

VERDAD RESOURCES

WATTENBERG FIELD

8N-60W-11 SONIC STAR 1101 PAD

SONIC STAR 1101-05H

Plan B

Design #1

Anticollision Summary Report

09 November, 2020

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 16' @ 4896.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 16' @ 4896.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-05H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	Database:	EDM 5000.16 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:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum centre distance of 1,500.00usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.45 Sigma	Casing Method:	Added to Error Values

Survey Tool Program		Date	11/9/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	1,500.00	Design #1 (Plan B)	ISCWSA MWD	Fixed:v2:standard declination	
1,500.00	14,602.03	Design #1 (Plan B)	ISCWSA MWD	Fixed:v2:standard declination	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance		Separation Factor	Warning
Offset Well - Wellbore - Design			Between Centres (usft)	Between Ellipses (usft)		
8N-60W-11 SONIC STAR 1101 PAD						
SONIC STAR 1101-01H - Plan B - Design #1	200.00	199.00	30.03	22.46	3.967	CC, ES
SONIC STAR 1101-01H - Plan B - Design #1	14,602.03	14,352.36	1,324.15	950.39	3.543	SF
SONIC STAR 1101-03H - Plan B - Design #1	201.42	201.42	15.01	7.44	1.983	CC, ES
SONIC STAR 1101-03H - Plan B - Design #1	14,582.85	14,420.13	662.06	289.98	1.779	SF
SONIC STAR 1101-07H - Plan B - Design #1	240.00	241.00	15.02	7.42	1.976	CC, ES
SONIC STAR 1101-07H - Plan B - Design #1	14,602.03	15,018.28	691.32	335.53	1.943	SF
SONIC STAR 1101-09H - Plan B - Design #1	240.00	241.00	30.03	22.43	3.951	CC, ES
SONIC STAR 1101-09H - Plan B - Design #1	14,602.03	15,145.57	1,324.08	951.78	3.556	SF
SONIC STAR 1101-11H - Plan B - Design #1	240.00	241.00	45.00	37.40	5.921	CC, ES
SONIC STAR 1101-11H - Plan B - Design #1	1,700.00	1,706.18	104.34	84.83	5.350	SF
SONIC STAR 1101-13H - Plan B - Design #1	240.00	242.00	60.02	52.42	7.896	CC, ES
SONIC STAR 1101-13H - Plan B - Design #1	1,600.00	1,605.44	121.01	102.45	6.520	SF
SONIC STAR 1101-16H - Plan B - Design #1	263.44	265.66	74.97	67.35	9.840	CC, ES
SONIC STAR 1101-16H - Plan B - Design #1	1,500.00	1,498.33	136.48	118.66	7.658	SF
8N-60W-12 Offsets						
COLORADO NATIONAL BANK #1 - Shell P&A Well - No					Out of range	

