



Hilcorp Energy Company

San Juan County, NM / CO (NAD 83)

Allison Unit Com #138H

Allison Unit Com #138H

Pilot

Design #1

Anticollision Report

23 January, 2018





Anticollision Report



Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well Allison Unit Com #138H
Project:	San Juan County, NM / CO (NAD 83)	TVD Reference:	rig @ 6149.00ft
Reference Site:	Allison Unit Com #138H	MD Reference:	rig @ 6149.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Allison Unit Com #138H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pilot	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 1,307.29 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	1/23/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	3,496.28	Design #1 (Pilot)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth	Offset Measured Depth	Distance		Separation	Warning
Offset Well - Wellbore - Design	Depth (ft)	Depth (ft)	Between Centres (ft)	Between Ellipses (ft)	Factor	
Allison Unit Com Offsets						
Allison UN #047B - Allison UN #047B - Allison UN #047B	800.00	800.00	557.77	552.95	115.604	CC, ES
Allison UN #047B - Allison UN #047B - Allison UN #047B	2,200.00	2,080.27	908.42	893.47	60.754	SF
Allison UN #063 - Allison UN #063 - Wellbore #1						Out of range
Allison UN Com #138 - Allison UN Com #138 - Allison UN						Out of range
Dufour 32-6-22-2 - Dufour 32-6-22-2 - Dufour 32-6-22-2						Out of range
Dufour 32-6-23-2 - Dufour 32-6-23-2 - Dufour 32-6-23-2						Out of range

Offset Design		Allison Unit Com Offsets - Allison UN #047B - Allison UN #047B - Allison UN #047B										Offset Site Error:		0.00 ft
Survey Program:		2760-MWD										Offset Well Error:		0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-179.24	-557.72	-7.38	557.77					
100.00	100.00	100.00	100.00	0.18	0.21	-179.24	-557.72	-7.38	557.77	557.38	0.39	1,429.348		
200.00	200.00	200.00	200.00	0.60	0.42	-179.24	-557.72	-7.38	557.77	556.75	1.02	544.835		
300.00	300.00	300.00	300.00	1.03	0.63	-179.24	-557.72	-7.38	557.77	556.11	1.66	336.562		
400.00	400.00	400.00	400.00	1.45	0.84	-179.24	-557.72	-7.38	557.77	555.48	2.29	243.486		
500.00	500.00	500.00	500.00	1.87	1.05	-179.24	-557.72	-7.38	557.77	554.85	2.92	190.737		
600.00	600.00	600.00	600.00	2.30	1.26	-179.24	-557.72	-7.38	557.77	554.21	3.56	156.774		
700.00	700.00	700.00	700.00	2.72	1.47	-179.24	-557.72	-7.38	557.77	553.58	4.19	133.078		
800.00	800.00	800.00	800.00	3.14	1.68	-179.24	-557.72	-7.38	557.77	552.95	4.82	115.604	CC, ES	
900.00	899.97	899.97	899.97	3.44	1.89	-121.29	-557.72	-7.38	558.89	553.56	5.33	104.872		
1,000.00	999.68	999.68	999.68	3.62	2.10	-121.83	-557.72	-7.38	562.76	557.04	5.72	98.427		
1,100.00	1,098.88	1,098.88	1,098.88	3.85	2.31	-122.73	-557.72	-7.38	569.52	563.35	6.16	92.403		
1,200.00	1,197.28	1,197.28	1,197.28	4.17	2.52	-123.94	-557.72	-7.38	579.38	572.71	6.68	86.796		
1,300.00	1,294.61	1,294.61	1,294.61	4.60	2.72	-125.42	-557.72	-7.38	592.64	585.38	7.26	81.620		
1,400.00	1,390.62	1,390.62	1,390.62	5.15	2.93	-127.09	-557.72	-7.38	609.61	601.69	7.92	76.926		
1,500.00	1,485.03	1,485.03	1,485.03	5.84	3.12	-128.90	-557.72	-7.38	630.61	621.95	8.66	72.783		
1,600.00	1,577.59	1,577.59	1,577.59	6.70	3.32	-130.77	-557.72	-7.38	655.95	646.47	9.47	69.253		
1,700.00	1,668.04	1,668.04	1,668.04	7.73	3.51	-132.65	-557.72	-7.38	685.87	675.53	10.33	66.366		
1,800.00	1,756.14	1,756.14	1,756.14	8.93	3.70	-134.47	-557.72	-7.38	720.57	709.33	11.24	64.122		
1,900.00	1,841.64	1,841.64	1,841.64	10.32	3.87	-136.18	-557.72	-7.38	760.17	748.01	12.16	62.490		
2,000.00	1,924.31	1,924.31	1,924.31	11.89	4.05	-137.76	-557.72	-7.38	804.71	791.61	13.10	61.422		

