



Weatherford®

SHELL E&P

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

Plan: PLAN #1

Proposal

2 OCTOBER, 2012



Weatherford®



Project: MOFFAT COUNTY, CO
Site: DEAL GULCH 8-16
Well: DEAL GULCH 8-16
Wellbore: DEAL GULCH 8-16
Design: Design #1
Latitude: 40° 23' 16.830 N
Longitude: 107° 29' 52.650 W
GL: 7167.00
KB: WELL @ 7183.00ft (Original Well Elev)
RIG: Original Well Elev



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WELL DETAILS: DEAL GULCH 8-16

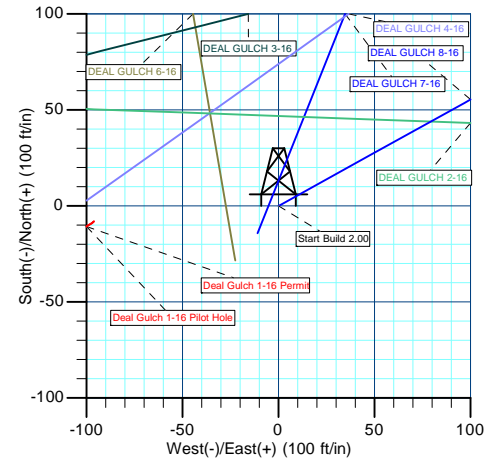
+N/-S	+E/-W	Northing	Ground Level:	7167.00	Latitude	Longitude	Slot
0.00	0.00	1390461.51	Easting	2443496.57	40° 23' 16.830 N	107° 29' 52.650 W	

SECTION DETAILS

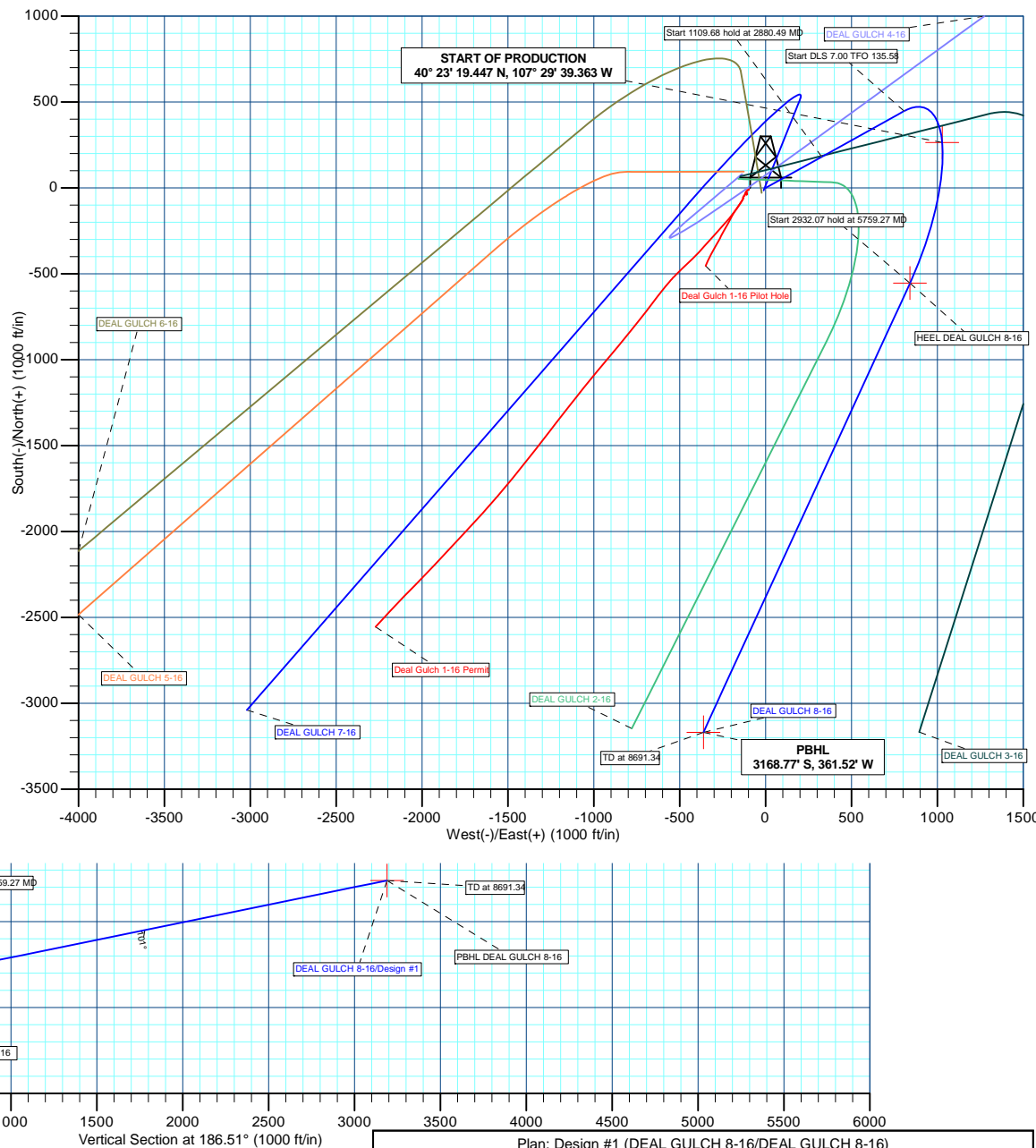
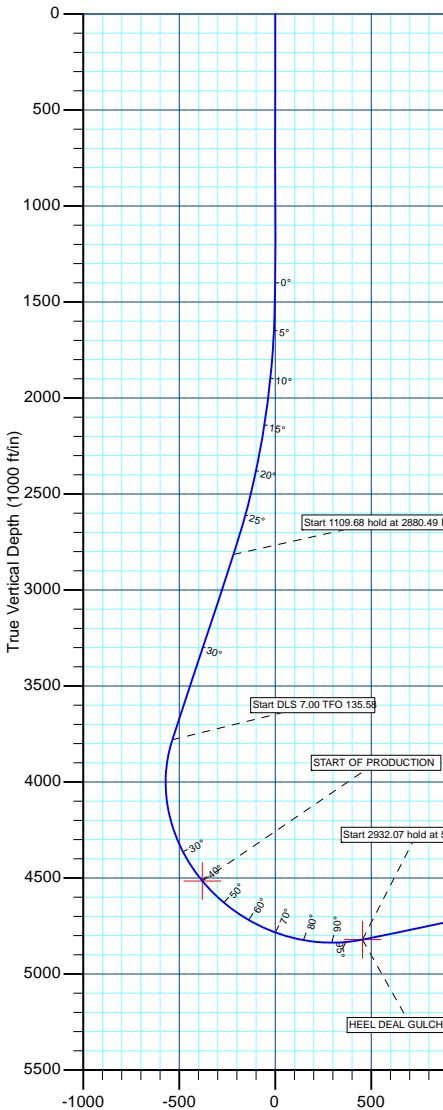
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
2880.49	29.61	61.01	2815.47	181.30	327.25	2.00	61.01	-217.23	Start 1109.68 hold at 2880.49 MD
3990.18	29.61	61.01	3780.24	447.00	806.85	0.00	0.00	-535.58	Start DLS 7.00 TFO 135.58
5759.27	101.01	204.69	4821.00	-553.84	840.81	7.00	135.58	454.96	Start 2932.07 hold at 5759.27 MD
8691.34	101.01	204.69	4261.00	-3168.77	-361.52	0.00	0.00	3189.32	TD at 8691.34

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL DEAL GULCH 8-16	4261.00	-3168.77	-361.52	1387301.69	2443063.75	40° 22' 45.516 N	107° 29' 57.322 W	Point
START OF PRODUCTION	4516.00	264.82	1028.12	1390703.09	2444530.39	40° 23' 19.447 N	107° 29' 39.363 W	Point
HEEL DEAL GULCH 8-16	4821.00	-553.84	840.81	1389888.87	2444324.69	40° 23' 11.357 N	107° 29' 41.784 W	Point



Azimuths to True North
Magnetic North: 10.08°
Magnetic Field
Strength: 52588.1nT
Dip Angle: 66.50°
Date: 10/2/2012
Model: BGGM2012



Plan: Design #1 (DEAL GULCH 8-16/DEAL GULCH 8-16)

Created By: TRACY WILLIAMS

Date: 14:11, October 02 2012



SHELL E&P

MOFFAT COUNTY, CO

DEAL GULCH 8-16

DEAL GULCH 8-16

DEAL GULCH 8-16

Plan: Design #1

Standard Planning Report

02 October, 2012



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Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Company:	SHELL E&P	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site:	DEAL GULCH 8-16	North Reference:	True
Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 8-16		
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 8-16			
Site Position:		Northing:	1,390,461.51 usft	Latitude:	40° 23' 16.830 N
From:	Lat/Long	Easting:	2,443,496.57 usft	Longitude:	107° 29' 52.650 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.29 °

Well	DEAL GULCH 8-16					
Well Position	+N/-S	0.00 ft	Northing:	1,390,461.51 usft	Latitude:	40° 23' 16.830 N
	+E/-W	0.00 ft	Easting:	2,443,496.57 usft	Longitude:	107° 29' 52.650 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	7,167.00 ft

Wellbore	DEAL GULCH 8-16				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	10/2/2012	10.08	66.50	52,588

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	186.51

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	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,880.49	29.61	61.01	2,815.47	181.30	327.25	2.00	2.00	0.00	61.01	
3,990.18	29.61	61.01	3,780.24	447.00	806.85	0.00	0.00	0.00	0.00	
5,759.27	101.01	204.69	4,821.00	-553.84	840.81	7.00	4.04	8.12	135.58	HEEL DEAL GULCH ;
8,691.34	101.01	204.69	4,261.00	-3,168.77	-361.52	0.00	0.00	0.00	0.00	PBHL DEAL GULCH ;



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Company:	SHELL E&P	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site:	DEAL GULCH 8-16	North Reference:	True
Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 8-16		
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
Start Build 2.00									
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	2.00	61.01	1,499.98	0.85	1.53	-1.01	2.00	2.00	0.00
1,600.00	4.00	61.01	1,599.84	3.38	6.10	-4.05	2.00	2.00	0.00
1,700.00	6.00	61.01	1,699.45	7.61	13.73	-9.11	2.00	2.00	0.00
1,800.00	8.00	61.01	1,798.70	13.51	24.39	-16.19	2.00	2.00	0.00
1,900.00	10.00	61.01	1,897.47	21.09	38.07	-25.27	2.00	2.00	0.00
2,000.00	12.00	61.01	1,995.62	30.34	54.76	-36.35	2.00	2.00	0.00
2,100.00	14.00	61.01	2,093.06	41.24	74.44	-49.41	2.00	2.00	0.00
2,200.00	16.00	61.01	2,189.64	53.78	97.07	-64.44	2.00	2.00	0.00
2,300.00	18.00	61.01	2,285.27	67.95	122.65	-81.41	2.00	2.00	0.00
2,400.00	20.00	61.01	2,379.82	83.72	151.13	-100.32	2.00	2.00	0.00
2,500.00	22.00	61.01	2,473.17	101.09	182.47	-121.12	2.00	2.00	0.00
2,600.00	24.00	61.01	2,565.21	120.02	216.65	-143.81	2.00	2.00	0.00
2,700.00	26.00	61.01	2,655.84	140.50	253.61	-168.35	2.00	2.00	0.00
2,800.00	28.00	61.01	2,744.94	162.50	293.32	-194.71	2.00	2.00	0.00
Start 1109.68 hold at 2880.49 MD									
2,880.49	29.61	61.01	2,815.47	181.30	327.25	-217.23	2.00	2.00	0.00
2,900.00	29.61	61.01	2,832.43	185.97	335.68	-222.82	0.00	0.00	0.00
3,000.00	29.61	61.01	2,919.37	209.91	378.90	-251.51	0.00	0.00	0.00
3,100.00	29.61	61.01	3,006.31	233.86	422.12	-280.20	0.00	0.00	0.00
3,200.00	29.61	61.01	3,093.25	257.80	465.34	-308.89	0.00	0.00	0.00
3,300.00	29.61	61.01	3,180.19	281.75	508.56	-337.58	0.00	0.00	0.00
3,400.00	29.61	61.01	3,267.13	305.69	551.78	-366.27	0.00	0.00	0.00
3,500.00	29.61	61.01	3,354.07	329.63	595.00	-394.95	0.00	0.00	0.00
3,600.00	29.61	61.01	3,441.01	353.58	638.22	-423.64	0.00	0.00	0.00
3,700.00	29.61	61.01	3,527.96	377.52	681.44	-452.33	0.00	0.00	0.00
3,800.00	29.61	61.01	3,614.90	401.47	724.66	-481.02	0.00	0.00	0.00
3,900.00	29.61	61.01	3,701.84	425.41	767.88	-509.71	0.00	0.00	0.00
Start DLS 7.00 TFO 135.58									
3,990.18	29.61	61.01	3,780.24	447.00	806.85	-535.58	0.00	0.00	0.00
4,000.00	29.12	62.00	3,788.80	449.30	811.08	-538.34	7.00	-4.96	10.07
4,050.00	26.77	67.53	3,832.97	459.32	832.24	-550.70	7.00	-4.71	11.06
4,100.00	24.66	73.98	3,878.03	466.50	852.67	-560.15	7.00	-4.21	12.90
4,150.00	22.87	81.46	3,923.80	470.82	872.31	-566.67	7.00	-3.57	14.96
4,200.00	21.49	89.99	3,970.11	472.27	891.09	-570.23	7.00	-2.77	17.05
4,250.00	20.59	99.42	4,016.79	470.83	908.93	-570.83	7.00	-1.80	18.86
4,300.00	20.24	109.41	4,063.66	466.52	925.76	-568.45	7.00	-0.71	19.99
4,350.00	20.46	119.47	4,110.56	459.34	941.53	-563.11	7.00	0.44	20.11



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Company:	SHELL E&P	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site:	DEAL GULCH 8-16	North Reference:	True
Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 8-16		
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)
4,400.00	21.24	129.07	4,157.30	449.33	956.17	-554.82	7.00	1.56	19.20
4,450.00	22.52	137.82	4,203.71	436.53	969.64	-543.63	7.00	2.56	17.51
4,500.00	24.22	145.55	4,249.61	420.97	981.87	-529.56	7.00	3.40	15.45
4,550.00	26.26	152.23	4,294.85	402.72	992.83	-512.67	7.00	4.08	13.36
4,600.00	28.56	157.96	4,339.24	381.85	1,002.47	-493.03	7.00	4.61	11.46
4,650.00	31.07	162.87	4,382.63	358.44	1,010.76	-470.70	7.00	5.02	9.82
4,700.00	33.74	167.09	4,424.84	332.57	1,017.66	-445.78	7.00	5.34	8.45
4,750.00	36.54	170.75	4,465.73	304.33	1,023.16	-418.35	7.00	5.59	7.32
4,800.00	39.43	173.95	4,505.14	273.84	1,027.23	-388.52	7.00	5.79	6.40
START OF PRODUCTION - START OF PRODUCTION (DEAL GULCH 8-16 DEAL GULCH 8-16)									
4,814.15	40.27	174.79	4,516.00	264.82	1,028.12	-379.65	7.00	5.89	5.90
4,850.00	42.40	176.78	4,542.92	241.21	1,029.85	-356.39	7.00	5.96	5.55
4,900.00	45.44	179.30	4,578.93	206.55	1,031.02	-322.09	7.00	6.07	5.04
4,950.00	48.52	181.56	4,613.05	170.01	1,030.72	-285.75	7.00	6.17	4.53
5,000.00	51.64	183.62	4,645.13	131.71	1,028.98	-247.50	7.00	6.25	4.12
5,050.00	54.80	185.51	4,675.06	91.80	1,025.77	-207.48	7.00	6.31	3.78
5,100.00	57.98	187.26	4,702.74	50.42	1,021.13	-165.85	7.00	6.37	3.49
5,150.00	61.19	188.88	4,728.05	7.74	1,015.07	-122.75	7.00	6.41	3.26
5,200.00	64.41	190.42	4,750.90	-36.09	1,007.61	-78.36	7.00	6.45	3.06
5,250.00	67.65	191.87	4,771.20	-80.91	998.78	-32.82	7.00	6.48	2.90
5,300.00	70.91	193.25	4,788.89	-126.55	988.60	13.67	7.00	6.50	2.77
5,350.00	74.17	194.58	4,803.90	-172.84	977.13	60.96	7.00	6.52	2.66
5,400.00	77.44	195.87	4,816.16	-219.60	964.40	108.87	7.00	6.54	2.58
5,450.00	80.71	197.12	4,825.63	-266.67	950.46	157.21	7.00	6.55	2.51
5,500.00	83.99	198.36	4,832.29	-313.86	935.36	205.81	7.00	6.56	2.47
5,550.00	87.28	199.58	4,836.09	-361.00	919.16	254.48	7.00	6.57	2.44
5,600.00	90.56	200.79	4,837.04	-407.91	901.91	303.05	7.00	6.57	2.42
5,650.00	93.84	202.00	4,835.12	-454.43	883.69	351.33	7.00	6.57	2.43
5,700.00	97.12	203.22	4,830.34	-500.37	864.56	399.14	7.00	6.56	2.44
5,750.00	100.40	204.46	4,822.72	-545.56	844.59	446.30	7.00	6.56	2.48
Start 2932.07 hold at 5759.27 MD - HEEL DEAL GULCH 8-16									
5,759.27	101.01	204.69	4,821.00	-553.84	840.81	454.96	7.00	6.55	2.51
5,800.00	101.01	204.69	4,813.22	-590.17	824.10	492.95	0.00	0.00	0.00
5,900.00	101.01	204.69	4,794.12	-679.35	783.10	586.20	0.00	0.00	0.00
6,000.00	101.01	204.69	4,775.02	-768.53	742.09	679.46	0.00	0.00	0.00
6,100.00	101.01	204.69	4,755.92	-857.72	701.08	772.72	0.00	0.00	0.00
6,200.00	101.01	204.69	4,736.82	-946.90	660.08	865.97	0.00	0.00	0.00
6,300.00	101.01	204.69	4,717.72	-1,036.08	619.07	959.23	0.00	0.00	0.00
6,400.00	101.01	204.69	4,698.63	-1,125.27	578.07	1,052.49	0.00	0.00	0.00
6,500.00	101.01	204.69	4,679.53	-1,214.45	537.06	1,145.75	0.00	0.00	0.00
6,600.00	101.01	204.69	4,660.43	-1,303.64	496.05	1,239.00	0.00	0.00	0.00
6,700.00	101.01	204.69	4,641.33	-1,392.82	455.05	1,332.26	0.00	0.00	0.00
6,800.00	101.01	204.69	4,622.23	-1,482.00	414.04	1,425.52	0.00	0.00	0.00
6,900.00	101.01	204.69	4,603.13	-1,571.19	373.04	1,518.77	0.00	0.00	0.00
7,000.00	101.01	204.69	4,584.03	-1,660.37	332.03	1,612.03	0.00	0.00	0.00
7,100.00	101.01	204.69	4,564.93	-1,749.55	291.02	1,705.29	0.00	0.00	0.00
7,200.00	101.01	204.69	4,545.83	-1,838.74	250.02	1,798.55	0.00	0.00	0.00
7,300.00	101.01	204.69	4,526.73	-1,927.92	209.01	1,891.80	0.00	0.00	0.00
7,400.00	101.01	204.69	4,507.63	-2,017.10	168.00	1,985.06	0.00	0.00	0.00
7,500.00	101.01	204.69	4,488.54	-2,106.29	127.00	2,078.32	0.00	0.00	0.00
7,600.00	101.01	204.69	4,469.44	-2,195.47	85.99	2,171.57	0.00	0.00	0.00
7,700.00	101.01	204.69	4,450.34	-2,284.66	44.99	2,264.83	0.00	0.00	0.00
7,800.00	101.01	204.69	4,431.24	-2,373.84	3.98	2,358.09	0.00	0.00	0.00
7,900.00	101.01	204.69	4,412.14	-2,463.02	-37.03	2,451.34	0.00	0.00	0.00



