



Weatherford®

SHELL E&P

**MOFFAT COUNTY, CO
DEAL GULCH 4-16**

Plan: PLAN #1

Proposal

12 September, 2012



Weatherford®



Project: MOFFAT COUNTY, CO
Site: DEAL GULCH 4-16
Well: DEAL GULCH 4-16
Wellbore: DEAL GULCH 4-16
Design: Design #1
Latitude: 40° 23' 17.630 N
Longitude: 107° 29' 54.420 W
GL: 7210.00
KB: WELL @ 7222.00ft (Original Well Elev)
RIG: Original Well Elev



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WELL DETAILS: DEAL GULCH 4-16

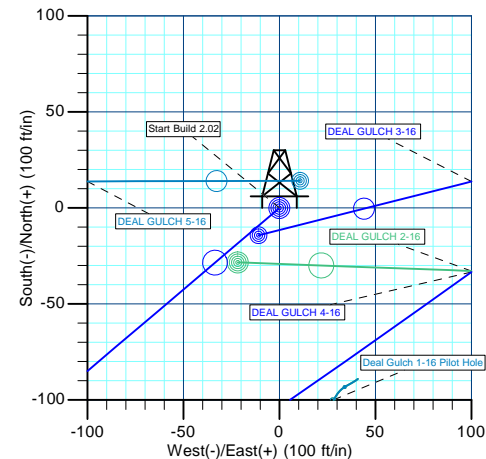
+N/-S	+E/-W	Northing	Ground Level: Easting	7210.00 Latitude	Longitude	Slot
0.00	0.00	1390545.53	2443361.47	40° 23' 17.630 N	107° 29' 54.420 W	

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	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.02
3975.16	29.80	229.65	3909.55	-242.82	-285.81	2.02	229.65	-372.60	Start 157.61 hold at 3975.16 MD
4132.77	29.80	229.65	4046.33	-293.53	-345.50	0.00	0.00	-450.42	Start DLS 7.07 TFO -175.00
5840.65	91.05	53.95	5257.00	86.51	266.74	7.07	-175.00	269.75	Start 1973.83 hold at 5840.65 MD
7814.48	91.05	53.95	5221.00	1247.96	1862.28	0.00	0.00	2241.76	TD at 7814.48

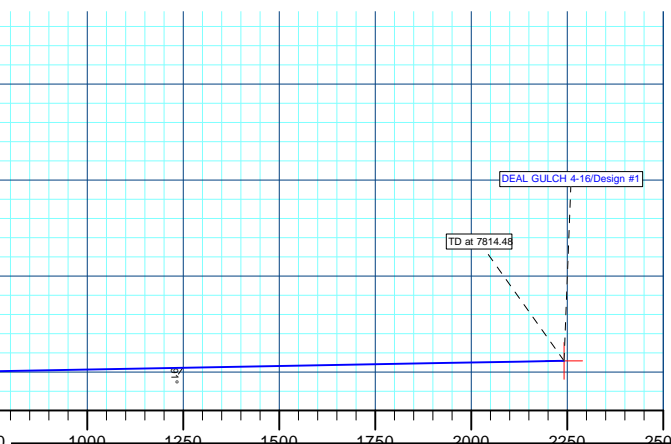
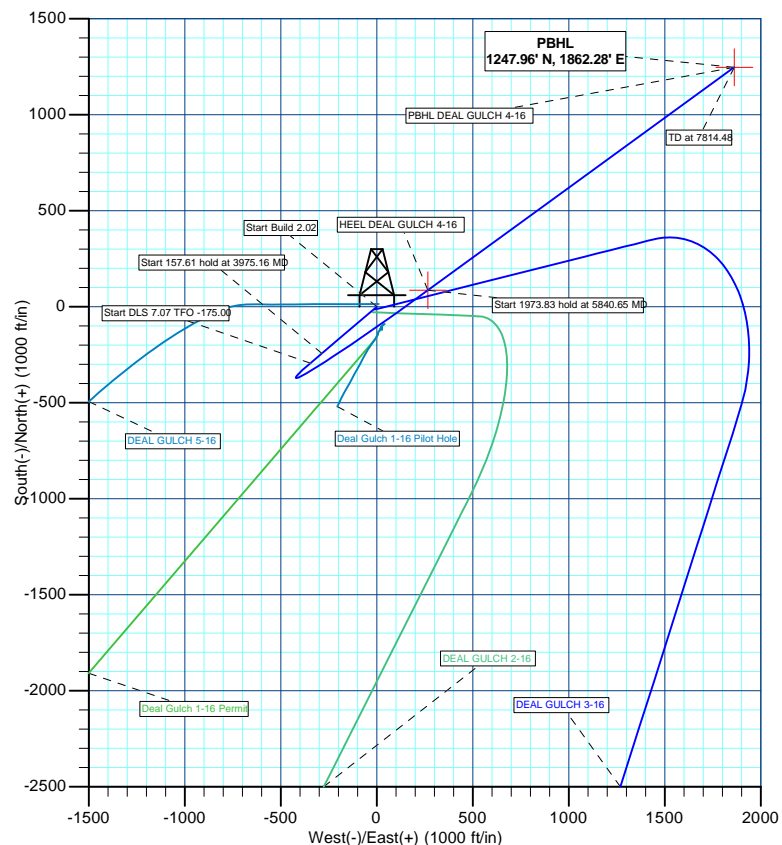
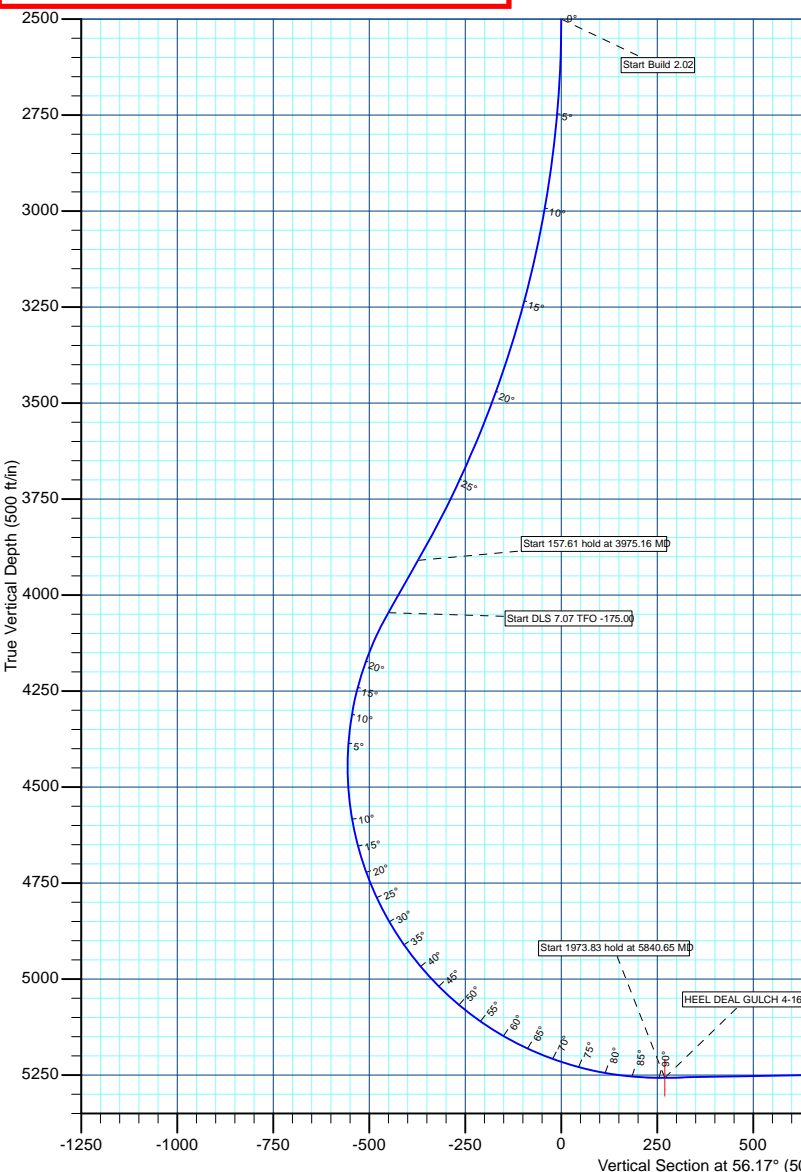
WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL DEAL GULCH 4-16	5221.00	1247.96	1862.28	1391751.20	2445251.40	40° 23' 29.962 N	107° 29' 30.351 W	Point
HEEL DEAL GULCH 4-16	5257.00	86.51	266.74	1390626.00	2443630.10	40° 23' 18.485 N	107° 29' 50.973 W	Point



Azimuths to True North
Magnetic North: 10.08°

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



Plan: Design #1 (DEAL GULCH 4-16/DEAL GULCH 4-16)

Created By: TRACY WILLIAMS

Date: 13:19, September 12 2012



SHELL E&P

MOFFAT COUNTY, CO

DEAL GULCH 4-16

DEAL GULCH 4-16

DEAL GULCH 4-16

Plan: Design #1

Standard Planning Report

12 September, 2012



Weatherford®



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Company:	SHELL E&P	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site:	DEAL GULCH 4-16	North Reference:	True
Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 4-16		
Design:	Design #1		

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

Site		DEAL GULCH 4-16			
Site Position:		Northing:	1,390,545.53 usft	Latitude:	40° 23' 17.630 N
From:	Lat/Long	Easting:	2,443,361.47 usft	Longitude:	107° 29' 54.420 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.29 °

Well	DEAL GULCH 4-16					
Well Position	+N/-S	0.00 ft	Northing:	1,390,545.53 usft	Latitude:	40° 23' 17.630 N
	+E/-W	0.00 ft	Easting:	2,443,361.47 usft	Longitude:	107° 29' 54.420 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	7,210.00 ft

Wellbore	DEAL GULCH 4-16				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	9/11/2012	10.08	66.50	52,596

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	56.17

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,975.16	29.80	229.65	3,909.55	-242.82	-285.81	2.02	2.02	0.00	229.65	
4,132.77	29.80	229.65	4,046.33	-293.53	-345.50	0.00	0.00	0.00	0.00	
5,840.65	91.05	53.95	5,257.00	86.51	266.74	7.07	3.59	-10.29	-175.00	HEEL DEAL GULCH
7,814.48	91.05	53.95	5,221.00	1,247.96	1,862.28	0.00	0.00	0.00	0.00	PBHL DEAL GULCH



