43	12.57	5.648		
3,000.00	3,000.00	2,994.70	2,993.00	6.60	6.40	174.34	-78.82	7.81	79.51	66.53	12.98	6.126		
3,100.00	3,099.96	3,094.13	3,091.83	6.82	6.61	-110.50	-88.14	2.30	89.38	75.98	13.40	6.669		
3,200.00	3,199.68	3,193.43	3,190.55	7.03	6.82	-110.71	-97.45	-3.20	101.05	87.25	13.81	7.320		
3,300.00	3,298.91	3,292.37	3,288.90	7.25	7.04	-113.07	-106.73	-8.68	114.58	100.37	14.22	8.060		
3,400.00	3,397.42	3,390.71	3,386.65	7.49	7.26	-116.77	-115.95	-14.13	130.46	115.82	14.63	8.915		
3,500.00	3,494.98	3,488.21	3,483.57	7.75	7.49	-121.13	-125.09	-19.53	149.32	134.27	15.05	9.920		
3,600.00	3,591.33	3,584.64	3,579.42	8.06	7.72	-125.67	-134.14	-24.87	171.79	156.32	15.46	11.108		
3,700.00	3,686.25	3,679.75	3,673.98	8.42	7.95	-130.05	-143.05	-30.14	198.32	182.45	15.87	12.499		
3,800.00	3,779.52	3,773.33	3,767.00	8.85	8.18	-134.07	-151.83	-35.32	229.22	212.97	16.25	14.105		
3,900.00	3,870.89	3,865.15	3,858.27	9.37	8.41	-137.65	-160.44	-40.40	264.66	248.04	16.62	15.924		
4,000.00	3,960.17	3,954.97	3,947.56	9.98	8.64	-140.76	-168.86	-45.38	304.67	287.70	16.97	17.949		
4,100.00	4,047.12	4,053.34	4,045.65	10.71	8.87	-144.51	-174.61	-48.71	348.12	330.87	17.26	20.173		
4,200.00	4,131.53	4,148.39	4,140.53	11.57	9.04	-149.32	-170.72	-46.18	394.03	376.67	17.36	22.693		
4,300.00	4,214.68	4,236.57	4,227.54	12.51	9.16	-154.96	-158.74	-38.73	442.41	424.85	17.56	25.201		
4,400.00	4,297.82	4,317.97	4,306.08	13.52	9.26	-160.27	-140.64	-27.57	492.83	475.13	17.70	27.841		
4,500.00	4,380.48	4,390.16	4,373.66	14.52	9.34	-154.49	-119.09	-14.33	546.03	527.88	18.15	30.086		
4,600.00	4,460.88	4,447.86	4,425.92	15.58	9.42	-145.69	-98.25	-1.55	602.92	584.10	18.82	32.043		
4,700.00	4,537.78	4,490.64	4,463.48	16.70	9.50	-136.89	-80.80	9.14	664.79	645.00	19.80	33.581		
4,800.00	4,610.03	4,519.77	4,488.42	17.88	9.56	-127.70	-67.97	17.00	731.80	710.54	21.26	34.429		
4,900.00	4,676.57	4,537.19	4,503.07	19.12	9.60	-117.97	-59.94	21.92	803.17	779.96	23.22	34.594		
5,000.00	4,736.39	4,550.00	4,513.72	20.42	9.63	-108.34	-53.86	25.64	877.69	852.29	25.40	34.557		
5,100.00	4,788.60	4,550.00	4,513.72	21.76	9.63	-98.23	-53.86	25.64	953.89	926.36	27.53	34.647		

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 NORTH CASTOR GULCH 6-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	KB @ 7015.00ft
Reference Site:	NORTH CASTOR GULCH 6-16	MD Reference:	KB @ 7015.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	NORTH CASTOR GULCH 6-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	NORTH CASTOR GULCH 6-16	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 3	Offset TVD Reference:	Offset Datum

Offset Design NORTH CASTOR GULCH 9-16 - NORTH CASTOR GULCH 9-16 - NORTH CASTOR GULCH 9-16 - PL												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	4,832.43	4,538.43	4,504.11	23.14	9.60	-88.25	-59.35	22.28	1,030.39	1,001.27	29.12	35.379	
5,300.00	4,867.22	4,527.03	4,494.54	24.55	9.57	-79.81	-64.66	19.03	1,105.98	1,076.07	29.91	36.980	
5,400.00	4,892.46	4,500.00	4,471.55	25.97	9.52	-71.97	-76.76	11.62	1,179.64	1,149.81	29.83	39.550	
5,500.00	4,907.77	4,500.00	4,471.55	27.38	9.52	-67.27	-76.76	11.62	1,250.12	1,220.68	29.44	42.466	
5,600.00	4,912.91	4,472.07	4,447.30	28.76	9.47	-62.42	-88.58	4.38	1,316.83	1,288.46	28.38	46.407	
5,700.00	4,907.83	4,450.00	4,427.82	30.10	9.43	-59.15	-97.42	-1.04	1,379.09	1,351.88	27.21	50.684	
5,800.00	4,897.81	4,426.33	4,406.61	31.44	9.39	-58.25	-106.40	-6.54	1,440.84	1,412.47	28.37	50.785	
5,900.00	4,887.79	4,400.00	4,382.69	32.85	9.36	-57.25	-115.76	-12.29	1,505.98	1,476.48	29.51	51.038	
6,000.00	4,877.77	4,400.00	4,382.69	34.31	9.36	-57.25	-115.76	-12.29	1,574.26	1,543.23	31.03	50.735	