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Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	DEAL GULCH 8-16		
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)	
8,000.00	101.01	204.69	4,393.04	-2,552.21	-78.03	2,544.60	0.00	0.00	0.00	
8,100.00	101.01	204.69	4,373.94	-2,641.39	-119.04	2,637.86	0.00	0.00	0.00	
8,200.00	101.01	204.69	4,354.84	-2,730.57	-160.04	2,731.12	0.00	0.00	0.00	
8,300.00	101.01	204.69	4,335.74	-2,819.76	-201.05	2,824.37	0.00	0.00	0.00	
8,400.00	101.01	204.69	4,316.64	-2,908.94	-242.06	2,917.63	0.00	0.00	0.00	
8,500.00	101.01	204.69	4,297.54	-2,998.12	-283.06	3,010.89	0.00	0.00	0.00	
8,600.00	101.01	204.69	4,278.45	-3,087.31	-324.07	3,104.14	0.00	0.00	0.00	
TD at 8691.34 - PBHL DEAL GULCH 8-16										
8,691.34	101.01	204.69	4,261.00	-3,168.77	-361.52	3,189.32	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
PBHL DEAL GULCH 8-1	0.00	0.00	4,261.00	-3,168.77	-361.52	1,387,301.69	2,443,063.75	40° 22' 45.516 N	107° 29' 57.322 W	
- plan hits target center										
- Point										
START OF PRODUCTIC	0.00	0.00	4,516.00	264.82	1,028.12	1,390,703.09	2,444,530.39	40° 23' 19.447 N	107° 29' 39.363 W	
- plan hits target center										
- Point										
HEEL DEAL GULCH 8-1	0.00	0.00	4,821.00	-553.84	840.81	1,389,888.87	2,444,324.69	40° 23' 11.357 N	107° 29' 41.784 W	
- plan hits target center										
- Point										

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,814.15	4,516.00	START OF PRODUCTION		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,400.00	1,400.00	0.00	0.00	Start Build 2.00	
2,880.49	2,815.47	181.30	327.25	Start 1109.68 hold at 2880.49 MD	
3,990.18	3,780.24	447.00	806.85	Start DLS 7.00 TFO 135.58	
5,759.27	4,821.00	-553.84	840.81	Start 2932.07 hold at 5759.27 MD	
8,691.34	4,261.00	-3,168.77	-361.52	TD at 8691.34	



SHELL E&P

MOFFAT COUNTY, CO

DEAL GULCH 8-16

DEAL GULCH 8-16

DEAL GULCH 8-16

Design #1

Anticollision Report

02 October, 2012



Weatherford®



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	10/2/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	8,691.34	Design #1 (DEAL GULCH 8-16)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
DEAL GULCH 1-16						
Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Deal Gulch 1	0.00	36.05	96.40			
Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Deal Gulch 1	8,691.34	6,980.55	1,866.40	1,752.21	16.344	SF
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulch	0.00	36.05	96.40			
Deal Gulch 1-16 - Deal Gulch 1-16 Pilot Hole - Deal Gulch	1,600.00	1,635.51	121.34	114.56	17.901	SF
DEAL GULCH 2-16						
DEAL GULCH 2-16 - DEAL GULCH 2-16 - Design #3	1,400.00	1,439.00	167.12	161.00	27.286	CC, ES
DEAL GULCH 2-16 - DEAL GULCH 2-16 - Design #3	8,691.34	8,281.19	874.99	792.92	10.662	SF
DEAL GULCH 3-16						
DEAL GULCH 3-16 - DEAL GULCH 3-16 - Design #1	4,300.00	4,463.39	134.47	86.71	2.816	ES, SF
DEAL GULCH 3-16 - DEAL GULCH 3-16 - Design #1	4,308.75	4,470.90	134.42	86.85	2.826	CC
DEAL GULCH 4-16						
DEAL GULCH 4-16 - DEAL GULCH 4-16 - Design #1	1,400.00	1,439.00	159.10	152.97	25.975	CC, ES
DEAL GULCH 4-16 - DEAL GULCH 4-16 - Design #1	4,700.00	6,669.98	870.00	819.50	17.230	SF
DEAL GULCH 5-16						
DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1	1,400.00	1,439.00	157.97	151.85	25.792	CC, ES
DEAL GULCH 5-16 - DEAL GULCH 5-16 - Design #1	1,900.00	1,936.47	180.11	171.79	21.629	SF
DEAL GULCH 6-16						
DEAL GULCH 6-16 - DEAL GULCH 6-16 - Design #1	1,509.72	1,512.15	33.53	27.01	5.143	CC, ES
DEAL GULCH 6-16 - DEAL GULCH 6-16 - Design #1	1,600.00	1,602.51	35.11	28.20	5.083	SF
DEAL GULCH 7-16						
DEAL GULCH 7-16 - DEAL GULCH 7-16 - Design #1	1,400.00	1,401.00	17.83	11.80	2.955	CC, ES, SF

Offset Design	DEAL GULCH 1-16 - Deal Gulch 1-16 - Deal Gulch 1-16 Permit - Deal Gulch 1-16 Permit											Offset Site Error:	0.67 ft
Survey Program:	177-MWD, 4498-MWD, 4363-MWD											Offset Well Error:	0.00 ft
Reference	Offset		Semi Major Axis		Distance								Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	36.05	36.05	0.00	0.67	-94.84	-8.13	-96.06	96.40				
100.00	100.00	135.34	135.34	0.09	0.68	-95.07	-8.58	-96.64	97.03	96.25	0.78	124.961	
200.00	200.00	234.18	234.16	0.32	0.74	-95.54	-9.52	-98.03	98.51	97.46	1.06	93.184	

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 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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, 4498-MWD, 4363-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
300.00	300.00	333.42	333.36	0.54	0.86	-96.16	-10.84	-100.47	101.10	99.70	1.40	72.052		
400.00	400.00	433.07	432.95	0.77	1.02	-96.95	-12.60	-103.33	104.14	102.36	1.78	58.410		
500.00	500.00	533.95	533.76	0.99	1.20	-98.10	-15.13	-106.29	107.39	105.21	2.18	49.272		
600.00	600.00	634.48	634.22	1.22	1.38	-99.60	-18.29	-108.06	109.62	107.04	2.58	42.520		
700.00	700.00	735.54	735.27	1.44	1.55	-100.08	-19.40	-109.19	110.90	107.93	2.98	37.275		
800.00	800.00	834.30	834.02	1.67	1.75	-100.21	-19.90	-110.52	112.32	108.93	3.39	33.122		
900.00	900.00	933.24	932.92	1.89	1.96	-100.89	-21.70	-112.76	114.88	111.06	3.82	30.060		
1,000.00	1,000.00	1,033.48	1,033.08	2.12	2.17	-102.12	-24.74	-115.22	117.89	113.64	4.25	27.732		
1,100.00	1,100.00	1,138.73	1,138.28	2.34	2.36	-103.46	-27.50	-114.91	118.17	113.50	4.67	25.298		
1,200.00	1,200.00	1,238.22	1,237.72	2.57	2.55	-104.63	-29.39	-112.60	116.38	111.30	5.09	22.887		
1,300.00	1,300.00	1,337.97	1,337.46	2.79	2.75	-105.22	-30.30	-111.37	115.42	109.91	5.51	20.961		
1,400.00	1,400.00	1,437.49	1,436.97	3.02	2.95	-105.76	-31.11	-110.26	114.56	108.63	5.93	19.316		
1,416.32	1,416.32	1,453.78	1,453.27	3.05	2.98	-166.89	-31.31	-110.10	114.52	108.50	6.01	19.050		
1,500.00	1,499.98	1,536.96	1,536.43	3.23	3.16	-167.72	-32.48	-109.46	115.88	109.51	6.37	18.204		
1,600.00	1,599.84	1,635.51	1,634.97	3.45	3.37	-169.01	-34.17	-109.27	121.34	114.56	6.78	17.901		
1,700.00	1,699.45	1,734.54	1,733.97	3.67	3.58	-170.53	-36.36	-109.88	131.21	124.02	7.19	18.251		
1,800.00	1,798.70	1,834.84	1,834.24	3.91	3.79	-172.17	-38.75	-110.11	144.29	136.71	7.59	19.020		
1,900.00	1,897.47	1,936.49	1,935.88	4.17	3.98	-172.75	-38.11	-109.73	159.23	151.27	7.97	19.990		
2,000.00	1,995.62	2,033.74	2,033.11	4.46	4.18	-173.00	-36.33	-109.22	177.02	168.68	8.34	21.227		
2,100.00	2,093.06	2,130.95	2,130.31	4.80	4.37	-173.35	-34.89	-109.13	198.73	190.01	8.71	22.803		
2,200.00	2,189.64	2,227.83	2,227.18	5.18	4.57	-173.70	-33.48	-109.28	224.05	214.97	9.08	24.662		
2,300.00	2,285.27	2,323.83	2,323.15	5.62	4.76	-173.90	-31.38	-109.40	252.42	242.97	9.45	26.725		
2,400.00	2,379.82	2,416.40	2,415.72	6.12	4.95	-174.16	-29.73	-109.85	284.57	274.76	9.81	29.020		
2,500.00	2,473.17	2,505.79	2,505.10	6.70	5.14	-174.55	-29.23	-110.80	320.96	310.79	10.16	31.579		
2,600.00	2,565.21	2,594.63	2,593.92	7.34	5.34	-175.01	-29.70	-112.37	361.56	351.04	10.52	34.374		
2,700.00	2,655.84	2,682.20	2,681.46	8.07	5.52	-175.41	-30.42	-114.34	405.85	394.99	10.87	37.346		
2,800.00	2,744.94	2,767.36	2,766.59	8.87	5.71	-175.82	-31.69	-116.39	453.65	442.43	11.21	40.466		
2,900.00	2,832.43	2,852.09	2,851.26	9.75	5.90	-176.28	-33.78	-118.66	504.99	493.41	11.58	43.604		
3,000.00	2,919.37	2,945.00	2,944.12	10.67	6.09	-176.86	-36.50	-119.97	556.52	544.44	12.08	46.072		
3,100.00	3,006.31	3,032.96	3,032.04	11.61	6.28	-177.33	-39.06	-120.72	607.67	595.09	12.58	48.300		
3,200.00	3,093.25	3,110.43	3,109.48	12.57	6.44	-177.66	-41.11	-121.61	658.99	645.91	13.08	50.398		
3,300.00	3,180.19	3,197.24	3,196.22	13.54	6.63	-178.01	-44.10	-123.14	711.08	697.48	13.60	52.289		
3,400.00	3,267.13	3,289.83	3,288.78	14.52	6.82	-178.25	-46.10	-124.45	762.40	748.27	14.12	53.976		
3,500.00	3,354.07	3,370.17	3,369.10	15.51	6.99	-178.38	-47.18	-125.86	813.67	799.03	14.64	55.573		
3,600.00	3,441.01	3,445.79	3,444.68	16.50	7.16	-178.52	-49.06	-127.68	865.90	850.74	15.16	57.110		
3,700.00	3,527.96	3,541.49	3,540.29	17.51	7.37	-178.76	-52.42	-129.75	918.40	902.68	15.72	58.439		
3,800.00	3,614.90	3,650.14	3,648.91	18.51	7.59	-178.97	-54.94	-130.39	969.23	952.95	16.28	59.530		
3,900.00	3,701.84	3,743.00	3,741.76	19.52	7.78	-179.08	-55.45	-129.53	1,018.12	1,001.29	16.83	60.497		
4,000.00	3,788.80	3,806.00	3,804.75	20.53	7.91	-179.68	-56.43	-129.26	1,067.91	1,050.53	17.38	61.445		
4,100.00	3,878.03	3,883.45	3,882.16	21.32	8.09	-166.54	-58.75	-129.97	1,114.68	1,096.39	18.28	60.965		
4,200.00	3,970.11	3,960.68	3,959.32	21.98	8.26	-150.25	-61.80	-131.08	1,154.24	1,135.19	19.05	60.577		
4,300.00	4,063.66	4,014.04	4,012.54	22.51	8.38	-130.94	-65.50	-132.39	1,187.59	1,167.99	19.60	60.587		
4,400.00	4,157.30	4,059.00	4,057.15	22.90	8.49	-111.72	-70.56	-134.71	1,216.11	1,196.18	19.94	60.998		
4,500.00	4,249.61	4,103.00	4,100.54	23.15	8.61	-96.04	-76.88	-138.26	1,239.72	1,219.64	20.08	61.752		
4,600.00	4,339.24	4,150.40	4,147.01	23.28	8.74	-84.86	-84.66	-143.44	1,258.16	1,238.11	20.05	62.743		
4,700.00	4,424.84	4,199.00	4,194.22	23.29	8.89	-77.33	-94.16	-149.93	1,271.46	1,251.54	19.92	63.831		
4,800.00	4,505.14	4,249.00	4,242.37	23.22	9.05	-72.48	-105.22	-157.64	1,279.47	1,259.72	19.75	64.768		
4,900.00	4,578.93	4,284.24	4,275.87	23.07	9.14	-69.15	-114.14	-163.96	1,282.96	1,263.40	19.55	65.609		
5,000.00	4,645.13	4,317.55	4,306.96	22.86	9.22	-67.10	-123.87	-170.90	1,282.67	1,263.23	19.44	65.964		
5,100.00	4,702.74	4,363.00	4,348.34	22.62	9.34	-66.37	-139.12	-181.85	1,278.96	1,259.41	19.55	65.414		
5,200.00	4,750.90	4,380.22	4,363.66	22.36	9.38	-65.69	-145.47	-186.49	1,271.70	1,251.95	19.75	64.404		
5,300.00	4,788.89	4,419.05	4,397.54	22.09	9.47	-66.28	-160.61	-197.89	1,261.67	1,241.31	20.35	61.984		