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Company:	SHELL E&P	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site:	DEAL GULCH 4-16	North Reference:	True
Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 4-16		
Design:	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
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
Start Build 2.02									
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	2.02	229.65	2,599.98	-1.14	-1.34	-1.75	2.02	2.02	0.00
2,700.00	4.04	229.65	2,699.83	-4.56	-5.37	-7.00	2.02	2.02	0.00
2,800.00	6.06	229.65	2,799.44	-10.26	-12.08	-15.75	2.02	2.02	0.00
2,900.00	8.08	229.65	2,898.68	-18.23	-21.46	-27.98	2.02	2.02	0.00
3,000.00	10.10	229.65	2,997.41	-28.46	-33.50	-43.67	2.02	2.02	0.00
3,100.00	12.12	229.65	3,095.54	-40.93	-48.18	-62.81	2.02	2.02	0.00
3,200.00	14.14	229.65	3,192.92	-55.64	-65.49	-85.38	2.02	2.02	0.00
3,300.00	16.16	229.65	3,289.44	-72.56	-85.41	-111.35	2.02	2.02	0.00
3,400.00	18.18	229.65	3,384.97	-91.67	-107.91	-140.67	2.02	2.02	0.00
3,500.00	20.20	229.65	3,479.41	-112.95	-132.96	-173.33	2.02	2.02	0.00
3,600.00	22.22	229.65	3,572.63	-136.38	-160.53	-209.27	2.02	2.02	0.00
3,700.00	24.24	229.65	3,664.52	-161.91	-190.58	-248.46	2.02	2.02	0.00
3,800.00	26.26	229.65	3,754.96	-189.53	-223.09	-290.84	2.02	2.02	0.00
3,900.00	28.28	229.65	3,843.84	-219.19	-258.01	-336.36	2.02	2.02	0.00
Start 157.61 hold at 3975.16 MD									
3,975.16	29.80	229.65	3,909.55	-242.82	-285.81	-372.60	2.02	2.02	0.00
4,000.00	29.80	229.65	3,931.11	-250.81	-295.22	-384.87	0.00	0.00	0.00
4,100.00	29.80	229.65	4,017.89	-282.98	-333.09	-434.24	0.00	0.00	0.00
Start DLS 7.07 TFO -175.00									
4,132.77	29.80	229.65	4,046.33	-293.53	-345.50	-450.42	0.00	0.00	0.00
4,150.00	28.59	229.43	4,061.37	-298.98	-351.90	-458.77	7.07	-7.04	-1.29
4,200.00	25.07	228.67	4,105.98	-313.76	-368.94	-481.15	7.07	-7.04	-1.51
4,250.00	21.55	227.69	4,151.89	-326.94	-383.69	-500.74	7.07	-7.03	-1.97
4,300.00	18.05	226.34	4,198.93	-338.47	-396.09	-517.46	7.07	-7.01	-2.69
4,350.00	14.55	224.38	4,246.91	-348.31	-406.09	-531.25	7.07	-6.98	-3.93
4,400.00	11.09	221.21	4,295.66	-356.42	-413.65	-542.05	7.07	-6.93	-6.34



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Company:	SHELL E&P	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site:	DEAL GULCH 4-16	North Reference:	True
Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 4-16		
Design:	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)
4,450.00	7.69	215.25	4,344.98	-362.77	-418.75	-549.82	7.07	-6.81	-11.92
4,500.00	4.49	200.46	4,394.70	-367.34	-421.37	-554.53	7.07	-6.39	-29.58
4,550.00	2.49	148.72	4,444.61	-370.10	-421.49	-556.17	7.07	-3.99	-103.48
4,600.00	4.15	90.67	4,494.54	-371.05	-419.11	-554.72	7.07	3.32	-116.11
4,650.00	7.30	73.79	4,544.29	-370.18	-414.25	-550.20	7.07	6.29	-33.76
4,700.00	10.69	67.28	4,593.66	-367.50	-406.92	-542.62	7.07	6.78	-13.02
4,750.00	14.15	63.90	4,642.49	-363.02	-397.15	-532.01	7.07	6.92	-6.76
4,800.00	17.64	61.83	4,690.57	-356.75	-384.98	-518.41	7.07	6.98	-4.13
4,850.00	21.14	60.43	4,737.72	-348.73	-370.45	-501.88	7.07	7.01	-2.80
4,900.00	24.66	59.41	4,783.78	-338.97	-353.63	-482.46	7.07	7.03	-2.03
4,950.00	28.18	58.64	4,828.55	-327.51	-334.56	-460.25	7.07	7.04	-1.55
5,000.00	31.70	58.02	4,871.87	-314.41	-313.33	-435.32	7.07	7.04	-1.23
5,050.00	35.22	57.51	4,913.58	-299.70	-290.02	-407.77	7.07	7.05	-1.01
5,100.00	38.75	57.09	4,953.51	-283.45	-264.71	-377.70	7.07	7.05	-0.85
5,150.00	42.28	56.73	4,991.52	-265.72	-237.51	-345.22	7.07	7.05	-0.73
5,200.00	45.80	56.41	5,027.46	-246.57	-208.51	-310.47	7.07	7.06	-0.63
5,250.00	49.33	56.13	5,061.19	-226.07	-177.82	-273.57	7.07	7.06	-0.56
5,300.00	52.86	55.88	5,092.58	-204.32	-145.57	-234.67	7.07	7.06	-0.51
5,350.00	56.39	55.64	5,121.52	-181.38	-111.87	-193.91	7.07	7.06	-0.46
5,400.00	59.92	55.43	5,147.90	-157.35	-76.86	-151.44	7.07	7.06	-0.42
5,450.00	63.45	55.23	5,171.61	-132.31	-40.66	-107.44	7.07	7.06	-0.40
5,500.00	66.98	55.05	5,192.56	-106.37	-3.42	-62.05	7.07	7.06	-0.37
5,550.00	70.52	54.87	5,210.68	-79.62	34.73	-15.47	7.07	7.06	-0.35
5,600.00	74.05	54.70	5,225.90	-52.16	73.64	32.14	7.07	7.06	-0.34
5,650.00	77.58	54.54	5,238.15	-24.10	113.16	80.58	7.07	7.06	-0.33
5,700.00	81.11	54.38	5,247.39	4.46	153.13	129.69	7.07	7.06	-0.32
5,750.00	84.64	54.23	5,253.59	33.40	193.42	179.27	7.07	7.06	-0.31
5,800.00	88.17	54.07	5,256.72	62.63	233.86	229.14	7.07	7.06	-0.31
Start 1973.83 hold at 5840.65 MD - HEEL DEAL GULCH 4-16									
5,840.65	91.05	53.95	5,257.00	86.51	266.74	269.75	7.07	7.06	-0.31
5,900.00	91.05	53.95	5,255.92	121.43	314.72	329.05	0.00	0.00	0.00
6,000.00	91.05	53.95	5,254.09	180.28	395.56	428.95	0.00	0.00	0.00
6,100.00	91.05	53.95	5,252.27	239.12	476.39	528.86	0.00	0.00	0.00
6,200.00	91.05	53.95	5,250.45	297.96	557.23	628.77	0.00	0.00	0.00
6,300.00	91.05	53.95	5,248.62	356.80	638.06	728.68	0.00	0.00	0.00
6,400.00	91.05	53.95	5,246.80	415.65	718.89	828.59	0.00	0.00	0.00
6,500.00	91.05	53.95	5,244.97	474.49	799.73	928.49	0.00	0.00	0.00
6,600.00	91.05	53.95	5,243.15	533.33	880.56	1,028.40	0.00	0.00	0.00
6,700.00	91.05	53.95	5,241.33	592.17	961.40	1,128.31	0.00	0.00	0.00
6,800.00	91.05	53.95	5,239.50	651.02	1,042.23	1,228.22	0.00	0.00	0.00
6,900.00	91.05	53.95	5,237.68	709.86	1,123.07	1,328.13	0.00	0.00	0.00
7,000.00	91.05	53.95	5,235.85	768.70	1,203.90	1,428.03	0.00	0.00	0.00
7,100.00	91.05	53.95	5,234.03	827.54	1,284.74	1,527.94	0.00	0.00	0.00
7,200.00	91.05	53.95	5,232.21	886.39	1,365.57	1,627.85	0.00	0.00	0.00
7,300.00	91.05	53.95	5,230.38	945.23	1,446.41	1,727.76	0.00	0.00	0.00
7,400.00	91.05	53.95	5,228.56	1,004.07	1,527.24	1,827.67	0.00	0.00	0.00
7,500.00	91.05	53.95	5,226.74	1,062.91	1,608.07	1,927.57	0.00	0.00	0.00
7,600.00	91.05	53.95	5,224.91	1,121.76	1,688.91	2,027.48	0.00	0.00	0.00
7,700.00	91.05	53.95	5,223.09	1,180.60	1,769.74	2,127.39	0.00	0.00	0.00
7,800.00	91.05	53.95	5,221.26	1,239.44	1,850.58	2,227.30	0.00	0.00	0.00
TD at 7814.48 - PBHL DEAL GULCH 4-16									
7,814.48	91.05	53.95	5,221.00	1,247.96	1,862.28	2,241.76	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Company:	SHELL E&P	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site:	DEAL GULCH 4-16	North Reference:	True
Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 4-16		
Design:	Design #1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
PBHL DEAL GULCH 4-1	0.00	0.00	5,221.00	1,247.96	1,862.28	1,391,751.20	2,445,251.40	40° 23' 29.962 N	107° 29' 30.351 W
- plan hits target center									
- Point									
HEEL DEAL GULCH 4-1	0.00	0.00	5,257.00	86.51	266.74	1,390,626.00	2,443,630.10	40° 23' 18.485 N	107° 29' 50.973 W
- plan hits target center									
- Point									

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
2,500.00	2,500.00	0.00	0.00	Start Build 2.02
3,975.16	3,909.55	-242.82	-285.81	Start 157.61 hold at 3975.16 MD
4,132.77	4,046.33	-293.53	-345.50	Start DLS 7.07 TFO -175.00
5,840.65	5,257.00	86.51	266.74	Start 1973.83 hold at 5840.65 MD
7,814.48	5,221.00	1,247.96	1,862.28	TD at 7814.48



