



SHELL E&P

MOFFAT COUNTY, CO

HERRING DRAW 3-33

HERRING DRAW 3-33

HERRING DRAW 3-33

Plan: PLAN 1

Standard Planning Report

28 August, 2012





Project: MOFFAT COUNTY, CO
Site: HERRING DRAW 3-33
Well: HERRING DRAW 3-33
Wellbore: HERRING DRAW 3-33
Design: PLAN 1
Latitude: 40° 20' 44.930 N
Longitude: 107° 30' 20.120 W
GL: 6804.00
KB: WELL @ 6820.00ft (Original Well Elev)



WELLBORE TARGET DETAILS (LAT/LONG)

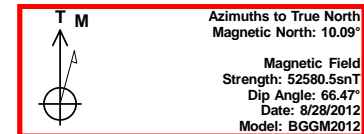
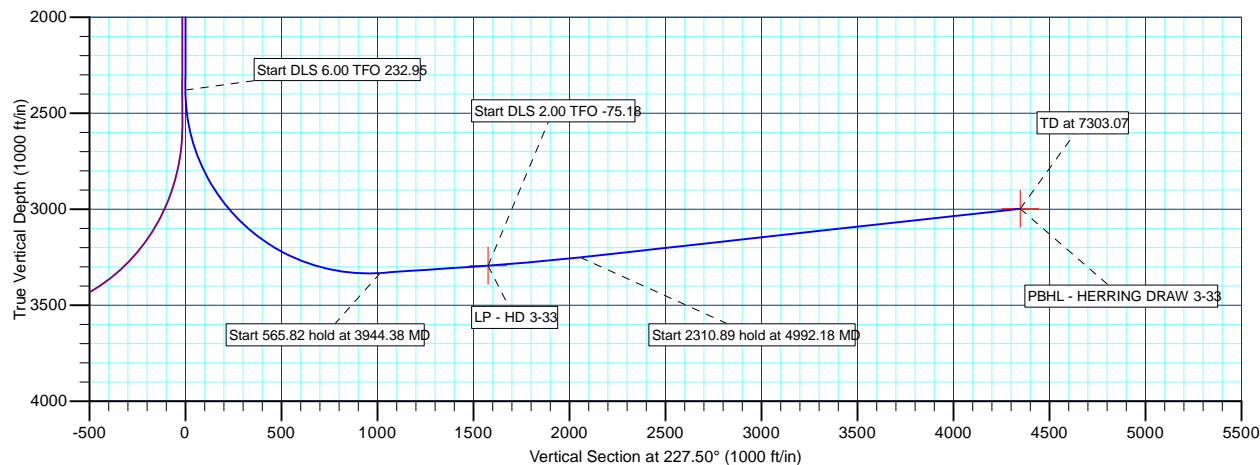
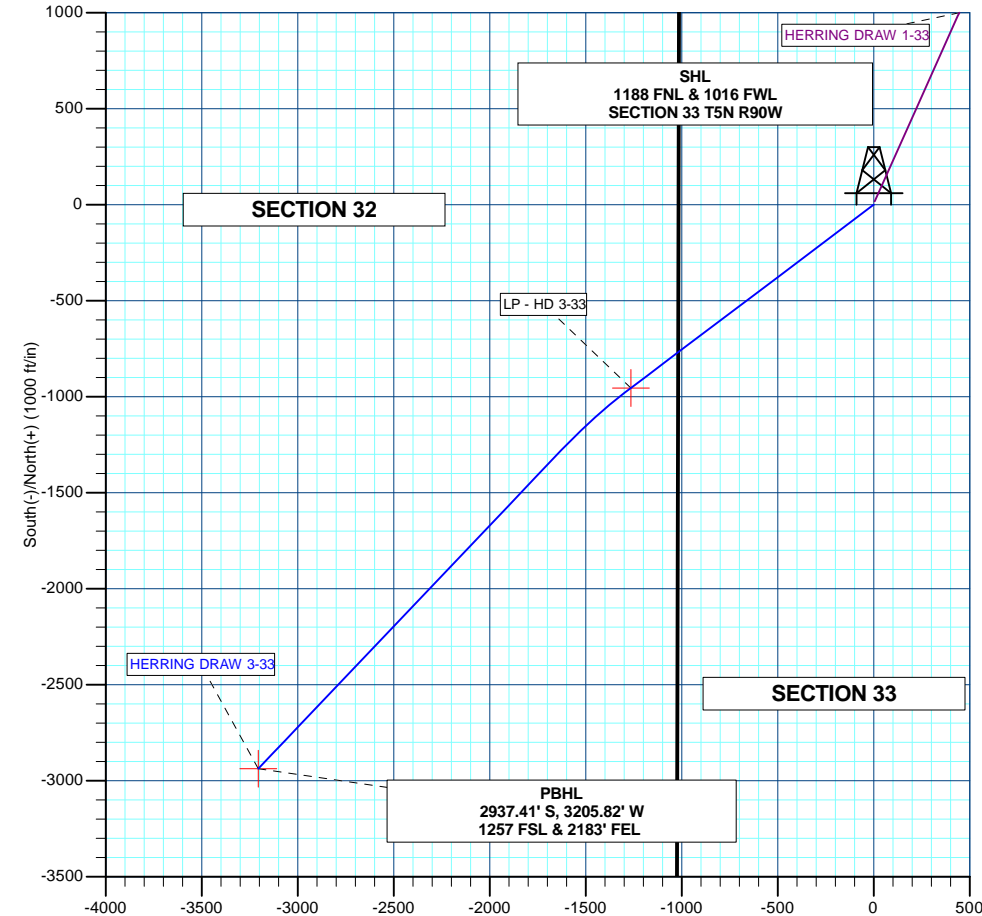
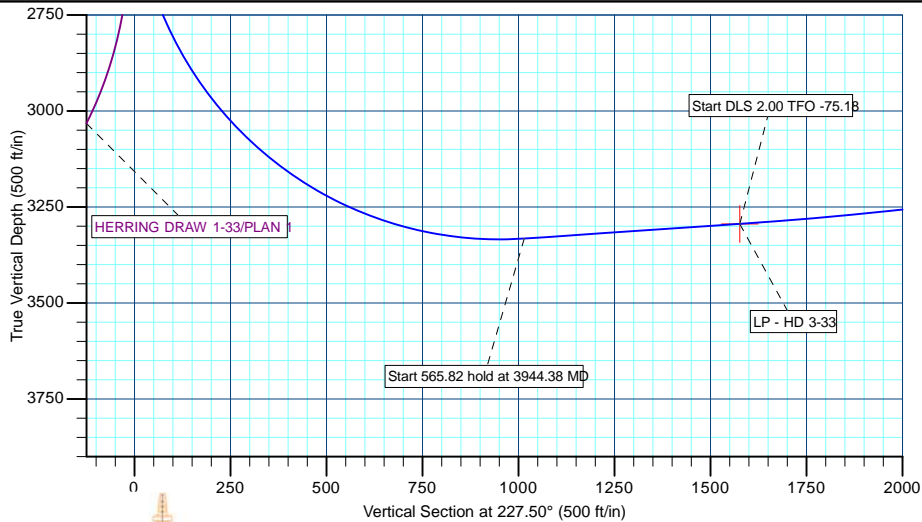
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL - HERRING DRAW 3-33	2998.00	-2937.41	-3205.82	40° 20' 15.900 N	107° 31' 1.520 W	Point
LP - HD 3-33	3294.00	-954.38	-1264.42	40° 20' 35.498 N	107° 30' 36.450 W	Point

