

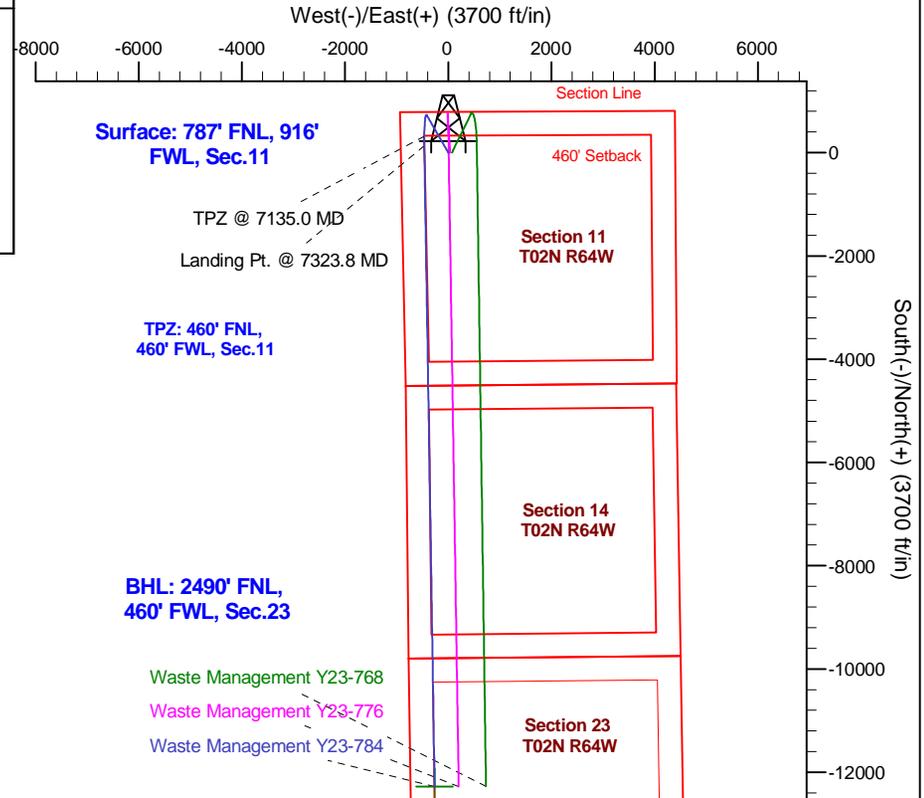
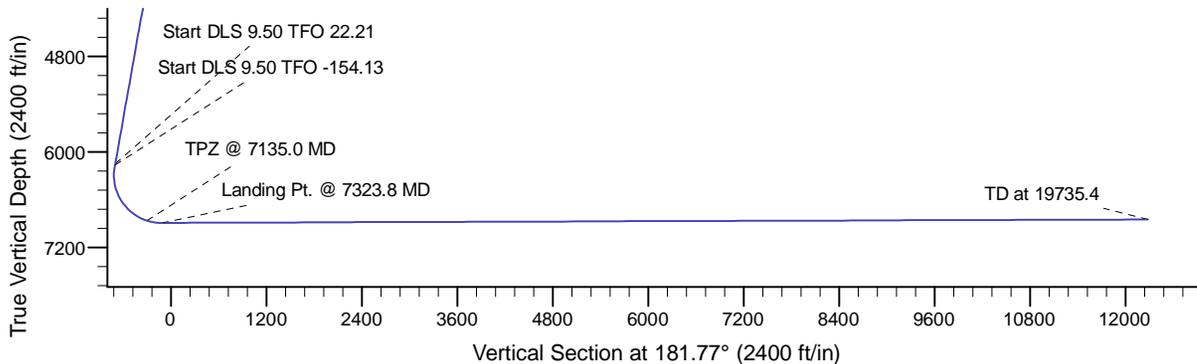
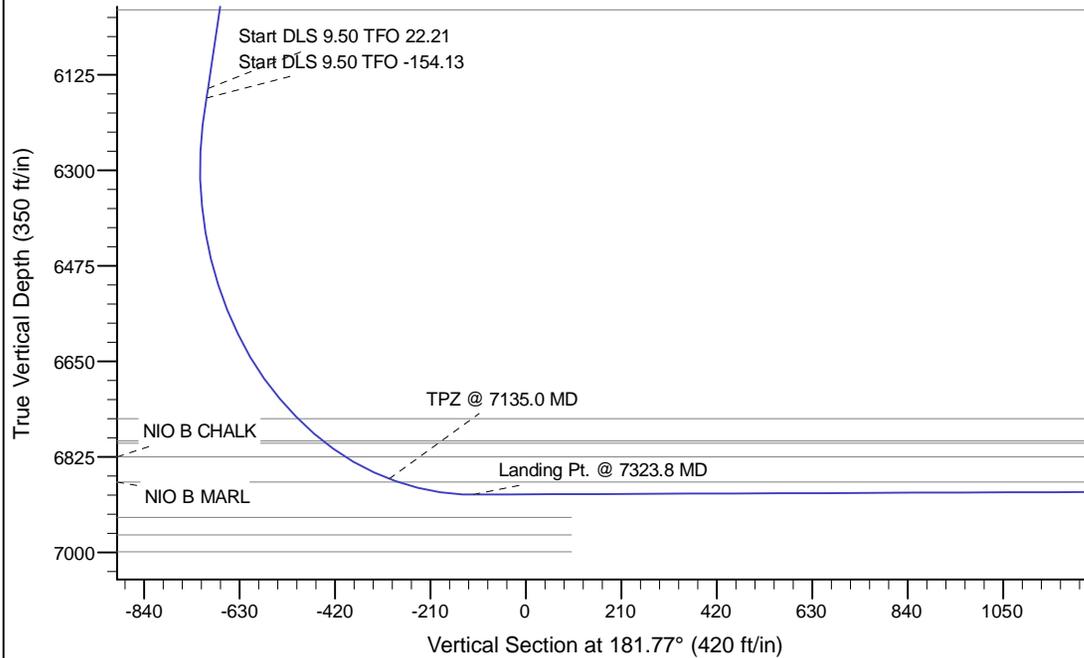
Project: Mustang
 Site: Y Section 11-T2N-R64W Weld County, CO
 Well: Waste Management Y23-784
 Wellbore: Original Drilling
 Design: APD - Rev 2