SHELL E&P

MOFFAT COUNTY, CO

DEAL GULCH 4-16

DEAL GULCH 4-16

DEAL GULCH 4-16

Design #1

Anticollision Report

12 September, 2012



Weatherford®



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	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	7,814.48	Design #1 (DEAL GULCH 4-16)	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	0.00	0.00	98.05			
Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Design #9	3,100.00	3,092.29	102.79	89.66	7.831	ES
Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Design #9	4,849.76	4,858.30	159.05	131.48	5.768	SF
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulc	0.00	0.00	98.05			
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulc	3,100.00	3,092.29	102.79	89.66	7.831	ES
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulc	5,162.09	5,022.28	155.46	130.07	6.123	SF
DEAL GULCH 2-16						
DEAL GULCH 2-16 - DEAL GULCH 2-16 - Design #3	2,802.41	2,801.64	19.59	7.42	1.609	CC, ES, SF
DEAL GULCH 3-16						
DEAL GULCH 3-16 - DEAL GULCH 3-16 - Design #1	2,247.31	2,247.83	11.09	1.28	1.130	Level 2, CC, ES, SF
DEAL GULCH 5-16						
DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1	2,249.33	2,249.64	14.14	4.32	1.440	Level 3, 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	155.31	-89.05	40.95	98.05					
100.00	100.00	97.12	97.12	0.10	0.67	155.54	-89.30	40.62	98.10	97.33	0.77	126.828		
200.00	200.00	197.00	196.99	0.32	0.71	156.27	-90.07	39.59	98.39	97.36	1.03	95.508		
300.00	300.00	297.04	297.00	0.55	0.81	157.69	-91.27	37.46	98.66	97.30	1.36	72.549		
400.00	400.00	396.68	396.58	0.77	0.96	159.51	-92.83	34.68	99.10	97.37	1.73	57.208		
500.00	500.00	495.93	495.77	1.00	1.13	161.60	-95.05	31.62	100.18	98.05	2.13	47.085		
600.00	600.00	594.61	594.38	1.22	1.31	163.21	-98.00	29.57	102.40	99.88	2.53	40.532		
700.00	700.00	697.04	696.77	1.45	1.49	164.32	-100.16	28.12	104.04	101.11	2.93	35.489		
800.00	800.00	797.49	797.21	1.67	1.67	164.95	-100.57	27.05	104.15	100.81	3.34	31.201		
900.00	900.00	896.16	895.85	1.90	1.88	166.15	-101.81	25.11	104.87	101.10	3.77	27.835		
1,000.00	1,000.00	994.89	994.52	2.12	2.09	167.78	-104.47	22.63	106.93	102.73	4.20	25.437		
1,100.00	1,100.00	1,094.87	1,094.44	2.35	2.28	168.80	-107.44	21.27	109.56	104.93	4.63	23.687		
1,200.00	1,200.00	1,195.18	1,194.70	2.57	2.47	167.90	-109.66	23.51	112.18	107.14	5.04	22.254		
1,300.00	1,300.00	1,296.66	1,296.16	2.80	2.67	167.24	-110.96	25.13	113.78	108.31	5.46	20.826		

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



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	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		
1,400.00	1,400.00	1,396.56	1,396.05	3.02	2.86	166.74	-111.65	26.30	114.71	108.83	5.88	19.498		
1,500.00	1,500.00	1,496.02	1,495.50	3.25	3.07	166.44	-112.83	27.22	116.09	109.77	6.31	18.383		
1,600.00	1,600.00	1,595.84	1,595.31	3.47	3.28	166.37	-114.40	27.74	117.73	110.98	6.75	17.438		
1,700.00	1,700.00	1,695.41	1,694.85	3.70	3.50	166.78	-116.39	27.33	119.58	112.39	7.19	16.629		
1,800.00	1,800.00	1,794.98	1,794.39	3.92	3.71	167.26	-118.95	26.89	121.99	114.36	7.63	15.991		
1,900.00	1,900.00	1,899.45	1,898.85	4.14	3.91	167.29	-119.71	26.99	122.73	114.67	8.06	15.229		
2,000.00	2,000.00	1,999.90	1,999.28	4.37	4.11	166.80	-117.85	27.65	121.06	112.58	8.48	14.281		
2,100.00	2,100.00	2,099.65	2,099.02	4.59	4.31	166.55	-116.28	27.81	119.57	110.67	8.90	13.431		
2,200.00	2,200.00	2,199.91	2,199.27	4.82	4.51	166.43	-114.95	27.74	118.27	108.94	9.33	12.674		
2,300.00	2,300.00	2,300.54	2,299.87	5.04	4.71	166.26	-112.85	27.60	116.20	106.45	9.76	11.911		
2,400.00	2,400.00	2,399.72	2,399.03	5.27	4.92	166.21	-110.90	27.21	114.20	104.02	10.18	11.213		
2,500.00	2,500.00	2,498.40	2,497.71	5.49	5.13	166.59	-110.19	26.26	113.27	102.65	10.62	10.667		
2,600.00	2,599.98	2,597.60	2,596.88	5.69	5.34	-62.95	-110.68	24.53	112.55	101.52	11.03	10.207		
2,700.00	2,699.83	2,697.32	2,696.58	5.88	5.56	-64.17	-111.54	22.25	110.49	99.07	11.42	9.674		
2,800.00	2,799.44	2,795.88	2,795.10	6.07	5.77	-66.87	-113.29	19.80	107.86	96.04	11.82	9.124		
2,900.00	2,898.68	2,894.54	2,893.68	6.27	5.98	-71.37	-115.92	17.44	105.18	92.95	12.23	8.598		
3,000.00	2,997.41	2,993.36	2,992.46	6.48	6.19	-78.56	-118.96	16.57	103.45	90.78	12.67	8.167		
3,079.82	3,075.79	3,072.55	3,071.61	6.68	6.36	-85.93	-120.94	15.89	102.72	89.68	13.03	7.881		
3,100.00	3,095.54	3,092.29	3,091.35	6.73	6.40	-87.91	-121.49	15.64	102.79	89.66	13.13	7.831 ES		
3,200.00	3,192.92	3,190.31	3,189.30	7.00	6.62	-98.21	-124.84	13.93	105.34	91.74	13.61	7.743		
3,300.00	3,289.44	3,288.52	3,287.47	7.32	6.82	-109.92	-127.04	12.53	112.08	98.03	14.05	7.978		
3,400.00	3,384.97	3,385.25	3,384.17	7.69	7.03	-121.37	-128.41	10.78	124.26	109.82	14.43	8.609		
3,500.00	3,479.41	3,480.67	3,479.52	8.12	7.24	-130.78	-131.23	8.40	142.56	127.78	14.78	9.648		
3,600.00	3,572.63	3,572.67	3,571.46	8.61	7.43	-138.32	-134.27	6.88	167.42	152.36	15.06	11.114		
3,700.00	3,664.52	3,662.02	3,660.78	9.17	7.61	-144.60	-136.01	6.63	198.91	183.60	15.31	12.993		
3,800.00	3,754.96	3,752.08	3,750.84	9.80	7.80	-149.89	-136.49	7.52	236.63	221.10	15.53	15.233		
3,900.00	3,843.84	3,847.50	3,846.24	10.52	8.01	-154.03	-138.51	7.45	277.50	261.72	15.77	17.593		
4,000.00	3,931.11	3,938.44	3,937.11	11.30	8.21	-157.08	-141.71	6.24	320.71	304.65	16.06	19.968		
4,100.00	4,017.89	4,056.60	4,054.77	12.14	8.49	-159.69	-151.20	2.41	362.62	346.08	16.54	21.925		
4,200.00	4,105.98	4,194.44	4,189.82	12.87	8.87	-160.24	-173.93	-12.57	392.48	374.95	17.54	22.382		
4,300.00	4,198.93	4,358.20	4,343.91	13.43	9.48	-157.55	-215.50	-48.24	397.41	378.60	18.80	21.135		
4,400.00	4,295.66	4,513.17	4,478.33	13.85	10.31	-148.69	-273.73	-98.21	375.11	354.97	20.14	18.626		
4,500.00	4,394.70	4,641.69	4,578.48	14.13	11.29	-119.91	-334.72	-150.55	330.43	308.75	21.69	15.236		
4,600.00	4,494.54	4,737.66	4,645.24	14.27	12.22	3.60	-386.99	-195.40	271.72	247.95	23.78	11.427		
4,700.00	4,593.66	4,803.55	4,686.66	14.29	12.96	45.26	-425.87	-228.76	210.48	184.39	26.10	8.065		
4,800.00	4,690.57	4,845.00	4,710.74	14.20	13.46	66.70	-451.47	-250.73	165.88	138.50	27.38	6.058		
4,849.76	4,737.50	4,858.30	4,718.14	14.12	13.64	73.10	-459.85	-257.93	159.05	131.48	27.57	5.768 SF		
4,900.00	4,783.78	4,867.63	4,723.23	14.05	13.76	76.82	-465.79	-263.02	166.25	138.63	27.63	6.018		
5,000.00	4,871.87	4,876.02	4,727.74	13.86	13.87	76.87	-471.16	-267.62	216.02	188.52	27.50	7.856		
5,100.00	4,953.51	4,873.63	4,726.46	13.72	13.84	68.73	-469.62	-266.31	291.54	264.72	26.83	10.868		
5,200.00	5,027.46	4,862.98	4,720.70	13.68	13.70	55.41	-462.83	-260.48	376.72	351.88	24.84	15.167		
5,300.00	5,092.58	4,850.00	4,713.54	13.84	13.53	42.28	-454.61	-253.42	464.66	442.87	21.79	21.321		
5,400.00	5,147.90	4,823.92	4,698.69	14.26	13.21	30.17	-438.34	-239.47	552.06	533.89	18.17	30.389		
5,500.00	5,192.56	4,800.00	4,684.52	14.98	12.91	22.28	-423.72	-226.91	637.20	621.70	15.51	41.093		
5,600.00	5,225.90	4,768.68	4,665.20	16.00	12.56	16.52	-405.00	-210.86	718.88	705.22	13.66	52.634		
5,700.00	5,247.39	4,736.84	4,644.70	17.29	12.21	12.62	-386.52	-195.00	796.27	783.52	12.75	62.457		
5,800.00	5,256.72	4,700.00	4,619.92	18.78	11.83	9.75	-365.84	-177.25	868.72	856.11	12.61	68.915		
5,900.00	5,255.92	4,667.86	4,597.41	20.42	11.53	8.44	-348.43	-162.31	937.24	924.20	13.04	71.894		
6,000.00	5,254.09	4,635.02	4,573.57	22.19	11.23	7.74	-331.29	-147.60	1,008.05	994.52	13.53	74.528		
6,100.00	5,252.27	4,600.00	4,547.27	24.08	10.94	7.04	-313.75	-132.55	1,081.53	1,067.49	14.04	77.046		
6,200.00	5,250.45	4,576.21	4,528.89	26.04	10.76	6.60	-302.28	-122.71	1,157.31	1,142.69	14.62	79.139		
6,300.00	5,248.62	4,550.00	4,508.19	28.07	10.56	6.15	-290.09	-112.24	1,235.18	1,219.97	15.21	81.185		

