

VERDAD RESOURCES

WATTENBERG FIELD

8N-60W-11 SONIC STAR 1101 PAD

SONIC STAR 1101-11H

Wellbore #1

Design #1

Anticollision Summary Report

20 August, 2020

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-11H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 4902.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4902.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-11H	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	15,575.65	Design #1 (Wellbore #1)	ISCWSA MWD	Fixed:v2:standard declination	

Summary						
Site Name Offset Well - Wellbore - Design	Reference	Offset	Distance		Separation Factor	Warning
	Measured Depth (usft)	Measured Depth (usft)	Between Centres (usft)	Between Ellipses (usft)		
8N-60W-11 SONIC STAR 1101 PAD						
SONIC STAR 1101-01H - Wellbore #1 - Design #3	250.00	246.00	150.05	142.45	19.732	CC, ES
SONIC STAR 1101-01H - Wellbore #1 - Design #3	1,400.00	1,364.45	247.73	233.94	17.956	SF
SONIC STAR 1101-02H - Wellbore #1 - Design #1	250.00	247.00	135.04	127.44	17.757	CC, ES
SONIC STAR 1101-02H - Wellbore #1 - Design #1	1,500.00	1,469.74	224.85	209.34	14.502	SF
SONIC STAR 1101-03H - Wellbore #1 - Design #1	250.00	247.00	120.03	112.43	15.783	CC, ES
SONIC STAR 1101-03H - Wellbore #1 - Design #1	1,600.00	1,573.44	202.14	184.70	11.588	SF
SONIC STAR 1101-04H - Wellbore #1 - Design #1	250.00	247.00	105.02	97.41	13.809	CC, ES
SONIC STAR 1101-04H - Wellbore #1 - Design #1	1,700.00	1,677.07	178.65	158.81	9.006	SF
SONIC STAR 1101-05H - Wellbore #1 - Design #1	250.00	247.00	90.05	82.44	11.840	CC, ES
SONIC STAR 1101-05H - Wellbore #1 - Design #1	1,700.00	1,682.63	144.03	123.32	6.957	SF
SONIC STAR 1101-06H - Wellbore #1 - Design #1	250.00	248.00	75.03	67.43	9.866	CC
SONIC STAR 1101-06H - Wellbore #1 - Design #1	300.00	297.61	75.07	67.42	9.813	ES
SONIC STAR 1101-06H - Wellbore #1 - Design #1	1,800.00	1,786.38	121.37	98.58	5.324	SF
SONIC STAR 1101-07H - Wellbore #1 - Design #1	250.00	248.00	60.02	52.41	7.891	CC
SONIC STAR 1101-07H - Wellbore #1 - Design #1	300.00	297.72	60.04	52.39	7.848	ES
SONIC STAR 1101-07H - Wellbore #1 - Design #1	15,500.94	15,038.82	1,245.56	874.17	3.354	SF
SONIC STAR 1101-08H - Wellbore #1 - Design #1	250.00	249.00	45.00	37.40	5.917	CC
SONIC STAR 1101-08H - Wellbore #1 - Design #1	300.00	298.81	45.02	37.37	5.885	ES
SONIC STAR 1101-08H - Wellbore #1 - Design #1	15,502.31	15,048.68	929.28	558.47	2.506	SF
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	250.00	249.00	29.99	22.38	3.943	CC
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	1,900.00	1,895.50	45.23	19.97	1.791	ES
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	15,500.64	15,186.04	619.53	248.93	1.672	SF
SONIC STAR 1101-10H - Wellbore #1 - Design #1	263.72	262.71	15.01	7.40	1.971	CC
SONIC STAR 1101-10H - Wellbore #1 - Design #1	2,029.00	2,026.35	23.24	-4.51	0.838	Level 1, SF
SONIC STAR 1101-10H - Wellbore #1 - Design #1	15,565.38	15,508.03	334.43	-26.32	0.927	Level 1, ES
SONIC STAR 1101-12H - Wellbore #1 - Design #1	250.00	250.00	15.01	7.41	1.974	CC
SONIC STAR 1101-12H - Wellbore #1 - Design #1	2,200.00	2,201.53	23.22	-8.81	0.725	Level 1, SF
SONIC STAR 1101-12H - Wellbore #1 - Design #1	15,575.65	15,752.88	309.75	-63.83	0.829	Level 1, ES
SONIC STAR 1101-13H - Wellbore #1 - Design #1	250.00	250.00	30.03	22.42	3.947	CC
SONIC STAR 1101-13H - Wellbore #1 - Design #1	2,300.00	2,302.48	47.37	12.86	1.373	Level 3, ES, SF
SONIC STAR 1101-14H - Wellbore #1 - Design #1	250.00	250.00	45.04	37.43	5.921	CC
SONIC STAR 1101-14H - Wellbore #1 - Design #1	2,300.00	2,303.62	69.06	34.22	1.982	ES
SONIC STAR 1101-14H - Wellbore #1 - Design #1	2,400.00	2,402.83	73.06	36.02	1.973	SF
SONIC STAR 1101-15H - Wellbore #1 - Design #1	250.00	250.00	60.02	52.41	7.890	CC
SONIC STAR 1101-15H - Wellbore #1 - Design #1	300.00	300.16	60.03	52.38	7.846	ES
SONIC STAR 1101-15H - Wellbore #1 - Design #1	2,400.00	2,403.66	93.12	55.63	2.484	SF