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 16' @ 4896.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 16' @ 4896.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-05H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	Database:	EDM 5000.16 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
8N-60W-14 Offsets						
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,323.09	7,842.22	193.92	95.49	1.970	CC
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,350.00	7,849.39	196.20	89.33	1.836	ES
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,400.00	7,862.10	211.86	94.31	1.802	SF
BOOMSLANG FED 8-60 14A-13-18-10 - Bison Planned W						Out of range
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	6,404.44	7,997.60	334.05	268.37	5.086	CC
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	6,450.00	8,008.36	338.54	267.08	4.737	ES
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	6,500.00	8,019.26	353.42	276.82	4.614	SF
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,186.25	7,963.62	785.92	710.78	10.459	CC
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,200.00	7,967.13	786.18	710.44	10.380	ES
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,300.00	7,991.07	803.40	723.89	10.104	SF
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well - A	6,113.16	7,941.31	1,419.07	1,342.24	18.471	CC, ES
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well - A	6,300.00	7,988.21	1,456.85	1,375.80	17.974	SF
BOOMSLANG FED 8-60 14A-13-18-5 - Bison Planned W	6,112.53	7,529.78	1,186.14	1,078.04	10.972	CC, ES
BOOMSLANG FED 8-60 14A-13-18-5 - Bison Planned W	6,250.00	7,571.39	1,207.87	1,094.41	10.646	SF
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	6,145.83	7,715.73	1,422.75	1,317.27	13.489	CC
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	6,150.00	7,717.02	1,422.77	1,317.12	13.466	ES
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	6,350.00	7,774.46	1,467.62	1,354.70	12.998	SF
BOOMSLANG FED 8-60 14A-13-18-7 - Bison Planned W						Out of range
BOOMSLANG FED 8-60 14A-13-18-8 - Bison Planned W						Out of range
BOOMSLANG FED 8-60 14A-13-18-9 - Bison Planned W						Out of range
HNIZDIL #1-14 - Gemini D/A Well - No Surveys						Out of range
Schneider 1-14-8-60 - Verdad PR Well - Actual Precision						Out of range
Schneider 2-14-8-60 - Verdad PR Well - Actual Precision						Out of range
8N-60W-14 SCHNEIDER 1414 PAD						
SCHNEIDER 1414-01H - Wellbore #1 - Design #1						Out of range
SCHNEIDER 1414-02H - Wellbore #1 - Design #1						Out of range
SCHNEIDER 1414-03H - Wellbore #1 - Design #3						Out of range
SCHNEIDER 1414-04H - Wellbore #1 - Design #2						Out of range
SCHNEIDER 1414-05H - Wellbore #1 - Design #2						Out of range
SCHNEIDER 1414-06H - Wellbore #1 - Design #2						Out of range
SCHNEIDER 1414-07H - Wellbore #1 - Design #3						Out of range
SCHNEIDER 1414-08H - Wellbore #1 - Design #2						Out of range
SCHNEIDER 1414-09H - Wellbore #1 - Design #2						Out of range
SCHNEIDER 1414-10H - Wellbore #1 - Design #3						Out of range
SCHNEIDER 1414-11H - Wellbore #1 - Design #2						Out of range
SCHNEIDER 1414-12H - Wellbore #1 - Design #2						Out of range
9N-59W-30 MARTIN FED PAD						
MARTIN 3030 01H - Wellbore #1 - Design #1						Out of range
MARTIN 3030 02H - Wellbore #1 - Design #1						Out of range
MARTIN 3030 03H - Wellbore #1 - Design #1						Out of range
MARTIN FED 3031 01H - Wellbore #1 - Design #2						Out of range
MARTIN FED 3031 02H - Wellbore #1 - Design #2						Out of range
MARTIN FED 3031 03H - Wellbore #1 - Design #2						Out of range
MARTIN FED 3031 04H - Wellbore #1 - Design #2						Out of range

