

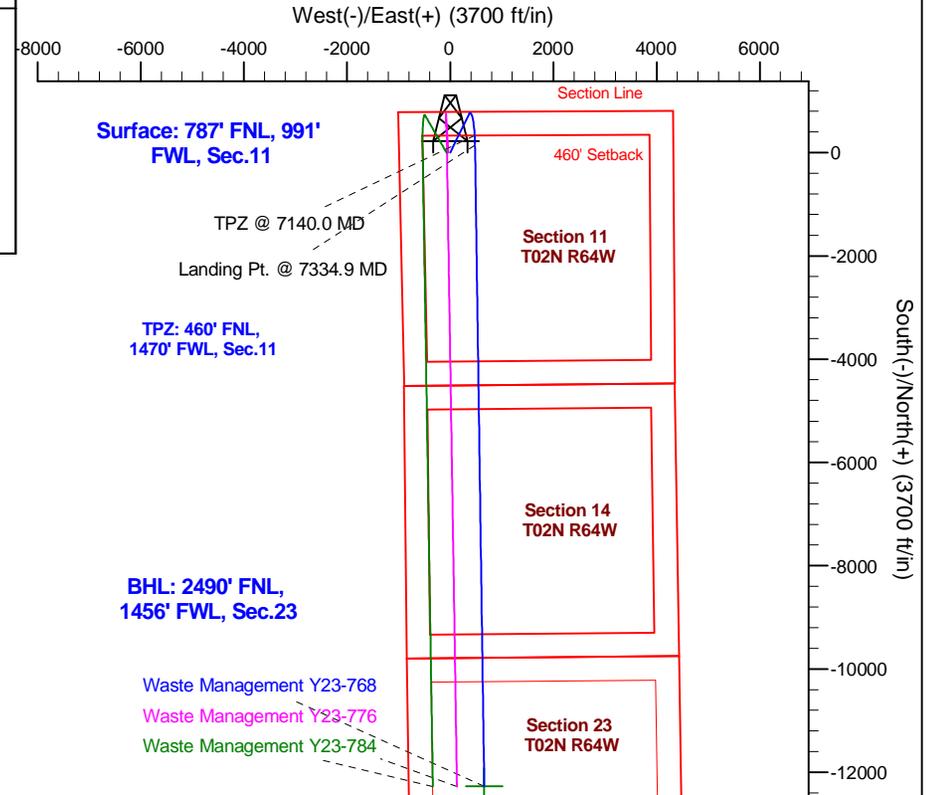
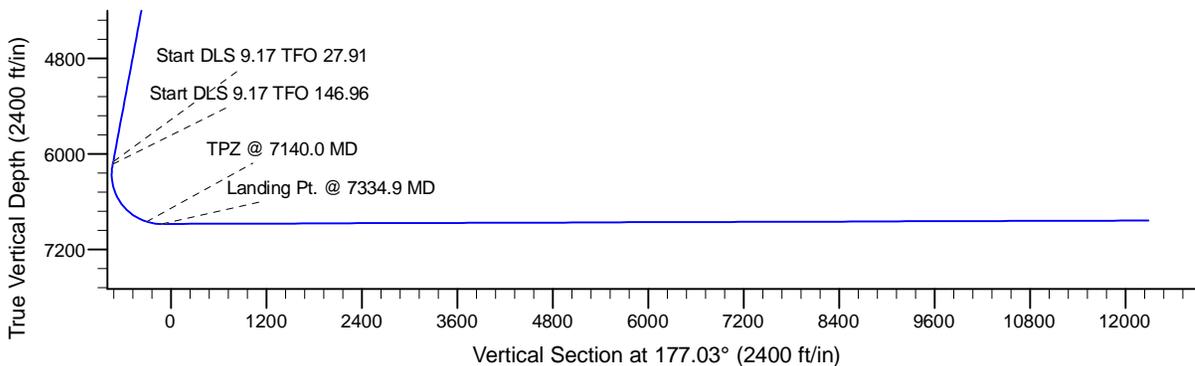
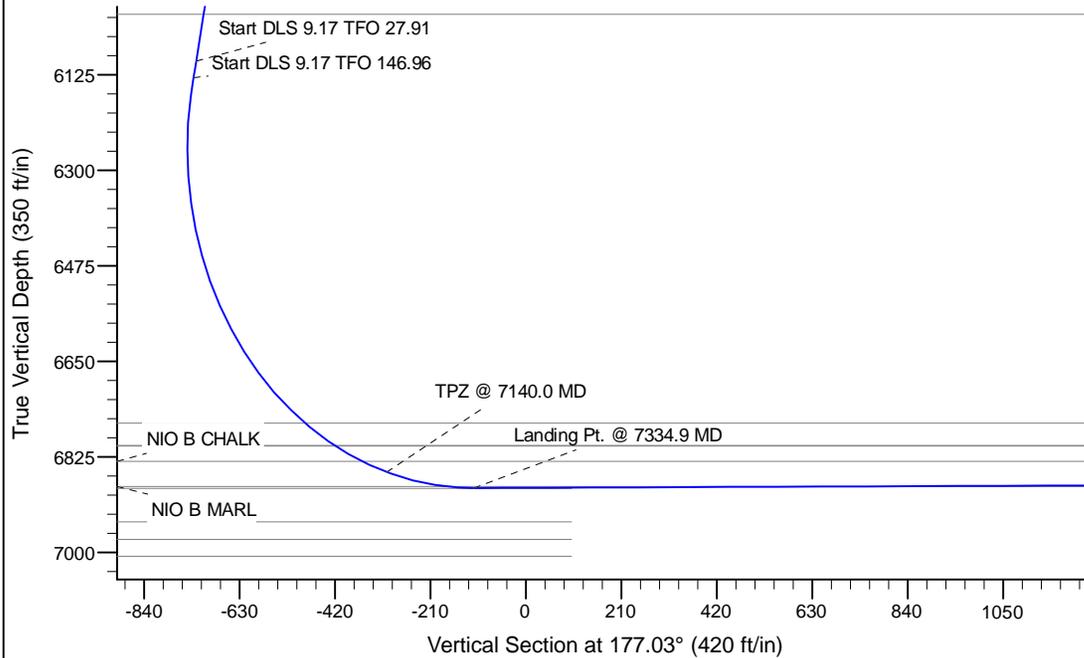
Project: Mustang
 Site: Y Section 11-T2N-R64W Weld County, CO
 Well: Waste Management Y23-768
 Wellbore: Original Drilling
 Design: APD - Rev 2