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



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Reference Well:	Allison Unit Com #138H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pilot	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design		Allison Unit Com Offsets - Allison UN #047B - Allison UN #047B - Allison UN #047B										Offset Site Error:	0.00 ft
Survey Program: 2760-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
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	Warning
2,100.00	2,003.93	2,003.93	2,003.93	13.65	4.22	-139.17	-557.72	-7.38	854.16	840.12	14.03	60.862	
2,200.00	2,080.27	2,080.27	2,080.27	15.60	4.38	-140.38	-557.72	-7.38	908.42	893.47	14.95	60.754 SF	
2,300.00	2,153.13	2,153.13	2,153.13	17.73	4.53	-141.38	-557.72	-7.38	967.35	951.50	15.85	61.043	
2,400.00	2,222.30	2,222.30	2,222.30	20.05	4.68	-142.15	-557.72	-7.38	1,030.76	1,014.05	16.71	61.681	
2,500.00	2,287.60	2,287.60	2,287.60	22.54	4.81	-142.68	-557.72	-7.38	1,098.43	1,080.89	17.54	62.626	
2,600.00	2,348.84	2,348.84	2,348.84	25.21	4.94	-142.93	-557.72	-7.38	1,170.11	1,151.78	18.33	63.842	
2,700.00	2,405.87	2,405.87	2,405.87	28.04	5.06	-142.89	-557.72	-7.38	1,245.54	1,226.47	19.07	65.301	



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Reference Depths are relative to rig @ 6149.00ft

Offset Depths are relative to Offset Datum

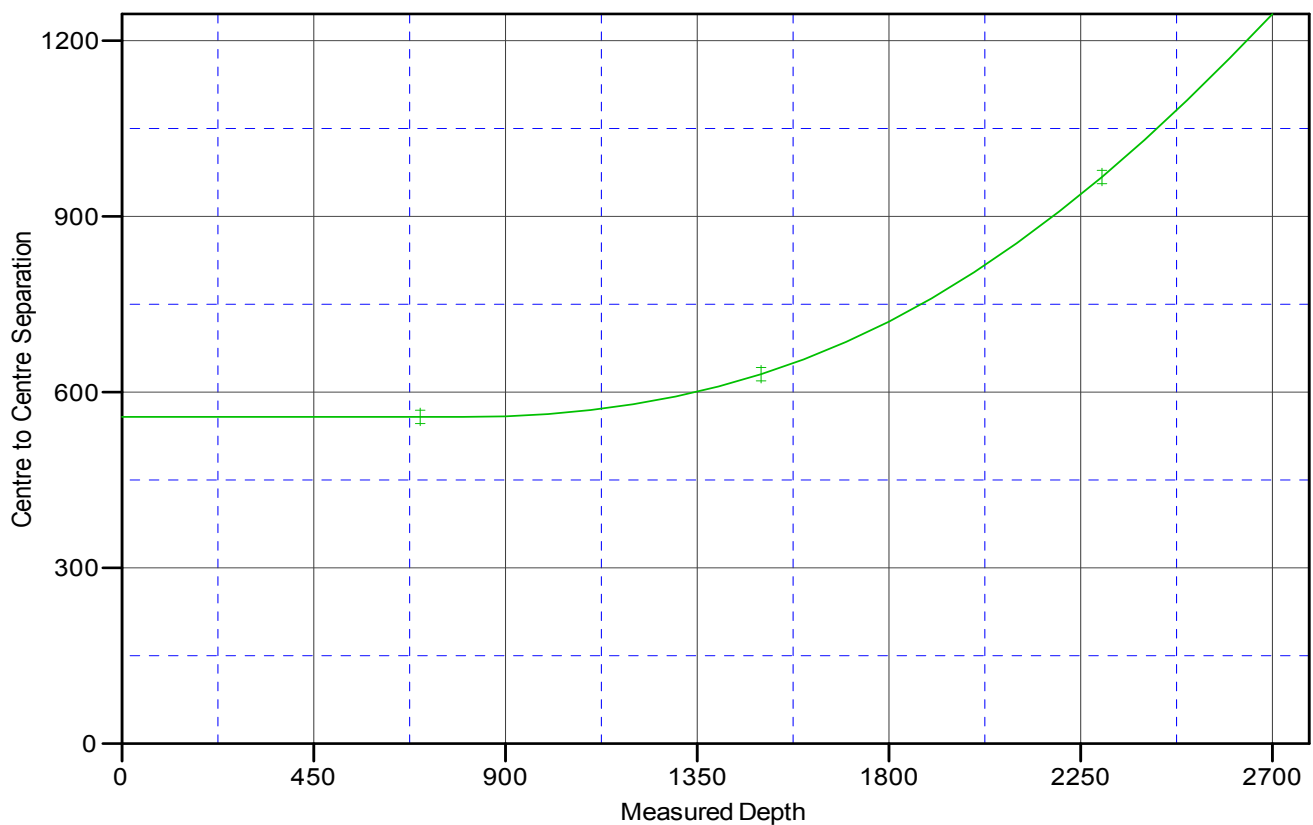
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Allison Unit Com #138H