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



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Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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 - Deal Gulch 1-16 Permit											Offset Site Error: 0.67 ft	
Survey Program: 177-MWD, 4498-MWD, 4363-MWD													Offset Well Error: 0.00 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
5,400.00	4,816.16	4,458.00	4,431.03	21.84	9.58	67.53	-176.36	-210.03	1,248.50	1,227.24	21.26	58.726		
5,500.00	4,832.29	4,489.00	4,457.36	21.63	9.69	69.07	-188.86	-220.60	1,233.28	1,210.94	22.33	55.226		
5,600.00	4,837.04	4,510.37	4,475.27	21.48	9.77	70.71	-197.56	-228.36	1,216.64	1,193.17	23.47	51.828		
5,700.00	4,830.34	4,534.64	4,495.28	21.44	9.87	72.86	-207.75	-237.54	1,199.24	1,174.47	24.77	48.420		
5,800.00	4,813.22	4,552.00	4,509.35	21.58	9.95	74.45	-215.26	-244.42	1,182.38	1,156.46	25.92	45.623		
5,900.00	4,794.12	4,588.07	4,537.91	22.02	10.14	76.05	-231.52	-259.27	1,171.60	1,144.43	27.17	43.116		
6,000.00	4,775.02	4,631.65	4,571.70	22.78	10.39	77.97	-252.11	-277.53	1,167.79	1,139.09	28.71	40.681		
6,003.91	4,774.28	4,632.99	4,572.74	22.81	10.40	78.03	-252.75	-278.10	1,167.79	1,139.02	28.77	40.595		
6,100.00	4,755.92	4,664.83	4,597.09	23.79	10.60	79.41	-268.03	-291.76	1,171.13	1,140.86	30.27	38.688		
6,200.00	4,736.82	4,702.75	4,625.09	24.96	10.88	81.03	-287.06	-308.84	1,181.57	1,149.54	32.04	36.883		
6,300.00	4,717.72	4,742.00	4,652.64	26.26	11.20	82.64	-307.90	-327.47	1,198.53	1,164.59	33.93	35.320		
6,400.00	4,698.63	4,783.54	4,681.39	27.64	11.54	84.32	-329.93	-347.82	1,221.76	1,185.82	35.93	34.001		
6,500.00	4,679.53	4,852.43	4,727.34	29.09	12.20	87.00	-367.89	-382.33	1,249.83	1,211.43	38.40	32.551		
6,600.00	4,660.43	4,890.05	4,750.00	30.59	12.62	88.35	-389.83	-402.80	1,282.90	1,242.39	40.51	31.669		
6,700.00	4,641.33	4,932.00	4,772.31	32.13	13.15	89.70	-415.09	-427.76	1,320.71	1,277.96	42.75	30.895		
6,800.00	4,622.23	4,979.31	4,793.21	33.71	13.83	91.02	-444.17	-458.65	1,362.65	1,317.52	45.13	30.194		
6,900.00	4,603.13	5,348.02	4,907.02	35.32	19.77	98.48	-707.92	-687.01	1,393.03	1,340.46	52.57	26.501		
7,000.00	4,584.03	5,461.25	4,912.76	36.96	21.91	99.42	-796.55	-757.02	1,420.46	1,364.23	56.23	25.260		
7,100.00	4,564.93	5,577.96	4,903.61	38.62	24.17	99.73	-886.89	-830.26	1,446.69	1,386.64	60.04	24.095		
7,200.00	4,545.83	5,658.18	4,893.03	40.31	25.72	99.77	-948.44	-880.61	1,472.28	1,409.07	63.21	23.293		
7,300.00	4,526.73	5,734.93	4,884.33	42.01	27.12	99.85	-1,006.64	-929.87	1,499.68	1,433.43	66.25	22.637		
7,400.00	4,507.63	5,856.65	4,874.99	43.73	29.39	100.15	-1,100.33	-1,007.00	1,526.67	1,456.57	70.10	21.778		
7,500.00	4,488.54	5,973.43	4,862.31	45.46	31.72	100.29	-1,190.41	-1,080.21	1,552.44	1,478.41	74.03	20.970		
7,600.00	4,469.44	6,070.00	4,851.56	47.21	33.55	100.41	-1,265.82	-1,139.58	1,576.66	1,499.14	77.52	20.338		
7,700.00	4,450.34	6,167.87	4,843.84	48.97	35.38	100.64	-1,342.37	-1,200.06	1,601.76	1,520.76	81.00	19.776		
7,800.00	4,431.24	6,286.93	4,833.46	50.73	37.71	100.89	-1,436.53	-1,272.16	1,625.11	1,540.15	84.96	19.128		
7,900.00	4,412.14	6,359.23	4,827.73	52.51	39.12	101.05	-1,493.32	-1,316.55	1,649.65	1,561.59	88.06	18.733		
8,000.00	4,393.04	6,465.88	4,817.60	54.30	41.28	101.22	-1,576.60	-1,382.38	1,674.47	1,582.61	91.87	18.227		
8,100.00	4,373.94	6,549.51	4,808.39	56.10	42.98	101.30	-1,641.82	-1,433.92	1,699.00	1,603.75	95.25	17.837		
8,200.00	4,354.84	6,629.00	4,799.33	57.90	44.58	101.36	-1,703.07	-1,483.76	1,724.70	1,626.15	98.55	17.500		
8,300.00	4,335.74	6,692.56	4,791.70	59.71	45.87	101.39	-1,751.42	-1,524.30	1,751.70	1,650.13	101.57	17.246		
8,400.00	4,316.64	6,805.90	4,776.64	61.53	48.20	101.38	-1,836.84	-1,597.26	1,779.18	1,673.61	105.58	16.852		
8,500.00	4,297.54	6,860.35	4,769.17	63.36	49.31	101.37	-1,877.64	-1,632.54	1,807.23	1,698.79	108.44	16.666		
8,600.00	4,278.45	6,923.81	4,761.26	65.18	50.60	101.36	-1,924.33	-1,674.78	1,837.47	1,726.01	111.46	16.486		
8,691.34	4,261.00	6,980.55	4,754.62	66.86	51.75	101.37	-1,965.64	-1,713.11	1,866.40	1,752.21	114.19	16.344 SF		



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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													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	36.05	36.05	0.00	0.67	-94.84	-8.13	-96.06	96.40					
100.00	100.00	135.34	135.34	0.09	0.68	-95.07	-8.58	-96.64	97.03	96.25	0.78	124.961		
200.00	200.00	234.18	234.16	0.32	0.74	-95.54	-9.52	-98.03	98.51	97.46	1.06	93.184		
300.00	300.00	333.42	333.36	0.54	0.86	-96.16	-10.84	-100.47	101.10	99.70	1.40	72.052		
400.00	400.00	433.07	432.95	0.77	1.02	-96.95	-12.60	-103.33	104.14	102.36	1.78	58.410		
500.00	500.00	533.95	533.76	0.99	1.20	-98.10	-15.13	-106.29	107.39	105.21	2.18	49.272		
600.00	600.00	634.48	634.22	1.22	1.38	-99.60	-18.29	-108.06	109.62	107.04	2.58	42.520		
700.00	700.00	735.54	735.27	1.44	1.55	-100.08	-19.40	-109.19	110.90	107.93	2.98	37.275		
800.00	800.00	834.30	834.02	1.67	1.75	-100.21	-19.90	-110.52	112.32	108.93	3.39	33.122		
900.00	900.00	933.24	932.92	1.89	1.96	-100.89	-21.70	-112.76	114.88	111.06	3.82	30.060		
1,000.00	1,000.00	1,033.48	1,033.08	2.12	2.17	-102.12	-24.74	-115.22	117.89	113.64	4.25	27.732		
1,100.00	1,100.00	1,138.73	1,138.28	2.34	2.36	-103.46	-27.50	-114.91	118.17	113.50	4.67	25.298		
1,200.00	1,200.00	1,238.22	1,237.72	2.57	2.55	-104.63	-29.39	-112.60	116.38	111.30	5.09	22.887		
1,300.00	1,300.00	1,337.97	1,337.46	2.79	2.75	-105.22	-30.30	-111.37	115.42	109.91	5.51	20.961		
1,400.00	1,400.00	1,437.49	1,436.97	3.02	2.95	-105.76	-31.11	-110.26	114.56	108.63	5.93	19.316		
1,416.32	1,416.32	1,453.78	1,453.27	3.05	2.98	-166.89	-31.31	-110.10	114.52	108.50	6.01	19.050		
1,500.00	1,499.98	1,536.96	1,536.43	3.23	3.16	-167.72	-32.48	-109.46	115.88	109.51	6.37	18.204		
1,600.00	1,599.84	1,635.51	1,634.97	3.45	3.37	-169.01	-34.17	-109.27	121.34	114.56	6.78	17.901 SF		
1,700.00	1,699.45	1,734.54	1,733.97	3.67	3.58	-170.53	-36.36	-109.88	131.21	124.02	7.19	18.251		
1,800.00	1,798.70	1,834.84	1,834.24	3.91	3.79	-172.17	-38.75	-110.11	144.29	136.71	7.59	19.020		
1,900.00	1,897.47	1,936.49	1,935.88	4.17	3.98	-172.75	-38.11	-109.73	159.23	151.27	7.97	19.990		
2,000.00	1,995.62	2,033.74	2,033.11	4.46	4.18	-173.00	-36.33	-109.22	177.02	168.68	8.34	21.227		
2,100.00	2,093.06	2,130.95	2,130.31	4.80	4.37	-173.35	-34.89	-109.13	198.73	190.01	8.71	22.803		
2,200.00	2,189.64	2,227.83	2,227.18	5.18	4.57	-173.70	-33.48	-109.28	224.05	214.97	9.08	24.662		
2,300.00	2,285.27	2,323.83	2,323.15	5.62	4.76	-173.90	-31.38	-109.40	252.42	242.97	9.45	26.725		
2,400.00	2,379.82	2,416.40	2,415.72	6.12	4.95	-174.16	-29.73	-109.85	284.57	274.76	9.81	29.020		
2,500.00	2,473.17	2,505.79	2,505.10	6.70	5.14	-174.55	-29.23	-110.80	320.96	310.79	10.16	31.579		
2,600.00	2,565.21	2,594.63	2,593.92	7.34	5.34	-175.01	-29.70	-112.37	361.56	351.04	10.52	34.374		
2,700.00	2,655.84	2,682.20	2,681.46	8.07	5.52	-175.41	-30.42	-114.34	405.85	394.99	10.87	37.346		
2,800.00	2,744.94	2,767.36	2,766.59	8.87	5.71	-175.82	-31.69	-116.39	453.65	442.43	11.21	40.466		
2,900.00	2,832.43	2,852.09	2,851.26	9.75	5.90	-176.28	-33.78	-118.66	504.99	493.41	11.58	43.604		
3,000.00	2,919.37	2,945.00	2,944.12	10.67	6.09	-176.86	-36.50	-119.97	556.52	544.44	12.08	46.072		
3,100.00	3,006.31	3,032.96	3,032.04	11.61	6.28	-177.33	-39.06	-120.72	607.67	595.09	12.58	48.300		
3,200.00	3,093.25	3,110.43	3,109.48	12.57	6.44	-177.66	-41.11	-121.61	658.99	645.91	13.08	50.398		
3,300.00	3,180.19	3,197.24	3,196.22	13.54	6.63	-178.01	-44.10	-123.14	711.08	697.48	13.60	52.289		
3,400.00	3,267.13	3,289.83	3,288.78	14.52	6.82	-178.25	-46.10	-124.45	762.40	748.27	14.12	53.976		
3,500.00	3,354.07	3,370.17	3,369.10	15.51	6.99	-178.38	-47.18	-125.86	813.67	799.03	14.64	55.573		
3,600.00	3,441.01	3,445.79	3,444.68	16.50	7.16	-178.52	-49.06	-127.68	865.90	850.74	15.16	57.110		
3,700.00	3,527.96	3,541.49	3,540.29	17.51	7.37	-178.76	-52.42	-129.75	918.40	902.68	15.72	58.439		
3,800.00	3,614.90	3,650.14	3,648.91	18.51	7.59	-178.97	-54.94	-130.39	969.23	952.95	16.28	59.530		
3,900.00	3,701.84	3,743.00	3,741.76	19.52	7.78	-179.08	-55.45	-129.53	1,018.12	1,001.29	16.83	60.497		
4,000.00	3,788.80	3,806.00	3,804.75	20.53	7.91	-179.68	-56.43	-129.26	1,067.91	1,050.53	17.38	61.445		
4,100.00	3,878.03	3,883.45	3,882.16	21.32	8.09	-166.54	-58.75	-129.97	1,114.68	1,096.39	18.28	60.965		
4,200.00	3,970.11	3,960.68	3,959.32	21.98	8.26	-150.25	-61.80	-131.08	1,154.24	1,135.19	19.05	60.577		
4,300.00	4,063.66	4,014.04	4,012.54	22.51	8.38	-130.94	-65.50	-132.39	1,187.59	1,167.99	19.60	60.587		
4,400.00	4,157.30	4,059.00	4,057.15	22.90	8.49	-111.72	-70.56	-134.71	1,216.11	1,196.18	19.94	60.998		
4,500.00	4,249.61	4,103.00	4,100.54	23.15	8.61	-96.04	-76.88	-138.26	1,239.72	1,219.64	20.08	61.752		
4,600.00	4,339.24	4,150.40	4,147.01	23.28	8.74	-84.86	-84.66	-143.44	1,258.16	1,238.11	20.05	62.743		
4,700.00	4,424.84	4,199.00	4,194.22	23.29	8.89	-77.33	-94.16	-149.93	1,271.46	1,251.54	19.92	63.831		
4,800.00	4,505.14	4,252.59	4,245.81	23.22	9.06	-72.55	-106.06	-158.23	1,279.47	1,259.70	19.77	64.722		
4,900.00	4,578.93	4,337.93	4,327.47	23.07	9.35	-70.47	-126.47	-172.31	1,281.30	1,261.45	19.84	64.570		
5,000.00	4,645.13	4,442.48	4,427.71	22.86	9.70	-70.58	-151.42	-188.39	1,275.34	1,255.06	20.29	62.862		

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 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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													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	4,702.74	4,540.09	4,521.52	22.62	10.03	72.00	-174.99	-201.54	1,262.17	1,241.09	21.08	59.882		
5,200.00	4,750.90	4,613.30	4,592.04	22.36	10.27	73.91	-192.35	-210.71	1,243.71	1,221.68	22.03	56.465		
5,300.00	4,788.89	4,676.43	4,653.01	22.09	10.49	76.45	-206.71	-218.55	1,222.00	1,198.85	23.15	52.790		
5,400.00	4,816.16	4,718.00	4,693.17	21.84	10.64	78.85	-216.19	-223.68	1,198.72	1,174.47	24.24	49.448		
5,500.00	4,832.29	4,750.00	4,723.86	21.63	10.77	81.30	-224.11	-228.05	1,175.81	1,150.46	25.35	46.377		
5,600.00	4,837.04	4,766.36	4,739.42	21.48	10.84	83.31	-228.52	-230.54	1,154.37	1,127.99	26.38	43.757		
5,700.00	4,830.34	4,781.00	4,753.27	21.44	10.91	85.41	-232.64	-232.87	1,135.29	1,107.84	27.45	41.355		
5,800.00	4,813.22	4,797.68	4,768.98	21.58	10.98	87.13	-237.50	-235.65	1,119.79	1,091.25	28.54	39.242		
5,900.00	4,794.12	4,813.00	4,783.36	22.02	11.05	87.91	-242.09	-238.30	1,112.05	1,082.46	29.59	37.579		
5,938.48	4,786.77	4,816.87	4,786.98	22.28	11.07	88.10	-243.26	-238.98	1,111.40	1,081.37	30.04	37.003		
6,000.00	4,775.02	4,829.81	4,799.12	22.78	11.13	88.76	-247.15	-241.21	1,113.05	1,082.23	30.81	36.124		
6,100.00	4,755.92	4,849.46	4,817.59	23.79	11.22	89.76	-253.00	-244.50	1,122.70	1,090.51	32.18	34.886		
6,200.00	4,736.82	4,867.57	4,834.65	24.96	11.30	90.69	-258.33	-247.41	1,140.81	1,107.17	33.64	33.912		
6,300.00	4,717.72	4,883.00	4,849.21	26.26	11.37	91.47	-262.82	-249.82	1,167.03	1,131.87	35.16	33.195		
6,400.00	4,698.63	4,896.18	4,861.67	27.64	11.42	92.14	-266.61	-251.82	1,200.87	1,164.15	36.72	32.703		
6,500.00	4,679.53	4,908.57	4,873.40	29.09	11.48	92.77	-270.13	-253.68	1,241.71	1,203.38	38.33	32.392		
6,600.00	4,660.43	4,920.23	4,884.46	30.59	11.53	93.37	-273.41	-255.40	1,288.91	1,248.93	39.99	32.233		
6,700.00	4,641.33	4,931.22	4,894.90	32.13	11.57	93.92	-276.47	-257.00	1,341.81	1,300.14	41.67	32.198		
6,800.00	4,622.23	4,940.00	4,903.25	33.71	11.61	94.37	-278.89	-258.25	1,399.77	1,356.40	43.37	32.271		
6,900.00	4,603.13	4,940.00	4,903.25	35.32	11.61	94.37	-278.89	-258.25	1,462.25	1,417.20	45.04	32.462		
7,000.00	4,584.03	4,955.59	4,918.10	36.96	11.67	95.16	-283.10	-260.44	1,528.58	1,481.75	46.84	32.636		
7,100.00	4,564.93	4,962.01	4,924.23	38.62	11.70	95.48	-284.80	-261.33	1,598.42	1,549.83	48.59	32.896		
7,200.00	4,545.83	4,968.00	4,929.95	40.31	11.72	95.79	-286.36	-262.15	1,671.28	1,620.92	50.36	33.188		
7,300.00	4,526.73	4,973.59	4,935.30	42.01	11.75	96.07	-287.80	-262.91	1,746.79	1,694.66	52.14	33.505		
7,400.00	4,507.63	4,978.83	4,940.32	43.73	11.77	96.33	-289.13	-263.62	1,824.64	1,770.71	53.92	33.837		
7,500.00	4,488.54	4,983.75	4,945.03	45.46	11.79	96.58	-290.37	-264.27	1,904.52	1,848.80	55.72	34.179		
7,600.00	4,469.44	5,003.00	4,963.52	47.21	11.87	97.55	-295.09	-266.79	1,986.32	1,928.73	57.59	34.493		
7,700.00	4,450.34	5,003.00	4,963.52	48.97	11.87	97.55	-295.09	-266.79	2,069.54	2,010.16	59.38	34.854		
7,800.00	4,431.24	5,003.00	4,963.52	50.73	11.87	97.55	-295.09	-266.79	2,154.18	2,093.00	61.18	35.212		
7,900.00	4,412.14	5,003.00	4,963.52	52.51	11.87	97.55	-295.09	-266.79	2,240.09	2,177.11	62.99	35.565		
8,000.00	4,393.04	5,003.00	4,963.52	54.30	11.87	97.55	-295.09	-266.79	2,327.13	2,262.33	64.80	35.911		
8,100.00	4,373.94	5,003.00	4,963.52	56.10	11.87	97.55	-295.09	-266.79	2,415.17	2,348.55	66.62	36.251		
8,200.00	4,354.84	5,003.00	4,963.52	57.90	11.87	97.55	-295.09	-266.79	2,504.11	2,435.66	68.45	36.582		
8,300.00	4,335.74	5,003.00	4,963.52	59.71	11.87	97.55	-295.09	-266.79	2,593.86	2,523.57	70.29	36.905		
8,400.00	4,316.64	5,003.00	4,963.52	61.53	11.87	97.55	-295.09	-266.79	2,684.33	2,612.21	72.12	37.219		
8,500.00	4,297.54	5,003.00	4,963.52	63.36	11.87	97.55	-295.09	-266.79	2,775.45	2,701.49	73.97	37.524		
8,600.00	4,278.45	5,003.00	4,963.52	65.18	11.87	97.55	-295.09	-266.79	2,867.17	2,791.36	75.81	37.820		
8,691.34	4,261.00	5,003.00	4,963.52	66.86	11.87	97.55	-295.09	-266.79	2,951.41	2,873.91	77.50	38.083		