HP

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Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-11H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 4902.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4902.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-11H	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
8N-60W-11 SONIC STAR 1101 PAD						
SONIC STAR 1101-16H - Wellbore #1 - Design #1	250.00	250.00	75.03	67.42	9.864	CC
SONIC STAR 1101-16H - Wellbore #1 - Design #1	300.00	300.19	75.05	67.40	9.808	ES
SONIC STAR 1101-16H - Wellbore #1 - Design #1	2,500.00	2,502.67	119.13	79.07	2.973	SF
8N-60W-12 Offsets						
COLORADO NATIONAL BANK #1 - Shell P&A Well - No	12,305.21	6,351.00	1,181.93	846.62	3.525	CC
COLORADO NATIONAL BANK #1 - Shell P&A Well - No	12,400.00	6,351.00	1,185.72	844.06	3.470	ES
COLORADO NATIONAL BANK #1 - Shell P&A Well - No	12,500.00	6,351.00	1,197.87	850.04	3.444	SF
8N-60W-14 Offsets						
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	7,120.29	9,471.00	86.98	-116.07	0.428	Level 1, CC
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	7,150.00	9,486.83	91.19	-130.44	0.411	Level 1, ES, SF
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	7,240.58	9,673.30	197.11	64.14	1.482	Level 3, CC
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	7,300.00	9,702.27	206.35	55.77	1.370	Level 3, ES, SF
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	7,034.04	9,565.85	701.35	552.01	4.696	CC
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	7,050.00	9,574.87	701.68	551.30	4.666	ES
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	7,100.00	9,603.20	706.88	553.59	4.611	SF
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	6,988.07	9,480.22	1,360.62	1,210.61	9.070	CC
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	7,000.00	9,487.26	1,360.77	1,210.26	9.041	ES
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	7,150.00	9,592.79	1,386.89	1,230.89	8.890	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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Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4902.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-11H	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)		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						Out of range
PEGGY 2501-06H - Wellbore #2 - Design #1						Out of range
PEGGY 2501-08H - Wellbore #2 - Design #1						Out of range
PEGGY 2501-10H - Wellbore #2 - Design #1	15,575.65	14,235.97	939.63	564.55	2.505	CC, ES, SF
PEGGY 2501-12H - Wellbore #2 - Design #1	15,575.65	14,306.14	369.48	52.27	1.165	Level 2, CC, ES, SF
PEGGY 2501-14H - Wellbore #2 - Design #1	15,575.65	14,647.68	372.80	35.21	1.104	Level 2, CC, ES, SF
PEGGY 2501-16H - Wellbore #2 - Design #1	15,575.65	14,670.32	994.38	622.62	2.675	CC, ES, SF
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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Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 4902.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4902.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-11H	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-60W-36 Offsets						
STATE-HUSKY #1 - Bennett D/A Well - No Surveys						Out of range

Anticollision Summary Report

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Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-11H	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 Depths are relative to RKB = 20' @ 4902.00usft (RIG)