Coordinate System is US State Plane 1983, Colorado Southern Zone

Grid Convergence at Surface is: -1.22°

Ladder Plot



LEGEND

JN #047B, Allison UN #047B, Allison UN #047B V0

Company:	Hilcorp Energy Company	Local Co-ordinate Reference:	Well Allison Unit Com #138H
Project:	San Juan County, NM / CO (NAD 83)	TVD Reference:	rig @ 6149.00ft
Reference Site:	Allison Unit Com #138H	MD Reference:	rig @ 6149.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Allison Unit Com #138H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pilot	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to rig @ 6149.00ft

Offset Depths are relative to Offset Datum

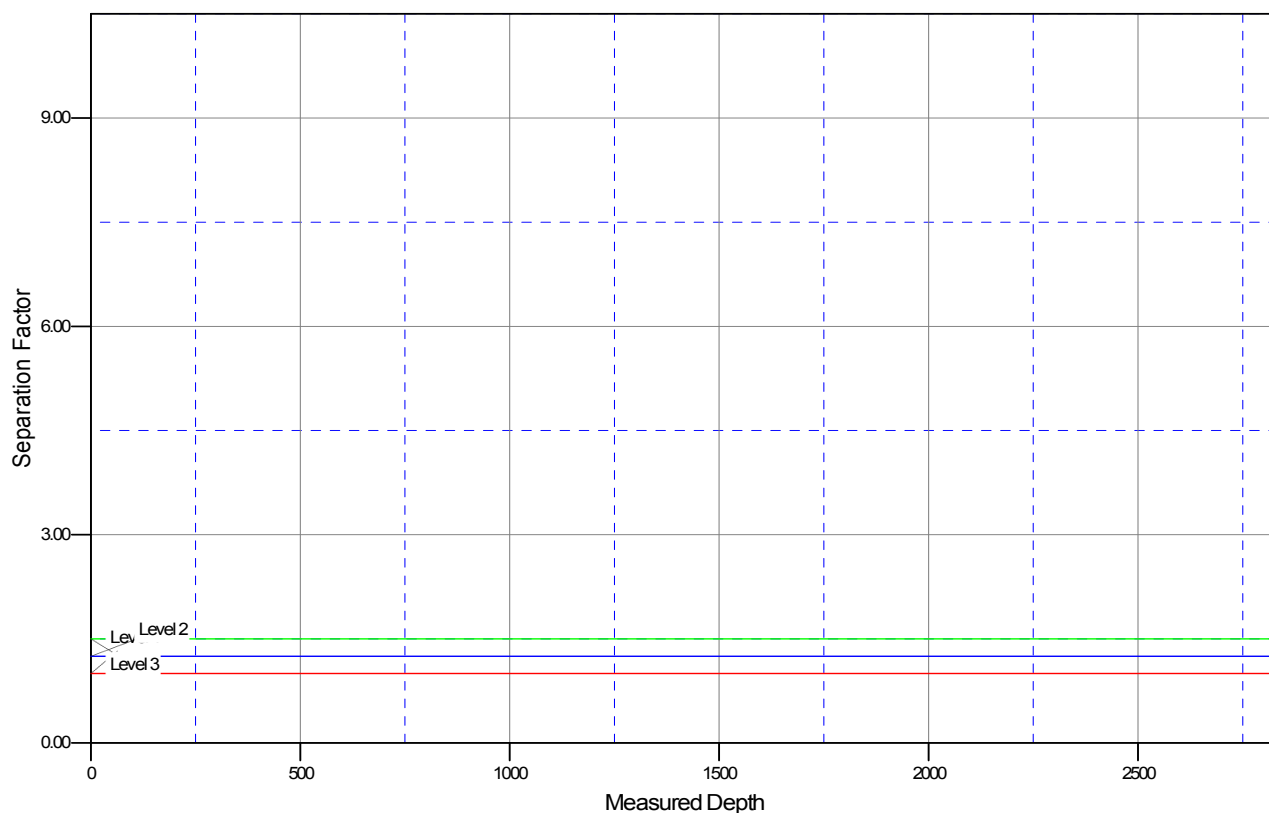
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Allison Unit Com #138H

Coordinate System is US State Plane 1983, Colorado Southern Zone

Grid Convergence at Surface is: -1.22°

Separation Factor Plot



LEGEND

JN #047B, Allison UN #047B, Allison UN #047B V0