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



Weatherford International Ltd.
Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												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	
6,400.00	5,246.80	4,525.37	4,488.32	30.16	10.40	5.75	-279.04	-102.77	1,314.89	1,299.06	15.83	83.082	
6,500.00	5,244.97	4,500.00	4,467.44	32.28	10.23	5.37	-268.10	-93.38	1,396.23	1,379.78	16.45	84.898	
6,600.00	5,243.15	4,481.27	4,451.77	34.44	10.11	5.10	-260.32	-86.70	1,479.02	1,461.92	17.10	86.512	
6,700.00	5,241.33	4,450.00	4,425.15	36.63	9.93	4.68	-247.87	-76.02	1,563.22	1,545.51	17.72	88.231	
6,800.00	5,239.50	4,450.00	4,425.15	38.84	9.93	4.68	-247.87	-76.02	1,648.42	1,629.99	18.43	89.443	
6,900.00	5,237.68	4,425.42	4,403.83	41.08	9.80	4.38	-238.59	-68.06	1,734.69	1,715.61	19.08	90.915	
7,000.00	5,235.86	4,400.00	4,381.44	43.33	9.67	4.09	-229.46	-60.22	1,822.02	1,802.28	19.73	92.326	
7,100.00	5,234.03	4,400.00	4,381.44	45.59	9.67	4.09	-229.46	-60.22	1,910.10	1,889.65	20.45	93.389	
7,200.00	5,232.21	4,379.40	4,363.05	47.86	9.57	3.87	-222.41	-54.17	1,998.96	1,977.84	21.13	94.625	
7,300.00	5,230.38	4,350.00	4,336.45	50.15	9.44	3.59	-212.91	-46.02	2,088.76	2,066.98	21.78	95.893	
7,400.00	5,228.56	4,350.00	4,336.45	52.45	9.44	3.59	-212.91	-46.02	2,178.82	2,156.32	22.50	96.819	
7,500.00	5,226.74	4,350.00	4,336.45	54.75	9.44	3.59	-212.91	-46.02	2,269.71	2,246.48	23.23	97.715	
7,600.00	5,224.91	4,329.62	4,317.77	57.06	9.35	3.40	-206.72	-40.71	2,361.02	2,337.11	23.91	98.749	
7,700.00	5,223.09	4,318.83	4,307.82	59.38	9.31	3.31	-203.57	-38.01	2,452.89	2,428.28	24.61	99.660	
7,800.00	5,221.26	4,300.00	4,290.32	61.70	9.23	3.16	-198.29	-33.48	2,545.27	2,519.96	25.30	100.598	
7,814.48	5,221.00	4,300.00	4,290.32	62.04	9.23	3.16	-198.29	-33.48	2,558.65	2,533.24	25.41	100.709	