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	39.00	39.00	0.00	0.04	-71.65	52.62	-158.62	167.12					
100.00	100.00	139.00	139.00	0.09	0.19	-71.65	52.62	-158.62	167.12	166.84	0.28	594.839		
200.00	200.00	239.00	239.00	0.32	0.41	-71.65	52.62	-158.62	167.12	166.39	0.73	228.784		
300.00	300.00	339.00	339.00	0.54	0.64	-71.65	52.62	-158.62	167.12	165.94	1.18	141.628		
400.00	400.00	439.00	439.00	0.77	0.86	-71.65	52.62	-158.62	167.12	165.50	1.63	102.558		
500.00	500.00	539.00	539.00	0.99	1.09	-71.65	52.62	-158.62	167.12	165.05	2.08	80.384		
600.00	600.00	639.00	639.00	1.22	1.31	-71.65	52.62	-158.62	167.12	164.60	2.53	66.093		
700.00	700.00	739.00	739.00	1.44	1.54	-71.65	52.62	-158.62	167.12	164.15	2.98	56.117		
800.00	800.00	839.00	839.00	1.67	1.76	-71.65	52.62	-158.62	167.12	163.70	3.43	48.757		
900.00	900.00	939.00	939.00	1.89	1.98	-71.65	52.62	-158.62	167.12	163.25	3.88	43.104		
1,000.00	1,000.00	1,039.00	1,039.00	2.12	2.21	-71.65	52.62	-158.62	167.12	162.80	4.33	38.626		
1,100.00	1,100.00	1,139.00	1,139.00	2.34	2.43	-71.65	52.62	-158.62	167.12	162.35	4.78	34.991		
1,200.00	1,200.00	1,239.00	1,239.00	2.57	2.66	-71.65	52.62	-158.62	167.12	161.90	5.23	31.981		
1,300.00	1,300.00	1,339.00	1,339.00	2.79	2.88	-71.65	52.62	-158.62	167.12	161.45	5.68	29.447		
1,400.00	1,400.00	1,439.00	1,439.00	3.02	3.11	-71.65	52.62	-158.62	167.12	161.00	6.12	27.286 CC, ES		
1,500.00	1,499.98	1,538.98	1,538.98	3.23	3.33	-133.08	52.62	-158.62	168.31	161.75	6.57	25.635		
1,600.00	1,599.84	1,638.84	1,638.84	3.45	3.56	-134.30	52.62	-158.62	171.93	164.93	7.00	24.571		
1,700.00	1,699.45	1,738.45	1,738.45	3.67	3.78	-136.22	52.62	-158.62	178.13	170.71	7.43	23.982		
1,800.00	1,798.70	1,837.70	1,837.70	3.91	4.00	-138.67	52.62	-158.62	187.14	179.29	7.86	23.818		
1,900.00	1,897.47	1,936.47	1,936.47	4.17	4.23	-141.48	52.62	-158.62	199.21	190.92	8.29	24.044		
2,000.00	1,995.62	2,034.62	2,034.62	4.46	4.45	-144.45	52.62	-158.62	214.54	205.83	8.71	24.630		
2,100.00	2,093.06	2,132.06	2,132.06	4.80	4.67	-147.44	52.62	-158.62	233.34	224.21	9.13	25.551		
2,200.00	2,189.64	2,228.64	2,228.64	5.18	4.88	-150.31	52.62	-158.62	255.70	246.15	9.55	26.781		
2,300.00	2,285.27	2,324.27	2,324.27	5.62	5.10	-152.99	52.62	-158.62	281.69	271.73	9.96	28.291		
2,400.00	2,379.82	2,418.82	2,418.82	6.12	5.31	-155.43	52.62	-158.62	311.31	300.95	10.36	30.053		
2,500.00	2,473.17	2,513.80	2,513.80	6.70	5.52	-157.66	52.62	-158.59	344.49	333.74	10.75	32.036		
2,600.00	2,565.21	2,619.73	2,619.69	7.34	5.74	-160.00	52.53	-156.12	379.15	368.01	11.14	34.046		
2,700.00	2,655.84	2,726.80	2,726.56	8.07	5.96	-162.25	52.30	-149.66	414.02	402.52	11.50	36.007		
2,800.00	2,744.94	2,834.99	2,834.23	8.87	6.19	-164.43	51.91	-139.07	449.14	437.28	11.86	37.884		
2,900.00	2,832.43	2,944.31	2,942.53	9.75	6.44	-166.61	51.38	-124.26	484.47	472.24	12.24	39.590		
3,000.00	2,919.37	3,055.70	3,052.22	10.67	6.72	-168.82	50.67	-104.93	517.94	505.19	12.75	40.638		
3,100.00	3,006.31	3,169.43	3,163.35	11.61	7.04	-170.93	49.80	-80.82	548.41	535.13	13.28	41.301		
3,200.00	3,093.25	3,285.21	3,275.42	12.57	7.41	-173.01	48.75	-51.76	575.84	562.00	13.84	41.604		
3,300.00	3,180.19	3,402.71	3,387.84	13.54	7.86	-175.08	47.51	-17.67	600.18	585.73	14.45	41.525		
3,400.00	3,267.13	3,521.56	3,500.05	14.52	8.40	-177.19	46.09	21.47	621.46	606.33	15.13	41.080		
3,500.00	3,354.07	3,641.37	3,611.41	15.51	9.03	-179.35	44.49	65.60	639.71	623.83	15.89	40.268		
3,600.00	3,441.01	3,755.41	3,715.66	16.50	9.73	178.52	42.82	111.79	655.15	638.43	16.72	39.179		
3,700.00	3,527.96	3,852.08	3,803.56	17.51	10.38	176.76	41.36	152.00	670.29	652.72	17.57	38.144		
3,800.00	3,614.90	3,948.74	3,891.46	18.51	11.06	175.07	39.90	192.20	686.05	667.56	18.49	37.098		
3,900.00	3,701.84	4,045.41	3,979.35	19.52	11.76	173.45	38.45	232.41	702.39	682.91	19.48	36.055		
4,000.00	3,788.80	4,142.09	4,067.26	20.53	12.49	170.98	36.99	272.62	719.22	698.63	20.60	34.921		
4,100.00	3,878.03	4,240.27	4,156.53	21.32	13.24	158.65	35.51	313.45	730.67	708.55	22.12	33.037		
4,200.00	3,970.11	4,339.88	4,247.11	21.98	14.02	143.22	34.01	354.89	732.28	709.00	23.28	31.455		
4,300.00	4,063.66	4,431.59	4,330.50	22.51	14.74	125.28	32.56	393.00	723.92	699.96	23.96	30.212		
4,400.00	4,157.30	4,487.76	4,381.92	22.90	15.13	107.62	29.31	415.37	709.47	685.41	24.05	29.496		
4,500.00	4,249.61	4,550.00	4,439.22	23.15	15.52	93.55	21.59	438.35	691.09	667.22	23.87	28.949		
4,600.00	4,339.24	4,600.00	4,485.31	23.28	15.82	83.87	12.29	455.35	668.87	645.43	23.44	28.541		
4,700.00	4,424.84	4,650.00	4,531.25	23.29	16.11	77.88	0.26	470.98	643.30	620.40	22.90	28.096		
4,800.00	4,505.14	4,714.75	4,590.25	23.22	16.45	74.96	-19.28	489.09	614.53	592.06	22.46	27.356		
4,900.00	4,578.93	4,772.38	4,642.00	23.07	16.74	74.07	-40.36	503.09	583.31	561.09	22.22	26.257		
5,000.00	4,645.13	4,830.51	4,693.24	22.86	17.02	74.92	-65.03	515.14	550.28	527.95	22.33	24.641		
5,100.00	4,702.74	4,889.28	4,743.76	22.62	17.28	77.27	-93.30	525.13	516.41	493.51	22.90	22.551		

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 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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		
5,200.00	4,750.90	4,950.00	4,794.35	22.36	17.54	81.02	-125.90	533.09	482.97	459.06	23.91	20.202		
5,300.00	4,788.89	5,009.28	4,841.89	22.09	17.78	85.82	-160.87	538.49	451.63	426.46	25.18	17.939		
5,400.00	4,816.16	5,070.92	4,889.13	21.84	18.02	91.67	-200.33	541.61	424.59	398.05	26.54	15.995		
5,500.00	4,832.29	5,134.05	4,934.90	21.63	18.26	98.24	-243.78	542.13	404.45	376.64	27.81	14.543		
5,600.00	4,837.04	5,200.00	4,979.61	21.48	18.53	105.29	-292.18	539.80	394.01	365.10	28.91	13.627		
5,637.80	4,835.85	5,224.26	4,995.20	21.44	18.62	107.85	-310.70	538.20	393.11	363.78	29.33	13.405		
5,700.00	4,830.34	5,266.57	5,021.22	21.44	18.79	112.20	-343.84	534.47	395.64	365.69	29.95	13.208		
5,800.00	4,813.22	5,338.16	5,061.74	21.58	19.10	119.36	-402.15	525.44	410.42	379.39	31.03	13.226		
5,900.00	4,794.12	5,422.66	5,103.48	22.02	19.49	127.03	-474.04	510.49	435.38	403.45	31.94	13.633		
6,000.00	4,775.02	5,524.26	5,144.36	22.78	20.03	134.22	-563.85	486.58	465.09	432.31	32.78	14.188		
6,100.00	4,755.92	5,644.54	5,178.84	23.79	20.79	140.11	-673.13	450.38	494.29	460.54	33.75	14.647		
6,200.00	4,736.82	5,782.54	5,198.92	24.96	21.85	143.98	-799.55	399.28	518.40	483.25	35.15	14.749		
6,300.00	4,717.72	5,916.26	5,198.54	26.26	23.07	145.39	-920.02	341.50	534.53	497.41	37.11	14.402		
6,400.00	4,698.63	6,015.15	5,193.85	27.64	24.11	145.94	-1,008.27	297.12	548.41	509.44	38.97	14.071		
6,500.00	4,679.53	6,114.05	5,189.15	29.09	25.26	146.47	-1,096.53	252.74	562.34	521.48	40.86	13.764		
6,600.00	4,660.43	6,212.94	5,184.45	30.59	26.53	146.97	-1,184.78	208.36	576.32	533.56	42.76	13.479		
6,700.00	4,641.33	6,311.84	5,179.75	32.13	27.89	147.45	-1,273.03	163.98	590.33	545.66	44.67	13.216		
6,800.00	4,622.23	6,410.73	5,175.05	33.71	29.32	147.90	-1,361.28	119.60	604.39	557.80	46.59	12.974		
6,900.00	4,603.13	6,509.63	5,170.36	35.32	30.82	148.34	-1,449.54	75.22	618.48	569.97	48.51	12.751		
7,000.00	4,584.03	6,608.53	5,165.66	36.96	32.37	148.75	-1,537.79	30.84	632.60	582.18	50.43	12.545		
7,100.00	4,564.93	6,707.42	5,160.96	38.62	33.97	149.15	-1,626.04	-13.54	646.76	594.42	52.34	12.357		
7,200.00	4,545.83	6,806.32	5,156.26	40.31	35.61	149.53	-1,714.30	-57.92	660.94	606.69	54.25	12.182		
7,300.00	4,526.73	6,905.21	5,151.57	42.01	37.28	149.89	-1,802.55	-102.30	675.15	618.99	56.16	12.021		
7,400.00	4,507.63	7,004.11	5,146.87	43.73	38.98	150.24	-1,890.80	-146.69	689.39	631.33	58.07	11.872		
7,500.00	4,488.54	7,103.00	5,142.17	45.46	40.70	150.58	-1,979.06	-191.07	703.65	643.69	59.96	11.735		
7,600.00	4,469.44	7,201.90	5,137.47	47.21	42.45	150.90	-2,067.31	-235.45	717.94	656.08	61.85	11.607		
7,700.00	4,450.34	7,300.79	5,132.77	48.97	44.21	151.21	-2,155.56	-279.83	732.24	668.50	63.74	11.488		
7,800.00	4,431.24	7,399.69	5,128.08	50.73	45.99	151.50	-2,243.82	-324.21	746.57	680.95	65.62	11.378		
7,900.00	4,412.14	7,498.59	5,123.38	52.51	47.79	151.79	-2,332.07	-368.59	760.91	693.43	67.49	11.275		
8,000.00	4,393.04	7,597.48	5,118.68	54.30	49.59	152.07	-2,420.32	-412.97	775.28	705.92	69.35	11.179		
8,100.00	4,373.94	7,696.38	5,113.98	56.10	51.41	152.33	-2,508.58	-457.35	789.66	718.45	71.21	11.089		
8,200.00	4,354.84	7,795.27	5,109.28	57.90	53.24	152.59	-2,596.83	-501.73	804.05	730.99	73.06	11.005		
8,300.00	4,335.74	7,894.17	5,104.59	59.71	55.08	152.83	-2,685.08	-546.11	818.46	743.56	74.91	10.927		
8,400.00	4,316.64	7,993.06	5,099.89	61.53	56.93	153.07	-2,773.33	-590.49	832.89	756.14	76.74	10.853		
8,500.00	4,297.54	8,091.96	5,095.19	63.36	58.78	153.30	-2,861.59	-634.88	847.32	768.75	78.58	10.783		
8,600.00	4,278.45	8,190.86	5,090.49	65.18	60.64	153.53	-2,949.84	-679.26	861.78	781.37	80.40	10.718		
8,691.34	4,261.00	8,281.19	5,086.20	66.86	62.35	153.72	-3,030.45	-719.79	874.99	792.92	82.07	10.662 SF		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	39.00	39.00	0.00	0.04	-65.68	66.79	-147.79	162.18					
100.00	100.00	139.00	139.00	0.09	0.19	-65.68	66.79	-147.79	162.18	161.90	0.28	577.246		
200.00	200.00	239.00	239.00	0.32	0.41	-65.68	66.79	-147.79	162.18	161.45	0.73	222.018		
300.00	300.00	339.00	339.00	0.54	0.64	-65.68	66.79	-147.79	162.18	161.00	1.18	137.440		
400.00	400.00	439.00	439.00	0.77	0.86	-65.68	66.79	-147.79	162.18	160.55	1.63	99.525		
500.00	500.00	539.00	539.00	0.99	1.09	-65.68	66.79	-147.79	162.18	160.10	2.08	78.006		
600.00	600.00	639.00	639.00	1.22	1.31	-65.68	66.79	-147.79	162.18	159.65	2.53	64.138		
700.00	700.00	739.00	739.00	1.44	1.54	-65.68	66.79	-147.79	162.18	159.20	2.98	54.457		
800.00	800.00	839.00	839.00	1.67	1.76	-65.68	66.79	-147.79	162.18	158.75	3.43	47.315		
900.00	900.00	939.00	939.00	1.89	1.98	-65.68	66.79	-147.79	162.18	158.30	3.88	41.829		
1,000.00	1,000.00	1,039.00	1,039.00	2.12	2.21	-65.68	66.79	-147.79	162.18	157.85	4.33	37.484		
1,100.00	1,100.00	1,139.00	1,139.00	2.34	2.43	-65.68	66.79	-147.79	162.18	157.41	4.78	33.956		
1,200.00	1,200.00	1,239.00	1,239.00	2.57	2.66	-65.68	66.79	-147.79	162.18	156.96	5.23	31.035		
1,300.00	1,300.00	1,339.00	1,339.00	2.79	2.88	-65.68	66.79	-147.79	162.18	156.51	5.68	28.577		
1,400.00	1,400.00	1,439.00	1,439.00	3.02	3.11	-65.68	66.79	-147.79	162.18	156.06	6.12	26.479		
1,500.00	1,499.98	1,538.98	1,538.98	3.23	3.33	-127.17	66.79	-147.79	163.23	156.66	6.57	24.860		
1,600.00	1,599.84	1,638.84	1,638.84	3.45	3.56	-128.55	66.79	-147.79	166.45	159.45	7.00	23.782		
1,700.00	1,699.45	1,738.45	1,738.45	3.67	3.78	-130.73	66.79	-147.79	172.02	164.59	7.43	23.147		
1,800.00	1,798.70	1,837.70	1,837.70	3.91	4.00	-133.54	66.79	-147.79	180.23	172.37	7.86	22.917		
1,900.00	1,897.47	1,936.47	1,936.47	4.17	4.23	-136.76	66.79	-147.79	191.40	183.10	8.30	23.066		
2,000.00	1,995.62	2,037.85	2,037.85	4.46	4.45	-140.27	66.87	-147.48	205.53	196.80	8.73	23.538		
2,100.00	2,093.06	2,145.74	2,145.64	4.80	4.68	-143.70	67.97	-143.11	219.60	210.44	9.16	23.967		
2,200.00	2,189.64	2,254.79	2,254.21	5.18	4.92	-146.83	70.39	-133.48	232.56	222.98	9.59	24.257		
2,300.00	2,285.27	2,364.88	2,363.21	5.62	5.17	-149.76	74.17	-118.48	244.33	234.31	10.02	24.394		
2,400.00	2,379.82	2,475.93	2,472.22	6.12	5.47	-152.56	79.32	-98.00	254.82	244.37	10.45	24.391		
2,500.00	2,473.17	2,587.81	2,580.83	6.70	5.81	-155.28	85.86	-71.99	264.00	253.12	10.88	24.266		
2,600.00	2,565.21	2,700.41	2,688.61	7.34	6.23	-157.98	93.80	-40.44	271.86	260.54	11.31	24.033		
2,700.00	2,655.84	2,813.59	2,795.13	8.07	6.75	-160.70	103.13	-3.37	278.38	266.64	11.74	23.705		
2,800.00	2,744.94	2,927.22	2,899.94	8.87	7.38	-163.47	113.83	39.14	283.61	271.43	12.18	23.290		
2,900.00	2,832.43	3,041.16	3,002.63	9.75	8.14	-166.32	125.88	86.99	287.53	274.88	12.64	22.740		
3,000.00	2,919.37	3,155.31	3,102.80	10.67	9.04	-169.20	139.23	140.04	287.94	274.69	13.26	21.721		
3,100.00	3,006.31	3,269.18	3,199.76	11.61	10.08	-172.16	153.79	197.91	283.79	269.86	13.92	20.384		
3,200.00	3,093.25	3,382.16	3,292.79	12.57	11.27	-175.35	169.44	260.08	275.16	260.49	14.67	18.752		
3,300.00	3,180.19	3,493.69	3,381.27	13.54	12.58	-178.95	186.00	325.91	262.29	246.71	15.58	16.839		
3,400.00	3,267.13	3,603.22	3,464.70	14.52	14.02	-176.81	203.32	394.71	245.54	228.79	16.75	14.659		
3,500.00	3,354.07	3,710.29	3,542.73	15.51	15.56	-171.59	221.21	465.79	225.50	207.09	18.41	12.250		
3,600.00	3,441.01	3,809.54	3,612.28	16.50	17.09	-165.35	238.49	534.44	203.74	182.99	20.75	9.820		
3,700.00	3,527.96	3,904.40	3,678.44	17.51	18.58	-158.06	255.08	600.37	184.37	160.42	23.95	7.698		
3,800.00	3,614.90	3,999.26	3,744.60	18.51	20.10	-149.35	271.67	666.29	168.76	140.56	28.20	5.984		
3,900.00	3,701.84	4,094.12	3,810.76	19.52	21.64	-139.31	288.26	732.22	158.02	124.67	33.35	4.739		
4,000.00	3,788.80	4,188.98	3,876.92	20.53	23.18	-127.48	304.85	798.14	153.12	114.25	38.87	3.939		
4,100.00	3,878.03	4,283.12	3,942.58	21.32	24.73	-104.76	321.32	863.57	147.81	103.80	44.02	3.358		
4,200.00	3,970.11	4,375.05	4,006.69	21.98	26.25	-75.57	337.40	927.46	139.71	92.22	47.49	2.942		
4,300.00	4,063.66	4,463.39	4,068.30	22.51	27.71	-39.89	352.85	988.85	134.47	86.71	47.75	2.816 ES, SF		
4,308.75	4,071.87	4,470.90	4,073.54	22.54	27.84	-36.59	354.16	994.07	134.42	86.85	47.57	2.826 CC		
4,400.00	4,157.30	4,546.82	4,126.49	22.90	29.10	-2.65	367.44	1,046.83	140.70	96.78	43.92	3.204		
4,500.00	4,249.61	4,624.11	4,180.39	23.15	30.39	-29.00	380.96	1,100.54	165.52	127.35	38.16	4.337		
4,600.00	4,339.24	4,694.09	4,229.20	23.28	31.56	-51.80	393.20	1,149.18	209.44	175.82	33.62	6.230		
4,700.00	4,424.84	4,755.73	4,272.19	23.29	32.59	-66.47	403.98	1,192.02	268.75	237.51	31.24	8.602		
4,800.00	4,505.14	4,808.11	4,308.72	23.22	33.47	-74.66	413.14	1,228.42	339.56	308.83	30.73	11.050		
4,900.00	4,578.93	4,850.44	4,338.25	23.07	34.18	-77.45	420.55	1,257.84	418.89	387.07	31.82	13.165		
5,000.00	4,645.13	4,882.10	4,360.33	22.86	34.72	-75.08	426.08	1,279.84	504.42	470.12	34.30	14.706		