Company: SHELL E&P
Project: MOFFAT COUNTY, CO
Reference Site: NORTH CASTOR GULCH 6-16
Site Error: 0.00 ft
Reference Well: NORTH CASTOR GULCH 6-16
Well Error: 0.00 ft
Reference Wellbore: NORTH CASTOR GULCH 6-16
Reference Design: PLAN 3

Local Co-ordinate Reference: Well NORTH CASTOR GULCH 6-16
TVD Reference: KB @ 7015.00ft
MD Reference: KB @ 7015.00ft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 7015.00ft

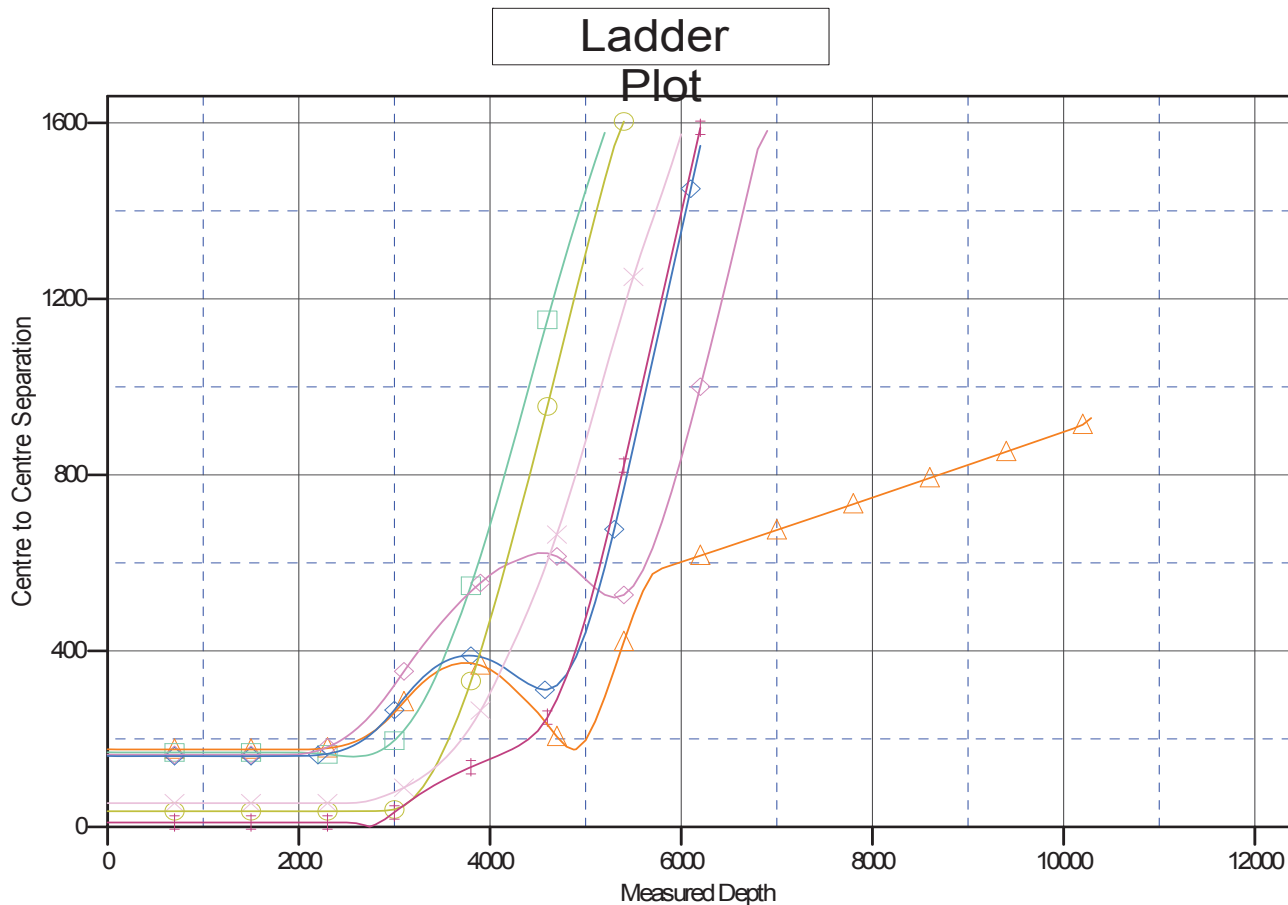
Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: NORTH CASTOR GULCH 6-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.36°



LEGEND

NORTH CASTOR GULCH 2-16, PLAN 4 V0 NORTH CASTOR GULCH 5-16, NORTH CASTOR GULCH 5-16, PLAN 3 V0 NORTH CASTOR GULCH 9-16, NC
NORTH CASTOR GULCH 3-16, PLAN 4 V0 NORTH CASTOR GULCH 7-16, NORTH CASTOR GULCH 7-16, PLAN 2 V0
NORTH CASTOR GULCH 4-16, PLAN 3 V0 NORTH CASTOR GULCH 8-16, NORTH CASTOR GULCH 8-16, PLAN 3 V0



Company: SHELL E&P
Project: MOFFAT COUNTY, CO
Reference Site: NORTH CASTOR GULCH 6-16
Site Error: 0.00 ft
Reference Well: NORTH CASTOR GULCH 6-16
Well Error: 0.00 ft
Reference Wellbore: NORTH CASTOR GULCH 6-16
Reference Design: PLAN 3

Local Co-ordinate Reference: Well NORTH CASTOR GULCH 6-16
TVD Reference: KB @ 7015.00ft
MD Reference: KB @ 7015.00ft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 7015.00ft

Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: NORTH CASTOR GULCH 6-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.36°