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	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	155.31	-89.05	40.95	98.05					
100.00	100.00	97.12	97.12	0.10	0.67	155.54	-89.30	40.62	98.10	97.33	0.77	126.828		
200.00	200.00	197.00	196.99	0.32	0.71	156.27	-90.07	39.59	98.39	97.36	1.03	95.508		
300.00	300.00	297.04	297.00	0.55	0.81	157.69	-91.27	37.46	98.66	97.30	1.36	72.549		
400.00	400.00	396.68	396.58	0.77	0.96	159.51	-92.83	34.68	99.10	97.37	1.73	57.208		
500.00	500.00	495.93	495.77	1.00	1.13	161.60	-95.05	31.62	100.18	98.05	2.13	47.085		
600.00	600.00	594.61	594.38	1.22	1.31	163.21	-98.00	29.57	102.40	99.88	2.53	40.532		
700.00	700.00	697.04	696.77	1.45	1.49	164.32	-100.16	28.12	104.04	101.11	2.93	35.489		
800.00	800.00	797.49	797.21	1.67	1.67	164.95	-100.57	27.05	104.15	100.81	3.34	31.201		
900.00	900.00	896.16	895.85	1.90	1.88	166.15	-101.81	25.11	104.87	101.10	3.77	27.835		
1,000.00	1,000.00	994.89	994.52	2.12	2.09	167.78	-104.47	22.63	106.93	102.73	4.20	25.437		
1,100.00	1,100.00	1,094.87	1,094.44	2.35	2.28	168.80	-107.44	21.27	109.56	104.93	4.63	23.687		
1,200.00	1,200.00	1,195.18	1,194.70	2.57	2.47	167.90	-109.66	23.51	112.18	107.14	5.04	22.254		
1,300.00	1,300.00	1,296.66	1,296.16	2.80	2.67	167.24	-110.96	25.13	113.78	108.31	5.46	20.826		
1,400.00	1,400.00	1,396.56	1,396.05	3.02	2.86	166.74	-111.65	26.30	114.71	108.83	5.88	19.498		
1,500.00	1,500.00	1,496.02	1,495.50	3.25	3.07	166.44	-112.83	27.22	116.09	109.77	6.31	18.383		
1,600.00	1,600.00	1,595.84	1,595.31	3.47	3.28	166.37	-114.40	27.74	117.73	110.98	6.75	17.438		
1,700.00	1,700.00	1,695.41	1,694.85	3.70	3.50	166.78	-116.39	27.33	119.58	112.39	7.19	16.629		
1,800.00	1,800.00	1,794.98	1,794.39	3.92	3.71	167.26	-118.95	26.89	121.99	114.36	7.63	15.991		
1,900.00	1,900.00	1,899.45	1,898.85	4.14	3.91	167.29	-119.71	26.99	122.73	114.67	8.06	15.229		
2,000.00	2,000.00	1,999.90	1,999.28	4.37	4.11	166.80	-117.85	27.65	121.06	112.58	8.48	14.281		
2,100.00	2,100.00	2,099.65	2,099.02	4.59	4.31	166.55	-116.28	27.81	119.57	110.67	8.90	13.431		
2,200.00	2,200.00	2,199.91	2,199.27	4.82	4.51	166.43	-114.95	27.74	118.27	108.94	9.33	12.674		
2,300.00	2,300.00	2,300.54	2,299.87	5.04	4.71	166.26	-112.85	27.60	116.20	106.45	9.76	11.911		
2,400.00	2,400.00	2,399.72	2,399.03	5.27	4.92	166.21	-110.90	27.21	114.20	104.02	10.18	11.213		
2,500.00	2,500.00	2,498.40	2,497.71	5.49	5.13	166.59	-110.19	26.26	113.27	102.65	10.62	10.667		
2,600.00	2,599.98	2,597.60	2,596.88	5.69	5.34	-62.95	-110.68	24.53	112.55	101.52	11.03	10.207		
2,700.00	2,699.83	2,697.32	2,696.58	5.88	5.56	-64.17	-111.54	22.25	110.49	99.07	11.42	9.674		
2,800.00	2,799.44	2,795.88	2,795.10	6.07	5.77	-66.87	-113.29	19.80	107.86	96.04	11.82	9.124		
2,900.00	2,898.68	2,894.54	2,893.68	6.27	5.98	-71.37	-115.92	17.44	105.18	92.95	12.23	8.598		
3,000.00	2,997.41	2,993.36	2,992.46	6.48	6.19	-78.56	-118.96	16.57	103.45	90.78	12.67	8.167		
3,079.82	3,075.79	3,072.55	3,071.61	6.68	6.36	-85.93	-120.94	15.89	102.72	89.68	13.03	7.881		
3,100.00	3,095.54	3,092.29	3,091.35	6.73	6.40	-87.91	-121.49	15.64	102.79	89.66	13.13	7.831 ES		
3,200.00	3,192.92	3,190.31	3,189.30	7.00	6.62	-98.21	-124.84	13.93	105.34	91.74	13.61	7.743		
3,300.00	3,289.44	3,288.52	3,287.47	7.32	6.82	-109.92	-127.04	12.53	112.08	98.03	14.05	7.978		
3,400.00	3,384.97	3,385.25	3,384.17	7.69	7.03	-121.37	-128.41	10.78	124.26	109.82	14.43	8.609		
3,500.00	3,479.41	3,480.67	3,479.52	8.12	7.24	-130.78	-131.23	8.40	142.56	127.78	14.78	9.648		
3,600.00	3,572.63	3,572.67	3,571.46	8.61	7.43	-138.32	-134.27	6.88	167.42	152.36	15.06	11.114		
3,700.00	3,664.52	3,662.02	3,660.78	9.17	7.61	-144.60	-136.01	6.63	198.91	183.60	15.31	12.993		
3,800.00	3,754.96	3,752.08	3,750.84	9.80	7.80	-149.89	-136.49	7.52	236.63	221.10	15.53	15.233		
3,900.00	3,843.84	3,847.50	3,846.24	10.52	8.01	-154.03	-138.51	7.45	277.50	261.72	15.77	17.593		
4,000.00	3,931.11	3,938.44	3,937.11	11.30	8.21	-157.08	-141.71	6.24	320.71	304.65	16.06	19.968		
4,100.00	4,017.89	4,056.60	4,054.77	12.14	8.49	-159.69	-151.20	2.41	362.62	346.08	16.54	21.925		
4,200.00	4,105.98	4,189.44	4,184.97	12.87	8.86	-160.18	-173.14	-11.61	392.60	375.07	17.53	22.393		
4,300.00	4,198.93	4,304.00	4,295.02	13.43	9.24	-157.86	-199.22	-29.76	404.16	385.53	18.63	21.690		
4,400.00	4,295.66	4,398.02	4,385.04	13.85	9.55	-152.03	-221.80	-44.81	403.30	383.82	19.48	20.706		
4,500.00	4,394.70	4,490.63	4,473.97	14.13	9.86	-129.87	-243.95	-58.15	392.26	372.16	20.10	19.516		
4,600.00	4,494.54	4,583.00	4,562.83	14.27	10.17	-17.66	-266.24	-69.96	371.39	350.86	20.53	18.094		
4,700.00	4,593.66	4,674.52	4,651.17	14.29	10.48	9.34	-287.24	-81.35	340.68	319.88	20.80	16.375		
4,800.00	4,690.57	4,778.19	4,750.61	14.20	10.89	21.87	-312.80	-95.46	299.49	278.17	21.31	14.051		
4,900.00	4,783.78	4,856.35	4,824.07	14.05	11.25	34.89	-335.99	-108.66	248.73	226.58	22.15	11.229		
5,000.00	4,871.87	4,922.96	4,887.06	13.86	11.54	50.69	-355.13	-118.84	199.51	176.06	23.45	8.507		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	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		
5,100.00	4,953.51	4,985.57	4,946.78	13.72	11.80	69.73	-371.78	-127.55	163.19	138.30	24.89	6.557		
5,162.09	5,000.41	5,022.28	4,982.12	13.70	11.94	81.57	-380.52	-132.21	155.46	130.07	25.39	6.123 SF		
5,200.00	5,027.46	5,044.34	5,003.53	13.68	12.02	88.31	-385.25	-134.67	158.54	133.09	25.45	6.230		
5,300.00	5,092.58	5,097.86	5,055.84	13.84	12.21	102.12	-395.29	-139.79	194.07	168.94	25.13	7.723		
5,400.00	5,147.90	5,140.01	5,097.19	14.26	12.36	108.78	-402.52	-143.67	258.61	233.61	25.00	10.346		
5,500.00	5,192.56	5,169.22	5,125.87	14.98	12.46	108.26	-407.34	-146.44	339.31	313.45	25.86	13.123		
5,600.00	5,225.90	5,186.08	5,142.42	16.00	12.51	100.00	-410.07	-148.08	428.70	400.89	27.80	15.420		
5,700.00	5,247.39	5,190.36	5,146.63	17.29	12.53	82.39	-410.76	-148.50	522.50	493.10	29.40	17.773		
5,800.00	5,256.72	5,182.07	5,138.49	18.78	12.50	58.56	-409.42	-147.68	617.86	590.45	27.41	22.541		
5,900.00	5,255.92	5,163.55	5,120.30	20.42	12.44	46.96	-406.41	-145.89	713.06	687.43	25.63	27.822		
6,000.00	5,254.09	5,144.07	5,101.18	22.19	12.37	43.16	-403.20	-144.05	808.82	783.12	25.69	31.481		
6,100.00	5,252.27	5,123.57	5,081.05	24.08	12.30	39.58	-399.76	-142.16	905.08	879.37	25.71	35.204		
6,200.00	5,250.45	5,098.56	5,056.54	26.04	12.22	35.74	-395.42	-139.85	1,001.63	976.15	25.47	39.319		
6,300.00	5,248.62	5,072.27	5,030.79	28.07	12.13	32.24	-390.66	-137.41	1,098.33	1,073.11	25.22	43.552		
6,400.00	5,246.80	4,926.14	4,890.08	30.16	11.55	19.22	-356.01	-119.30	1,193.05	1,172.57	20.47	58.274		
6,500.00	5,244.97	4,872.85	4,839.63	32.28	11.32	16.15	-340.83	-111.28	1,287.17	1,267.09	20.08	64.091		
6,600.00	5,243.15	4,813.00	4,783.36	34.44	11.05	13.40	-323.04	-101.34	1,380.74	1,360.92	19.82	69.681		
6,700.00	5,241.33	4,793.95	4,765.47	36.63	10.97	12.64	-317.36	-98.06	1,474.30	1,453.96	20.35	72.457		
6,800.00	5,239.50	4,781.00	4,753.27	38.84	10.91	12.16	-313.60	-95.91	1,568.33	1,547.36	20.98	74.765		
6,900.00	5,237.68	4,765.96	4,739.03	41.08	10.84	11.63	-309.37	-93.52	1,662.79	1,641.21	21.58	77.051		
7,000.00	5,235.86	4,750.00	4,723.86	43.33	10.77	11.11	-305.06	-91.09	1,757.66	1,735.48	22.18	79.258		
7,100.00	5,234.03	4,750.00	4,723.86	45.59	10.77	11.11	-305.06	-91.09	1,852.90	1,829.91	22.99	80.598		
7,200.00	5,232.21	4,736.08	4,710.55	47.86	10.71	10.68	-301.49	-89.10	1,948.45	1,924.84	23.61	82.523		
7,300.00	5,230.38	4,718.00	4,693.17	50.15	10.64	10.15	-297.15	-86.72	2,044.43	2,020.24	24.18	84.539		
7,400.00	5,228.56	4,718.00	4,693.17	52.45	10.64	10.15	-297.15	-86.72	2,140.51	2,115.53	24.99	85.662		
7,500.00	5,226.74	4,707.67	4,683.19	54.75	10.60	9.87	-294.77	-85.43	2,236.91	2,211.25	25.66	87.186		
7,600.00	5,224.91	4,687.00	4,663.23	57.06	10.53	9.34	-290.06	-82.88	2,333.44	2,307.24	26.20	89.073		
7,700.00	5,223.09	4,663.22	4,640.26	59.38	10.44	8.76	-284.68	-79.96	2,430.02	2,403.31	26.71	90.976		
7,800.00	5,221.26	4,633.99	4,612.02	61.70	10.34	8.11	-278.03	-76.34	2,526.58	2,499.40	27.18	92.953		
7,814.48	5,221.00	4,629.73	4,607.91	62.04	10.33	8.02	-277.06	-75.80	2,540.56	2,513.31	27.25	93.228		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-142.60	-28.33	-21.67	35.67					
100.00	100.00	100.00	100.00	0.10	0.10	-142.60	-28.33	-21.67	35.67	35.47	0.20	180.330		
200.00	200.00	200.00	200.00	0.32	0.32	-142.60	-28.33	-21.67	35.67	35.02	0.65	55.101		
300.00	300.00	300.00	300.00	0.55	0.55	-142.60	-28.33	-21.67	35.67	34.57	1.10	32.519		
400.00	400.00	400.00	400.00	0.77	0.77	-142.60	-28.33	-21.67	35.67	34.12	1.55	23.066		
500.00	500.00	500.00	500.00	1.00	1.00	-142.60	-28.33	-21.67	35.67	33.67	2.00	17.871		
600.00	600.00	600.00	600.00	1.22	1.22	-142.60	-28.33	-21.67	35.67	33.22	2.45	14.586		
700.00	700.00	700.00	700.00	1.45	1.45	-142.60	-28.33	-21.67	35.67	32.77	2.89	12.321		
800.00	800.00	800.00	800.00	1.67	1.67	-142.60	-28.33	-21.67	35.67	32.32	3.34	10.665		
900.00	900.00	900.00	900.00	1.90	1.90	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-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	-142.60	-28.33	-21.67	35.67	26.93	8.74	4.082		
2,100.00	2,100.00	2,100.00	2,100.00	4.59	4.59	-142.60	-28.33	-21.67	35.67	26.48	9.19	3.882		
2,200.00	2,200.00	2,200.00	2,200.00	4.82	4.82	-142.60	-28.33	-21.67	35.67	26.03	9.64	3.701		
2,300.00	2,300.00	2,300.00	2,300.00	5.04	5.04	-142.60	-28.33	-21.67	35.67	25.58	10.09	3.536		
2,400.00	2,400.00	2,400.00	2,400.00	5.27	5.27	-142.60	-28.33	-21.67	35.67	25.13	10.54	3.385		
2,500.00	2,500.00	2,500.00	2,500.00	5.49	5.49	-142.60	-28.33	-21.67	35.67	24.68	10.99	3.247		
2,600.00	2,599.98	2,600.62	2,600.60	5.69	5.71	-15.42	-28.40	-19.90	32.98	21.59	11.39	2.894		
2,700.00	2,699.83	2,700.59	2,700.42	5.88	5.91	-28.64	-28.59	-14.65	25.76	14.00	11.76	2.190		
2,800.00	2,799.44	2,799.28	2,798.74	6.07	6.11	-67.47	-28.90	-6.06	19.60	7.43	12.17	1.611		
2,802.41	2,801.84	2,801.64	2,801.08	6.07	6.12	-68.82	-28.91	-5.81	19.59	7.42	12.18	1.609 CC, ES, SF		
2,900.00	2,898.68	2,896.11	2,894.85	6.27	6.32	-116.22	-29.32	5.66	29.55	17.01	12.53	2.357		
3,000.00	2,997.41	2,990.52	2,988.13	6.48	6.55	-136.51	-29.85	20.20	54.51	41.66	12.86	4.240		
3,100.00	3,095.54	3,082.03	3,078.03	6.73	6.79	-144.60	-30.47	37.22	87.80	74.62	13.18	6.663		
3,200.00	3,192.92	3,170.21	3,164.12	7.00	7.04	-148.53	-31.16	56.32	127.55	114.05	13.50	9.450		
3,300.00	3,289.44	3,254.73	3,246.03	7.32	7.31	-150.67	-31.91	77.11	173.06	159.24	13.82	12.525		
3,400.00	3,384.97	3,335.29	3,323.51	7.69	7.60	-151.91	-32.71	99.17	223.91	209.78	14.13	15.847		
3,500.00	3,479.41	3,411.70	3,396.39	8.12	7.90	-152.62	-33.54	122.09	279.73	265.29	14.44	19.369		
3,600.00	3,572.63	3,483.82	3,464.60	8.61	8.22	-152.98	-34.39	145.50	340.19	325.43	14.76	23.051		
3,700.00	3,664.52	3,551.56	3,528.10	9.17	8.55	-153.10	-35.25	169.05	404.95	389.87	15.08	26.852		
3,800.00	3,754.96	3,614.89	3,586.96	9.80	8.88	-153.02	-36.09	192.41	473.72	458.31	15.41	30.734		
3,900.00	3,843.84	3,673.84	3,641.27	10.52	9.22	-152.77	-36.92	215.32	546.17	530.40	15.76	34.646		
4,000.00	3,931.11	3,729.73	3,692.31	11.30	9.56	-152.66	-37.75	238.07	621.94	605.77	16.17	38.453		
4,100.00	4,017.89	3,791.91	3,748.85	12.14	9.97	-153.30	-38.69	263.93	698.93	682.23	16.70	41.858		
4,200.00	4,105.98	3,857.56	3,808.54	12.87	10.42	-154.71	-39.68	291.24	774.22	756.68	17.55	44.120		
4,300.00	4,198.93	3,931.16	3,875.46	13.43	10.93	-154.56	-40.78	321.85	841.83	823.31	18.52	45.449		
4,400.00	4,295.66	4,012.08	3,949.04	13.85	11.51	-150.73	-42.00	355.50	900.34	880.96	19.38	46.458		
4,500.00	4,394.70	4,099.09	4,028.16	14.13	12.16	-130.67	-43.32	391.69	948.90	928.84	20.06	47.313		
4,600.00	4,494.54	4,190.86	4,111.61	14.27	12.86	-21.11	-44.70	429.87	986.86	966.35	20.51	48.114		
4,700.00	4,593.66	4,286.01	4,198.13	14.29	13.60	2.44	-46.13	469.44	1,013.77	993.06	20.72	48.938		
4,800.00	4,690.57	4,383.09	4,286.40	14.20	14.36	8.41	-47.60	509.82	1,029.37	1,008.71	20.66	49.832		
4,900.00	4,783.78	4,715.31	4,590.75	14.05	16.46	17.03	-100.42	626.19	1,026.74	1,005.46	21.29	48.230		
5,000.00	4,871.87	5,001.29	4,835.60	13.86	17.75	30.82	-236.94	674.86	991.89	969.67	22.22	44.642		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.00	4,953.51	5,124.27	4,927.99	13.72	18.23	41.17	-317.81	679.19	944.87	922.07	22.80	41.439		
5,200.00	5,027.46	5,174.41	4,962.65	13.68	18.42	48.13	-354.01	678.01	895.36	872.12	23.24	38.530		
5,300.00	5,092.58	5,190.01	4,973.05	13.84	18.48	52.79	-365.62	677.30	847.01	823.28	23.72	35.701		
5,400.00	5,147.90	5,187.17	4,971.17	14.26	18.47	55.84	-363.49	677.44	801.68	777.30	24.39	32.875		
5,500.00	5,192.56	5,173.42	4,961.99	14.98	18.42	57.66	-353.28	678.05	760.61	735.34	25.27	30.095		
5,600.00	5,225.90	5,152.66	4,947.85	16.00	18.34	58.47	-338.10	678.73	724.71	698.33	26.38	27.469		
5,700.00	5,247.39	5,127.09	4,929.99	17.29	18.24	58.41	-319.80	679.17	694.70	667.02	27.67	25.102		
5,800.00	5,256.72	5,100.00	4,910.55	18.78	18.13	57.74	-300.93	679.15	671.03	641.92	29.12	23.047		
5,900.00	5,255.92	5,067.41	4,886.50	20.42	18.00	55.60	-278.96	678.46	655.05	624.91	30.14	21.733		
5,971.58	5,254.61	5,050.00	4,873.36	21.69	17.94	54.17	-267.55	677.80	651.43	620.61	30.82	21.139		
6,000.00	5,254.09	5,040.61	4,866.19	22.19	17.90	53.40	-261.50	677.36	651.95	620.94	31.01	21.024		
6,100.00	5,252.27	5,017.38	4,848.23	24.08	17.81	51.48	-246.83	676.01	662.75	630.81	31.94	20.748		
6,200.00	5,250.45	5,000.00	4,834.58	26.04	17.74	50.04	-236.15	674.76	687.05	654.03	33.02	20.809		
6,300.00	5,248.62	4,979.22	4,818.03	28.07	17.65	48.32	-223.72	673.01	723.63	689.67	33.95	21.312		
6,400.00	5,246.80	4,963.40	4,805.26	30.16	17.59	47.01	-214.49	671.47	770.90	735.88	35.01	22.017		
6,500.00	5,244.97	4,950.00	4,794.35	32.28	17.54	45.90	-206.86	670.05	827.11	790.98	36.13	22.894		
6,600.00	5,243.15	4,936.64	4,783.37	34.44	17.48	44.81	-199.40	668.51	890.65	853.44	37.21	23.936		
6,700.00	5,241.33	4,925.24	4,773.93	36.63	17.43	43.88	-193.16	667.10	960.11	921.77	38.34	25.042		
6,800.00	5,239.50	4,914.91	4,765.33	38.84	17.39	43.05	-187.61	665.75	1,034.35	994.86	39.49	26.194		
6,900.00	5,237.68	4,900.00	4,752.82	41.08	17.33	41.85	-179.77	663.67	1,112.46	1,072.07	40.39	27.542		
7,000.00	5,235.86	4,900.00	4,752.82	43.33	17.33	41.85	-179.77	663.67	1,193.64	1,151.66	41.98	28.436		
7,100.00	5,234.03	4,900.00	4,752.82	45.59	17.33	41.85	-179.77	663.67	1,277.48	1,233.91	43.57	29.320		
7,200.00	5,232.21	4,881.85	4,737.45	47.86	17.25	40.42	-170.50	660.95	1,363.19	1,318.98	44.20	30.838		
7,300.00	5,230.38	4,875.18	4,731.76	50.15	17.22	39.90	-167.17	659.90	1,450.74	1,405.33	45.41	31.948		
7,400.00	5,228.56	4,869.00	4,726.48	52.45	17.19	39.42	-164.12	658.90	1,539.74	1,493.11	46.62	33.025		
7,500.00	5,226.74	4,850.00	4,710.14	54.75	17.11	37.96	-154.99	655.66	1,630.11	1,583.05	47.05	34.643		
7,600.00	5,224.91	4,850.00	4,710.14	57.06	17.11	37.96	-154.99	655.66	1,721.24	1,672.66	48.58	35.432		
7,700.00	5,223.09	4,850.00	4,710.14	59.38	17.11	37.96	-154.99	655.66	1,813.31	1,763.20	50.11	36.189		
7,800.00	5,221.26	4,850.00	4,710.14	61.70	17.11	37.96	-154.99	655.66	1,906.18	1,854.54	51.64	36.914		
7,814.48	5,221.00	4,850.00	4,710.14	62.04	17.11	37.96	-154.99	655.66	1,919.68	1,867.82	51.86	37.016		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-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	27.550		
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		
2,100.00	2,100.00	2,100.57	2,100.53	4.59	4.59	-147.70	-13.61	-8.60	16.11	6.93	9.18	1.754		
2,200.00	2,200.00	2,200.72	2,200.44	4.82	4.80	-170.73	-11.93	-1.95	12.10	2.48	9.61	1.258 Level 3		
2,247.31	2,247.31	2,247.83	2,247.31	4.93	4.90	165.88	-10.76	2.71	11.09	1.28	9.82	1.130 Level 2, CC, ES, SF		
2,300.00	2,300.00	2,300.00	2,299.07	5.04	5.02	135.56	-9.18	9.00	12.89	2.84	10.04	1.283 Level 3		
2,400.00	2,400.00	2,398.14	2,395.97	5.27	5.25	102.62	-5.39	24.05	24.98	14.49	10.49	2.381		
2,500.00	2,500.00	2,494.67	2,490.50	5.49	5.52	90.85	-0.63	42.94	43.98	33.03	10.96	4.014		
2,600.00	2,599.98	2,588.86	2,581.84	5.69	5.81	-144.57	4.98	65.23	69.28	57.95	11.32	6.119		
2,700.00	2,699.83	2,679.73	2,668.94	5.88	6.15	-148.32	11.29	90.32	101.80	90.11	11.69	8.707		
2,800.00	2,799.44	2,766.64	2,751.18	6.07	6.52	-150.80	18.15	117.56	141.22	129.17	12.05	11.721		
2,900.00	2,898.68	2,849.12	2,828.14	6.27	6.94	-152.47	25.38	146.31	187.15	174.76	12.39	15.108		
3,000.00	2,997.41	2,926.80	2,899.56	6.48	7.38	-153.60	32.84	175.93	239.15	226.45	12.71	18.821		
3,100.00	3,095.54	3,000.00	2,965.83	6.73	7.84	-154.35	40.42	206.07	296.79	283.78	13.01	22.816		
3,200.00	3,192.92	3,066.98	3,025.53	7.00	8.33	-154.80	47.83	235.50	359.62	346.32	13.29	27.055		
3,300.00	3,289.44	3,129.33	3,080.26	7.32	8.82	-155.01	55.12	264.48	427.18	413.62	13.56	31.503		
3,400.00	3,384.97	3,186.58	3,129.74	7.69	9.31	-155.03	62.15	292.41	499.06	485.24	13.82	36.123		
3,500.00	3,479.41	3,238.84	3,174.24	8.12	9.79	-154.86	68.84	318.98	574.83	560.76	14.07	40.866		
3,600.00	3,572.63	3,286.28	3,214.06	8.61	10.25	-154.51	75.13	343.98	654.10	639.78	14.32	45.687		
3,700.00	3,664.52	3,329.10	3,249.51	9.17	10.69	-153.98	80.99	367.26	736.50	721.92	14.58	50.510		
3,800.00	3,754.96	3,367.52	3,280.92	9.80	11.11	-153.24	86.39	388.72	821.68	806.81	14.87	55.251		
3,900.00	3,843.84	3,400.00	3,307.17	10.52	11.46	-152.24	91.06	407.27	909.32	894.12	15.21	59.799		
4,000.00	3,931.11	3,432.15	3,332.87	11.30	11.84	-151.55	95.77	426.00	999.08	983.47	15.61	63.984		
4,100.00	4,017.89	3,460.31	3,355.15	12.14	12.18	-152.19	99.98	442.71	1,089.84	1,073.78	16.06	67.866		
4,200.00	4,105.98	3,500.00	3,386.17	12.87	12.66	-155.31	106.02	466.72	1,180.11	1,163.47	16.64	70.902		
4,300.00	4,198.93	3,521.88	3,403.07	13.43	12.94	-156.64	109.41	480.18	1,265.64	1,248.22	17.42	72.662		
4,400.00	4,295.66	3,559.78	3,432.03	13.85	13.44	-153.93	115.38	503.90	1,345.49	1,327.33	18.16	74.090		
4,500.00	4,394.70	3,600.00	3,462.29	14.13	13.97	-134.81	121.85	529.59	1,418.80	1,400.06	18.74	75.729		
4,600.00	4,494.54	3,646.85	3,496.93	14.27	14.64	-26.14	129.55	560.19	1,484.87	1,465.76	19.12	77.670		
4,700.00	4,593.66	3,700.00	3,535.39	14.29	15.40	-3.50	138.50	595.75	1,543.16	1,523.88	19.28	80.040		
4,800.00	4,690.57	3,755.49	3,574.59	14.20	16.24	1.45	148.08	633.84	1,593.20	1,573.98	19.21	82.922		
4,900.00	4,783.78	3,827.38	3,624.72	14.05	17.37	3.67	160.66	683.80	1,633.79	1,614.81	18.98	86.080		
5,000.00	4,871.87	3,921.12	3,690.10	13.86	18.85	5.18	177.05	748.94	1,663.29	1,644.66	18.63	89.275		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	4,953.51	4,017.26	3,757.16	13.72	20.39	6.41	193.87	815.76	1,681.23	1,663.11	18.12	92.791	
5,200.00	5,027.46	4,114.34	3,824.87	13.68	21.97	7.59	210.85	883.23	1,687.41	1,669.91	17.49	96.452	
5,300.00	5,092.58	4,210.89	3,892.20	13.84	23.54	8.85	227.74	950.33	1,681.84	1,664.98	16.86	99.754	
5,400.00	5,147.90	4,305.44	3,958.15	14.26	25.10	10.28	244.27	1,016.04	1,664.70	1,648.32	16.38	101.625	
5,500.00	5,192.56	4,396.55	4,021.69	14.98	26.60	11.98	260.21	1,079.36	1,636.38	1,620.07	16.31	100.352	
5,600.00	5,225.90	4,482.83	4,081.86	16.00	28.04	14.06	275.30	1,139.32	1,597.41	1,580.45	16.96	94.210	
5,700.00	5,247.39	4,562.97	4,137.76	17.29	29.37	16.67	289.32	1,195.02	1,548.53	1,529.87	18.66	82.968	
5,800.00	5,256.72	4,635.76	4,188.52	18.78	30.59	20.00	302.05	1,245.60	1,490.64	1,468.94	21.69	68.719	
5,900.00	5,255.92	4,701.68	4,234.50	20.42	31.69	22.66	313.58	1,291.41	1,426.23	1,401.52	24.71	57.713	
6,000.00	5,254.09	4,766.88	4,279.97	22.19	32.78	24.50	324.98	1,336.72	1,362.22	1,334.99	27.24	50.014	
6,100.00	5,252.27	4,832.07	4,325.44	24.08	33.88	26.48	336.39	1,382.03	1,299.49	1,269.46	30.02	43.283	
6,200.00	5,250.45	4,897.27	4,370.91	26.04	34.97	28.58	347.79	1,427.34	1,238.21	1,205.13	33.09	37.425	
6,300.00	5,248.62	4,981.46	4,430.39	28.07	36.31	31.68	359.02	1,485.80	1,178.21	1,141.02	37.19	31.680	
6,400.00	5,246.80	5,053.03	4,482.24	30.16	37.37	34.86	361.00	1,535.05	1,119.66	1,078.23	41.43	27.024	
6,500.00	5,244.97	5,109.80	4,523.87	32.28	38.18	37.73	357.56	1,573.47	1,064.12	1,018.66	45.45	23.411	
6,600.00	5,243.15	5,155.40	4,557.43	34.44	38.80	40.23	351.59	1,603.75	1,013.04	963.82	49.21	20.584	
6,700.00	5,241.33	5,192.55	4,584.75	36.63	39.29	42.38	344.64	1,627.93	967.80	915.08	52.72	18.358	
6,800.00	5,239.50	5,223.24	4,607.25	38.84	39.68	44.22	337.49	1,647.54	929.75	873.76	56.00	16.604	
6,900.00	5,237.68	5,250.00	4,626.78	41.08	40.01	45.86	330.24	1,664.33	900.15	841.00	59.16	15.217	
7,000.00	5,235.86	5,270.72	4,641.83	43.33	40.25	47.16	323.97	1,677.12	880.11	818.08	62.03	14.188	
7,100.00	5,234.03	5,289.38	4,655.31	45.59	40.47	48.33	317.85	1,688.47	870.46	805.61	64.85	13.423	
7,139.84	5,233.30	5,300.00	4,662.96	46.50	40.60	49.01	314.16	1,694.85	869.65	803.48	66.17	13.142	
7,200.00	5,232.21	5,300.00	4,662.96	47.86	40.60	49.01	314.16	1,694.85	871.73	804.49	67.24	12.964	
7,300.00	5,230.38	5,319.62	4,677.01	50.15	40.81	50.26	306.97	1,706.50	883.88	813.69	70.19	12.592	
7,400.00	5,228.56	5,332.02	4,685.85	52.45	40.95	51.05	302.17	1,713.76	906.64	833.88	72.76	12.461	
7,500.00	5,226.74	5,350.00	4,698.58	54.75	41.15	52.20	294.87	1,724.14	939.32	863.62	75.69	12.410	
7,600.00	5,224.91	5,350.00	4,698.58	57.06	41.15	52.20	294.87	1,724.14	980.82	903.26	77.57	12.645	
7,700.00	5,223.09	5,350.00	4,698.58	59.38	41.15	52.20	294.87	1,724.14	1,030.39	950.95	79.45	12.970	
7,800.00	5,221.26	5,369.53	4,712.31	61.70	41.34	53.45	286.48	1,735.21	1,086.50	1,003.96	82.55	13.162	
7,814.48	5,221.00	5,370.61	4,713.06	62.04	41.36	53.52	286.00	1,735.82	1,095.15	1,012.26	82.89	13.212	