WELL DETAILS: HERRING DRAW 3-33

+N/-S	+E/-W	Northing	Easting	Ground Level: 6804.00	Latitude	Longitude	Slot
0.00	0.00	1375142.22	2441023.93		40° 20' 44.930 N	107° 30' 20.120 W	

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2379.61	0.00	0.00	2379.61	0.00	0.00	0.00	0.00	0.00	Start DLS 6.00 TFO 232.95
3944.38	93.89	232.95	3332.35	-614.28	-813.84	6.00	232.95	1015.03	Start 565.82 hold at 3944.38 MD
4510.20	93.89	232.95	3294.00	-954.38	-1264.42	0.00	0.00	1577.00	Start DLS 2.00 TFO -75.18
4992.18	96.29	223.58	3251.17	-1273.50	-1622.30	2.00	-75.18	2056.46	Start 2310.89 hold at 4992.18 MD
7303.07	96.29	223.58	2998.00	-2937.41	-3205.82	0.00	0.00	4348.06	TD at 7303.07



Plan: PLAN 1 (HERRING DRAW 3-33/HERRING DRAW 3-33)

Created By: MATT MAYDEW

Date: 14:01, August 28 2012



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well HERRING DRAW 3-33
Company:	SHELL E&P	TVD Reference:	WELL @ 6820.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 6820.00ft (Original Well Elev)
Site:	HERRING DRAW 3-33	North Reference:	True
Well:	HERRING DRAW 3-33	Survey Calculation Method:	Minimum Curvature
Wellbore:	HERRING DRAW 3-33		
Design:	PLAN 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		HERRING DRAW 3-33			
Site Position:		Northing:	1,375,142.22 usft	Latitude:	40° 20' 44.930 N
From:	Lat/Long	Easting:	2,441,023.93 usft	Longitude:	107° 30' 20.120 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.30 °