Offset Depths are relative to Offset Datum

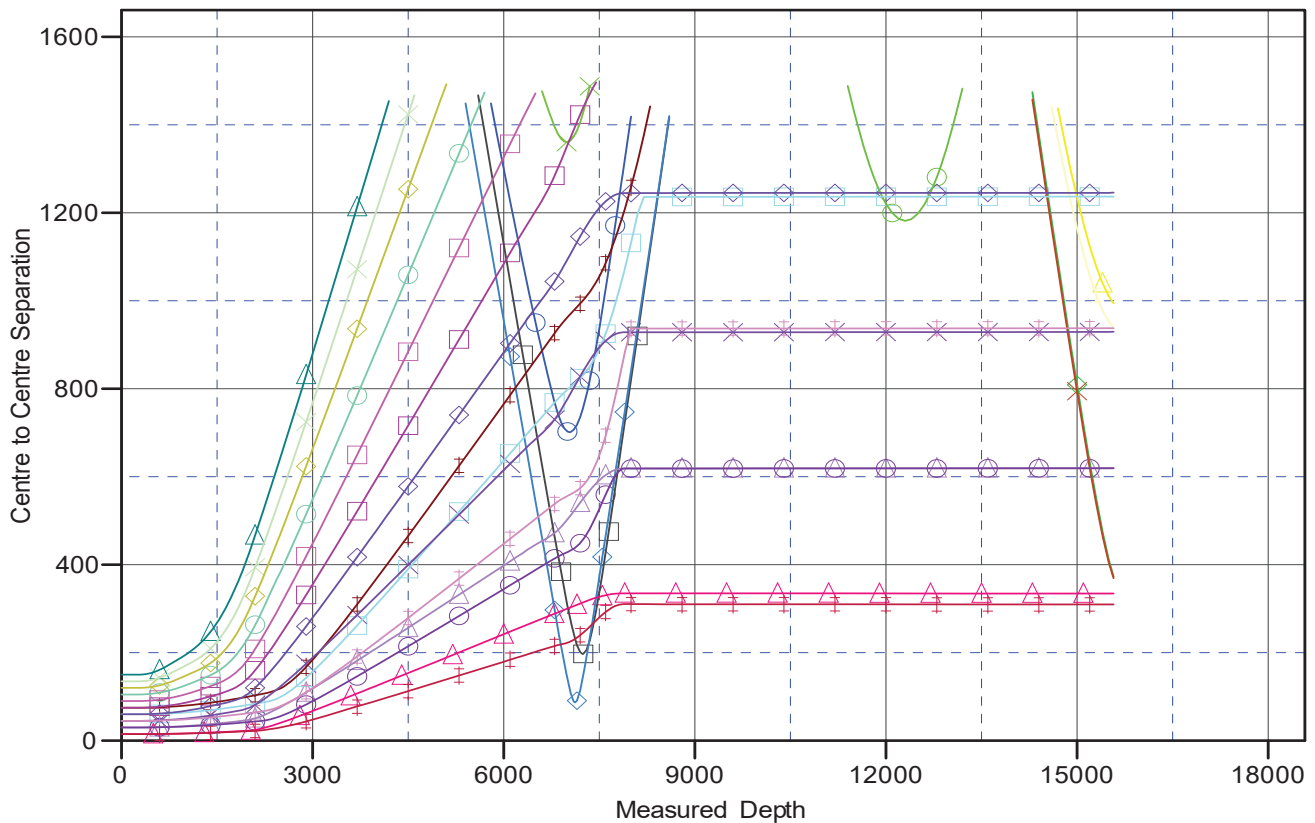
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-11H

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	COLORADONATIONAL BANK #1, Shell P&A Well, No Surveys V0	SONIC STAR 1101-09H, Wellbore#1, Design #1 V0
BOOMSLAND FED 8-60 14A-13-183, Beacon PR Well, Actual Baker Surveys V0	SONIC STAR 1101-09H, Wellbore#1, Plan #1 V0	SONIC STAR 1101-03H, Wellbore#1, Design #1 V0
BOOMSLAND FED 8-60 14A-13-184, Beacon PR Well, Actual Baker Surveys V0	SONIC STAR 1101-16H, Wellbore#1, Design #1 V0	SONIC STAR 1101-02H, Wellbore#1, Design #1 V0
BOOMSLAND FED 8-60 14A-13-181, Beacon Planned Well, Planned Beacon MWD Surveys V0	SONIC STAR 1101-15H, Wellbore#1, Design #1 V0	SONIC STAR 1101-10H, Wellbore#1, Design #1 V0
PEGGY 2501-14H, Wellbore #2, Design #1 V0	SONIC STAR 1101-04H, Wellbore#1, Design #1 V0	SONIC STAR 1101-01H, Wellbore#1, Design #3 V0
PEGGY 2501-12H, Wellbore #2, Design #1 V0	SONIC STAR 1101-07H, Wellbore#1, Design #1 V0	SONIC STAR 1101-14H, Wellbore#1, Design #1 V0
PEGGY 2501-16H, Wellbore #2, Design #1 V0	SONIC STAR 1101-08H, Wellbore#1, Design #1 V0	SONIC STAR 1101-12H, Wellbore#1, Design #1 V0
PEGGY 2501-10H, Wellbore #2, Design #1 V0	SONIC STAR 1101-13H, Wellbore#1, Design #1 V0	SONIC STAR 1101-05H, Wellbore#1, Design #1 V0

Anticollision Summary Report

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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 Depths are relative to RKB = 20' @ 4902.00usft (RIG)