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	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	2,100.00	2,100.34	2,100.32	4.59	4.58	32.65	14.16	9.08	16.82	7.65	9.18	1.833		
2,200.00	2,200.00	2,200.43	2,200.27	4.82	4.78	15.13	14.15	3.82	14.66	5.06	9.60	1.526		
2,249.33	2,249.33	2,249.64	2,249.33	4.93	4.89	-0.15	14.14	-0.04	14.14	4.32	9.81	1.440	Level 3, CC, ES, SF	
2,300.00	2,300.00	2,300.00	2,299.45	5.04	4.99	-18.99	14.12	-4.86	14.94	4.92	10.03	1.490	Level 3	
2,400.00	2,400.00	2,398.93	2,397.64	5.27	5.22	-50.19	14.09	-16.90	22.13	11.67	10.45	2.116		
2,500.00	2,500.00	2,496.86	2,494.38	5.49	5.46	-66.41	14.04	-32.15	35.53	24.63	10.90	3.260		
2,600.00	2,599.98	2,593.89	2,589.65	5.69	5.72	57.13	13.99	-50.51	52.46	41.17	11.30	4.643		
2,700.00	2,699.83	2,690.16	2,683.50	5.88	6.02	55.16	13.92	-71.90	70.95	59.27	11.69	6.072		
2,800.00	2,799.44	2,785.60	2,775.79	6.07	6.36	55.15	13.85	-96.21	90.66	78.57	12.08	7.503		
2,900.00	2,898.68	2,880.17	2,866.39	6.27	6.74	56.02	13.77	-123.32	111.54	99.04	12.50	8.925		
3,000.00	2,997.41	2,973.81	2,955.17	6.48	7.18	57.32	13.69	-153.09	133.65	120.71	12.94	10.325		
3,100.00	3,095.54	3,070.05	3,045.67	6.73	7.67	59.00	13.59	-185.82	156.21	142.77	13.44	11.620		
3,200.00	3,192.92	3,167.51	3,137.29	7.00	8.21	61.19	13.49	-219.05	177.35	163.34	14.01	12.658		
3,300.00	3,289.44	3,265.06	3,228.99	7.32	8.77	63.76	13.40	-252.31	197.23	182.56	14.67	13.447		
3,400.00	3,384.97	3,362.56	3,320.65	7.69	9.35	66.67	13.30	-285.56	216.14	200.71	15.43	14.006		
3,500.00	3,479.41	3,459.90	3,412.16	8.12	9.95	69.84	13.20	-318.75	234.43	218.11	16.32	14.363		
3,600.00	3,572.63	3,556.96	3,503.40	8.61	10.56	73.25	13.10	-351.85	252.47	235.12	17.35	14.551		
3,700.00	3,664.52	3,653.62	3,594.26	9.17	11.18	76.85	13.01	-384.80	270.66	252.14	18.52	14.614		
3,800.00	3,754.96	3,749.75	3,684.63	9.80	11.80	80.58	12.91	-417.58	289.41	269.58	19.82	14.598		
3,900.00	3,843.84	3,845.24	3,774.40	10.52	12.43	84.39	12.81	-450.14	309.14	287.89	21.25	14.549		
4,000.00	3,931.11	3,939.99	3,863.48	11.30	13.06	88.33	12.72	-482.45	330.27	307.50	22.77	14.504		
4,100.00	4,017.89	4,034.52	3,952.33	12.14	13.70	92.24	12.63	-514.68	353.07	328.73	24.33	14.509		
4,200.00	4,105.98	4,129.58	4,041.70	12.87	14.34	97.35	12.53	-547.10	377.27	351.47	25.80	14.621		
4,300.00	4,198.93	4,226.24	4,132.57	13.43	15.00	102.32	12.43	-580.06	401.72	374.66	27.06	14.844		
4,400.00	4,295.66	4,323.18	4,223.70	13.85	15.67	108.23	12.34	-613.11	425.38	397.24	28.13	15.120		
4,500.00	4,394.70	4,418.93	4,313.71	14.13	16.33	128.22	12.24	-645.76	448.32	419.34	28.98	15.470		
4,600.00	4,494.54	4,512.02	4,401.22	14.27	16.98	-123.89	12.15	-677.50	471.50	441.93	29.57	15.945		
4,700.00	4,593.66	4,601.90	4,485.24	14.29	17.61	-103.33	10.91	-709.34	496.40	466.50	29.90	16.599		
4,800.00	4,690.57	4,678.29	4,554.42	14.20	18.24	-101.05	5.17	-741.18	525.74	495.69	30.05	17.495		
4,900.00	4,783.78	4,736.98	4,605.65	14.05	18.78	-100.72	-2.42	-768.74	563.30	533.16	30.14	18.690		
5,000.00	4,871.87	4,778.85	4,641.04	13.86	19.20	-99.48	-9.51	-789.96	611.08	580.73	30.35	20.133		