Well	HERRING DRAW 3-33					
Well Position	+N/-S	0.00 ft	Northing:	1,375,142.22 usft	Latitude:	40° 20' 44.930 N
	+E/-W	0.00 ft	Easting:	2,441,023.93 usft	Longitude:	107° 30' 20.120 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,804.00 ft

Wellbore	HERRING DRAW 3-33				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	8/28/2012	10.09	66.47	52,581

Design	PLAN 1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	227.50

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,379.61	0.00	0.00	2,379.61	0.00	0.00	0.00	0.00	0.00	0.00	
3,944.38	93.89	232.95	3,332.35	-614.28	-813.84	6.00	6.00	-8.12	232.95	
4,510.20	93.89	232.95	3,294.00	-954.38	-1,264.42	0.00	0.00	0.00	0.00	LP - HD 3-33
4,992.18	96.29	223.58	3,251.17	-1,273.50	-1,622.30	2.00	0.50	-1.94	-75.18	
7,303.07	96.29	223.58	2,998.00	-2,937.41	-3,205.82	0.00	0.00	0.00	0.00	PBHL - HERRING DF



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Company:	SHELL E&P	TVD Reference:	WELL @ 6820.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 6820.00ft (Original Well Elev)
Site:	HERRING DRAW 3-33	North Reference:	True
Well:	HERRING DRAW 3-33	Survey Calculation Method:	Minimum Curvature
Wellbore:	HERRING DRAW 3-33		
Design:	PLAN 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
Start DLS 6.00 TFO 232.95									
2,379.61	0.00	0.00	2,379.61	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	1.22	232.95	2,400.00	-0.13	-0.17	0.22	6.00	6.00	0.00
2,450.00	4.22	232.95	2,449.94	-1.56	-2.07	2.58	6.00	6.00	0.00
2,500.00	7.22	232.95	2,499.68	-4.57	-6.05	7.54	6.00	6.00	0.00
2,550.00	10.22	232.95	2,549.10	-9.13	-12.10	15.09	6.00	6.00	0.00
2,600.00	13.22	232.95	2,598.05	-15.25	-20.21	25.20	6.00	6.00	0.00
2,650.00	16.22	232.95	2,646.40	-22.91	-30.35	37.85	6.00	6.00	0.00
2,700.00	19.22	232.95	2,694.02	-32.08	-42.50	53.00	6.00	6.00	0.00
2,750.00	22.22	232.95	2,740.78	-42.73	-56.62	70.61	6.00	6.00	0.00
2,800.00	25.22	232.95	2,786.55	-54.85	-72.67	90.64	6.00	6.00	0.00
2,850.00	28.22	232.95	2,831.21	-68.40	-90.62	113.02	6.00	6.00	0.00
2,900.00	31.22	232.95	2,874.62	-83.33	-110.40	137.69	6.00	6.00	0.00
2,950.00	34.22	232.95	2,916.68	-99.61	-131.97	164.60	6.00	6.00	0.00
3,000.00	37.22	232.95	2,957.27	-117.20	-155.27	193.65	6.00	6.00	0.00
3,050.00	40.22	232.95	2,996.27	-136.04	-180.23	224.79	6.00	6.00	0.00
3,100.00	43.22	232.95	3,033.59	-156.08	-206.79	257.91	6.00	6.00	0.00
3,150.00	46.22	232.95	3,069.11	-177.28	-234.87	292.93	6.00	6.00	0.00
3,200.00	49.22	232.95	3,102.74	-199.56	-264.39	329.75	6.00	6.00	0.00
3,250.00	52.22	232.95	3,134.39	-222.88	-295.28	368.28	6.00	6.00	0.00
3,300.00	55.22	232.95	3,163.97	-247.16	-327.45	408.40	6.00	6.00	0.00
3,350.00	58.22	232.95	3,191.40	-272.34	-360.81	450.01	6.00	6.00	0.00
3,400.00	61.22	232.95	3,216.61	-298.35	-395.27	492.99	6.00	6.00	0.00
3,450.00	64.22	232.95	3,239.52	-325.12	-430.74	537.22	6.00	6.00	0.00
3,500.00	67.22	232.95	3,260.08	-352.58	-467.11	582.59	6.00	6.00	0.00
3,550.00	70.22	232.95	3,278.22	-380.64	-504.30	628.97	6.00	6.00	0.00
3,600.00	73.22	232.95	3,293.90	-409.24	-542.19	676.22	6.00	6.00	0.00
3,650.00	76.22	232.95	3,307.07	-438.30	-580.68	724.23	6.00	6.00	0.00
3,700.00	79.22	232.95	3,317.70	-467.73	-619.67	772.86	6.00	6.00	0.00
3,750.00	82.22	232.95	3,325.76	-497.45	-659.05	821.98	6.00	6.00	0.00