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 16' @ 4896.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 16' @ 4896.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-05H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	Database:	EDM 5000.16 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)		Separation Factor	Warning
Offset Well - Wellbore - Design						
9N-59W-31 Offsets						
AF 1 - Mallard Planned Well - Planned Surveys						Out of range
AF 2 - Mallard Planned Well - Planned MWD Surveys						Out of range
ANDERSEN FED 6-5-1HN - Mallard Planned Well - Plan						Out of range
ANDERSEN FED 6-5-2HN - Mallard Planned Well - Plan						Out of range
ANDERSON FED 6-5-10HN - Mallard Planned Well - Pla						Out of range
ANDERSON FED 6-5-3HC - Mallard Planned Well - Plan						Out of range
ANDERSON FED 6-5-4HN - Mallard Planned Well - Plan						Out of range
ANDERSON FED 6-5-5HN - Mallard Planned Well - Plan						Out of range
ANDERSON FED 6-5-6HN - Mallard Planned Well - Plan						Out of range
ANDERSON FED 6-5-7HN - Mallard Planned Well - Plan						Out of range
ANDERSON FED 6-5-8HC - Mallard Planned Well - Plan						Out of range
ANDERSON FED 6-5-9HN - Mallard Planned Well - Plan						Out of range
RAINBOW-SHULL #1 - Toltek D/A Well - No Surveys						Out of range
SHULL FED 31-32-10HN - Mallard Planned Well - Planne						Out of range
SHULL FED 31-32-1HN - Mallard PR Well - Actual Mallar						Out of range
SHULL FED 31-32-2HC - Mallard PR Well - Actual Mallar						Out of range
SHULL FED 31-32-3HN - Mallard Planned Well (Now Pro						Out of range
SHULL FED 31-32-4HN - Mallard Planned Well (Now PR						Out of range
SHULL FED 31-32-5HN - Mallard Planned Well - Planned						Out of range
SHULL FED 31-32-6HN - Mallard Planned Well - Planned						Out of range
SHULL FED 31-32-7HN - Mallard Planned Well - Planned						Out of range
SHULL FED 31-32-8HC - Mallard Planned Well - Planned						Out of range
SHULL FED 31-32-9HN - Mallard Planned Well - Planned						Out of range
Shull Fed-9-59-31-0508CDE - Mallard Planned Well - Pla						Out of range
Shull Fed-9-59-31-1209AE - Mallard Planned Well - Plan						Out of range
Shull Fed-9-59-31-2124BE - Mallard Planned Well - Plan						Out of range
Shull Fed-9-59-31-2124CE2 - Mallard Planned Well - Pla						Out of range
9N-60W-25 PEGGY 2501 PAD						
PEGGY 2501-01H - Verdad SI Well - Actual Baker Surve						Out of range
PEGGY 2501-02H - Verdad PR Well - Actual Baker Surve						Out of range
PEGGY 2501-04H - Wellbore #2 - Design #1	14,602.03	14,322.29	1,022.17	637.81	2.659	CC, ES, SF
PEGGY 2501-06H - Wellbore #2 - Design #1	14,602.03	14,238.85	414.10	41.72	1.112	Level 2, CC, ES, SF
PEGGY 2501-08H - Wellbore #2 - Design #1	14,602.03	14,399.40	338.83	76.03	1.289	Level 3, CC, ES, SF
PEGGY 2501-10H - Wellbore #2 - Design #1	14,602.03	14,235.97	877.72	509.16	2.382	CC, ES, SF
PEGGY 2501-12H - Wellbore #2 - Design #1	14,602.03	14,306.14	1,497.44	1,121.45	3.983	CC, ES, SF
PEGGY 2501-14H - Wellbore #2 - Design #1						Out of range
PEGGY 2501-16H - Wellbore #2 - Design #1						Out of range

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 16' @ 4896.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 16' @ 4896.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-05H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	Database:	EDM 5000.16 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
9N-60W-25 PEGGY 2525 PAD						
PEGGY 2525-01H - Wellbore #1 - Design #2						Out of range
PEGGY 2525-02H - Wellbore #1 - Design #2						Out of range
PEGGY 2525-03H - Wellbore #1 - Design #2						Out of range
PEGGY 2525-04H - Wellbore #1 - Design #2						Out of range
PEGGY 2525-05H - Wellbore #1 - Design #2						Out of range
PEGGY 2525-06H - Wellbore #1 - Design #2						Out of range
PEGGY 2525-07H - Wellbore #1 - Design #2						Out of range
9N-60W-35 Offsets Incomplete						
PINTAIL FED 2-11-8HN - Mallard Planned Well - Planned						Out of range
PINTAIL FED 2-11-9HN - Mallard Planned Well - Planned						Out of range
Shull 1-35-9-60 - Carrizo PR Well - Actual Precision Surv						Out of range
Shull 2-35-9-60 - Verdad PR Well - Actual Precision Surv						Out of range
Shull 3-35-9-60 - Verdad PR Well - Actual Precision Surv						Out of range

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 16' @ 4896.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 16' @ 4896.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-05H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	Database:	EDM 5000.16 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB = 16' @ 4896.00usft (RIG)