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 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	4,702.74	4,902.61	4,374.63	22.62	35.06	-67.23	429.67	1,294.10	594.22	556.94	37.29	15.937		
5,200.00	4,750.90	4,917.61	4,385.11	22.36	35.31	-55.41	432.25	1,304.52	686.56	648.11	38.45	17.856		
5,300.00	4,788.89	4,909.13	4,379.19	22.09	35.17	-37.93	430.81	1,298.63	779.82	744.75	35.06	22.241		
5,400.00	4,816.16	6,393.26	5,068.13	21.84	44.76	-103.50	-489.28	1,744.76	852.67	823.24	29.43	28.973		
5,500.00	4,832.29	6,489.82	5,058.65	21.63	44.64	-102.68	-580.88	1,715.69	845.77	814.58	31.19	27.117		
5,546.12	4,835.90	6,535.21	5,054.19	21.54	44.60	-102.27	-623.93	1,702.03	845.03	812.90	32.14	26.296		
5,600.00	4,837.04	6,588.64	5,048.95	21.48	44.56	-101.78	-674.61	1,685.95	846.01	812.81	33.20	25.479		
5,700.00	4,830.34	6,688.24	5,039.17	21.44	44.51	-100.90	-769.09	1,655.97	852.86	817.50	35.37	24.115		
5,800.00	4,813.22	6,787.28	5,029.45	21.58	44.50	-100.58	-863.03	1,626.15	865.54	828.41	37.13	23.311		
5,900.00	4,794.12	6,886.09	5,019.76	22.02	44.54	-101.02	-956.76	1,596.41	879.35	840.99	38.37	22.918		
6,000.00	4,775.02	6,984.91	5,010.06	22.78	44.62	-101.45	-1,050.49	1,566.66	893.22	853.33	39.89	22.390		
6,100.00	4,755.92	7,083.72	5,000.36	23.79	44.76	-101.86	-1,144.22	1,536.92	907.14	865.47	41.67	21.769		
6,200.00	4,736.82	7,182.53	4,990.66	24.96	44.95	-102.27	-1,237.95	1,507.17	921.10	877.44	43.67	21.093		
6,300.00	4,717.72	7,281.35	4,980.96	26.26	45.20	-102.66	-1,331.68	1,477.43	935.11	889.26	45.85	20.393		
6,400.00	4,698.63	7,380.16	4,971.26	27.64	45.52	-103.04	-1,425.41	1,447.68	949.16	900.96	48.20	19.691		
6,500.00	4,679.53	7,478.98	4,961.57	29.09	45.91	-103.41	-1,519.14	1,417.94	963.25	912.56	50.69	19.003		
6,600.00	4,660.43	7,577.79	4,951.87	30.59	46.39	-103.77	-1,612.87	1,388.19	977.38	924.08	53.29	18.339		
6,700.00	4,641.33	7,676.60	4,942.17	32.13	46.94	-104.12	-1,706.60	1,358.45	991.54	935.54	56.00	17.706		
6,800.00	4,622.23	7,775.42	4,932.47	33.71	47.58	-104.46	-1,800.33	1,328.70	1,005.74	946.95	58.79	17.107		
6,900.00	4,603.13	7,874.23	4,922.77	35.32	48.32	-104.78	-1,894.06	1,298.96	1,019.97	958.32	61.65	16.544		
7,000.00	4,584.03	7,973.04	4,913.07	36.96	49.14	-105.10	-1,987.79	1,269.21	1,034.24	969.66	64.58	16.015		
7,100.00	4,564.93	8,071.86	4,903.37	38.62	50.06	-105.42	-2,081.52	1,239.47	1,048.53	980.97	67.56	15.521		
7,200.00	4,545.83	8,170.67	4,893.68	40.31	51.05	-105.72	-2,175.25	1,209.72	1,062.86	992.27	70.58	15.058		
7,300.00	4,526.73	8,269.49	4,883.98	42.01	52.13	-106.01	-2,268.98	1,179.98	1,077.21	1,003.56	73.65	14.627		
7,400.00	4,507.63	8,368.30	4,874.28	43.73	53.28	-106.30	-2,362.71	1,150.23	1,091.59	1,014.85	76.74	14.224		
7,500.00	4,488.54	8,467.11	4,864.58	45.46	54.50	-106.58	-2,456.44	1,120.49	1,106.00	1,026.13	79.87	13.848		
7,600.00	4,469.44	8,565.93	4,854.88	47.21	55.78	-106.85	-2,550.17	1,090.74	1,120.43	1,037.41	83.02	13.496		
7,700.00	4,450.34	8,664.74	4,845.18	48.97	57.12	-107.12	-2,643.90	1,061.00	1,134.89	1,048.69	86.19	13.167		
7,800.00	4,431.24	8,763.55	4,835.49	50.73	58.50	-107.38	-2,737.63	1,031.25	1,149.37	1,059.98	89.38	12.859		
7,900.00	4,412.14	8,862.37	4,825.79	52.51	59.92	-107.63	-2,831.36	1,001.51	1,163.87	1,071.28	92.59	12.570		
8,000.00	4,393.04	8,961.18	4,816.09	54.30	61.38	-107.88	-2,925.09	971.76	1,178.39	1,082.58	95.81	12.299		
8,100.00	4,373.94	9,059.99	4,806.39	56.10	62.88	-108.12	-3,018.82	942.02	1,192.94	1,093.89	99.05	12.044		
8,200.00	4,354.84	9,158.81	4,796.69	57.90	64.40	-108.35	-3,112.55	912.27	1,207.50	1,105.21	102.29	11.805		
8,300.00	4,335.74	9,216.79	4,791.00	59.71	65.31	-108.49	-3,167.56	894.82	1,222.77	1,117.84	104.92	11.654		
8,400.00	4,316.64	9,216.79	4,791.00	61.53	65.31	-108.49	-3,167.56	894.82	1,244.55	1,137.85	106.70	11.664		
8,500.00	4,297.54	9,216.79	4,791.00	63.36	65.31	-108.49	-3,167.56	894.82	1,273.83	1,165.35	108.48	11.743		
8,600.00	4,278.45	9,216.79	4,791.00	65.18	65.31	-108.49	-3,167.56	894.82	1,310.11	1,199.85	110.26	11.882		
8,691.34	4,261.00	9,216.79	4,791.00	66.86	65.31	-108.49	-3,167.56	894.82	1,348.88	1,236.99	111.89	12.056		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	39.00	39.00	0.00	0.04	-59.41	80.96	-136.96	159.10					
100.00	100.00	139.00	139.00	0.09	0.19	-59.41	80.96	-136.96	159.10	158.81	0.28	566.261		
200.00	200.00	239.00	239.00	0.32	0.41	-59.41	80.96	-136.96	159.10	158.36	0.73	217.793		
300.00	300.00	339.00	339.00	0.54	0.64	-59.41	80.96	-136.96	159.10	157.92	1.18	134.824		
400.00	400.00	439.00	439.00	0.77	0.86	-59.41	80.96	-136.96	159.10	157.47	1.63	97.631		
500.00	500.00	539.00	539.00	0.99	1.09	-59.41	80.96	-136.96	159.10	157.02	2.08	76.522		
600.00	600.00	639.00	639.00	1.22	1.31	-59.41	80.96	-136.96	159.10	156.57	2.53	62.918		
700.00	700.00	739.00	739.00	1.44	1.54	-59.41	80.96	-136.96	159.10	156.12	2.98	53.421		
800.00	800.00	839.00	839.00	1.67	1.76	-59.41	80.96	-136.96	159.10	155.67	3.43	46.415		
900.00	900.00	939.00	939.00	1.89	1.98	-59.41	80.96	-136.96	159.10	155.22	3.88	41.033		
1,000.00	1,000.00	1,039.00	1,039.00	2.12	2.21	-59.41	80.96	-136.96	159.10	154.77	4.33	36.770		
1,100.00	1,100.00	1,139.00	1,139.00	2.34	2.43	-59.41	80.96	-136.96	159.10	154.32	4.78	33.309		
1,200.00	1,200.00	1,239.00	1,239.00	2.57	2.66	-59.41	80.96	-136.96	159.10	153.87	5.23	30.444		
1,300.00	1,300.00	1,339.00	1,339.00	2.79	2.88	-59.41	80.96	-136.96	159.10	153.42	5.68	28.033		
1,400.00	1,400.00	1,439.00	1,439.00	3.02	3.11	-59.41	80.96	-136.96	159.10	152.97	6.12	25.975 CC, ES		
1,500.00	1,499.98	1,538.98	1,538.98	3.23	3.33	-120.95	80.96	-136.96	159.99	153.42	6.57	24.365		
1,600.00	1,599.84	1,638.84	1,638.84	3.45	3.56	-122.48	80.96	-136.96	162.74	155.74	7.00	23.248		
1,700.00	1,699.45	1,738.45	1,738.45	3.67	3.78	-124.91	80.96	-136.96	167.59	160.15	7.44	22.539		
1,800.00	1,798.70	1,837.70	1,837.70	3.91	4.00	-128.06	80.96	-136.96	174.87	167.00	7.87	22.212		
1,900.00	1,897.47	1,936.47	1,936.47	4.17	4.23	-131.70	80.96	-136.96	184.98	176.67	8.31	22.254		
2,000.00	1,995.62	2,034.62	2,034.62	4.46	4.45	-135.59	80.96	-136.96	198.29	189.54	8.75	22.658		
2,100.00	2,093.06	2,132.06	2,132.06	4.80	4.67	-139.52	80.96	-136.96	215.09	205.91	9.19	23.411		
2,200.00	2,189.64	2,228.64	2,228.64	5.18	4.88	-143.31	80.96	-136.96	235.61	225.99	9.62	24.495		
2,300.00	2,285.27	2,324.27	2,324.27	5.62	5.10	-146.84	80.96	-136.96	259.93	249.89	10.04	25.887		
2,400.00	2,379.82	2,418.82	2,418.82	6.12	5.31	-150.05	80.96	-136.96	288.10	277.64	10.45	27.557		
2,500.00	2,473.17	2,511.16	2,511.16	6.70	5.52	-152.87	80.94	-136.98	320.08	309.23	10.85	29.487		
2,600.00	2,565.21	2,594.37	2,594.35	7.34	5.68	-155.28	79.94	-138.15	357.20	345.98	11.22	31.835		
2,700.00	2,655.84	2,673.97	2,673.87	8.07	5.83	-157.49	77.50	-141.02	400.18	388.62	11.56	34.618		
2,800.00	2,744.94	2,749.69	2,749.37	8.87	5.97	-159.47	73.84	-145.33	448.86	436.96	11.89	37.750		
2,900.00	2,832.43	2,821.33	2,820.64	9.75	6.11	-161.27	69.18	-150.81	502.89	490.65	12.23	41.103		
3,000.00	2,919.37	2,889.95	2,888.72	10.67	6.25	-163.13	63.63	-157.35	560.19	547.53	12.67	44.224		
3,100.00	3,006.31	2,956.16	2,954.19	11.61	6.39	-164.72	57.26	-164.85	619.70	606.59	13.10	47.292		
3,200.00	3,093.25	3,020.01	3,017.10	12.57	6.53	-166.09	50.18	-173.18	681.23	667.69	13.54	50.304		
3,300.00	3,180.19	3,081.56	3,077.50	13.54	6.68	-167.29	42.49	-182.24	744.66	730.67	13.98	53.252		
3,400.00	3,267.13	3,140.89	3,135.45	14.52	6.84	-168.33	34.28	-191.90	809.85	795.42	14.43	56.132		
3,500.00	3,354.07	3,200.00	3,192.92	15.51	7.00	-169.29	25.31	-202.45	876.70	861.82	14.88	58.938		
3,600.00	3,441.01	3,253.14	3,244.32	16.50	7.17	-170.08	16.60	-212.71	945.09	929.76	15.33	61.665		
3,700.00	3,527.96	3,300.00	3,289.44	17.51	7.32	-170.74	8.39	-222.37	1,014.96	999.19	15.77	64.379		
3,800.00	3,614.90	3,357.34	3,344.35	18.51	7.53	-171.48	-2.30	-234.95	1,086.14	1,069.91	16.23	66.941		
3,900.00	3,701.84	3,400.00	3,384.97	19.52	7.69	-172.00	-10.72	-244.87	1,158.66	1,141.99	16.67	69.516		
4,000.00	3,788.80	3,454.09	3,436.20	20.53	7.92	-174.08	-21.96	-258.10	1,232.31	1,215.18	17.13	71.955		
4,100.00	3,878.03	3,500.00	3,479.41	21.32	8.12	-169.60	-32.00	-269.92	1,303.92	1,286.21	17.71	73.634		
4,200.00	3,970.11	3,558.16	3,524.09	21.98	35.72	-162.08	648.50	790.62	1,249.56	1,204.78	44.78	27.905		
4,300.00	4,063.66	3,681.10	3,641.67	22.51	36.22	-165.38	662.00	809.16	1,161.53	1,109.59	51.94	22.362		
4,400.00	4,157.30	3,693.86	3,641.44	22.90	36.50	-172.05	669.51	819.48	1,076.79	1,021.85	54.95	19.598		
4,500.00	4,249.61	3,696.26	3,641.39	23.15	36.55	-179.21	670.92	821.42	998.00	943.15	54.86	18.193		
4,600.00	4,339.24	3,688.26	3,641.54	23.28	36.37	174.57	666.22	814.95	928.07	874.99	53.08	17.485		
4,700.00	4,424.84	3,669.98	3,641.87	23.29	35.97	169.22	655.46	800.18	870.00	819.50	50.49	17.230 SF		
4,800.00	4,505.14	3,641.69	3,642.39	23.22	35.36	164.24	638.81	777.31	826.57	778.99	47.58	17.371		
4,900.00	4,578.93	3,603.81	3,643.08	23.07	34.53	159.21	616.53	746.69	799.83	755.19	44.63	17.920		
5,000.00	4,645.13	3,556.92	3,643.94	22.86	33.51	153.85	588.93	708.78	790.54	748.67	41.87	18.880		
5,004.10	4,647.67	3,554.81	3,643.97	22.85	33.47	153.62	587.69	707.08	790.53	748.77	41.76	18.929		