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Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 6820.00ft (Original Well Elev)
Site:	HERRING DRAW 3-33	North Reference:	True
Well:	HERRING DRAW 3-33	Survey Calculation Method:	Minimum Curvature
Wellbore:	HERRING DRAW 3-33		
Design:	PLAN 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)
3,800.00	85.22	232.95	3,331.22	-527.39	-698.72	871.45	6.00	6.00	0.00
3,850.00	88.22	232.95	3,334.08	-557.46	-738.55	921.14	6.00	6.00	0.00
3,900.00	91.22	232.95	3,334.32	-587.58	-778.46	970.90	6.00	6.00	0.00
Start 565.82 hold at 3944.38 MD									
3,944.38	93.89	232.95	3,332.35	-614.28	-813.84	1,015.03	6.00	6.00	0.00
4,000.00	93.89	232.95	3,328.58	-647.72	-858.13	1,070.28	0.00	0.00	0.00
4,100.00	93.89	232.95	3,321.80	-707.82	-937.77	1,169.59	0.00	0.00	0.00
4,200.00	93.89	232.95	3,315.02	-767.93	-1,017.40	1,268.91	0.00	0.00	0.00
4,300.00	93.89	232.95	3,308.25	-828.03	-1,097.03	1,368.23	0.00	0.00	0.00
4,400.00	93.89	232.95	3,301.47	-888.14	-1,176.66	1,467.55	0.00	0.00	0.00
4,500.00	93.89	232.95	3,294.69	-948.25	-1,256.30	1,566.87	0.00	0.00	0.00
Start DLS 2.00 TFO -75.18 - LP - HD 3-33									
4,510.20	93.89	232.95	3,294.00	-954.38	-1,264.42	1,577.00	0.00	0.00	0.00
4,600.00	94.34	231.21	3,287.56	-1,009.42	-1,335.08	1,666.28	2.00	0.51	-1.94
4,700.00	94.85	229.27	3,279.54	-1,073.16	-1,411.70	1,765.84	2.00	0.50	-1.94
4,800.00	95.35	227.33	3,270.66	-1,139.42	-1,486.07	1,865.43	2.00	0.50	-1.94
4,900.00	95.84	225.38	3,260.91	-1,208.10	-1,558.08	1,964.92	2.00	0.49	-1.95
Start 2310.89 hold at 4992.18 MD									
4,992.18	96.29	223.58	3,251.17	-1,273.50	-1,622.30	2,056.46	2.00	0.49	-1.95
5,000.00	96.29	223.58	3,250.31	-1,279.13	-1,627.66	2,064.21	0.00	0.00	0.00
5,100.00	96.29	223.58	3,239.35	-1,351.14	-1,696.19	2,163.38	0.00	0.00	0.00
5,200.00	96.29	223.58	3,228.40	-1,423.14	-1,764.71	2,262.54	0.00	0.00	0.00
5,300.00	96.29	223.58	3,217.44	-1,495.14	-1,833.23	2,361.71	0.00	0.00	0.00
5,400.00	96.29	223.58	3,206.49	-1,567.14	-1,901.76	2,460.87	0.00	0.00	0.00
5,500.00	96.29	223.58	3,195.53	-1,639.15	-1,970.28	2,560.04	0.00	0.00	0.00
5,600.00	96.29	223.58	3,184.58	-1,711.15	-2,038.81	2,659.21	0.00	0.00	0.00
5,700.00	96.29	223.58	3,173.62	-1,783.15	-2,107.33	2,758.37	0.00	0.00	0.00
5,800.00	96.29	223.58	3,162.67	-1,855.16	-2,175.85	2,857.54	0.00	0.00	0.00
5,900.00	96.29	223.58	3,151.71	-1,927.16	-2,244.38	2,956.70	0.00	0.00	0.00
6,000.00	96.29	223.58	3,140.76	-1,999.16	-2,312.90	3,055.87	0.00	0.00	0.00
6,100.00	96.29	223.58	3,129.80	-2,071.17	-2,381.43	3,155.03	0.00	0.00	0.00
6,200.00	96.29	223.58	3,118.84	-2,143.17	-2,449.95	3,254.20	0.00	0.00	0.00
6,300.00	96.29	223.58	3,107.89	-2,215.17	-2,518.47	3,353.36	0.00	0.00	0.00
6,400.00	96.29	223.58	3,096.93	-2,287.18	-2,587.00	3,452.53	0.00	0.00	0.00
6,500.00	96.29	223.58	3,085.98	-2,359.18	-2,655.52	3,551.70	0.00	0.00	0.00
6,600.00	96.29	223.58	3,075.02	-2,431.18	-2,724.05	3,650.86	0.00	0.00	0.00
6,700.00	96.29	223.58	3,064.07	-2,503.18	-2,792.57	3,750.03	0.00	0.00	0.00
6,800.00	96.29	223.58	3,053.11	-2,575.19	-2,861.09	3,849.19	0.00	0.00	0.00
6,900.00	96.29	223.58	3,042.16	-2,647.19	-2,929.62	3,948.36	0.00	0.00	0.00
7,000.00	96.29	223.58	3,031.20	-2,719.19	-2,998.14	4,047.52	0.00	0.00	0.00
7,100.00	96.29	223.58	3,020.25	-2,791.20	-3,066.67	4,146.69	0.00	0.00	0.00
7,200.00	96.29	223.58	3,009.29	-2,863.20	-3,135.19	4,245.85	0.00	0.00	0.00
TD at 7303.07 - PBHL - HERRING DRAW 3-33									
7,303.07	96.29	223.58	2,998.00	-2,937.41	-3,205.82	4,348.06	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well HERRING DRAW 3-33
Company:	SHELL E&P	TVD Reference:	WELL @ 6820.00ft (Original Well Elev)
Project:	MOFFAT COUNTY, CO	MD Reference:	WELL @ 6820.00ft (Original Well Elev)
Site:	HERRING DRAW 3-33	North Reference:	True
Well:	HERRING DRAW 3-33	Survey Calculation Method:	Minimum Curvature
Wellbore:	HERRING DRAW 3-33		
Design:	PLAN 1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
PBHL - HERRING DRAW	0.00	0.00	2,998.00	-2,937.41	-3,205.82	1,372,278.07	2,437,752.50	40° 20' 15.900 N	107° 31' 1.520 W
- plan hits target center									
- Point									
LP - HD 3-33	0.00	0.00	3,294.00	-954.38	-1,264.42	1,374,216.68	2,439,738.25	40° 20' 35.498 N	107° 30' 36.450 W
- plan hits target center									
- Point									