Northern Region - DJ Basin

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1900.0	0.00	0.00	1900.0	0.0	0.0	0.00	0.00	0.0	
3	2487.5	11.75	330.00	2483.4	52.0	-30.0	2.00	330.00	-51.0	
4	6232.6	11.75	330.00	6150.0	712.5	-411.3	0.00	0.00	-699.4	
5	6255.5	13.14	337.91	6172.4	716.9	-413.5	9.59	54.69	-703.8	
6	7323.8	90.20	179.07	6894.0	130.0	-465.0	9.59	-158.31	-115.6	Waste Management Y23-784 BHL 2490'FNL, 460'FWL
7	19735.4	90.20	179.08	6851.0	-12279.9	-264.9	0.00	103.70	12282.2	



T G M

Azimuths to Grid North
 True North: -0.63°
 Magnetic North: 7.57°

Magnetic Field
 Strength: 52698.5snT
 Dip Angle: 66.79°
 Date: 11/10/2014
 Model: IGRF200510

WELL DETAILS: Waste Management Y23-784			
Northing	Ground Level: 4952.0	Easting	Longitude
0.00.0 1301919.1572509		3272525.1955935	40.1580500 -104.5249500
Plan: APD - Rev 2 (Waste Management Y23-784/Original Drilling)			
Created By: Shailey Jewell		Date: 15:26, June 21 2017	
OK to submit with 2A as per Noble Drilling			
6/21/2017 4:16			

Northern Region - DJ Basin

Mustang

Y Section 11

Waste Management Y23-784

Original Drilling

APD - Rev 2

Anticollision Summary Report

21 June, 2017

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Waste Management Y23-784
Project:	Mustang	TVD Reference:	WELL @ 4982.0ft (Original Well Elev)
Reference Site:	Y Section 11	MD Reference:	WELL @ 4982.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Waste Management Y23-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Reference	APD - Rev 2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,933.0 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	6/21/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	19,735.4	APD - Rev 2 (Original Drilling)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