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	VSec	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	2500.0	12.00	26.00	2495.6	56.3	27.4	2.00	26.00	-54.8	
4	6184.9	12.00	26.00	6100.0	744.9	363.3	0.00	0.00	-725.1	
5	6216.3	14.62	31.26	6130.6	751.2	366.8	9.17	27.44	-731.2	
6	7334.9	90.20	179.18	6882.0	140.0	480.0	9.17	147.03	-115.0	
7	19749.7	90.20	179.18	6839.0	-12273.4	658.0	0.00	0.00	12291.0	Waste Management Y23-768 BHL 2490'FNL, 1456'FWL



T G M

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

Magnetic Field
 Strength: 52698.6snT
 Dip Angle: 66.79°
 Date: 11/10/2014
 Model: IGRF200510

WELL DETAILS: Waste Management Y23-768			
Northing	Ground Level	Easting	Longitude
0.00.0 1301919.9480837	4950.0	3272597.8624138	40.1580500 -104.5246900
Plan: APD - Rev 2 (Waste Management Y23-768/Original Drilling)			
Created By: Shailey Jewell		Date: 16:26, June 21 2017	
OK to submit with 2A as per Noble Drilling			
6/21/2017 4:30			

Northern Region - DJ Basin

Mustang

Y Section 11

Waste Management Y23-768

Original Drilling

APD - Rev 2

Anticollision Summary Report

21 June, 2017

Noble Energy, Inc.
Anticollision Summary Report

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Reference Site:	Y Section 11	MD Reference:	WELL @ 4980.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Waste Management Y23-768	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	19,749.1	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 -	4,834.4	4,770.1	823.6	789.1	23.870	CC
Waste Management 2I-221 - Wellbore #1 - Wellbore #1 -	5,100.0	5,037.6	825.2	788.9	22.685	ES
Waste Management 2I-221 - Wellbore #1 - Wellbore #1 -	6,400.0	6,343.9	897.1	851.7	19.781	SF
Waste Management 2I-401 - Wellbore #1 - Wellbore #1 -	3,567.2	3,499.6	1,072.1	1,046.0	41.099	CC
Waste Management 2I-401 - Wellbore #1 - Wellbore #1 -	3,600.0	3,527.2	1,072.1	1,045.8	40.760	ES
Waste Management 2I-401 - Wellbore #1 - Wellbore #1 -	6,500.0	6,407.5	1,271.0	1,224.6	27.432	SF
Waste Management 2L-201 - Wellbore #1 - Wellbore #1	6,111.5	6,039.3	223.7	180.4	5.169	CC, ES
Waste Management 2L-201 - Wellbore #1 - Wellbore #1	6,200.0	6,118.3	225.8	182.0	5.157	SF
Waste Management 2L-301 - Wellbore #1 - Wellbore #1	6,338.2	6,242.6	125.6	80.7	2.798	CC, ES, SF
Waste Management 2L-421 - Wellbore #1 - Wellbore #1	6,513.6	6,385.2	426.8	381.3	9.376	CC, ES, SF
Waste Management 2L-441 - Wellbore #1 - Wellbore #1	5,494.3	5,411.4	551.7	513.1	14.275	CC
Waste Management 2L-441 - Wellbore #1 - Wellbore #1	5,600.0	5,512.5	552.4	513.0	14.022	ES
Waste Management 2L-441 - Wellbore #1 - Wellbore #1	6,300.0	6,204.0	579.3	534.8	13.028	SF
Waste Management 2Q-201 - Wellbore #1 - Wellbore #1	6,612.5	6,452.2	1,470.4	1,423.5	31.408	CC, ES
Waste Management 2Q-201 - Wellbore #1 - Wellbore #1	6,700.0	6,488.7	1,473.2	1,426.2	31.354	SF
Waste Management 2Q-321 - Wellbore #1 - Wellbore #1	6,685.5	6,446.1	1,773.0	1,726.5	38.110	CC, ES
Waste Management 2Q-321 - Wellbore #1 - Wellbore #1	6,800.0	6,482.0	1,777.4	1,730.7	38.052	SF
Waste Management 2Q-341 - Wellbore #1 - Wellbore #1	6,559.7	6,379.8	778.2	732.4	16.993	CC, ES
Waste Management 2Q-341 - Wellbore #1 - Wellbore #1	6,600.0	6,404.6	779.0	733.0	16.949	SF
Waste Management 2Q-401 - Wellbore #1 - Wellbore #1	6,663.9	6,485.6	1,043.6	996.6	22.236	CC, ES
Waste Management 2Q-401 - Wellbore #1 - Wellbore #1	6,800.0	6,552.3	1,051.8	1,004.3	22.151	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

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Anticollision Summary Report

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Project:	Mustang	TVD Reference:	WELL @ 4980.0ft (Original Well Elev)
Reference Site:	Y Section 11	MD Reference:	WELL @ 4980.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Waste Management Y23-768	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