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
2,379.61	2,379.61	0.00	0.00	Start DLS 6.00 TFO 232.95
3,944.38	3,332.35	-614.28	-813.84	Start 565.82 hold at 3944.38 MD
4,510.20	3,294.00	-954.38	-1,264.42	Start DLS 2.00 TFO -75.18
4,992.18	3,251.17	-1,273.50	-1,622.30	Start 2310.89 hold at 4992.18 MD
7,303.07	2,998.00	-2,937.41	-3,205.82	TD at 7303.07



SHELL E&P

MOFFAT COUNTY, CO

HERRING DRAW 3-33

HERRING DRAW 3-33

HERRING DRAW 3-33

PLAN 1

Anticollision Report

28 August, 2012



Weatherford®



Company:	SHELL E&P	Local Co-ordinate Reference:	Well HERRING DRAW 3-33
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 6820.00ft (Original Well Elev)
Reference Site:	HERRING DRAW 3-33	MD Reference:	WELL @ 6820.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	HERRING DRAW 3-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	HERRING DRAW 3-33	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 1	Offset TVD Reference:	Offset Datum

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

Survey Tool Program	Date 8/28/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,303.07	PLAN 1 (HERRING DRAW 3-33)	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						
HERRING DRAW 1-33						
HERRING DRAW 1-33 - HERRING DRAW 1-33 - PLAN	2,300.00	2,300.00	17.82	7.74	1.768 CC	
HERRING DRAW 1-33 - HERRING DRAW 1-33 - PLAN	2,400.00	2,400.00	17.99	7.47	1.710 ES, SF	