Summary						
Site Name	Reference	Offset	Distance		Separation Factor	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
Y Section 02						
Waste Management 2I-221 - Wellbore #1 - Wellbore #1 -	6,300.0	6,179.1	116.8	72.4	2.633	CC, ES, SF
Waste Management 2I-401 - Wellbore #1 - Wellbore #1 -	6,465.7	6,369.9	377.9	331.4	8.125	CC, ES
Waste Management 2I-401 - Wellbore #1 - Wellbore #1 -	6,500.0	6,397.1	378.6	331.8	8.097	SF
Waste Management 2L-201 - Wellbore #1 - Wellbore #1 -	5,378.9	5,331.6	606.5	567.5	15.530	CC
Waste Management 2L-201 - Wellbore #1 - Wellbore #1 -	5,400.0	5,352.1	606.5	567.4	15.479	ES
Waste Management 2L-201 - Wellbore #1 - Wellbore #1 -	6,100.0	6,019.3	641.9	598.2	14.692	SF
Waste Management 2L-301 - Wellbore #1 - Wellbore #1 -	5,175.1	5,153.8	911.2	874.1	24.545	CC
Waste Management 2L-301 - Wellbore #1 - Wellbore #1 -	5,200.0	5,177.2	911.2	873.9	24.431	ES
Waste Management 2L-301 - Wellbore #1 - Wellbore #1 -	6,500.0	6,420.8	1,000.2	954.1	21.715	SF
Waste Management 2L-421 - Wellbore #1 - Wellbore #1 -	4,418.4	4,398.5	1,190.9	1,159.7	38.177	CC
Waste Management 2L-421 - Wellbore #1 - Wellbore #1 -	4,600.0	4,572.7	1,191.9	1,159.5	36.712	ES
Waste Management 2L-421 - Wellbore #1 - Wellbore #1 -	6,500.0	6,355.6	1,331.8	1,286.3	29.318	SF
Waste Management 2L-441 - Wellbore #1 - Wellbore #1 -	6,033.9	5,934.9	315.8	273.0	7.383	CC
Waste Management 2L-441 - Wellbore #1 - Wellbore #1 -	6,100.0	6,000.1	316.1	272.8	7.309	ES
Waste Management 2L-441 - Wellbore #1 - Wellbore #1 -	6,300.0	6,194.0	319.0	274.4	7.148	SF
Waste Management 2Q-201 - Wellbore #1 - Wellbore #1 -						Out of range
Waste Management 2Q-321 - Wellbore #1 - Wellbore #1 -						Out of range
Waste Management 2Q-341 - Wellbore #1 - Wellbore #1 -	3,702.1	3,671.2	1,497.9	1,472.0	57.698	CC, ES
Waste Management 2Q-341 - Wellbore #1 - Wellbore #1 -	6,500.0	6,324.8	1,689.6	1,644.2	37.207	SF
Waste Management 2Q-401 - Wellbore #1 - Wellbore #1 -	100.0	60.0	1,575.8	1,575.6	7,306.909	CC, ES
Waste Management 2Q-401 - Wellbore #1 - Wellbore #1 -	6,100.0	6,004.9	1,929.8	1,886.4	44.438	SF
Waste Management 2T-221 - Wellbore #1 - Wellbore #1 -						Out of range
Waste Management 2T-241 - Wellbore #1 - Wellbore #1 -						Out of range
Waste Management 2T-301 - Wellbore #1 - Wellbore #1 -						Out of range
Waste Management 2T-401 - Wellbore #1 - Wellbore #1 -						Out of range
Waste Management 2Y-201 - Wellbore #1 - Wellbore #1 -						Out of range
Waste Management 2Y-441 - Wellbore #1 - Wellbore #1 -						Out of range

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

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Waste Management Y23-784
Project:	Mustang	TVD Reference:	WELL @ 4982.0ft (Original Well Elev)
Reference Site:	Y Section 11	MD Reference:	WELL @ 4982.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Waste Management Y23-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