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 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	4,702.74	6,501.70	5,244.94	22.62	32.32	148.00	556.44	664.14	797.94	758.45	39.49	20.207		
5,200.00	4,750.90	6,438.98	5,246.09	22.36	30.98	141.64	519.53	613.45	819.87	782.21	37.67	21.765		
5,300.00	4,788.89	6,369.69	5,247.35	22.09	29.52	134.92	478.76	557.44	853.38	816.87	36.51	23.377		
5,400.00	4,816.16	6,294.88	5,248.72	21.84	27.97	128.12	434.74	496.96	895.29	859.33	35.96	24.896		
5,500.00	4,832.29	6,215.65	5,250.16	21.63	26.36	121.63	388.12	432.92	942.74	906.86	35.88	26.272		
5,600.00	4,837.04	6,133.18	5,251.66	21.48	24.73	115.82	339.59	366.26	993.37	957.31	36.06	27.546		
5,700.00	4,830.34	6,048.71	5,253.21	21.44	23.11	110.94	289.89	297.97	1,045.41	1,009.07	36.34	28.767		
5,800.00	4,813.22	5,963.47	5,254.76	21.58	21.54	108.60	239.74	229.07	1,097.65	1,061.22	36.43	30.129		
5,900.00	4,794.12	5,878.20	5,256.32	22.02	20.05	108.69	189.56	160.14	1,149.86	1,113.54	36.32	31.659		
6,000.00	4,775.02	5,747.92	5,253.39	22.78	17.98	108.55	113.15	54.78	1,201.17	1,165.22	35.95	33.414		
6,100.00	4,755.92	5,578.51	5,219.72	23.79	15.76	106.94	16.91	-80.13	1,247.28	1,211.57	35.72	34.923		
6,200.00	4,736.82	5,416.42	5,155.98	24.96	14.36	104.13	-68.28	-202.05	1,288.32	1,252.12	36.20	35.587		
6,300.00	4,717.72	5,272.51	5,075.61	26.26	13.78	100.75	-135.48	-300.45	1,326.01	1,288.72	37.29	35.557		
6,400.00	4,698.63	5,151.19	4,992.40	27.64	13.68	97.37	-184.32	-373.80	1,362.48	1,323.77	38.70	35.205		
6,500.00	4,679.53	5,051.75	4,915.01	29.09	13.78	94.29	-218.20	-426.13	1,399.59	1,359.37	40.22	34.796		
6,600.00	4,660.43	4,971.03	4,846.96	30.59	13.92	91.61	-241.24	-462.85	1,438.73	1,396.97	41.76	34.452		
6,700.00	4,641.33	4,905.41	4,788.69	32.13	14.04	89.33	-256.85	-488.63	1,480.78	1,437.48	43.29	34.205		
6,800.00	4,622.23	4,851.69	4,739.30	33.71	14.13	87.42	-267.47	-506.89	1,526.20	1,481.38	44.82	34.053		
6,900.00	4,603.13	4,807.25	4,697.46	35.32	14.19	85.80	-274.74	-519.98	1,575.22	1,528.87	46.35	33.987		
7,000.00	4,584.03	4,770.09	4,661.90	36.96	14.24	84.43	-279.76	-529.51	1,627.83	1,579.95	47.89	33.993		
7,100.00	4,564.93	4,738.68	4,631.49	38.62	14.26	83.26	-283.24	-536.54	1,683.95	1,634.51	49.44	34.059		
7,200.00	4,545.83	4,711.86	4,605.30	40.31	14.28	82.25	-285.65	-541.78	1,743.40	1,692.39	51.01	34.175		
7,300.00	4,526.73	4,688.74	4,582.59	42.01	14.29	81.38	-287.31	-545.75	1,805.98	1,753.37	52.60	34.333		
7,400.00	4,507.63	4,668.63	4,562.74	43.73	14.29	80.62	-288.44	-548.77	1,871.44	1,817.24	54.21	34.524		
7,500.00	4,488.54	4,650.00	4,544.29	45.46	14.30	79.91	-289.23	-551.21	1,939.58	1,883.76	55.82	34.746		
7,600.00	4,469.44	4,635.45	4,529.83	47.21	14.29	79.36	-289.66	-552.88	2,010.15	1,952.69	57.46	34.981		
7,700.00	4,450.34	4,621.61	4,516.07	48.97	14.28	78.83	-289.94	-554.27	2,082.96	2,023.85	59.11	35.237		
7,800.00	4,431.24	4,600.00	4,494.54	50.73	14.27	78.01	-290.09	-556.07	2,157.84	2,097.15	60.68	35.559		
7,900.00	4,412.14	4,600.00	4,494.54	52.51	14.27	78.01	-290.09	-556.07	2,234.48	2,172.01	62.47	35.767		
8,000.00	4,393.04	4,600.00	4,494.54	54.30	14.27	78.01	-290.09	-556.07	2,312.92	2,248.65	64.27	35.987		
8,100.00	4,373.94	4,578.95	4,473.53	56.10	14.25	77.20	-289.91	-557.38	2,392.75	2,326.92	65.83	36.348		
8,200.00	4,354.84	4,570.64	4,465.23	57.90	14.24	76.89	-289.75	-557.77	2,474.04	2,406.51	67.53	36.635		
8,300.00	4,335.74	4,550.00	4,444.61	59.71	14.22	76.10	-289.14	-558.45	2,556.68	2,487.61	69.08	37.012		
8,400.00	4,316.64	4,550.00	4,444.61	61.53	14.22	76.10	-289.14	-558.45	2,640.33	2,569.45	70.88	37.248		
8,500.00	4,297.54	4,550.00	4,444.61	63.36	14.22	76.10	-289.14	-558.45	2,725.09	2,652.39	72.70	37.485		
8,600.00	4,278.45	4,550.00	4,444.61	65.18	14.22	76.10	-289.14	-558.45	2,810.84	2,736.33	74.51	37.722		
8,691.34	4,261.00	4,550.00	4,444.61	66.86	14.22	76.10	-289.14	-558.45	2,889.97	2,813.80	76.18	37.938		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	39.00	39.00	0.00	0.04	-52.98	95.12	-126.13	157.97					
100.00	100.00	139.00	139.00	0.09	0.19	-52.98	95.12	-126.13	157.97	157.69	0.28	562.270		
200.00	200.00	239.00	239.00	0.32	0.41	-52.98	95.12	-126.13	157.97	157.24	0.73	216.258		
300.00	300.00	339.00	339.00	0.54	0.64	-52.98	95.12	-126.13	157.97	156.79	1.18	133.874		
400.00	400.00	439.00	439.00	0.77	0.86	-52.98	95.12	-126.13	157.97	156.34	1.63	96.943		
500.00	500.00	539.00	539.00	0.99	1.09	-52.98	95.12	-126.13	157.97	155.90	2.08	75.983		
600.00	600.00	639.00	639.00	1.22	1.31	-52.98	95.12	-126.13	157.97	155.45	2.53	62.475		
700.00	700.00	739.00	739.00	1.44	1.54	-52.98	95.12	-126.13	157.97	155.00	2.98	53.044		
800.00	800.00	839.00	839.00	1.67	1.76	-52.98	95.12	-126.13	157.97	154.55	3.43	46.088		
900.00	900.00	939.00	939.00	1.89	1.98	-52.98	95.12	-126.13	157.97	154.10	3.88	40.744		
1,000.00	1,000.00	1,039.00	1,039.00	2.12	2.21	-52.98	95.12	-126.13	157.97	153.65	4.33	36.511		
1,100.00	1,100.00	1,139.00	1,139.00	2.34	2.43	-52.98	95.12	-126.13	157.97	153.20	4.78	33.075		
1,200.00	1,200.00	1,239.00	1,239.00	2.57	2.66	-52.98	95.12	-126.13	157.97	152.75	5.23	30.230		
1,300.00	1,300.00	1,339.00	1,339.00	2.79	2.88	-52.98	95.12	-126.13	157.97	152.30	5.68	27.835		
1,400.00	1,400.00	1,439.00	1,439.00	3.02	3.11	-52.98	95.12	-126.13	157.97	151.85	6.12	25.792 CC, ES		
1,500.00	1,499.98	1,538.98	1,538.98	3.23	3.33	-114.55	95.12	-126.13	158.69	152.13	6.57	24.167		
1,600.00	1,599.84	1,638.84	1,638.84	3.45	3.56	-116.20	95.12	-126.13	160.94	153.94	7.00	22.985		
1,700.00	1,699.45	1,738.45	1,738.45	3.67	3.78	-118.84	95.12	-126.13	164.98	157.54	7.44	22.175		
1,800.00	1,798.70	1,837.70	1,837.70	3.91	4.00	-122.29	95.12	-126.13	171.21	163.33	7.88	21.723		
1,900.00	1,897.47	1,936.47	1,936.47	4.17	4.23	-126.32	95.12	-126.13	180.11	171.79	8.33	21.629 SF		
2,000.00	1,995.62	2,032.57	2,032.57	4.46	4.44	-130.60	95.12	-126.31	192.32	183.56	8.77	21.938		
2,100.00	2,093.06	2,123.35	2,123.31	4.80	4.63	-134.89	95.11	-128.78	210.42	201.23	9.19	22.904		
2,200.00	2,189.64	2,211.74	2,211.55	5.18	4.81	-138.99	95.10	-133.95	235.31	225.71	9.60	24.519		
2,300.00	2,285.27	2,300.00	2,299.45	5.62	4.99	-142.76	95.08	-141.82	267.01	257.01	10.01	26.687		
2,400.00	2,379.82	2,379.63	2,378.52	6.12	5.17	-145.73	95.05	-151.24	305.25	294.85	10.40	29.345		
2,500.00	2,473.17	2,458.41	2,456.45	6.70	5.36	-148.26	95.02	-162.72	349.71	338.91	10.80	32.382		
2,600.00	2,565.21	2,533.38	2,530.31	7.34	5.56	-150.27	94.98	-175.64	399.97	388.77	11.20	35.720		
2,700.00	2,655.84	2,600.00	2,595.62	8.07	5.74	-151.70	94.94	-188.73	455.62	444.02	11.60	39.290		
2,800.00	2,744.94	2,671.22	2,665.09	8.87	5.96	-153.02	94.89	-204.40	516.16	504.15	12.01	42.984		
2,900.00	2,832.43	2,733.91	2,725.91	9.75	6.17	-154.03	94.85	-219.62	581.24	568.80	12.44	46.730		
3,000.00	2,919.37	2,800.00	2,789.64	10.67	6.41	-155.48	94.80	-237.10	648.98	636.04	12.94	50.142		
3,100.00	3,006.31	2,851.32	2,838.84	11.61	6.62	-156.41	94.75	-251.69	718.33	704.88	13.45	53.417		
3,200.00	3,093.25	2,900.00	2,885.27	12.57	6.83	-157.16	94.71	-266.34	789.27	775.32	13.95	56.576		
3,300.00	3,180.19	2,960.26	2,942.38	13.54	7.11	-157.95	94.66	-285.56	861.54	847.07	14.47	59.531		
3,400.00	3,267.13	3,016.49	2,995.32	14.52	7.39	-158.56	94.60	-304.51	935.09	920.09	15.00	62.335		
3,500.00	3,354.07	3,083.46	3,058.27	15.51	7.74	-159.19	94.53	-327.35	1,009.00	993.47	15.53	64.969		
3,600.00	3,441.01	3,150.43	3,121.23	16.50	8.11	-159.74	94.47	-350.18	1,082.96	1,066.89	16.07	67.400		
3,700.00	3,527.96	3,217.40	3,184.18	17.51	8.49	-160.22	94.40	-373.02	1,156.96	1,140.35	16.61	69.653		
3,800.00	3,614.90	3,284.37	3,247.14	18.51	8.88	-160.63	94.33	-395.85	1,230.99	1,213.83	17.16	71.738		
3,900.00	3,701.84	3,351.33	3,310.10	19.52	9.28	-161.01	94.27	-418.69	1,305.04	1,287.33	17.71	73.670		
4,000.00	3,788.80	3,418.33	3,373.07	20.53	9.69	-162.87	94.20	-441.53	1,379.10	1,360.89	18.21	75.733		
4,100.00	3,878.03	3,488.01	3,438.58	21.32	10.12	-179.68	94.13	-465.29	1,450.73	1,432.32	18.40	78.824		
4,200.00	3,970.11	3,561.47	3,507.63	21.98	10.58	161.07	94.06	-490.34	1,517.52	1,498.57	18.95	80.076		
4,300.00	4,063.66	3,637.60	3,579.20	22.51	11.07	139.68	93.98	-516.30	1,578.71	1,559.13	19.58	80.611		
4,400.00	4,157.30	3,715.27	3,652.22	22.90	11.57	119.08	93.90	-542.78	1,633.78	1,613.64	20.13	81.148		
4,500.00	4,249.61	3,793.32	3,725.59	23.15	12.09	102.46	93.82	-569.40	1,682.40	1,661.88	20.52	82.006		
4,600.00	4,339.24	3,870.59	3,798.23	23.28	12.60	90.54	93.75	-595.75	1,724.45	1,703.73	20.72	83.244		
4,700.00	4,424.84	3,945.93	3,869.05	23.29	13.10	82.43	93.67	-621.44	1,759.97	1,739.21	20.76	84.768		
4,800.00	4,505.14	4,018.21	3,937.00	23.22	13.59	77.02	93.60	-646.08	1,789.15	1,768.43	20.72	86.356		
4,900.00	4,578.93	4,086.36	4,001.07	23.07	14.05	73.50	93.53	-669.32	1,812.30	1,791.63	20.67	87.687		
5,000.00	4,645.13	4,149.36	4,060.29	22.86	14.48	71.30	93.47	-690.80	1,829.83	1,809.12	20.70	88.391		
5,100.00	4,702.74	4,206.27	4,113.79	22.62	14.86	70.04	93.41	-710.21	1,842.20	1,821.30	20.90	88.138		

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 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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		
5,200.00	4,750.90	4,256.24	4,160.77	22.36	15.21	69.47	93.36	-727.25	1,849.94	1,828.62	21.33	86.746		
5,300.00	4,788.89	4,298.53	4,200.52	22.09	15.50	69.38	93.32	-741.67	1,853.58	1,831.58	22.00	84.261		
5,400.00	4,816.16	4,332.51	4,232.47	21.84	15.73	69.65	93.29	-753.25	1,853.64	1,830.73	22.91	80.926		
5,500.00	4,832.29	4,357.67	4,256.12	21.63	15.91	70.16	93.26	-761.83	1,850.58	1,826.57	24.01	77.085		
5,600.00	4,837.04	4,373.63	4,271.12	21.48	16.02	70.85	93.24	-767.27	1,844.79	1,819.55	25.25	73.069		
5,700.00	4,830.34	4,380.16	4,277.26	21.44	16.06	71.66	93.24	-769.50	1,836.59	1,810.02	26.58	69.101		
5,800.00	4,813.22	4,377.95	4,275.19	21.58	16.05	72.15	93.24	-768.75	1,826.80	1,799.12	27.68	65.995		
5,900.00	4,794.12	4,374.07	4,271.54	22.02	16.02	72.03	93.24	-767.42	1,821.10	1,792.64	28.46	63.997		
5,954.12	4,783.78	4,371.97	4,269.56	22.39	16.00	71.96	93.25	-766.71	1,820.29	1,791.34	28.96	62.864		
6,000.00	4,775.02	4,370.19	4,267.89	22.78	15.99	71.91	93.25	-766.10	1,820.87	1,791.49	29.38	61.968		
6,100.00	4,755.92	4,366.30	4,264.24	23.79	15.97	71.79	93.25	-764.78	1,826.12	1,795.68	30.44	59.987		
6,200.00	4,736.82	4,362.42	4,260.59	24.96	15.94	71.66	93.26	-763.45	1,836.80	1,805.19	31.61	58.112		
6,300.00	4,717.72	4,358.54	4,256.94	26.26	15.91	71.54	93.26	-762.13	1,852.81	1,819.95	32.86	56.379		
6,400.00	4,698.63	4,354.65	4,253.29	27.64	15.89	71.42	93.26	-760.80	1,874.03	1,839.83	34.19	54.807		
6,500.00	4,679.53	4,350.77	4,249.64	29.09	15.86	71.30	93.27	-759.48	1,900.26	1,864.68	35.58	53.403		
6,600.00	4,660.43	4,346.89	4,245.98	30.59	15.83	71.17	93.27	-758.16	1,931.32	1,894.30	37.02	52.164		
6,700.00	4,641.33	4,343.01	4,242.33	32.13	15.80	71.05	93.28	-756.83	1,966.97	1,928.46	38.51	51.081		
6,800.00	4,622.23	4,339.12	4,238.68	33.71	15.78	70.93	93.28	-755.51	2,006.96	1,966.94	40.02	50.145		
6,900.00	4,603.13	4,335.24	4,235.03	35.32	15.75	70.81	93.28	-754.18	2,051.05	2,009.48	41.57	49.340		
7,000.00	4,584.03	4,331.36	4,231.38	36.96	15.72	70.69	93.29	-752.86	2,098.97	2,055.83	43.14	48.656		
7,100.00	4,564.93	4,327.47	4,227.73	38.62	15.70	70.56	93.29	-751.53	2,150.47	2,105.74	44.73	48.077		
7,200.00	4,545.83	4,323.59	4,224.08	40.31	15.67	70.44	93.29	-750.21	2,205.30	2,158.96	46.34	47.592		
7,300.00	4,526.73	4,319.71	4,220.43	42.01	15.64	70.32	93.30	-748.89	2,263.21	2,215.25	47.96	47.190		
7,400.00	4,507.63	4,315.82	4,216.78	43.73	15.62	70.20	93.30	-747.56	2,323.98	2,274.39	49.59	46.860		
7,500.00	4,488.54	4,311.94	4,213.13	45.46	15.59	70.08	93.31	-746.24	2,387.39	2,336.15	51.24	46.594		
7,600.00	4,469.44	4,308.06	4,209.48	47.21	15.56	69.95	93.31	-744.91	2,453.22	2,400.33	52.89	46.382		
7,700.00	4,450.34	4,304.17	4,205.83	48.97	15.54	69.83	93.31	-743.59	2,521.30	2,466.75	54.55	46.218		
7,800.00	4,431.24	4,300.29	4,202.18	50.73	15.51	69.71	93.32	-742.27	2,591.45	2,535.23	56.22	46.095		
7,900.00	4,412.14	5,972.01	4,995.96	52.51	39.54	98.12	-542.36	-1,785.88	2,654.10	2,573.69	80.41	33.007		
8,000.00	4,393.04	6,062.99	4,987.79	54.30	41.40	98.17	-602.09	-1,854.02	2,695.54	2,611.65	83.89	32.130		
8,100.00	4,373.94	6,153.96	4,979.61	56.10	43.28	98.23	-661.81	-1,922.16	2,736.98	2,649.58	87.40	31.314		
8,200.00	4,354.84	6,244.94	4,971.43	57.90	45.18	98.29	-721.54	-1,990.30	2,778.43	2,687.49	90.94	30.554		
8,300.00	4,335.74	6,335.92	4,963.26	59.71	47.10	98.34	-781.26	-2,058.43	2,819.87	2,725.39	94.49	29.844		
8,400.00	4,316.64	6,426.89	4,955.08	61.53	49.03	98.39	-840.98	-2,126.57	2,861.32	2,763.27	98.05	29.181		
8,500.00	4,297.54	6,517.87	4,946.91	63.36	50.97	98.44	-900.71	-2,194.71	2,902.77	2,801.14	101.64	28.561		
8,600.00	4,278.45	6,608.84	4,938.73	65.18	52.93	98.49	-960.43	-2,262.85	2,944.22	2,838.99	105.23	27.979		
8,691.34	4,261.00	6,691.94	4,931.26	66.86	54.72	98.53	-1,014.99	-2,325.09	2,982.09	2,873.56	108.52	27.478		



Weatherford International Ltd.