Offset Design		HERRING DRAW 1-33 - HERRING DRAW 1-33 - HERRING DRAW 1-33 - PLAN 1										Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
0.00	0.00	0.00	0.00	0.00	0.00	15.11	17.20	4.65	17.82				
100.00	100.00	100.00	100.00	0.09	0.09	15.11	17.20	4.65	17.82	17.63	0.19	94.378	
200.00	200.00	200.00	200.00	0.32	0.32	15.11	17.20	4.65	17.82	17.18	0.64	27.915	
300.00	300.00	300.00	300.00	0.54	0.54	15.11	17.20	4.65	17.82	16.73	1.09	16.380	
400.00	400.00	400.00	400.00	0.77	0.77	15.11	17.20	4.65	17.82	16.28	1.54	11.590	
500.00	500.00	500.00	500.00	0.99	0.99	15.11	17.20	4.65	17.82	15.83	1.99	8.968	
600.00	600.00	600.00	600.00	1.22	1.22	15.11	17.20	4.65	17.82	15.38	2.44	7.313	
700.00	700.00	700.00	700.00	1.44	1.44	15.11	17.20	4.65	17.82	14.93	2.89	6.174	
800.00	800.00	800.00	800.00	1.67	1.67	15.11	17.20	4.65	17.82	14.48	3.34	5.342	
900.00	900.00	900.00	900.00	1.89	1.89	15.11	17.20	4.65	17.82	14.03	3.79	4.708	
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	15.11	17.20	4.65	17.82	13.58	4.23	4.208	
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	15.11	17.20	4.65	17.82	13.13	4.68	3.804	
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	15.11	17.20	4.65	17.82	12.69	5.13	3.471	
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	15.11	17.20	4.65	17.82	12.24	5.58	3.192	
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	15.11	17.20	4.65	17.82	11.79	6.03	2.954	
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	15.11	17.20	4.65	17.82	11.34	6.48	2.749	
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	15.11	17.20	4.65	17.82	10.89	6.93	2.571	
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	15.11	17.20	4.65	17.82	10.44	7.38	2.414	
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	15.11	17.20	4.65	17.82	9.99	7.83	2.275	
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	15.11	17.20	4.65	17.82	9.54	8.28	2.152	
2,000.00	2,000.00	2,000.00	2,000.00	4.36	4.36	15.11	17.20	4.65	17.82	9.09	8.73	2.041	
2,100.00	2,100.00	2,100.00	2,100.00	4.59	4.59	15.11	17.20	4.65	17.82	8.64	9.18	1.941	
2,200.00	2,200.00	2,200.00	2,200.00	4.81	4.81	15.11	17.20	4.65	17.82	8.19	9.63	1.851	
2,300.00	2,300.00	2,300.00	2,300.00	5.04	5.04	15.11	17.20	4.65	17.82	7.74	10.08	1.768 CC	
2,358.16	2,358.16	2,358.16	2,358.16	5.17	5.17	142.86	17.20	4.65	18.11	7.77	10.34	1.752	

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 HERRING DRAW 3-33
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 6820.00ft (Original Well Elev)
Reference Site:	HERRING DRAW 3-33	MD Reference:	WELL @ 6820.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	HERRING DRAW 3-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	HERRING DRAW 3-33	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 1	Offset TVD Reference:	Offset Datum

Offset Design HERRING DRAW 1-33 - HERRING DRAW 1-33 - HERRING DRAW 1-33 - PLAN 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2,400.00	2,400.00	2,400.00	2,400.00	5.26	5.26	142.58	17.20	4.65	17.99	7.47	10.52	1.710 ES, SF		
2,500.00	2,499.68	2,499.68	2,499.68	5.45	5.49	153.03	17.20	4.65	24.25	13.38	10.87	2.231		
2,600.00	2,598.05	2,596.71	2,596.71	5.65	5.71	163.79	17.70	4.87	41.43	30.32	11.11	3.728		
2,700.00	2,694.02	2,685.40	2,685.09	5.90	5.91	167.72	24.04	7.72	75.83	64.59	11.25	6.743		
2,800.00	2,786.55	2,763.62	2,762.24	6.24	6.09	168.40	35.68	12.94	126.95	115.67	11.27	11.262		
2,900.00	2,874.62	2,829.37	2,826.13	6.74	6.25	167.97	49.78	19.27	192.05	180.85	11.20	17.149		
3,000.00	2,957.27	2,882.21	2,876.64	7.44	6.38	166.91	63.93	25.62	268.38	257.33	11.06	24.276		
3,100.00	3,033.59	2,922.74	2,914.78	8.36	6.50	165.15	76.46	31.24	353.35	342.44	10.91	32.393		
3,200.00	3,102.74	2,950.00	2,940.08	9.52	6.59	162.05	85.69	35.39	444.63	433.72	10.91	40.762		
3,300.00	3,163.97	2,971.78	2,960.10	10.92	6.66	156.25	93.53	38.90	540.23	528.78	11.45	47.164		
3,400.00	3,216.61	2,982.99	2,970.32	12.53	6.70	141.24	97.72	40.79	638.49	624.36	14.13	45.181		
3,500.00	3,260.08	2,987.00	2,973.97	14.32	6.72	88.66	99.24	41.47	738.01	716.98	21.03	35.100		
3,600.00	3,293.90	2,984.87	2,972.03	16.27	6.71	32.18	98.43	41.11	837.59	823.18	14.41	58.133		
3,700.00	3,317.70	2,977.51	2,965.33	18.33	6.68	15.86	95.66	39.86	936.24	925.37	10.88	86.090		
3,800.00	3,331.22	2,965.68	2,954.51	20.48	6.64	9.61	91.29	37.90	1,033.10	1,023.33	9.77	105.750		
3,900.00	3,334.32	2,950.00	2,940.08	22.66	6.59	6.45	85.69	35.39	1,127.41	1,117.94	9.47	119.002		
4,000.00	3,328.58	2,931.74	2,923.16	24.88	6.53	5.19	79.44	32.58	1,219.21	1,209.39	9.82	124.115		
4,100.00	3,321.80	2,914.38	2,906.95	27.11	6.47	4.68	73.76	30.03	1,311.33	1,300.88	10.46	125.413		
4,200.00	3,315.02	2,900.00	2,893.45	29.37	6.43	4.29	69.25	28.01	1,404.09	1,392.98	11.11	126.342		
4,300.00	3,308.25	2,883.22	2,877.60	31.64	6.39	3.88	64.23	25.75	1,497.41	1,485.64	11.77	127.206		
4,400.00	3,301.47	2,869.21	2,864.29	33.93	6.35	3.57	60.22	23.95	1,591.22	1,578.78	12.45	127.839		