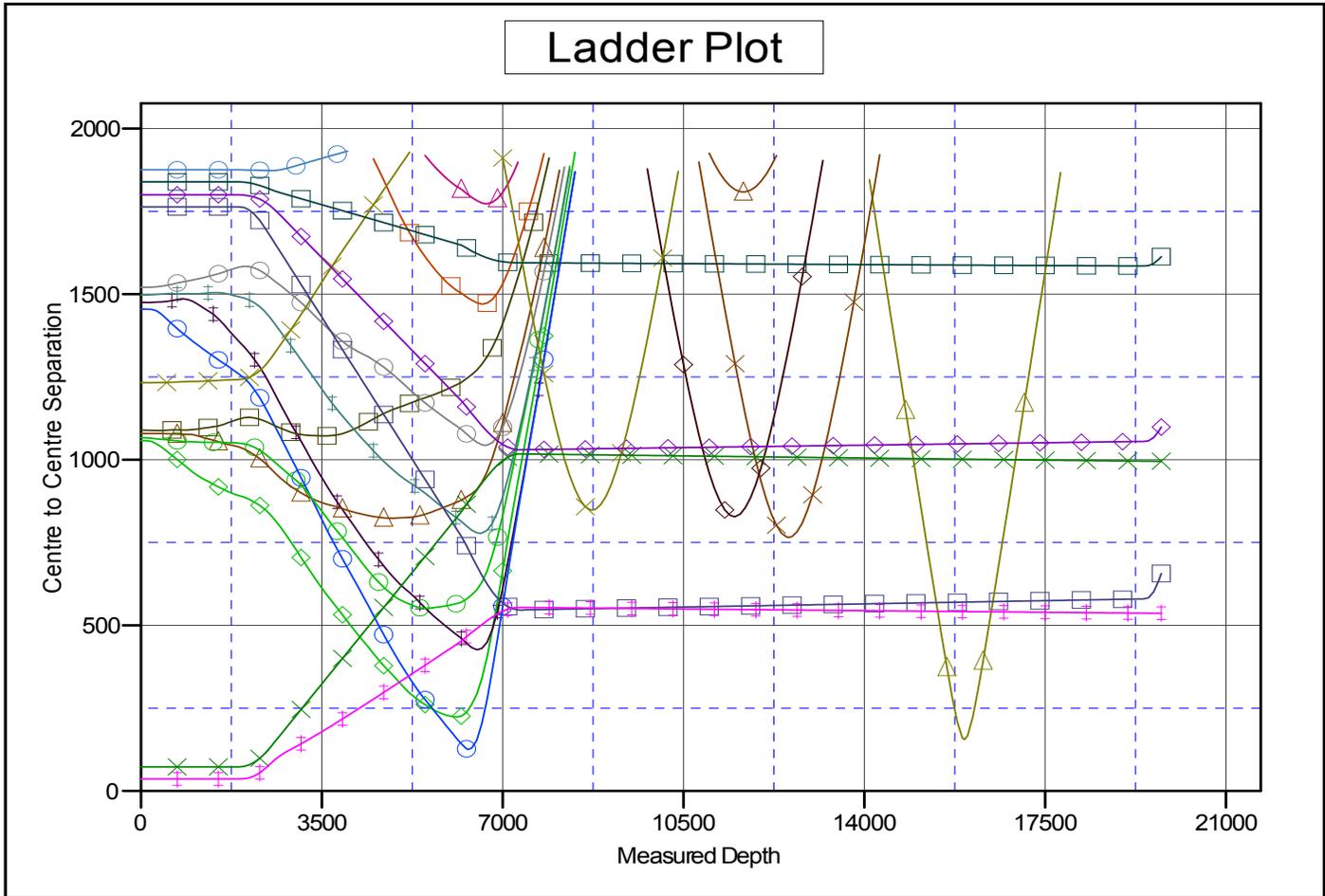
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Y Section 11						
Marolf 14-11 - Wellbore #1 - Wellbore #1 - As Drilled	11,485.8	6,834.1	828.3	761.4	12.387	CC, ES
Marolf 14-11 - Wellbore #1 - Wellbore #1 - As Drilled	11,500.0	6,833.9	828.4	761.5	12.379	SF
Marolf 34-11 - Wellbore #1 - Wellbore #1 - As Drilled	11,659.8	6,807.5	1,808.9	1,740.8	26.562	CC, ES
Marolf 34-11 - Wellbore #1 - Wellbore #1 - As Drilled	11,900.0	6,808.9	1,824.8	1,755.0	26.150	SF
Waste Management 12-11 - Wellbore #1 - Wellbore #1 -	8,731.8	6,911.3	848.1	796.3	16.386	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	2,526.1	2,335.8	1,873.4	1,864.6	213.793	CC, ES
Waste Management Y23-736 - Original Drilling - APD - R	4,000.0	3,725.0	1,932.4	1,918.3	137.393	SF
Waste Management Y23-744 - Original Drilling - APD - R	19,419.8	19,399.5	1,585.0	1,481.5	15.304	CC, ES
Waste Management Y23-744 - Original Drilling - APD - R	19,600.0	19,427.6	1,592.5	1,487.7	15.196	SF
Waste Management Y23-752 - Original Drilling - APD - R	7,370.2	7,321.1	1,030.1	1,005.5	41.787	CC