Anticollision Report



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	1.00	1.00	0.00	0.00	-141.62	-28.33	-22.44	36.14					
100.00	100.00	101.00	101.00	0.09	0.10	-141.62	-28.33	-22.44	36.14	35.95	0.19	189.183		
200.00	200.00	201.00	201.00	0.32	0.32	-141.62	-28.33	-22.44	36.14	35.50	0.64	56.423		
300.00	300.00	301.00	301.00	0.54	0.55	-141.62	-28.33	-22.44	36.14	35.05	1.09	33.156		
400.00	400.00	401.00	401.00	0.77	0.77	-141.62	-28.33	-22.44	36.14	34.60	1.54	23.475		
500.00	500.00	501.00	501.00	0.99	1.00	-141.62	-28.33	-22.44	36.14	34.15	1.99	18.170		
600.00	600.00	601.00	601.00	1.22	1.22	-141.62	-28.33	-22.44	36.14	33.70	2.44	14.821		
700.00	700.00	701.00	701.00	1.44	1.45	-141.62	-28.33	-22.44	36.14	33.26	2.89	12.514		
800.00	800.00	801.00	801.00	1.67	1.67	-141.62	-28.33	-22.44	36.14	32.81	3.34	10.829		
900.00	900.00	901.00	901.00	1.89	1.89	-141.62	-28.33	-22.44	36.14	32.36	3.79	9.543		
1,000.00	1,000.00	1,001.00	1,001.00	2.12	2.12	-141.62	-28.33	-22.44	36.14	31.91	4.24	8.531		
1,100.00	1,100.00	1,101.00	1,101.00	2.34	2.34	-141.62	-28.33	-22.44	36.14	31.46	4.69	7.712		
1,200.00	1,200.00	1,201.00	1,201.00	2.57	2.57	-141.62	-28.33	-22.44	36.14	31.01	5.14	7.037		
1,300.00	1,300.00	1,301.01	1,301.01	2.79	2.79	-141.62	-28.33	-22.44	36.14	30.56	5.59	6.471		
1,400.00	1,400.00	1,401.82	1,401.79	3.02	3.02	-139.41	-26.55	-22.75	34.97	28.93	6.04	5.793		
1,500.00	1,499.98	1,502.39	1,502.22	3.23	3.25	167.67	-21.29	-23.65	33.54	27.07	6.48	5.179		
1,509.72	1,509.70	1,512.15	1,511.96	3.26	3.27	168.83	-20.60	-23.77	33.53	27.01	6.52	5.143 CC, ES		
1,600.00	1,599.84	1,602.51	1,601.95	3.45	3.48	-178.12	-12.61	-25.14	35.11	28.20	6.91	5.083 SF		
1,700.00	1,699.45	1,701.93	1,700.62	3.67	3.71	-162.25	-0.59	-27.20	41.74	34.39	7.35	5.681		
1,800.00	1,798.70	1,800.43	1,797.89	3.91	3.97	-149.44	14.64	-29.80	54.23	46.43	7.81	6.947		
1,900.00	1,897.47	1,897.79	1,893.46	4.17	4.25	-140.69	32.92	-32.94	72.16	63.86	8.30	8.693		
2,000.00	1,995.62	1,993.80	1,987.03	4.46	4.57	-134.95	54.07	-36.56	94.84	86.01	8.84	10.734		
2,100.00	2,093.06	2,088.28	2,078.37	4.80	4.92	-131.11	77.89	-40.65	121.79	112.37	9.42	12.932		
2,200.00	2,189.64	2,181.07	2,167.24	5.18	5.31	-128.44	104.15	-45.15	152.68	142.63	10.06	15.181		
2,300.00	2,285.27	2,272.01	2,253.47	5.62	5.75	-126.48	132.64	-50.03	187.29	176.53	10.76	17.404		
2,400.00	2,379.82	2,361.69	2,337.57	6.12	6.22	-124.96	163.31	-55.29	225.41	213.88	11.53	19.547		
2,500.00	2,473.17	2,453.12	2,422.99	6.70	6.74	-124.11	195.44	-60.79	265.90	253.52	12.38	21.480		
2,600.00	2,565.21	2,543.71	2,507.63	7.34	7.27	-123.83	227.28	-66.25	308.17	294.89	13.28	23.207		
2,700.00	2,655.84	2,633.35	2,591.37	8.07	7.81	-123.91	258.79	-71.65	352.24	338.01	14.23	24.745		
2,800.00	2,744.94	2,721.93	2,674.13	8.87	8.36	-124.21	289.92	-76.99	398.15	382.91	15.24	26.123		
2,900.00	2,832.43	2,809.36	2,755.82	9.75	8.91	-124.81	320.65	-82.25	445.90	429.60	16.30	27.348		
3,000.00	2,919.37	2,896.40	2,837.13	10.67	9.47	-126.00	351.24	-87.50	494.40	476.96	17.44	28.350		
3,100.00	3,006.31	2,983.44	2,918.45	11.61	10.04	-126.98	381.83	-92.74	543.02	524.43	18.60	29.202		
3,200.00	3,093.25	3,070.47	2,999.76	12.57	10.61	-127.79	412.42	-97.98	591.75	571.98	19.77	29.935		
3,300.00	3,180.19	3,157.51	3,081.08	13.54	11.18	-128.49	443.01	-103.23	640.55	619.60	20.95	30.569		
3,400.00	3,267.13	3,244.55	3,162.40	14.52	11.76	-129.08	473.60	-108.47	689.42	667.27	22.15	31.121		
3,500.00	3,354.07	3,331.59	3,243.71	15.51	12.34	-129.60	504.19	-113.71	738.34	714.98	23.36	31.607		
3,600.00	3,441.01	3,418.63	3,325.03	16.50	12.93	-130.05	534.78	-118.96	787.29	762.72	24.58	32.036		
3,700.00	3,527.96	3,505.66	3,406.35	17.51	13.51	-130.45	565.37	-124.20	836.28	810.48	25.80	32.417		
3,800.00	3,614.90	3,592.70	3,487.66	18.51	14.10	-130.81	595.96	-129.44	885.30	858.27	27.03	32.757		
3,900.00	3,701.84	3,679.74	3,568.98	19.52	14.70	-131.13	626.55	-134.69	934.34	906.08	28.26	33.063		
4,000.00	3,788.80	3,766.78	3,650.30	20.53	15.29	-132.66	657.14	-139.93	983.40	953.96	29.45	33.397		
4,100.00	3,878.03	3,831.93	3,711.23	21.32	15.72	-147.28	679.79	-144.21	1,033.16	1,003.23	29.93	34.517		
4,200.00	3,970.11	3,877.92	3,754.55	21.98	15.98	-165.95	694.38	-149.24	1,085.60	1,055.43	30.17	35.984		
4,300.00	4,063.66	3,921.71	3,795.97	22.51	16.21	171.95	706.87	-155.98	1,140.24	1,109.95	30.29	37.648		
4,400.00	4,157.30	3,963.34	3,835.40	22.90	16.42	149.68	717.44	-164.13	1,196.34	1,166.02	30.32	39.453		
4,500.00	4,249.61	4,000.00	3,870.07	23.15	16.60	130.62	725.68	-172.69	1,253.26	1,222.98	30.28	41.385		
4,600.00	4,339.24	4,050.00	3,917.18	23.28	16.82	116.22	735.26	-186.42	1,310.47	1,280.19	30.28	43.276		
4,700.00	4,424.84	4,075.99	3,941.52	23.29	16.93	104.69	739.48	-194.48	1,367.28	1,337.18	30.10	45.424		
4,800.00	4,505.14	4,100.00	3,963.90	23.22	17.03	95.64	742.91	-202.48	1,423.46	1,393.59	29.87	47.654		
4,900.00	4,578.93	4,150.00	4,010.06	23.07	17.23	89.31	748.59	-220.82	1,478.39	1,448.65	29.75	49.702		
5,000.00	4,645.13	4,171.68	4,029.86	22.86	17.31	83.42	750.44	-229.46	1,531.75	1,502.35	29.40	52.094		

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 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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	4,702.74	4,200.00	4,055.49	22.62	17.41	78.82	752.29	-241.35	1,583.26	1,554.18	29.08	54.449		
5,200.00	4,750.90	4,226.44	4,079.16	22.36	17.50	75.02	753.44	-253.07	1,632.56	1,603.83	28.73	56.822		
5,300.00	4,788.89	4,250.00	4,100.02	22.09	17.58	71.86	753.99	-264.01	1,679.38	1,650.97	28.41	59.117		
5,400.00	4,816.16	4,273.38	4,120.49	21.84	17.65	69.34	754.09	-275.31	1,723.46	1,695.31	28.15	61.222		
5,500.00	4,832.29	4,300.00	4,143.48	21.63	17.73	67.51	753.68	-288.71	1,764.60	1,736.57	28.03	62.951		
5,600.00	4,837.04	4,310.67	4,152.60	21.48	17.76	65.67	753.35	-294.24	1,802.54	1,774.61	27.93	64.548		
5,700.00	4,830.34	4,324.47	4,164.31	21.44	17.80	64.47	752.80	-301.52	1,837.14	1,809.14	28.00	65.622		
5,800.00	4,813.22	4,334.46	4,172.73	21.58	17.83	64.07	752.30	-306.88	1,868.91	1,840.51	28.40	65.807		
5,900.00	4,794.12	4,345.29	4,181.79	22.02	17.87	64.42	751.67	-312.77	1,903.92	1,874.71	29.21	65.170		
6,000.00	4,775.02	4,358.82	4,193.03	22.78	17.90	64.85	750.75	-320.26	1,943.37	1,913.17	30.21	64.339		
6,100.00	4,755.92	4,376.22	4,207.32	23.79	17.95	65.41	749.36	-330.08	1,986.97	1,955.61	31.36	63.365		
6,200.00	4,736.82	4,399.40	4,226.08	24.96	18.02	66.14	747.13	-343.50	2,034.40	2,001.73	32.67	62.279		
6,300.00	4,717.72	4,431.72	4,251.69	26.26	18.11	67.16	743.30	-362.84	2,085.31	2,051.18	34.13	61.101		
6,400.00	4,698.63	4,479.74	4,288.46	27.64	18.24	68.64	736.11	-392.86	2,139.27	2,103.50	35.77	59.812		
6,500.00	4,679.53	4,557.79	4,344.70	29.09	18.47	70.95	720.61	-444.67	2,195.69	2,158.07	37.62	58.369		
6,600.00	4,660.43	4,702.38	4,435.79	30.59	18.98	74.83	679.93	-549.08	2,253.38	2,213.63	39.75	56.687		
6,700.00	4,641.33	5,017.91	4,564.38	32.13	21.13	80.90	543.43	-800.41	2,308.96	2,266.25	42.71	54.067		
6,800.00	4,622.23	5,386.12	4,575.62	33.71	25.89	83.55	325.42	-1,093.29	2,353.95	2,306.32	47.63	49.422		
6,900.00	4,603.13	5,476.65	4,563.00	35.32	27.31	83.75	267.81	-1,161.97	2,395.79	2,345.44	50.35	47.579		
7,000.00	4,584.03	5,567.17	4,550.38	36.96	28.82	83.93	210.20	-1,230.65	2,437.66	2,384.29	53.37	45.679		
7,100.00	4,564.93	5,657.70	4,537.76	38.62	30.41	84.12	152.59	-1,299.33	2,479.55	2,423.08	56.47	43.908		
7,200.00	4,545.83	5,748.23	4,525.14	40.31	32.06	84.29	94.98	-1,368.01	2,521.45	2,461.80	59.66	42.265		
7,300.00	4,526.73	5,838.76	4,512.52	42.01	33.75	84.46	37.37	-1,436.69	2,563.38	2,500.46	62.92	40.739		
7,400.00	4,507.63	5,929.29	4,499.90	43.73	35.49	84.62	-20.24	-1,505.37	2,605.33	2,539.08	66.25	39.325		
7,500.00	4,488.54	6,019.81	4,487.28	45.46	37.27	84.78	-77.85	-1,574.05	2,647.29	2,577.65	69.63	38.017		
7,600.00	4,469.44	6,110.34	4,474.66	47.21	39.08	84.94	-135.46	-1,642.74	2,689.26	2,616.20	73.07	36.806		
7,700.00	4,450.34	6,200.87	4,462.04	48.97	40.91	85.09	-193.07	-1,711.42	2,731.26	2,654.72	76.54	35.685		
7,800.00	4,431.24	6,291.40	4,449.42	50.73	42.77	85.23	-250.68	-1,780.10	2,773.27	2,693.22	80.05	34.646		
7,900.00	4,412.14	6,381.92	4,436.80	52.51	44.64	85.37	-308.29	-1,848.78	2,815.29	2,731.71	83.58	33.683		
8,000.00	4,393.04	6,472.45	4,424.18	54.30	46.54	85.51	-365.90	-1,917.46	2,857.33	2,770.18	87.15	32.788		
8,100.00	4,373.94	6,562.98	4,411.56	56.10	48.45	85.64	-423.51	-1,986.14	2,899.38	2,808.65	90.73	31.956		
8,200.00	4,354.84	6,653.51	4,398.94	57.90	50.37	85.77	-481.13	-2,054.82	2,941.44	2,847.10	94.33	31.181		
8,300.00	4,335.74	6,744.03	4,386.32	59.71	52.30	85.89	-538.74	-2,123.50	2,983.51	2,885.56	97.95	30.458		
8,400.00	4,316.64	6,834.56	4,373.70	61.53	54.25	86.02	-596.35	-2,192.18	3,025.60	2,924.01	101.59	29.783		
8,500.00	4,297.54	6,925.09	4,361.08	63.36	56.20	86.13	-653.96	-2,260.86	3,067.69	2,962.45	105.24	29.150		
8,600.00	4,278.45	7,015.62	4,348.46	65.18	58.17	86.25	-711.57	-2,329.54	3,109.80	3,000.90	108.90	28.557		
8,691.34	4,261.00	7,098.30	4,336.93	66.86	59.97	86.35	-764.19	-2,392.28	3,148.27	3,036.02	112.25	28.047		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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
DEAL GULCH 7-16 - DEAL GULCH 7-16 - DEAL GULCH 7-16 - Design #1														
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	1.00	1.00	0.00	0.00	-142.60	-14.17	-10.83	17.83					
100.00	100.00	101.00	101.00	0.09	0.10	-142.60	-14.17	-10.83	17.83	17.64	0.19	93.348		
200.00	200.00	201.00	201.00	0.32	0.32	-142.60	-14.17	-10.83	17.83	17.19	0.64	27.841		
300.00	300.00	301.00	301.00	0.54	0.55	-142.60	-14.17	-10.83	17.83	16.74	1.09	16.360		
400.00	400.00	401.00	401.00	0.77	0.77	-142.60	-14.17	-10.83	17.83	16.29	1.54	11.583		
500.00	500.00	501.00	501.00	0.99	1.00	-142.60	-14.17	-10.83	17.83	15.85	1.99	8.966		
600.00	600.00	601.00	601.00	1.22	1.22	-142.60	-14.17	-10.83	17.83	15.40	2.44	7.313		
700.00	700.00	701.00	701.00	1.44	1.45	-142.60	-14.17	-10.83	17.83	14.95	2.89	6.175		
800.00	800.00	801.00	801.00	1.67	1.67	-142.60	-14.17	-10.83	17.83	14.50	3.34	5.343		
900.00	900.00	901.00	901.00	1.89	1.89	-142.60	-14.17	-10.83	17.83	14.05	3.79	4.709		
1,000.00	1,000.00	1,001.00	1,001.00	2.12	2.12	-142.60	-14.17	-10.83	17.83	13.60	4.24	4.209		
1,100.00	1,100.00	1,101.00	1,101.00	2.34	2.34	-142.60	-14.17	-10.83	17.83	13.15	4.69	3.806		
1,200.00	1,200.00	1,201.00	1,201.00	2.57	2.57	-142.60	-14.17	-10.83	17.83	12.70	5.14	3.472		
1,300.00	1,300.00	1,301.00	1,301.00	2.79	2.79	-142.60	-14.17	-10.83	17.83	12.25	5.59	3.193		
1,400.00	1,400.00	1,401.00	1,401.00	3.02	3.02	-142.60	-14.17	-10.83	17.83	11.80	6.03	2.955 CC, ES, SF		
1,500.00	1,499.98	1,500.99	1,500.99	3.23	3.24	158.44	-14.17	-10.83	19.45	12.97	6.48	3.003		
1,600.00	1,599.84	1,601.60	1,601.57	3.45	3.47	164.69	-12.49	-10.17	22.74	15.84	6.90	3.294		
1,700.00	1,699.45	1,702.19	1,702.02	3.67	3.70	174.34	-7.54	-8.19	26.69	19.37	7.32	3.645		
1,800.00	1,798.70	1,802.68	1,802.12	3.91	3.92	-174.69	0.67	-4.91	32.08	24.35	7.73	4.148		
1,900.00	1,897.47	1,902.99	1,901.66	4.17	4.16	-164.16	12.11	-0.34	39.58	31.42	8.16	4.852		
2,000.00	1,995.62	2,003.04	2,000.46	4.46	4.41	-155.10	26.74	5.50	49.54	40.92	8.62	5.750		
2,100.00	2,093.06	2,102.74	2,098.30	4.80	4.70	-147.73	44.50	12.59	62.08	52.94	9.14	6.793		
2,200.00	2,189.64	2,201.97	2,194.97	5.18	5.01	-141.88	65.29	20.89	77.17	67.43	9.74	7.923		
2,300.00	2,285.27	2,300.23	2,290.38	5.62	5.35	-138.46	87.14	29.61	95.09	84.68	10.40	9.139		
2,400.00	2,379.82	2,398.07	2,385.37	6.12	5.72	-137.21	108.88	38.29	115.70	104.59	11.10	10.420		
2,500.00	2,473.17	2,495.35	2,479.82	6.70	6.09	-137.23	130.51	46.92	138.82	126.99	11.83	11.738		
2,600.00	2,565.21	2,591.96	2,573.63	7.34	6.48	-137.97	151.98	55.50	164.46	151.89	12.57	13.085		
2,700.00	2,655.84	2,687.79	2,666.67	8.07	6.88	-139.08	173.29	64.00	192.68	179.36	13.32	14.464		
2,800.00	2,744.94	2,782.71	2,758.83	8.87	7.28	-140.38	194.39	72.42	223.56	209.48	14.08	15.877		
2,900.00	2,832.43	2,876.63	2,850.02	9.75	7.69	-141.83	215.26	80.76	257.14	242.28	14.86	17.308		
3,000.00	2,919.37	2,970.20	2,940.87	10.67	8.10	-143.35	236.06	89.06	291.74	276.04	15.70	18.585		
3,100.00	3,006.31	3,063.77	3,031.72	11.61	8.51	-144.55	256.86	97.36	326.48	309.93	16.56	19.719		
3,200.00	3,093.25	3,157.34	3,122.58	12.57	8.94	-145.53	277.66	105.67	361.33	343.90	17.43	20.730		
3,300.00	3,180.19	3,250.92	3,213.43	13.54	9.36	-146.33	298.46	113.97	396.25	377.94	18.32	21.634		
3,400.00	3,267.13	3,344.49	3,304.28	14.52	9.79	-147.00	319.26	122.27	431.24	412.02	19.21	22.445		
3,500.00	3,354.07	3,438.06	3,395.13	15.51	10.22	-147.57	340.06	130.58	466.26	446.14	20.12	23.176		
3,600.00	3,441.01	3,531.63	3,485.98	16.50	10.65	-148.06	360.86	138.88	501.32	480.29	21.03	23.838		
3,700.00	3,527.96	3,625.20	3,576.84	17.51	11.09	-148.49	381.66	147.18	536.41	514.46	21.95	24.439		
3,800.00	3,614.90	3,718.77	3,667.69	18.51	11.53	-148.86	402.46	155.49	571.52	548.65	22.87	24.986		
3,900.00	3,701.84	3,812.35	3,758.54	19.52	11.97	-149.19	423.26	163.79	606.65	582.85	23.80	25.486		
4,000.00	3,788.80	3,905.93	3,849.40	20.53	12.41	-150.59	444.07	172.09	641.78	617.09	24.70	25.987		
4,100.00	3,878.03	4,000.08	3,940.81	21.32	12.86	-163.30	464.99	180.45	675.06	649.75	25.31	26.672		
4,200.00	3,970.11	4,094.17	4,032.17	21.98	13.30	-178.83	485.91	188.80	705.07	678.98	26.09	27.027		
4,300.00	4,063.66	4,186.80	4,122.11	22.51	13.75	-163.20	506.50	197.02	732.10	705.13	26.96	27.153		
4,400.00	4,157.30	4,259.58	4,192.89	22.90	14.07	145.15	522.26	203.10	757.39	729.74	27.65	27.392		
4,500.00	4,249.61	4,316.05	4,248.48	23.15	14.24	129.91	531.87	205.41	784.35	756.31	28.04	27.977		
4,600.00	4,339.24	4,371.52	4,303.55	23.28	14.38	118.73	538.52	205.15	813.39	785.10	28.29	28.748		
4,700.00	4,424.84	4,426.08	4,357.89	23.29	14.47	110.78	542.32	202.46	844.50	816.05	28.44	29.689		
4,800.00	4,505.14	4,479.83	4,411.39	23.22	14.53	105.06	543.42	197.45	877.60	849.09	28.51	30.779		
4,900.00	4,578.93	4,532.91	4,463.94	23.07	14.55	100.82	541.90	190.23	912.60	884.07	28.53	31.984		
5,000.00	4,645.13	4,585.50	4,515.53	22.86	14.53	97.57	537.85	180.87	949.36	920.82	28.54	33.262		
5,100.00	4,702.74	4,637.82	4,566.15	22.62	14.49	95.00	531.34	169.44	987.72	959.15	28.58	34.565		