Company:	SHELL E&P	Local Co-ordinate Reference:	Well HERRING DRAW 3-33
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 6820.00ft (Original Well Elev)
Reference Site:	HERRING DRAW 3-33	MD Reference:	WELL @ 6820.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	HERRING DRAW 3-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	HERRING DRAW 3-33	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 6820.00ft (Original Well Elev)

Offset Depths are relative to Offset Datum

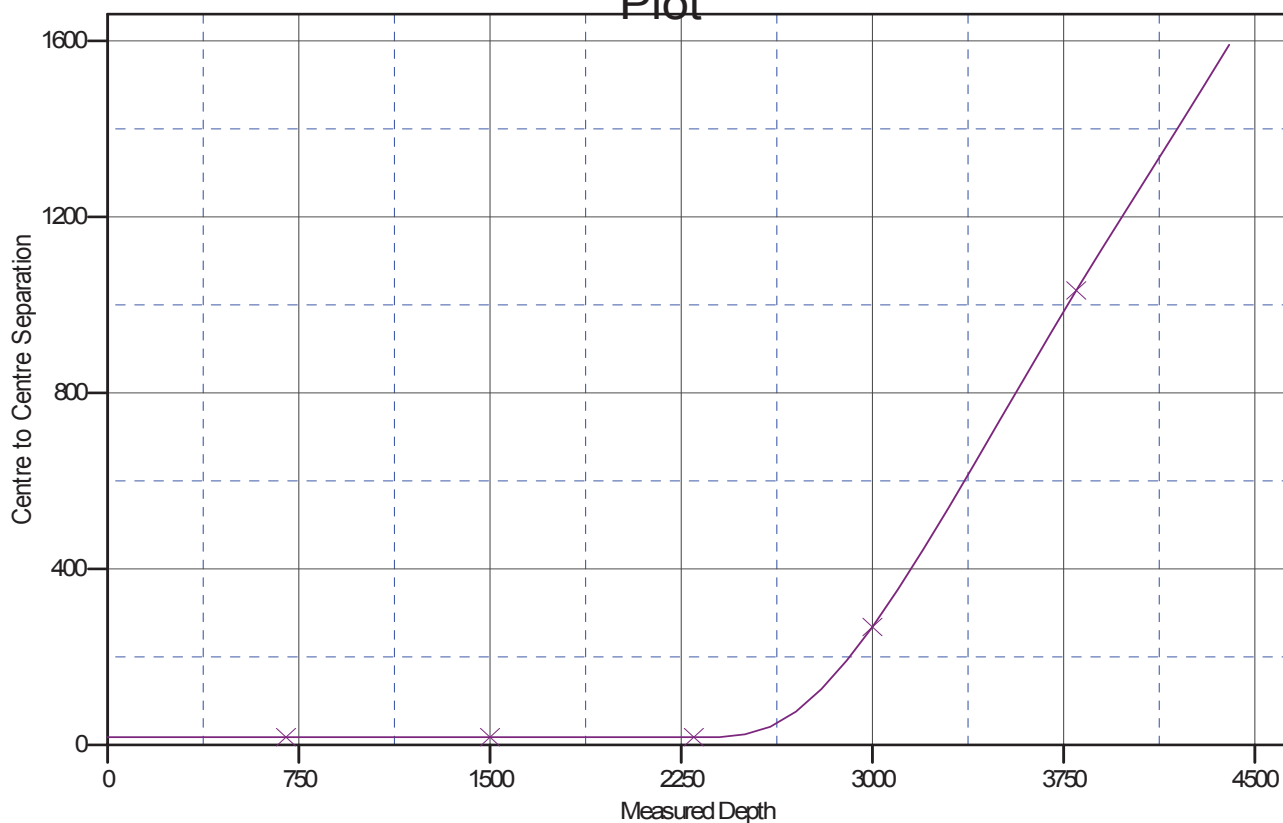
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: HERRING DRAW 3-33

