

VERDAD RESOURCES

WATTENBERG FIELD

8N-60W-11 SONIC STAR 1101 PAD

SONIC STAR 1101-05H

Wellbore #1

Design #1

Anticollision Summary Report

20 August, 2020

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 4899.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4899.00usft (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	Wellbore #1	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	8/20/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	1,700.00	Design #1 (Wellbore #1)	ISCWSA MWD	Fixed:v2:standard declination
1,700.00	14,739.77	Design #1 (Wellbore #1)	ISCWSA MWD	Fixed:v2:standard declination

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
8N-60W-11 SONIC STAR 1101 PAD						
SONIC STAR 1101-01H - Wellbore #1 - Design #3	250.00	249.00	60.01	52.40	7.890	CC, ES
SONIC STAR 1101-01H - Wellbore #1 - Design #3	14,739.77	14,294.79	1,259.13	890.30	3.414	SF
SONIC STAR 1101-02H - Wellbore #1 - Design #1	250.00	250.00	45.00	37.39	5.916	CC, ES
SONIC STAR 1101-02H - Wellbore #1 - Design #1	14,700.00	14,510.54	929.26	556.60	2.494	SF
SONIC STAR 1101-03H - Wellbore #1 - Design #1	250.00	250.00	29.99	22.38	3.942	CC, ES
SONIC STAR 1101-03H - Wellbore #1 - Design #1	14,701.65	14,681.17	632.02	264.03	1.717	SF
SONIC STAR 1101-04H - Wellbore #1 - Design #1	250.00	250.00	14.97	7.37	1.968	CC
SONIC STAR 1101-04H - Wellbore #1 - Design #1	14,700.51	14,621.66	309.78	-62.12	0.833	Level 1, ES, SF
SONIC STAR 1101-06H - Wellbore #1 - Design #1	257.32	258.34	15.01	7.40	1.972	CC
SONIC STAR 1101-06H - Wellbore #1 - Design #1	14,739.77	14,833.43	309.75	-63.51	0.830	Level 1, ES, SF
SONIC STAR 1101-07H - Wellbore #1 - Design #1	253.64	254.65	30.03	22.42	3.946	CC
SONIC STAR 1101-07H - Wellbore #1 - Design #1	300.00	301.15	30.06	22.41	3.928	ES
SONIC STAR 1101-07H - Wellbore #1 - Design #1	14,739.77	15,060.11	631.79	267.10	1.732	SF
SONIC STAR 1101-08H - Wellbore #1 - Design #1	254.85	256.88	45.04	37.43	5.918	CC
SONIC STAR 1101-08H - Wellbore #1 - Design #1	300.00	302.20	45.08	37.43	5.891	ES
SONIC STAR 1101-08H - Wellbore #1 - Design #1	14,739.77	15,068.71	929.29	556.44	2.492	SF
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	253.67	255.70	60.06	52.45	7.892	CC, ES
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	14,739.77	15,207.59	1,239.04	866.35	3.325	SF
SONIC STAR 1101-10H - Wellbore #1 - Design #1	252.95	254.97	75.03	67.42	9.860	CC, ES
SONIC STAR 1101-10H - Wellbore #1 - Design #1	1,700.00	1,702.16	125.94	105.25	6.086	SF
SONIC STAR 1101-11H - Wellbore #1 - Design #1	253.70	256.74	90.04	82.43	11.832	CC, ES
SONIC STAR 1101-11H - Wellbore #1 - Design #1	1,700.00	1,703.48	145.03	124.22	6.969	SF
SONIC STAR 1101-12H - Wellbore #1 - Design #1	253.20	256.24	105.06	97.45	13.805	CC, ES
SONIC STAR 1101-12H - Wellbore #1 - Design #1	1,700.00	1,703.90	163.42	142.54	7.827	SF
SONIC STAR 1101-13H - Wellbore #1 - Design #1	252.82	255.86	120.07	112.46	15.778	CC, ES
SONIC STAR 1101-13H - Wellbore #1 - Design #1	1,800.00	1,800.00	192.11	169.96	8.674	SF
SONIC STAR 1101-14H - Wellbore #1 - Design #1	252.50	255.54	135.08	127.47	17.752	CC, ES
SONIC STAR 1101-14H - Wellbore #1 - Design #1	1,800.00	1,800.00	209.94	187.72	9.448	SF
SONIC STAR 1101-15H - Wellbore #1 - Design #1	252.29	255.33	150.06	142.45	19.720	CC, ES
SONIC STAR 1101-15H - Wellbore #1 - Design #1	1,800.00	1,801.09	226.90	204.62	10.182	SF
SONIC STAR 1101-16H - Wellbore #1 - Design #1	252.10	255.14	165.07	157.46	21.694	CC, ES
SONIC STAR 1101-16H - Wellbore #1 - Design #1	1,800.00	1,801.34	243.94	221.62	10.929	SF
8N-60W-12 Offsets						
COLORADO NATIONAL BANK #1 - Shell P&A Well - No	Out of range					