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 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	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		
5,200.00	4,750.90	4,690.13	4,615.88	22.36	14.42	92.93	522.37	155.92	1,027.50	998.83	28.67	35.842		
5,300.00	4,788.89	4,742.79	4,664.82	22.09	14.33	91.25	510.89	140.27	1,068.48	1,039.64	28.84	37.046		
5,400.00	4,816.16	4,796.24	4,713.15	21.84	14.21	89.90	496.78	122.35	1,110.44	1,081.33	29.11	38.143		
5,500.00	4,832.29	4,851.10	4,761.12	21.63	14.08	88.88	479.79	101.91	1,153.13	1,123.65	29.48	39.113		
5,600.00	4,837.04	4,908.24	4,809.11	21.48	13.93	88.19	459.46	78.51	1,196.31	1,166.37	29.95	39.949		
5,700.00	4,830.34	4,969.00	4,857.67	21.44	13.76	87.91	435.02	51.40	1,239.71	1,209.20	30.51	40.631		
5,800.00	4,813.22	5,036.64	4,908.40	21.58	13.59	89.21	404.54	18.68	1,283.36	1,252.08	31.28	41.028		
5,900.00	4,794.12	5,126.37	4,969.73	22.02	13.41	92.73	359.14	-28.46	1,329.50	1,297.21	32.29	41.177		
6,000.00	4,775.02	5,252.69	5,043.22	22.78	13.34	96.92	286.62	-101.01	1,376.80	1,343.30	33.50	41.100		
6,100.00	4,755.92	5,432.28	5,118.87	23.79	14.11	101.22	169.37	-213.50	1,422.10	1,386.87	35.23	40.367		
6,200.00	4,736.82	5,676.36	5,161.90	24.96	16.74	104.14	-7.24	-375.02	1,460.90	1,422.62	38.28	38.163		
6,300.00	4,717.72	5,843.05	5,152.01	26.26	19.14	104.48	-132.13	-484.73	1,491.05	1,449.50	41.55	35.885		
6,400.00	4,698.63	5,938.66	5,142.29	27.64	20.67	104.52	-203.82	-547.25	1,520.31	1,476.05	44.26	34.347		
6,500.00	4,679.53	6,034.28	5,132.57	29.09	22.28	104.55	-275.51	-609.78	1,549.58	1,502.45	47.13	32.879		
6,600.00	4,660.43	6,129.90	5,122.85	30.59	23.96	104.59	-347.20	-672.30	1,578.84	1,528.72	50.12	31.499		
6,700.00	4,641.33	6,225.52	5,113.14	32.13	25.70	104.62	-418.89	-734.82	1,608.10	1,554.88	53.22	30.217		
6,800.00	4,622.23	6,321.14	5,103.42	33.71	27.48	104.65	-490.58	-797.35	1,637.37	1,580.97	56.40	29.031		
6,900.00	4,603.13	6,416.76	5,093.70	35.32	29.30	104.68	-562.27	-859.87	1,666.63	1,606.98	59.65	27.939		
7,000.00	4,584.03	6,512.38	5,083.99	36.96	31.15	104.71	-633.95	-922.39	1,695.90	1,632.93	62.96	26.935		
7,100.00	4,564.93	6,607.99	5,074.27	38.62	33.03	104.74	-705.64	-984.92	1,725.16	1,658.84	66.32	26.011		
7,200.00	4,545.83	6,703.61	5,064.55	40.31	34.92	104.76	-777.33	-1,047.44	1,754.43	1,684.70	69.73	25.161		
7,300.00	4,526.73	6,799.23	5,054.83	42.01	36.84	104.79	-849.02	-1,109.96	1,783.69	1,710.52	73.17	24.378		
7,400.00	4,507.63	6,894.85	5,045.12	43.73	38.78	104.82	-920.71	-1,172.49	1,812.96	1,736.32	76.64	23.656		
7,500.00	4,488.54	6,990.47	5,035.40	45.46	40.72	104.84	-992.40	-1,235.01	1,842.22	1,762.09	80.14	22.989		
7,600.00	4,469.44	7,086.09	5,025.68	47.21	42.68	104.86	-1,064.09	-1,297.54	1,871.49	1,787.83	83.66	22.371		
7,700.00	4,450.34	7,181.71	5,015.96	48.97	44.65	104.89	-1,135.78	-1,360.06	1,900.76	1,813.56	87.20	21.798		
7,800.00	4,431.24	7,277.32	5,006.25	50.73	46.63	104.91	-1,207.46	-1,422.58	1,930.02	1,839.27	90.76	21.266		
7,900.00	4,412.14	7,372.94	4,996.53	52.51	48.62	104.93	-1,279.15	-1,485.11	1,959.29	1,864.96	94.33	20.771		
8,000.00	4,393.04	7,468.56	4,986.81	54.30	50.61	104.95	-1,350.84	-1,547.63	1,988.56	1,890.64	97.92	20.308		
8,100.00	4,373.94	7,564.18	4,977.10	56.10	52.61	104.97	-1,422.53	-1,610.15	2,017.83	1,916.31	101.52	19.876		
8,200.00	4,354.84	7,659.80	4,967.38	57.90	54.61	104.99	-1,494.22	-1,672.68	2,047.10	1,941.96	105.13	19.472		
8,300.00	4,335.74	7,755.42	4,957.66	59.71	56.62	105.01	-1,565.91	-1,735.20	2,076.36	1,967.61	108.75	19.093		
8,400.00	4,316.64	7,851.04	4,947.94	61.53	58.64	105.03	-1,637.60	-1,797.72	2,105.63	1,993.25	112.38	18.736		
8,500.00	4,297.54	7,946.65	4,938.23	63.36	60.66	105.05	-1,709.29	-1,860.25	2,134.90	2,018.88	116.02	18.401		
8,600.00	4,278.45	8,042.27	4,928.51	65.18	62.68	105.07	-1,780.98	-1,922.77	2,164.17	2,044.50	119.67	18.085		
8,691.34	4,261.00	8,129.61	4,919.63	66.86	64.53	105.08	-1,846.46	-1,979.88	2,190.91	2,067.90	123.00	17.812		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 7183.00ft (Original Well Elev)

Offset Depths are relative to Offset Datum

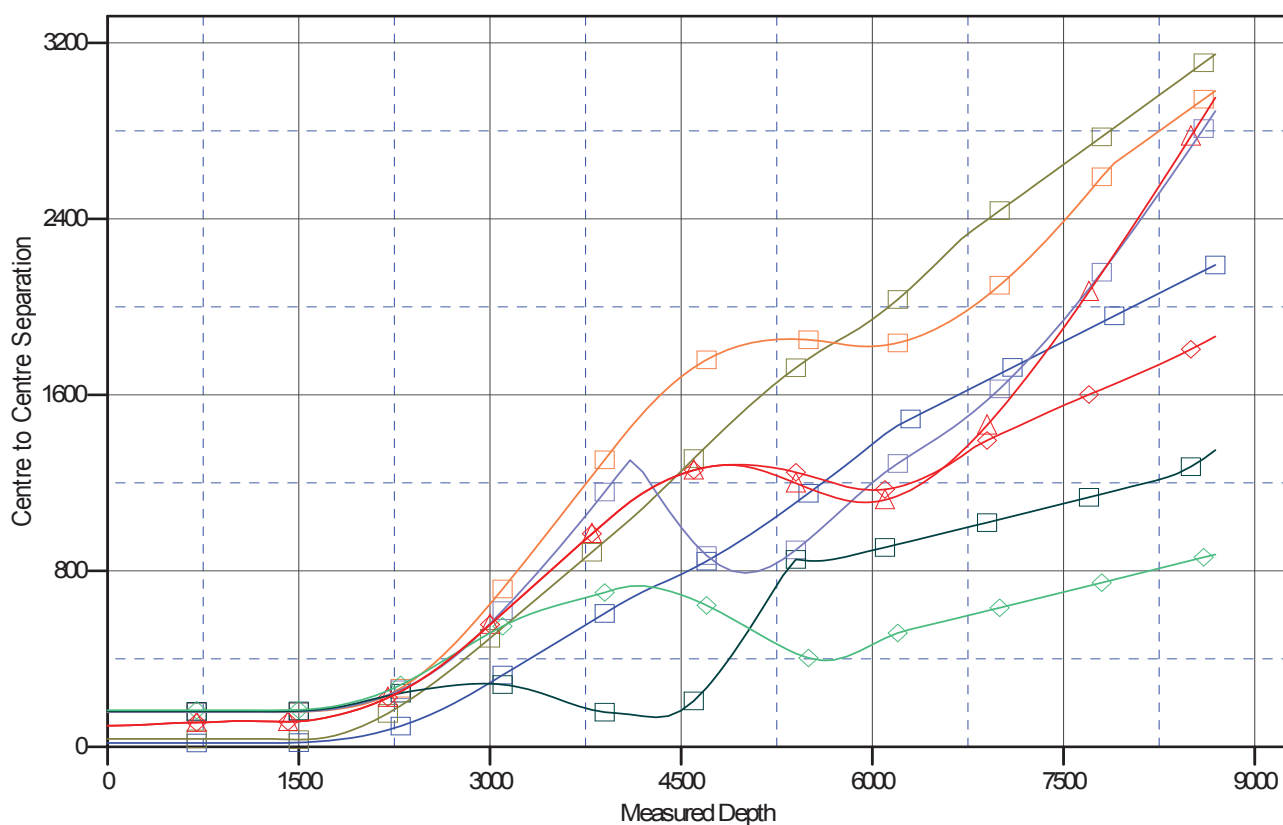
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: DEAL GULCH 8-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.29°

Ladder Plot



LEGEND

17-16, Design #1 V0
16-16, Design #1 V0
15-16, Design #1 V0

DEAL GULCH 4-16, DEAL GULCH 4-16, Design #1 V0
DEAL GULCH 3-16, DEAL GULCH 3-16, Design #1 V0
DEAL GULCH 2-16, DEAL GULCH 2-16, Design #3 V0

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



Company:	SHELL E&P	Local Co-ordinate Reference:	Well DEAL GULCH 8-16
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 7183.00ft (Original Well Elev)
Reference Site:	DEAL GULCH 8-16	MD Reference:	WELL @ 7183.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	DEAL GULCH 8-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	DEAL GULCH 8-16	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 7183.00ft (Original Well Elev)

Offset Depths are relative to Offset Datum

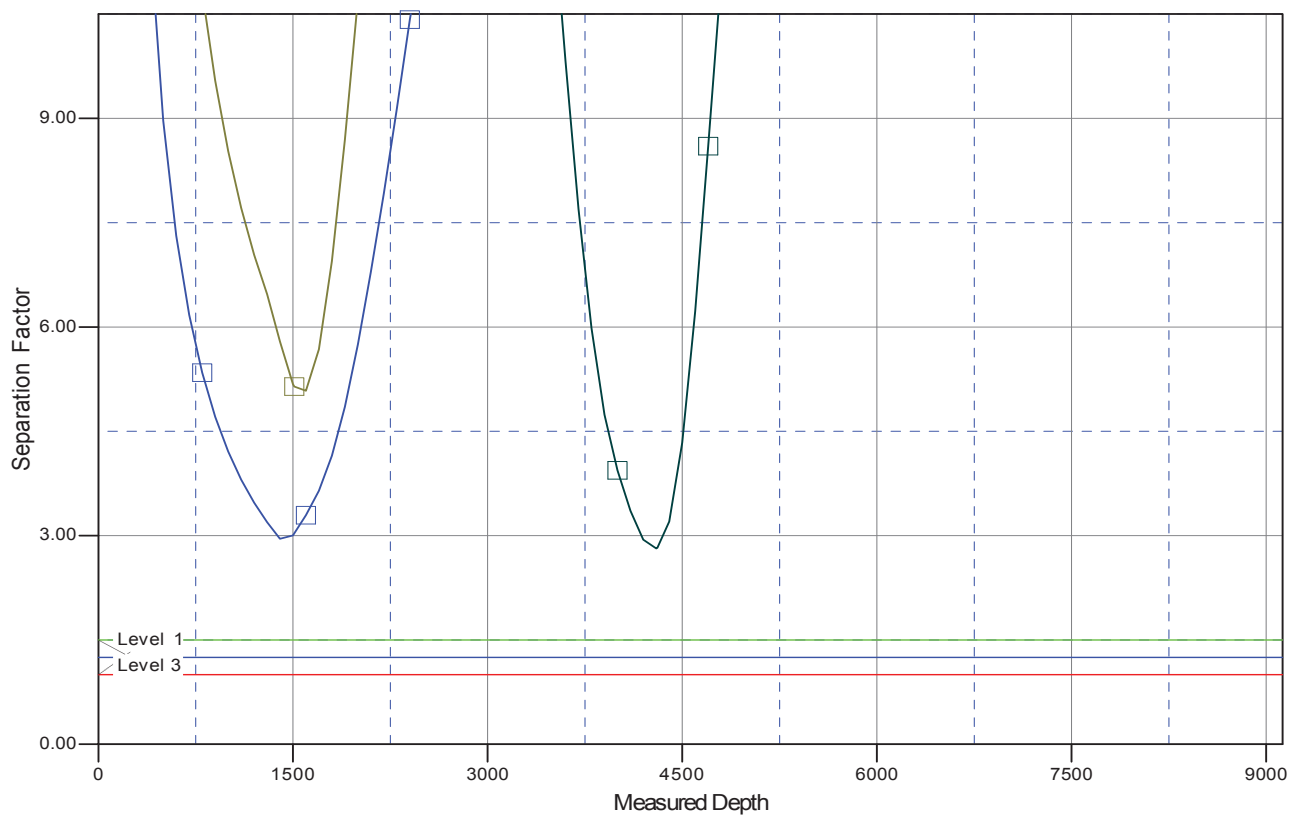
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: DEAL GULCH 8-16

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.29°

Separation Factor Plot



LEGEND

17-16, Design #1 V0

16-16, Design #1 V0

15-16, Design #1 V0

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

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

DEAL GULCH 2-16, DEAL GULCH 2-16, Design #3 V0

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

Deal Gulch 1-16, Deal Gulch 1-16