Offset Depths are relative to Offset Datum

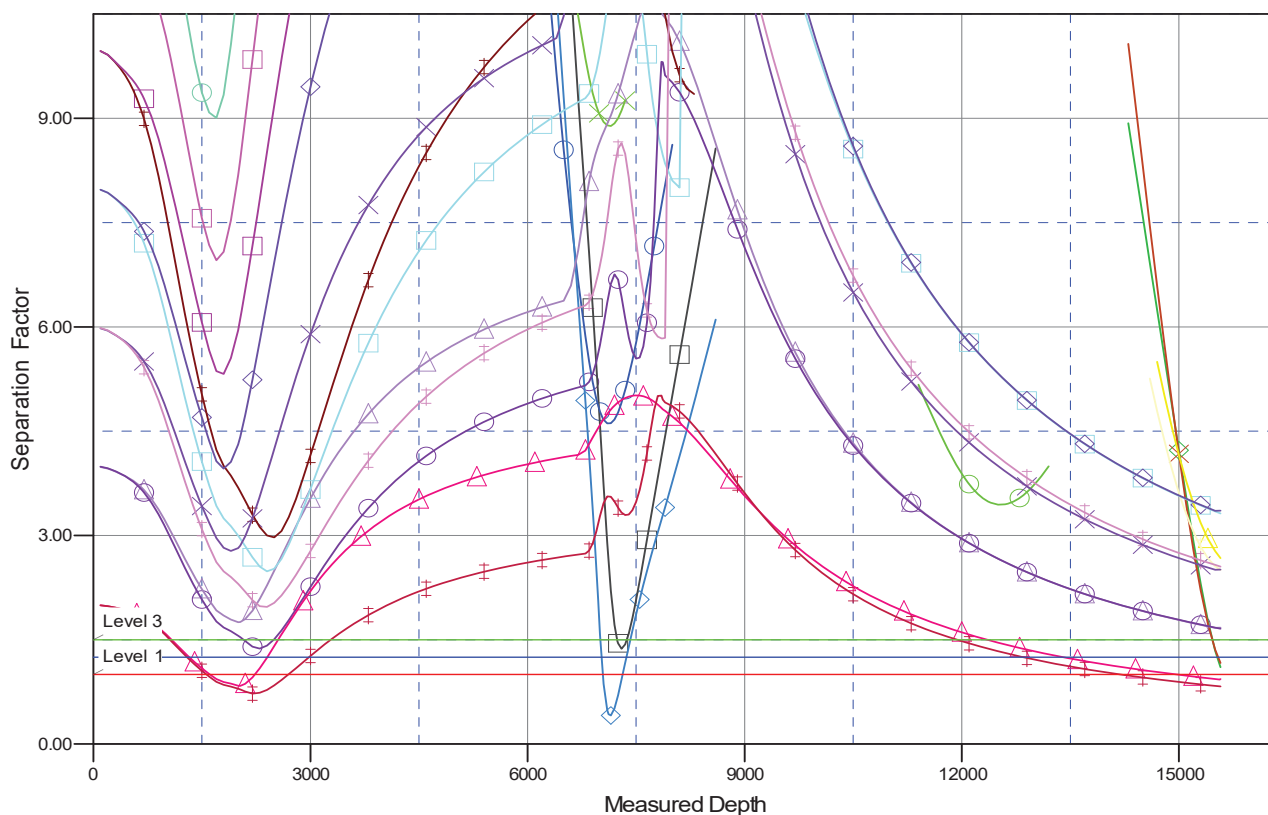
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-11H

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	COLORADONATIONAL BANK #1, Shell P&A Well, No Surveys V0	SONIC STAR 1101-09H, Wellbore#1, Design #1 V0
BOOMSLAND FED 8-60 14A-13-183, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-09H, Wellbore#1, Plan #1 V0	SONIC STAR 1101-09H, Wellbore#1, Design #1 V0
BOOMSLAND FED 8-60 14A-13-184, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-10H, Wellbore#1, Design #1 V0	SONIC STAR 1101-09H, Wellbore#1, Design #1 V0
BOOMSLAND FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	SONIC STAR 1101-10H, Wellbore#1, Design #1 V0	SONIC STAR 1101-10H, Wellbore#1, Design #1 V0
PEGGY 2501-14H, Wellbore #2, Design #1 V0	SONIC STAR 1101-04H, Wellbore#1, Design #1 V0	SONIC STAR 1101-04H, Wellbore#1, Design #3 V0
PEGGY 2501-12H, Wellbore #2, Design #1 V0	SONIC STAR 1101-07H, Wellbore#1, Design #1 V0	SONIC STAR 1101-01H, Wellbore#1, Design #1 V0
PEGGY 2501-16H, Wellbore #2, Design #1 V0	SONIC STAR 1101-08H, Wellbore#1, Design #1 V0	SONIC STAR 1101-14H, Wellbore#1, Design #1 V0
PEGGY 2501-10H, Wellbore #2, Design #1 V0	SONIC STAR 1101-13H, Wellbore#1, Design #1 V0	SONIC STAR 1101-12H, Wellbore#1, Design #1 V0
		SONIC STAR 1101-05H, Wellbore#1, Design #1 V0