HP

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Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 4899.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4899.00usft (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	Wellbore #1	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	6,342.20	7,732.41	97.96	-5.81	0.944	Level 1, CC
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,350.00	7,734.57	98.29	-8.88	0.917	Level 1, ES, SF
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	6,452.97	7,895.64	216.00	148.00	3.176	CC
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	6,500.00	7,907.23	222.43	147.71	2.977	ES, SF
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	6,254.24	7,890.37	724.62	650.74	9.808	CC, ES
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	6,350.00	7,914.08	737.49	660.67	9.601	SF
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	6,213.12	7,814.89	1,372.30	1,297.65	18.384	CC, ES
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	6,350.00	7,890.51	1,397.12	1,319.73	18.053	SF
8N-60W-14 SCHNEIDER 1414 PAD						
SCHNEIDER 1414-12H - Wellbore #1 - Design #2						Out of range
9N-59W-30 PTASNIK FED PAD						
PTASNIK FED 3031 01H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 02H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 03H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 04H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 05H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 06H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 07H - Wellbore #1 - Design #2						Out of range
PTASNIK FED 3031 08H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 09H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 10H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 11H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 12H - Wellbore #1 - Design #1						Out of range
PTASNIK FED 3031 13H - Wellbore #1 - Design #1						Out of range

HP

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Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 4899.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4899.00usft (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	Wellbore #1	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-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 - Plann						Out of range
SHULL FED 31-32-1HN - Mallard PR Well - Actual Malla						Out of range
SHULL FED 31-32-2HC - Mallard PR Well - Actual Malla						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 - Planne						Out of range
SHULL FED 31-32-6HN - Mallard Planned Well - Planne						Out of range
SHULL FED 31-32-7HN - Mallard Planned Well - Planne						Out of range
SHULL FED 31-32-8HC - Mallard Planned Well - Planne						Out of range
SHULL FED 31-32-9HN - Mallard Planned Well - Planne						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 Surv						Out of range
PEGGY 2501-04H - Wellbore #2 - Design #1	14,739.77	14,322.29	956.26	578.09	2.529	CC, ES, SF
PEGGY 2501-06H - Wellbore #2 - Design #1	14,739.77	14,238.85	383.58	59.05	1.182	Level 2, CC, ES, SF
PEGGY 2501-08H - Wellbore #2 - Design #1	14,739.77	14,399.40	357.85	29.35	1.089	Level 2, CC, ES, SF
PEGGY 2501-10H - Wellbore #2 - Design #1	14,739.77	14,235.97	979.20	612.90	2.673	CC, ES, SF
PEGGY 2501-12H - Wellbore #2 - Design #1						Out of range
PEGGY 2501-14H - Wellbore #2 - Design #1						Out of range
PEGGY 2501-16H - Wellbore #2 - Design #1						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

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Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4899.00usft (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	Wellbore #1	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
9N-60W-36 Offsets						
STATE-HUSKY #1 - Bennett D/A Well - No Surveys						Out of range

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-05H
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Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB = 20' @ 4899.00usft (RIG)