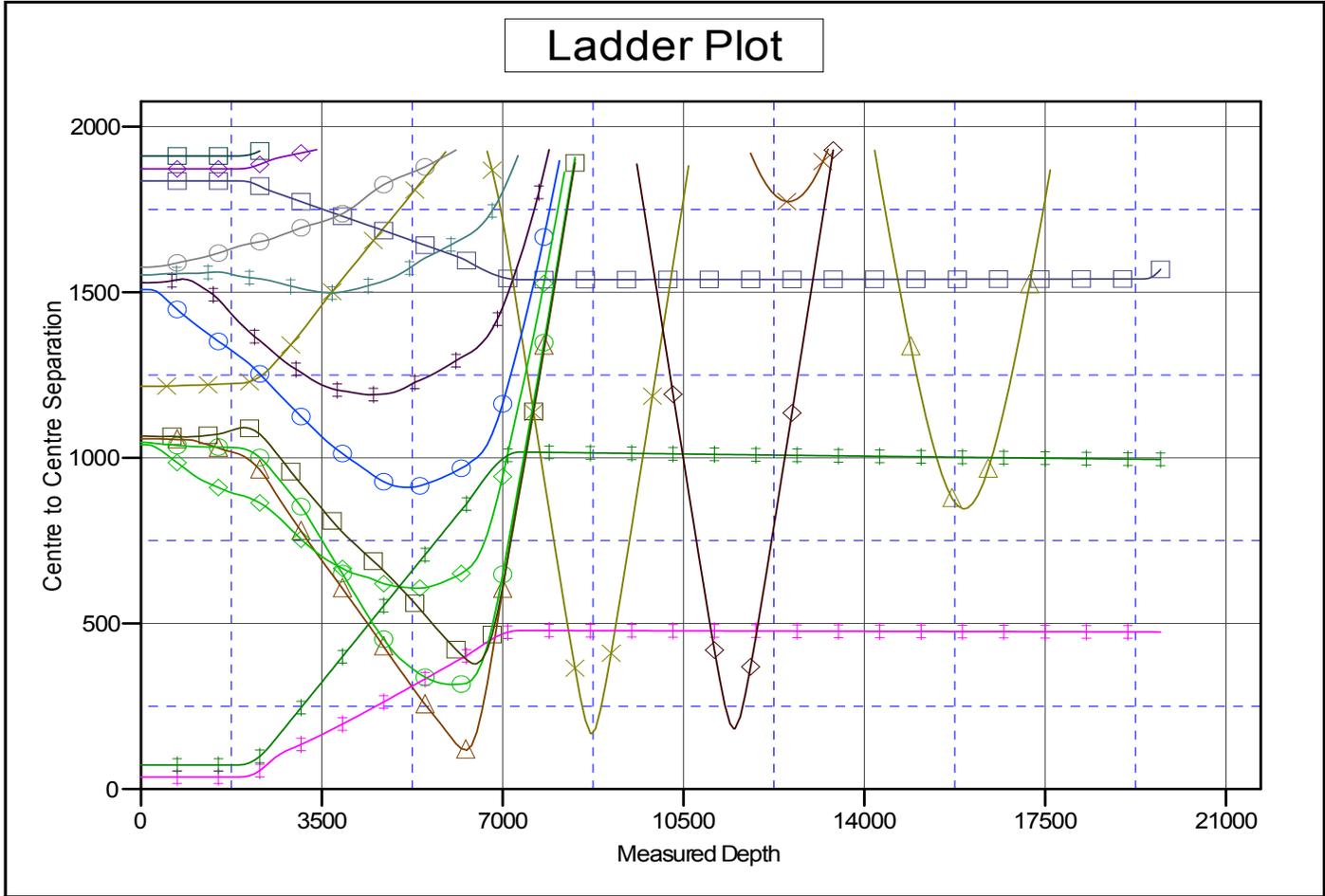
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Y Section 11						
Marloff 14-11 - Wellbore #1 - Wellbore #1 - As Drilled	11,478.5	6,850.5	181.5	114.6	2.713	CC, ES, SF
Marloff 34-11 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Waste Management 12-11 - Wellbore #1 - Wellbore #1 -	8,725.3	6,890.9	166.8	115.3	3.240	CC, ES, SF
Waste Management Y23-712 - Original Drilling - APD - R						Out of range
Waste Management Y23-720 - Original Drilling - APD - R						Out of range
Waste Management Y23-720 - PH - Original Drilling - AP						Out of range
Waste Management Y23-728 - Original Drilling - APD - R						Out of range
Waste Management Y23-736 - Original Drilling - APD - R						Out of range
Waste Management Y23-744 - Original Drilling - APD - R	1,900.0	1,882.0	1,911.8	1,905.3	290.636	CC, ES
Waste Management Y23-744 - Original Drilling - APD - R	2,300.0	2,255.9	1,927.0	1,919.0	241.033	SF
Waste Management Y23-752 - Original Drilling - APD - R	1,900.0	1,882.0	1,872.7	1,866.1	284.687	CC, ES
Waste Management Y23-752 - Original Drilling - APD - R	3,400.0	3,515.7	1,930.6	1,918.7	162.006	SF
Waste Management Y23-760 - Original Drilling - APD - R	7,394.4	7,603.4	1,538.2	1,513.4	62.145	CC
Waste Management Y23-760 - Original Drilling - APD - R	19,400.0	19,609.1	1,540.3	1,436.3	14.811	ES
Waste Management Y23-760 - Original Drilling - APD - R	19,500.0	19,645.7	1,541.7	1,437.1	14.739	SF
Waste Management Y23-768 - Original Drilling - APD - R	1,900.0	1,898.0	72.7	59.5	5.527	CC, ES
Waste Management Y23-768 - Original Drilling - APD - R	19,735.4	19,736.9	995.5	782.9	4.683	SF
Waste Management Y23-776 - Original Drilling - APD - R	1,900.0	1,901.0	36.3	23.2	2.761	CC, ES
Waste Management Y23-776 - Original Drilling - APD - R	19,735.4	19,817.7	474.5	261.5	2.228	SF
Y Section 14						
Dale, Ivan #2 (PA) - Original Drilling - Original Drilling - A	15,933.3	6,849.1	846.3	633.2	3.971	CC, ES, SF
Gray 1 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Jervis 21-14 - Wellbore #1 - Wellbore #1 - As Drilled	12,534.1	6,836.0	1,773.9	1,699.7	23.905	CC, ES
Jervis 21-14 - Wellbore #1 - Wellbore #1 - As Drilled	12,700.0	6,836.3	1,781.7	1,706.6	23.738	SF
Y Section 23						
Haffner 41-23 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range