Waste Management Y23-752 - Original Drilling - APD - R	19,400.0	19,351.0	1,055.5	951.9	10.193	ES
Waste Management Y23-752 - Original Drilling - APD - R	19,500.0	19,396.6	1,057.1	952.7	10.131	SF
Waste Management Y23-760 - Original Drilling - APD - R	7,385.1	7,588.3	545.9	523.3	24.134	CC
Waste Management Y23-760 - Original Drilling - APD - R	19,400.0	19,603.2	579.9	478.4	5.714	ES, 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	19,749.7	19,823.3	536.8	323.5	2.516	SF
Waste Management Y23-784 - Original Drilling - APD - R	1,900.0	1,902.0	72.7	59.5	5.521	CC, ES
Waste Management Y23-784 - Original Drilling - APD - R	19,749.7	19,735.4	995.6	782.9	4.682	SF
Y Section 14						
Dale, Ivan #2 (PA) - Original Drilling - Original Drilling - A	15,939.1	6,839.0	155.5	-57.5	0.730	Level 1, CC, ES, SF
Gray 1 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Jervis 21-14 - Wellbore #1 - Wellbore #1 - As Drilled	12,538.1	6,830.8	765.9	691.7	10.313	CC, ES
Jervis 21-14 - Wellbore #1 - Wellbore #1 - As Drilled	12,600.0	6,830.9	768.4	693.7	10.276	SF
Y Section 23						
Haffner 41-23 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range