Offset Depths are relative to Offset Datum

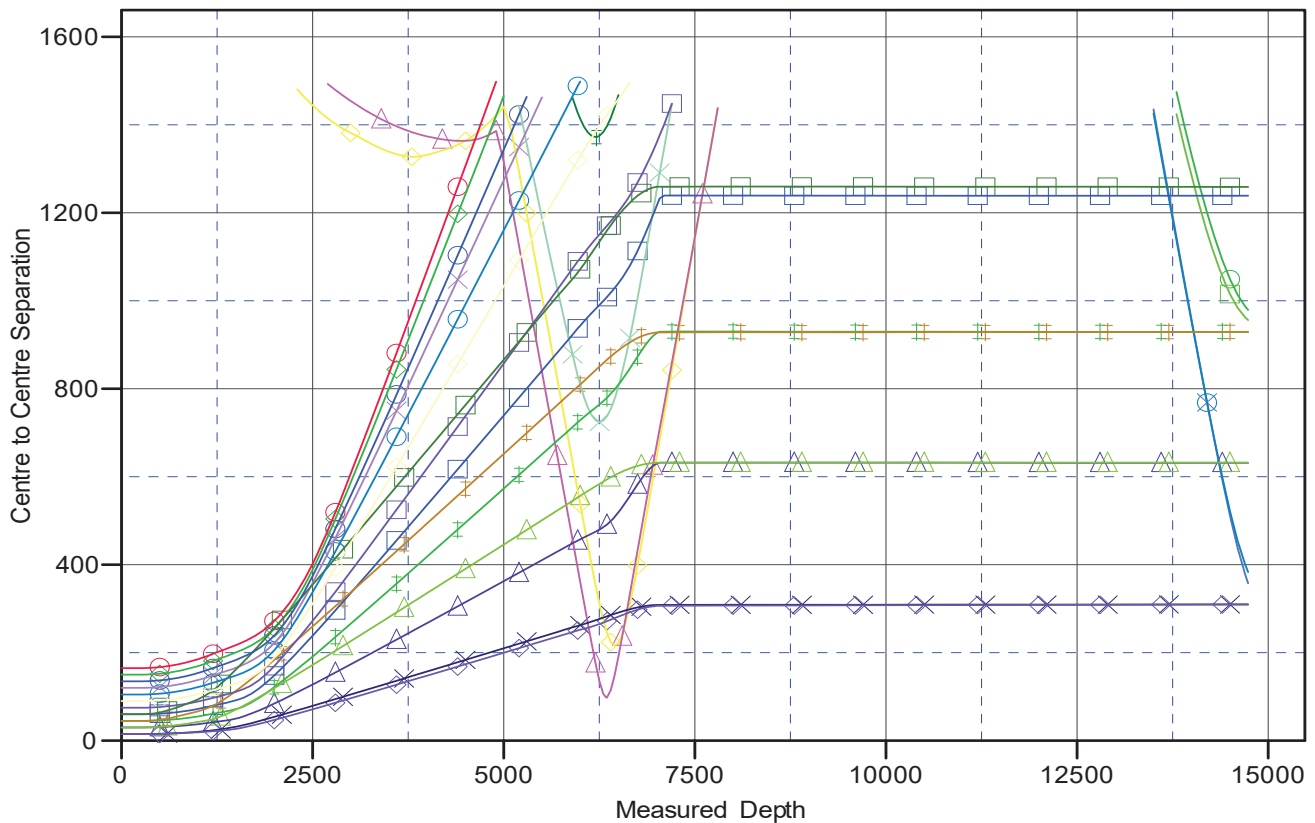
Central Meridian is -105.500000

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

BOOMSLAND FED 8-60 14A-13-182, Beacon PR Well, Actual Baker Surveys V0
 BOOMSLAND FED 8-60 14A-13-183, Beacon PR Well, Actual Baker Surveys V0
 BOOMSLAND FED 8-60 14A-13-184, Beacon PR Well, Actual Baker Surveys V0
 BOOMSLAND FED 8-60 14A-13-181, Beacon Planned Well, Planned Beacon MWD Surveys V0
 PEGGY 2501-08H, Wellbore #2, Design #1 V0
 PEGGY 2501-04H, Wellbore #2, Design #1 V0
 PEGGY 2501-06H, Wellbore #2, Design #1 V0
 PEGGY 2501-10H, Wellbore #2, Design #1 V0

SONIC STAR 1101-09H, Wellbore #1, Plan #1 V0
 SONIC STAR 1101-16H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-19H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-04H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-07H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-08H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-13H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-06H, Wellbore #1, Design #1 V0

SONIC STAR 1101-03H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-02H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-10H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-01H, Wellbore #1, Design #3 V0
 SONIC STAR 1101-14H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-12H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-11H, Wellbore #1, Design #1 V0

Anticollision Summary Report

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Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB = 20' @ 4899.00usft (RIG)