Offset Depths are relative to Offset Datum

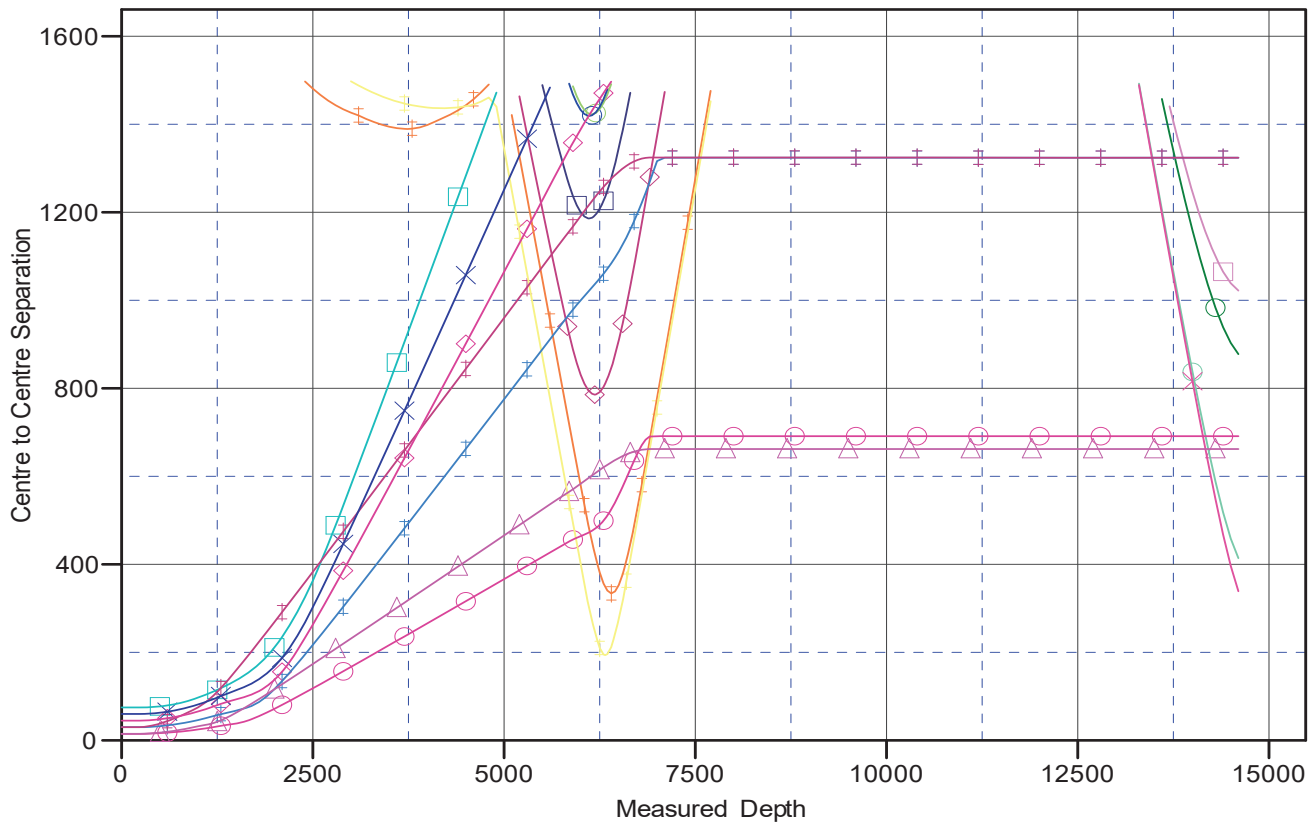
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-05H

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.94°

Ladder Plot



LEGEND

BOOMSLANG FED 8-60 14A-13-182, Bison PR Well, Actual Baker Surveys V0	PEGGY 2501-10H, Wellbore #2, Design #1 V0	SONIC STAR 1101-16H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-185, Bison Planned Well, Planned Bison Surveys V0	PEGGY 2501-04H, Wellbore #2, Design #1 V0	SONIC STAR 1101-07H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-186, Bison Planned Well, Bison Planned Surveys V0	PEGGY 2501-12H, Wellbore #2, Design #1 V0	SONIC STAR 1101-01H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-183, Bison PR Well, Actual Baker Surveys V0	PEGGY 2501-08H, Wellbore #2, Design #1 V0	SONIC STAR 1101-11H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	PEGGY 2501-08H, Wellbore #2, Design #1 V0	SONIC STAR 1101-13H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-184, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-09H, Plan B, Design #1 V0	SONIC STAR 1101-03H, Plan B, Design #1 V0

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 16' @ 4896.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 16' @ 4896.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-05H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	Database:	EDM 5000.16 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB = 16' @ 4896.00usft (RIG)