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Reference Well:	Waste Management Y23-768	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 @ 4980.0ft (Original Well Elev) Coordinates are relative to: Waste Management Y23-768
 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

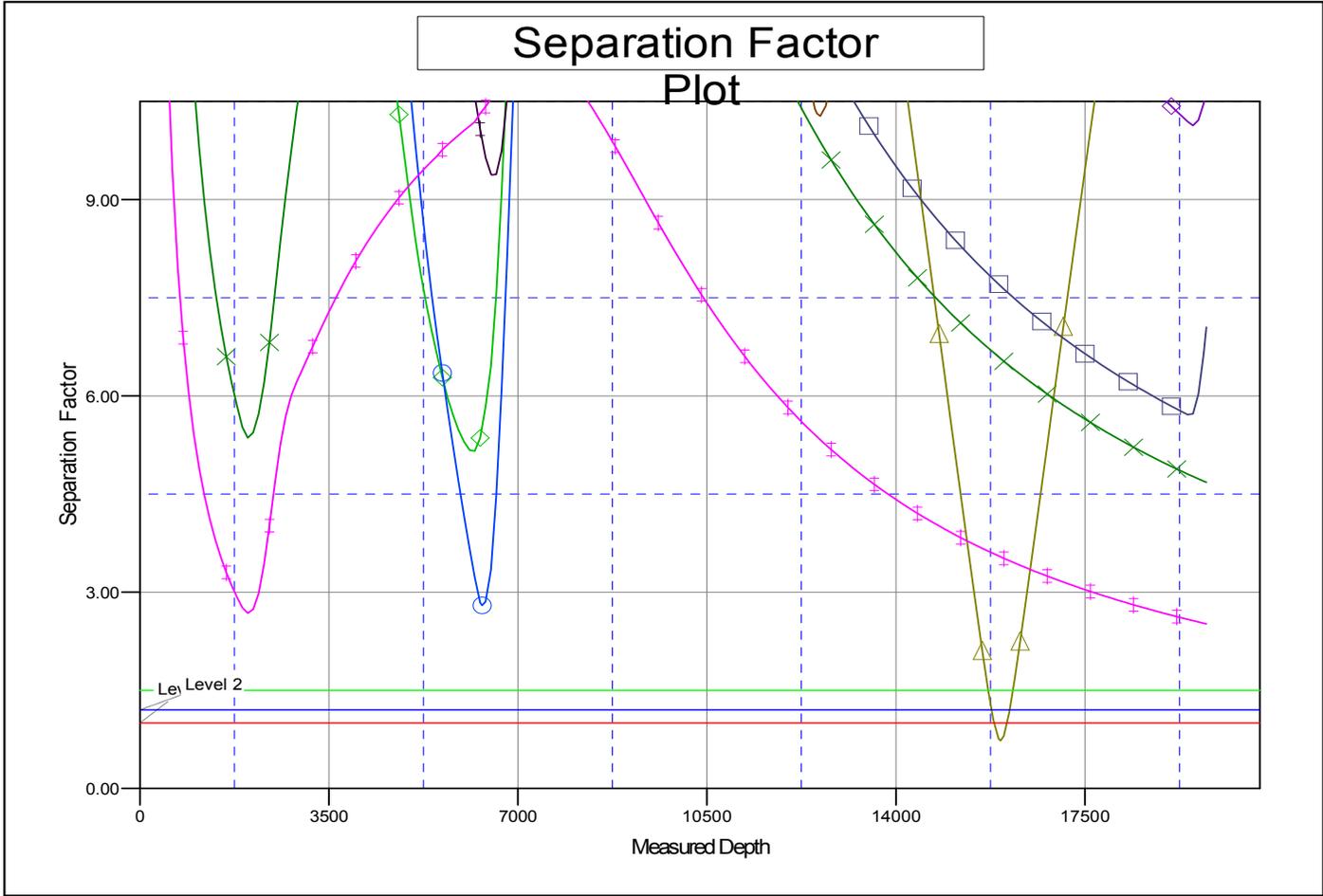
- | | | |
|---|--|------------------------------------|
| 201, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management2Q-401, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management 12-11, Wellbore # |
| 121, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management2Q-341, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management Y23-736, Original |
| 21, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management2Q-201, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management Y23-744, Original |
| 301, Wellbore #1, Wellbore #1 - As Drilled V0 | Dale, Ivan #2 (PA), Original Drilling, Original Drilling - As Drilled V0 | Waste Management Y23-752, Original |
| 141, Wellbore #1, Wellbore #1 - As Drilled V0 | Jervis 21-14, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management Y23-760, Original |
| 321, Wellbore #1, Wellbore #1 - As Drilled V0 | Marloff 14-11, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management Y23-776, Original |
| 01, Wellbore #1, Wellbore #1 - As Drilled V0 | Marloff 34-11, Wellbore #1, Wellbore #1 - As Drilled V0 | Waste Management Y23-784, Original |

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 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
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LEGEND

201, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management 2Q-401, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management 12-11, Wellbore #
121, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management 2Q-341, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management Y23-736, Original
21, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management 2Q-201, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management Y23-744, Original
301, Wellbore #1, Wellbore #1 - As Drilled V0	Dale, Ivan #2 (PA), Original Drilling, Original Drilling - As Drilled V0	Waste Management Y23-752, Original
141, Wellbore #1, Wellbore #1 - As Drilled V0	Jervis 21-14, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management Y23-760, Original
321, Wellbore #1, Wellbore #1 - As Drilled V0	Marolff 14-11, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management Y23-776, Original
01, Wellbore #1, Wellbore #1 - As Drilled V0	Marolff 34-11, Wellbore #1, Wellbore #1 - As Drilled V0	Waste Management Y23-784, Original

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