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Reference Well:	Waste Management Y23-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4982.0ft (Original Well Elev) Coordinates are relative to: Waste Management Y23-784
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.5000000 Grid Convergence at Surface is: 0.63°



LEGEND

- | | | |
|---|--|---|
| 11, Wellbore #1, Wellbore #1 - As Drilled V0 | ▲ Dale, Ivan #2 (PA), Original Drilling, Original Drilling - As Drilled V0 | ■ Waste Management Y23-760, Original Drilling, APD - Rev 1 V0 |
| 1744, Original Drilling, APD - Rev 1 V0 | ◆ Waste Management 2L-201, Wellbore #1, Wellbore #1 - As Drilled V0 | ◇ Marloff 14-11, Wellbore #1, Wellbore #1 - As Drilled V0 |
| 21, Wellbore #1, Wellbore #1 - As Drilled V0 | ● Waste Management 2L-421, Wellbore #1, Wellbore #1 - As Drilled V0 | ■ Waste Management 2L-401, Wellbore #1, Wellbore #1 - As Drilled V0 |
| 1752, Original Drilling, APD - Rev 1 V0 | ◆ Waste Management Y23-768, Original Drilling, APD - Rev 2 V0 | ○ Waste Management 2Q-401, Wellbore #1, Wellbore #1 - As Drilled V0 |
| 341, Wellbore #1, Wellbore #1 - As Drilled V0 | ● Waste Management 2L-301, Wellbore #1, Wellbore #1 - As Drilled V0 | ✕ Jervis 21-14, Wellbore #1, Wellbore #1 - As Drilled V0 |
| 1776, Original Drilling, APD - Rev 2 V0 | ○ Waste Management 2L-441, Wellbore #1, Wellbore #1 - As Drilled V0 | |