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.00	4,953.51	4,800.00	4,658.50	13.72	19.42	-95.76	-13.61	-801.16	669.04	638.24	30.80	21.722		
5,200.00	5,027.46	4,821.28	4,675.79	13.68	19.66	-91.16	-18.09	-812.74	735.51	704.08	31.42	23.407		
5,300.00	5,092.58	4,826.65	4,680.10	13.84	19.72	-83.90	-19.27	-815.71	808.37	776.38	31.99	25.267		
5,400.00	5,147.90	4,824.15	4,678.10	14.26	19.69	-75.11	-18.72	-814.33	885.32	853.21	32.11	27.574		
5,500.00	5,192.56	4,815.37	4,671.02	14.98	19.59	-65.69	-16.81	-809.49	964.26	932.81	31.44	30.666		
5,600.00	5,225.90	4,800.00	4,658.50	16.00	19.42	-56.50	-13.61	-801.16	1,043.41	1,013.44	29.97	34.815		
5,700.00	5,247.39	4,783.67	4,645.04	17.29	19.25	-48.59	-10.41	-792.49	1,121.27	1,093.12	28.15	39.831		
5,800.00	5,256.72	4,750.00	4,616.77	18.78	18.90	-41.29	-4.48	-775.20	1,196.77	1,170.82	25.95	46.126		
5,900.00	5,255.92	4,750.00	4,616.77	20.42	18.90	-39.42	-4.48	-775.20	1,269.76	1,243.59	26.18	48.507		
6,000.00	5,254.09	4,718.20	4,589.46	22.19	18.60	-38.02	0.31	-759.64	1,344.84	1,318.22	26.62	50.522		
6,100.00	5,252.27	4,700.00	4,573.58	24.08	18.43	-37.23	2.69	-751.07	1,422.38	1,394.96	27.42	51.869		
6,200.00	5,250.45	4,680.85	4,556.69	26.04	18.26	-36.40	4.90	-742.33	1,502.00	1,473.77	28.23	53.198		
6,300.00	5,248.62	4,650.00	4,529.10	28.07	17.99	-35.10	7.85	-728.84	1,583.64	1,554.88	28.76	55.073		
6,400.00	5,246.80	4,650.00	4,529.10	30.16	17.99	-35.10	7.85	-728.84	1,666.53	1,636.46	30.07	55.420		
6,500.00	5,244.97	4,650.00	4,529.10	32.28	17.99	-35.10	7.85	-728.84	1,751.22	1,719.81	31.41	55.751		
6,600.00	5,243.15	4,622.41	4,504.06	34.44	17.77	-33.95	9.83	-717.43	1,836.81	1,804.81	32.01	57.388		
6,700.00	5,241.33	4,600.00	4,483.49	36.63	17.60	-33.04	10.99	-708.61	1,923.81	1,891.08	32.72	58.792		
6,800.00	5,239.50	4,600.00	4,483.49	38.84	17.60	-33.04	10.99	-708.61	2,011.63	1,977.57	34.06	59.059		
6,900.00	5,237.68	4,600.00	4,483.49	41.08	17.60	-33.04	10.99	-708.61	2,100.54	2,065.13	35.41	59.317		
7,000.00	5,235.86	4,579.07	4,464.10	43.33	17.45	-32.21	11.71	-700.76	2,190.06	2,153.93	36.13	60.609		
7,100.00	5,234.03	4,569.96	4,455.62	45.59	17.38	-31.85	11.91	-697.45	2,280.41	2,243.21	37.20	61.307		
7,200.00	5,232.21	4,550.00	4,436.92	47.86	17.24	-31.08	12.11	-690.45	2,371.51	2,333.61	37.91	62.563		
7,300.00	5,230.38	4,550.00	4,436.92	50.15	17.24	-31.08	12.11	-690.45	2,463.02	2,423.79	39.23	62.778		
7,400.00	5,228.56	4,537.01	4,424.71	52.45	17.15	-30.58	12.12	-686.02	2,555.13	2,514.99	40.14	63.663		
7,500.00	5,226.74	4,507.67	4,397.13	54.75	16.94	-29.50	12.15	-676.02	2,647.53	2,607.05	40.48	65.398		
7,600.00	5,224.91	4,478.33	4,369.55	57.06	16.74	-28.46	12.18	-666.02	2,740.16	2,699.34	40.82	67.133		
7,700.00	5,223.09	4,449.00	4,341.97	59.38	16.54	-27.46	12.21	-656.01	2,832.98	2,791.84	41.14	68.865		
7,800.00	5,221.26	4,419.66	4,314.40	61.70	16.33	-26.51	12.24	-646.01	2,925.99	2,884.54	41.45	70.592		
7,814.48	5,221.00	4,415.41	4,310.40	62.04	16.30	-26.37	12.24	-644.56	2,939.46	2,897.97	41.49	70.841		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	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