Offset Depths are relative to Offset Datum

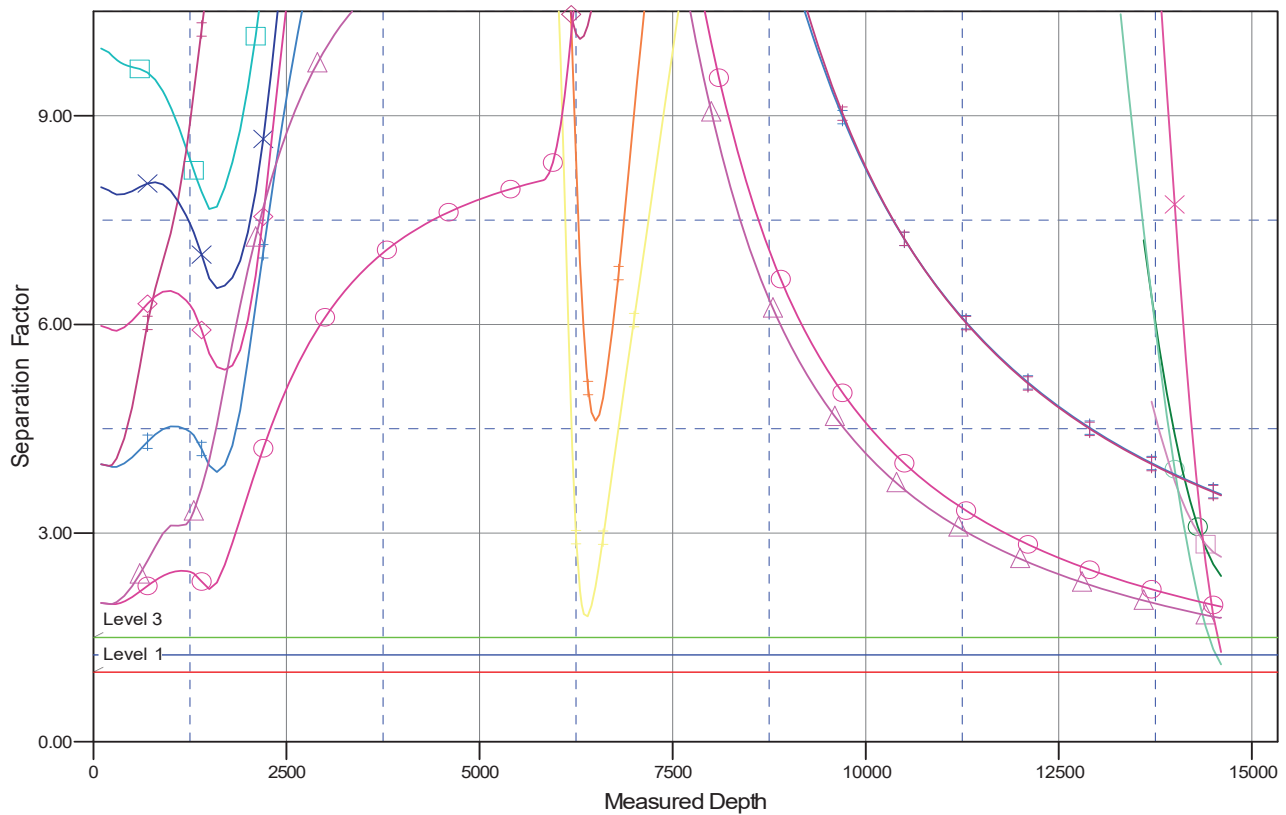
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-05H

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.94°

Separation Factor Plot



LEGEND

BOOMSLANG FED 8-60 14A-13-182, Bison PR Well, Actual Baker Surveys V0	PEGGY 2501-10H, Wellbore #2, Design #1 V0	SONIC STAR 1101-16H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-185, Bison Planned Well, Planned Bison Surveys V0	PEGGY 2501-04H, Wellbore #2, Design #1 V0	SONIC STAR 1101-07H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-186, Bison Planned Well, Bison Planned Surveys V0	PEGGY 2501-12H, Wellbore #2, Design #1 V0	SONIC STAR 1101-01H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-183, Bison PR Well, Actual Baker Surveys V0	PEGGY 2501-06H, Wellbore #2, Design #1 V0	SONIC STAR 1101-11H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	PEGGY 2501-08H, Wellbore #2, Design #1 V0	SONIC STAR 1101-13H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-184, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-09H, Plan B, Design #1 V0	SONIC STAR 1101-03H, Plan B, Design #1 V0