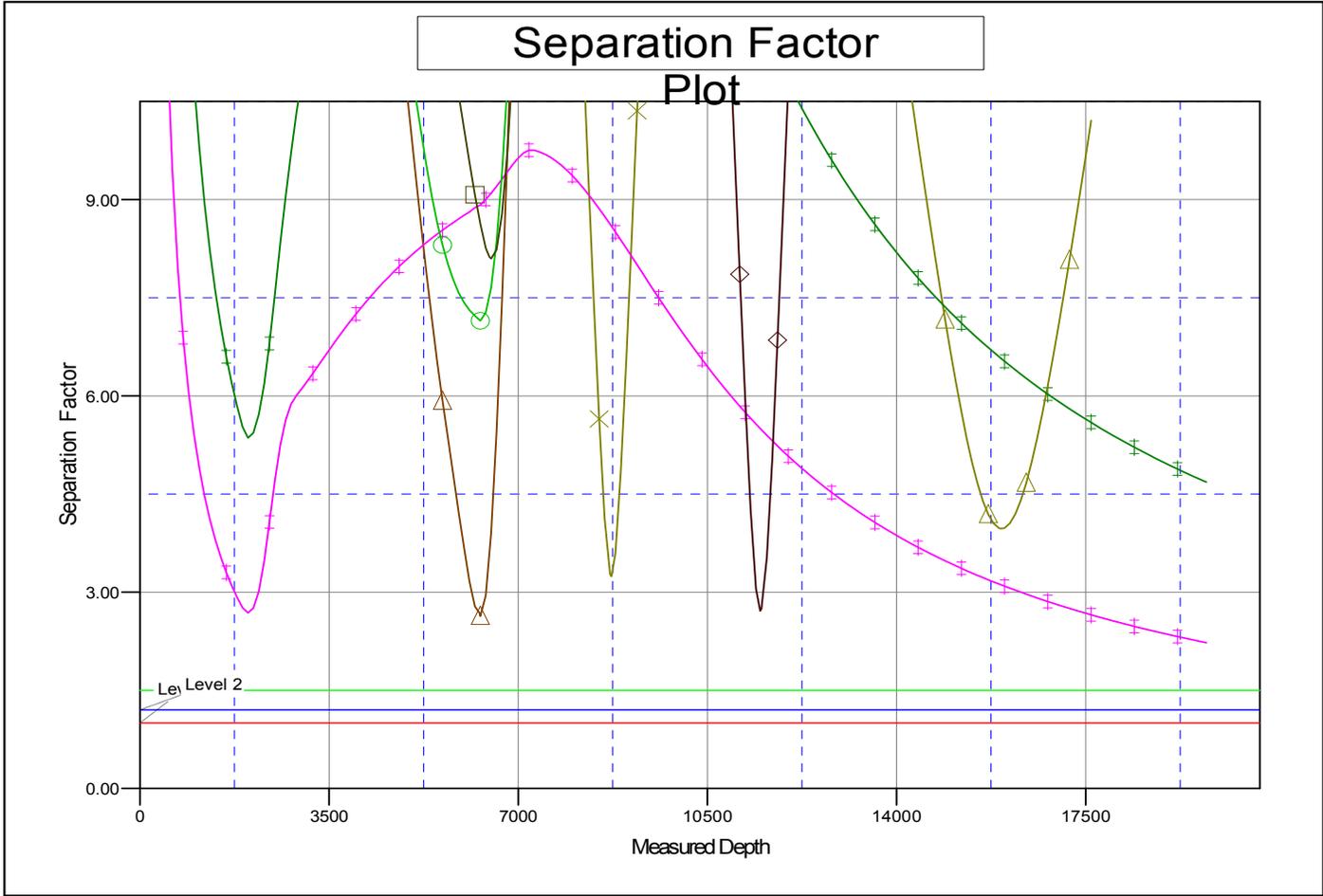
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Reference Well:	Waste Management Y23-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Original Drilling	Database:	EDMP
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Reference Depths are relative to WELL @ 4982.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Waste Management Y23-784
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.63°



LEGEND

- | | | |
|---|--|---|
| 11, Wellbore #1, Wellbore #1 - As Drilled V0 | ▲ Dale, Ivan #2 (PA), Original Drilling, Original Drilling - As Drilled V0 | ■ Waste Management Y23-760, Original Drilling, APD - Rev 1 V0 |
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| 1752, Original Drilling, APD - Rev 1 V0 | ◆ Waste Management Y23-768, Original Drilling, APD - Rev 2 V0 | ○ Waste Management 2Q-401, Wellbore #1, Wellbore #1 - As Drilled V0 |
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| 1776, Original Drilling, APD - Rev 2 V0 | ○ Waste Management 2L-441, Wellbore #1, Wellbore #1 - As Drilled V0 | |

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