Offset Depths are relative to Offset Datum

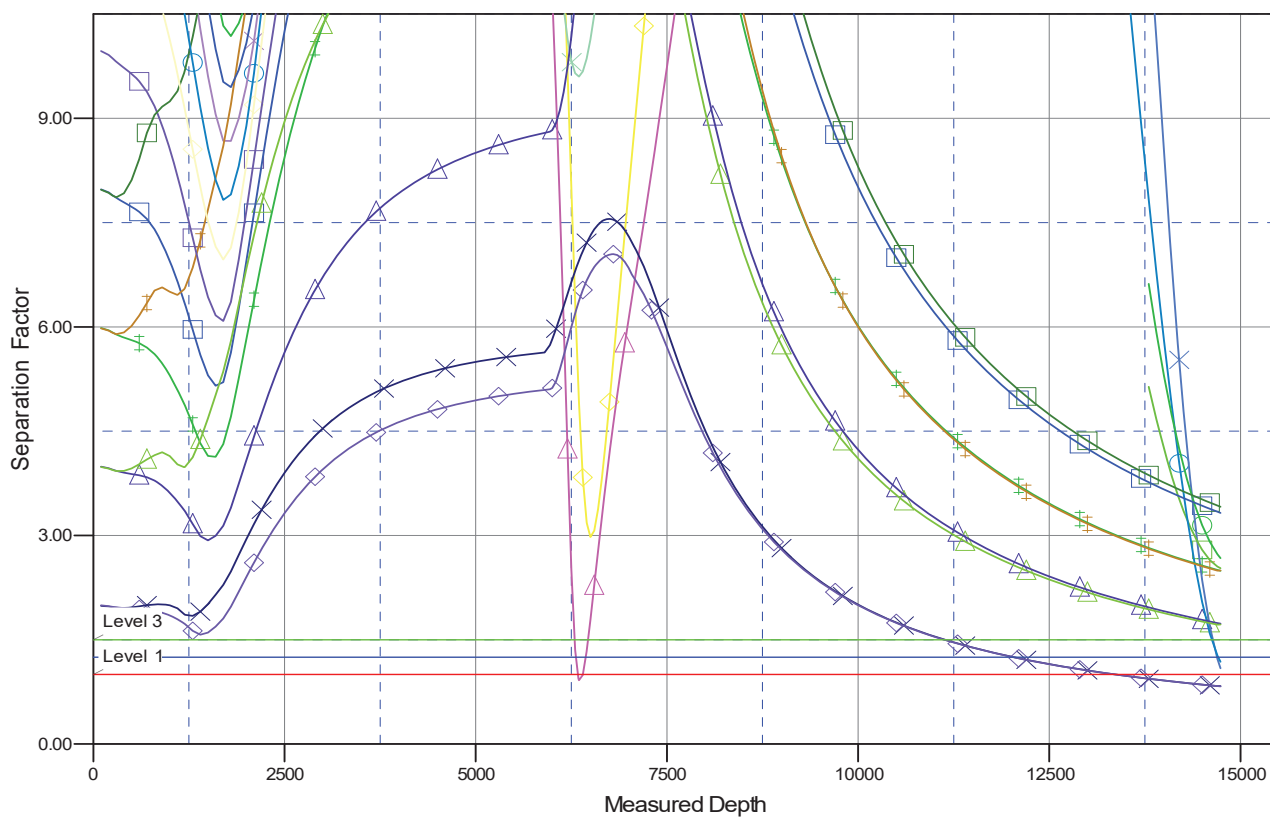
Central Meridian is -105.500000

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

BOOMSLAND FED 8-60 14A-13-182, Bison PR Well, Actual Baker Surveys V0
 BOOMSLAND FED 8-60 14A-13-183, Bison PR Well, Actual Baker Surveys V0
 BOOMSLAND FED 8-60 14A-13-184, Bison PR Well, Actual Baker Surveys V0
 BOOMSLAND FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0
 PEGGY 2501-08H, Wellbore #2, Design #1 V0
 PEGGY 2501-04H, Wellbore #2, Design #1 V0
 PEGGY 2501-06H, Wellbore #2, Design #1 V0
 PEGGY 2501-10H, Wellbore #2, Design #1 V0

SONIC STAR 1101-09H, Wellbore #1, Plan #1 V0
 SONIC STAR 1101-10H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-15H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-04H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-07H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-08H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-13H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-06H, Wellbore #1, Design #1 V0

SONIC STAR 1101-03H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-02H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-10H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-01H, Wellbore #1, Design #3 V0
 SONIC STAR 1101-14H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-12H, Wellbore #1, Design #1 V0
 SONIC STAR 1101-11H, Wellbore #1, Design #1 V0