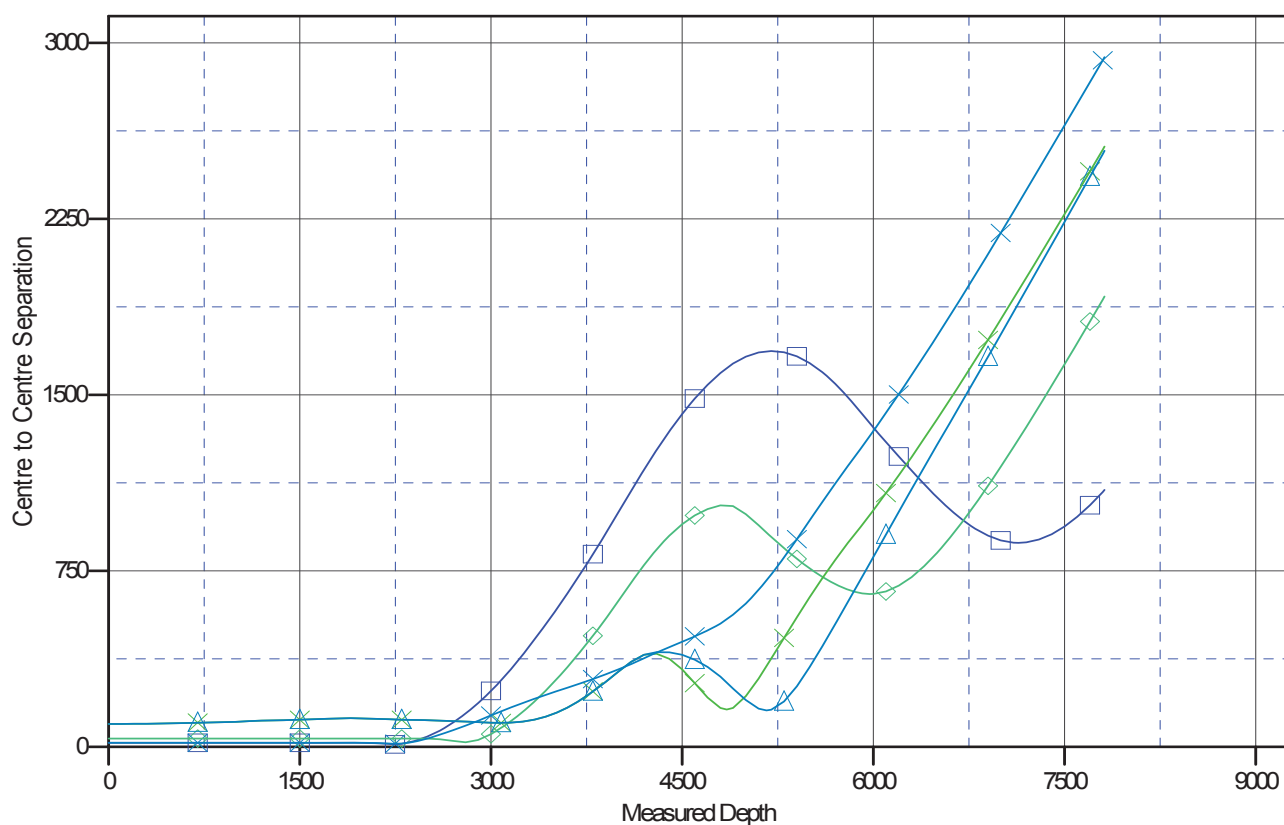
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: DEAL GULCH 4-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.29°

Ladder Plot



LEGEND

I3-16, Design #1 V0

I2-16, Design #3 V0

Deal Gulch 1-16, Deal Gulch 1-16 Permit, Design #9 V0

Deal Gulch 1-16, Deal Gulch 1-16 PilotHole, Deal Gulch 1-16 PilotHole V0

DEAL GULCH 5-16, DEAL GULCH 5-16



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 4-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7222.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 4-16	MD Reference:	WELL @ 7222.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 4-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 4-16	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)

Coordinates are relative to: DEAL GULCH 4-16

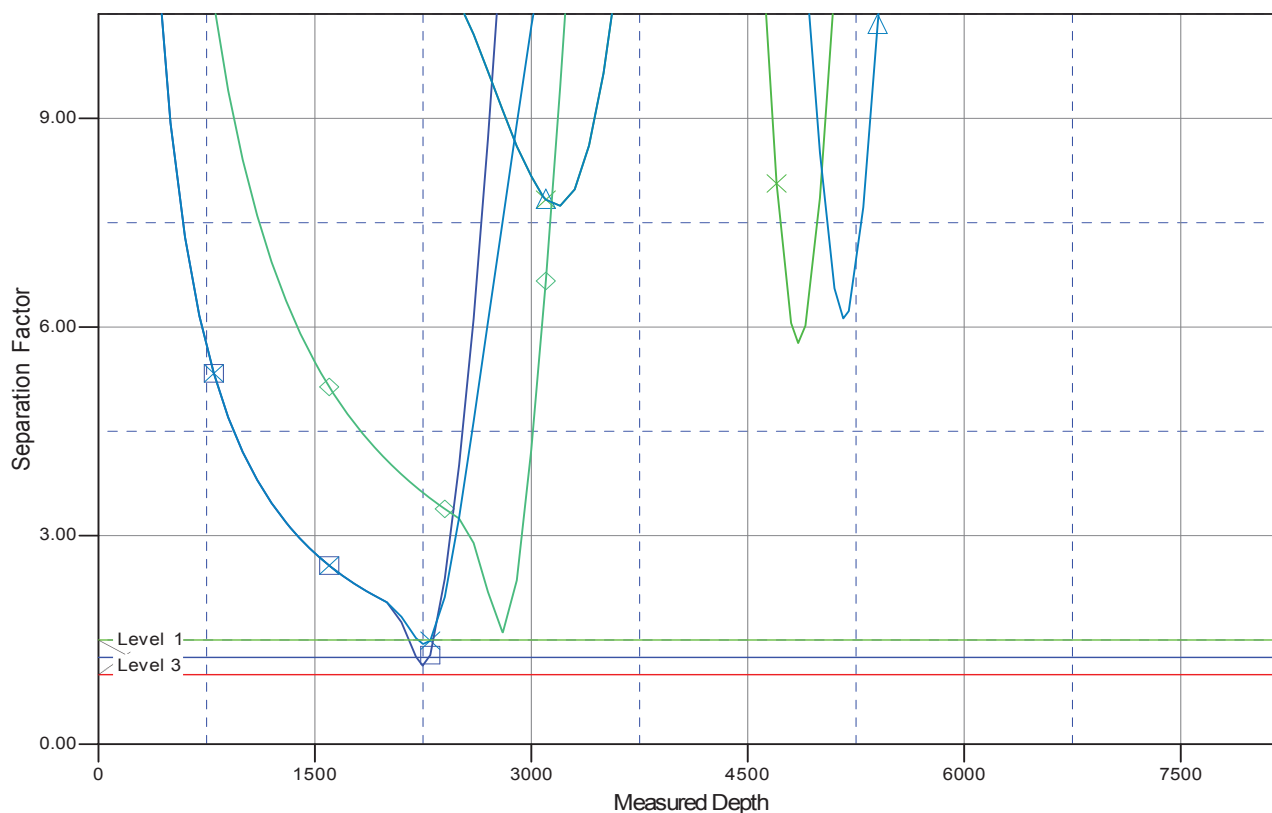
Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, Colorado Northern Zone

Central Meridian is 105° 30' 0.000 W

Grid Convergence at Surface is: -1.29°

Separation Factor Plot



LEGEND

I3-16, Design #1 V0

Deal Gulch 1-16, Deal Gulch 1-16 Permit, Design #9 V0

DEAL GULCH 5-16, DEAL GULCH

I2-16, Design #3 V0

Deal Gulch 1-16, Deal Gulch 1-16 PilotHole, Deal Gulch 1-16 PilotHole V0