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.30°

Ladder Plot



LEGEND

3D DRAW 1-33, HERRING DRAW 1-33, PLAN 1 V0



Company:	SHELL E&P	Local Co-ordinate Reference:	Well HERRING DRAW 3-33
Project:	MOFFAT COUNTY, CO	TVD Reference:	WELL @ 6820.00ft (Original Well Elev)
Reference Site:	HERRING DRAW 3-33	MD Reference:	WELL @ 6820.00ft (Original Well Elev)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	HERRING DRAW 3-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	HERRING DRAW 3-33	Database:	EDM 5000.1 Single User Db
Reference Design:	PLAN 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 6820.00ft (Original Well Elev)

Offset Depths are relative to Offset Datum

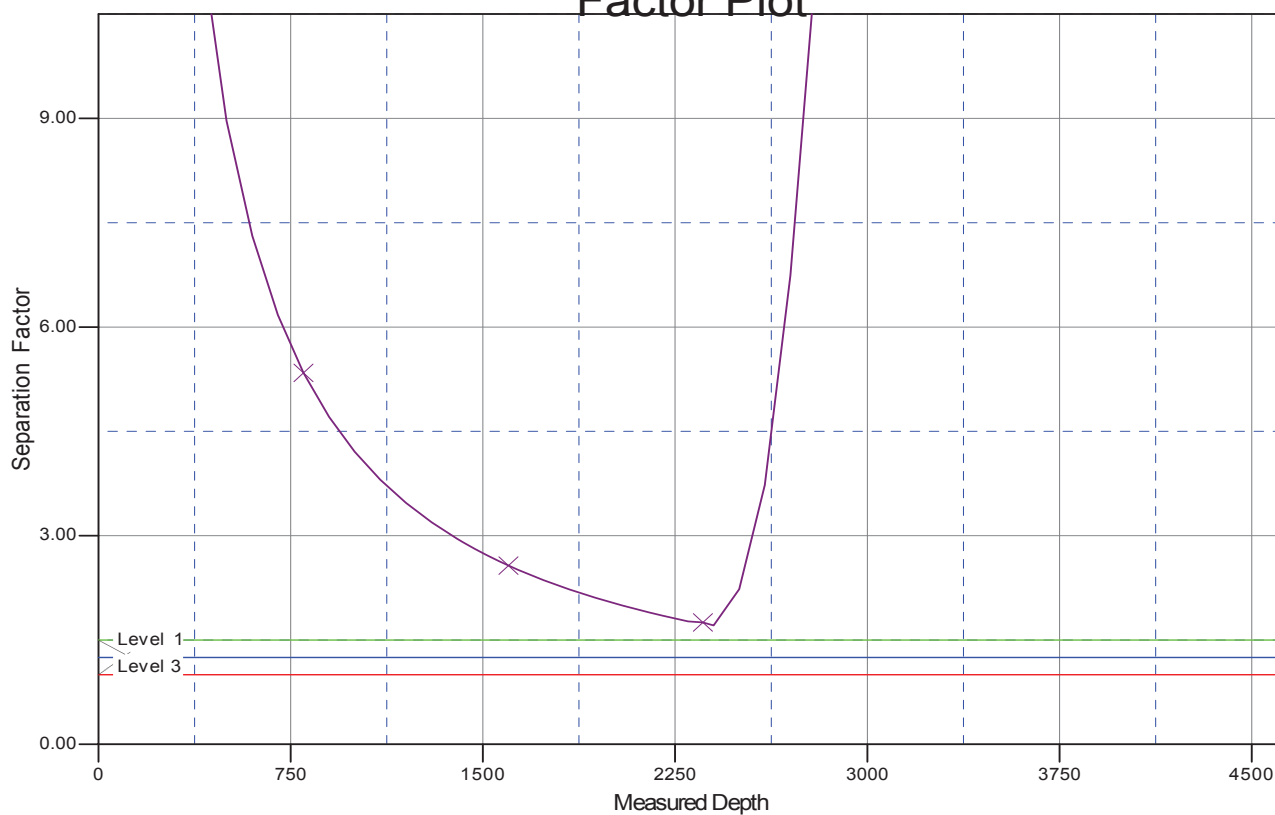
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: HERRING DRAW 3-33

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: -1.30°

Separation Factor Plot



LEGEND

3D DRAW 1-33, HERRING DRAW 1-33, PLAN 1 V0