

# **VERDAD RESOURCES**

**WATTENBERG FIELD**

**8N-60W-11 SONIC STAR 1101 PAD**

**SONIC STAR 1101-03H**

**Plan B**

**Design #1**

## **Anticollision Summary Report**

**09 November, 2020**

# HP

## Anticollision Summary Report

<b>Company:</b>	VERDAD RESOURCES	<b>Local Co-ordinate Reference:</b>	Well SONIC STAR 1101-03H
<b>Project:</b>	WATTENBERG FIELD	<b>TVD Reference:</b>	RKB = 16' @ 4896.00usft (RIG)
<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 16' @ 4896.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-03H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.28 usft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Plan B	<b>Database:</b>	EDM 5000.16 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Design #1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum centre distance of 1,500.00usft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.45 Sigma	<b>Casing Method:</b>	Added to Error Values

<b>Survey Tool Program</b>	<b>Date</b>	11/9/2020			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	1,500.00	Design #1 (Plan B)	ISCWSA MWD	Fixed:v2:standard declination	
1,500.00	14,420.18	Design #1 (Plan B)	ISCWSA MWD	Fixed:v2:standard declination	

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (usft)</b>	<b>Offset Measured Depth (usft)</b>	<b>Distance Between Centres (usft)</b>	<b>Distance Between Ellipses (usft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
8N-60W-11 SONIC STAR 1101 PAD						
SONIC STAR 1101-01H - Plan B - Design #1	200.00	199.00	15.01	7.44	1.983	CC, ES
SONIC STAR 1101-01H - Plan B - Design #1	14,420.18	14,333.20	662.10	288.82	1.774	SF
SONIC STAR 1101-05H - Plan B - Design #1	220.00	220.00	15.01	7.43	1.980	CC, ES
SONIC STAR 1101-05H - Plan B - Design #1	14,420.18	14,582.91	662.06	289.98	1.779	SF
SONIC STAR 1101-07H - Plan B - Design #1	220.00	221.00	30.03	22.45	3.960	CC, ES
SONIC STAR 1101-07H - Plan B - Design #1	14,420.18	14,999.15	1,338.98	972.13	3.650	SF
SONIC STAR 1101-09H - Plan B - Design #1	220.00	221.00	45.04	37.46	5.939	CC, ES, SF
SONIC STAR 1101-11H - Plan B - Design #1	220.00	221.00	60.02	52.43	7.913	CC, ES, SF
SONIC STAR 1101-13H - Plan B - Design #1	220.00	222.00	75.03	67.44	9.892	CC, ES
SONIC STAR 1101-13H - Plan B - Design #1	300.00	302.10	75.58	67.93	9.874	SF
SONIC STAR 1101-16H - Plan B - Design #1	227.76	229.88	90.03	82.44	11.862	CC, ES
SONIC STAR 1101-16H - Plan B - Design #1	1,400.00	1,394.03	174.80	159.45	11.382	SF
8N-60W-12 Offsets						
COLORADO NATIONAL BANK #1 - Shell P&A Well - No						Out of range

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<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 16' @ 4896.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-03H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.28 usft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Plan B	<b>Database:</b>	EDM 5000.16 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

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-14 Offsets						
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,153.82	7,209.92	196.56	125.52	2.767	CC
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,200.00	7,217.92	203.36	123.30	2.540	ES, 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	6,220.27	7,367.41	335.74	287.09	6.901	CC
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	6,250.00	7,372.00	337.69	286.59	6.609	ES
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	6,300.00	7,381.28	349.54	294.98	6.406	SF
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,005.10	7,383.78	831.89	778.16	15.485	CC, ES
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,100.00	7,403.29	843.98	787.93	15.058	SF
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well - A	5,938.02	7,223.51	1,414.45	1,360.64	26.288	CC
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well - A	5,950.00	7,225.41	1,414.61	1,360.60	26.195	ES
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well - A	6,100.00	7,247.27	1,443.55	1,387.40	25.707	SF
BOOMSLANG FED 8-60 14A-13-18-5 - Bison Planned W	5,943.35	6,918.93	1,186.46	1,110.11	15.540	CC
BOOMSLANG FED 8-60 14A-13-18-5 - Bison Planned W	5,950.00	6,920.30	1,186.51	1,109.97	15.500	ES
BOOMSLANG FED 8-60 14A-13-18-5 - Bison Planned W	6,100.00	6,949.71	1,215.15	1,134.78	15.120	SF
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	5,976.62	7,101.26	1,423.53	1,349.31	19.180	CC
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	6,000.00	7,105.96	1,424.14	1,349.27	19.021	ES
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	6,150.00	7,134.35	1,456.67	1,378.13	18.547	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	5,800.00	7,543.10	1,254.38	1,200.94	23.473	SF
SCHNEIDER 1414-12H - Wellbore #1 - Design #2	5,900.00	7,541.22	1,248.61	1,195.72	23.606	ES
SCHNEIDER 1414-12H - Wellbore #1 - Design #2	5,923.39	7,528.51	1,248.33	1,195.77	23.747	CC
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

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<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 16' @ 4896.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-03H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.28 usft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Plan B	<b>Database:</b>	EDM 5000.16 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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 - 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	14,420.18	14,322.29	379.84	10.14	1.027	Level 2, CC, ES, SF
PEGGY 2501-06H - Wellbore #2 - Design #1	14,420.18	14,238.85	314.90	0.06	1.000	Level 2, CC, ES, SF
PEGGY 2501-08H - Wellbore #2 - Design #1	14,420.18	14,399.40	933.11	570.61	2.574	CC, ES, SF
PEGGY 2501-10H - Wellbore #2 - Design #1						Out of range
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

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<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 16' @ 4896.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-03H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.28 usft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Plan B	<b>Database:</b>	EDM 5000.16 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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	6,678.37	17,926.13	1,292.94	1,021.68	4.766	CC
PINTAIL FED 2-11-9HN - Mallard Planned Well - Planned	6,700.00	17,924.71	1,293.05	1,020.34	4.741	ES, SF
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

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<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 16' @ 4896.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-03H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.28 usft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Plan B	<b>Database:</b>	EDM 5000.16 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

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

Offset Depths are relative to Offset Datum

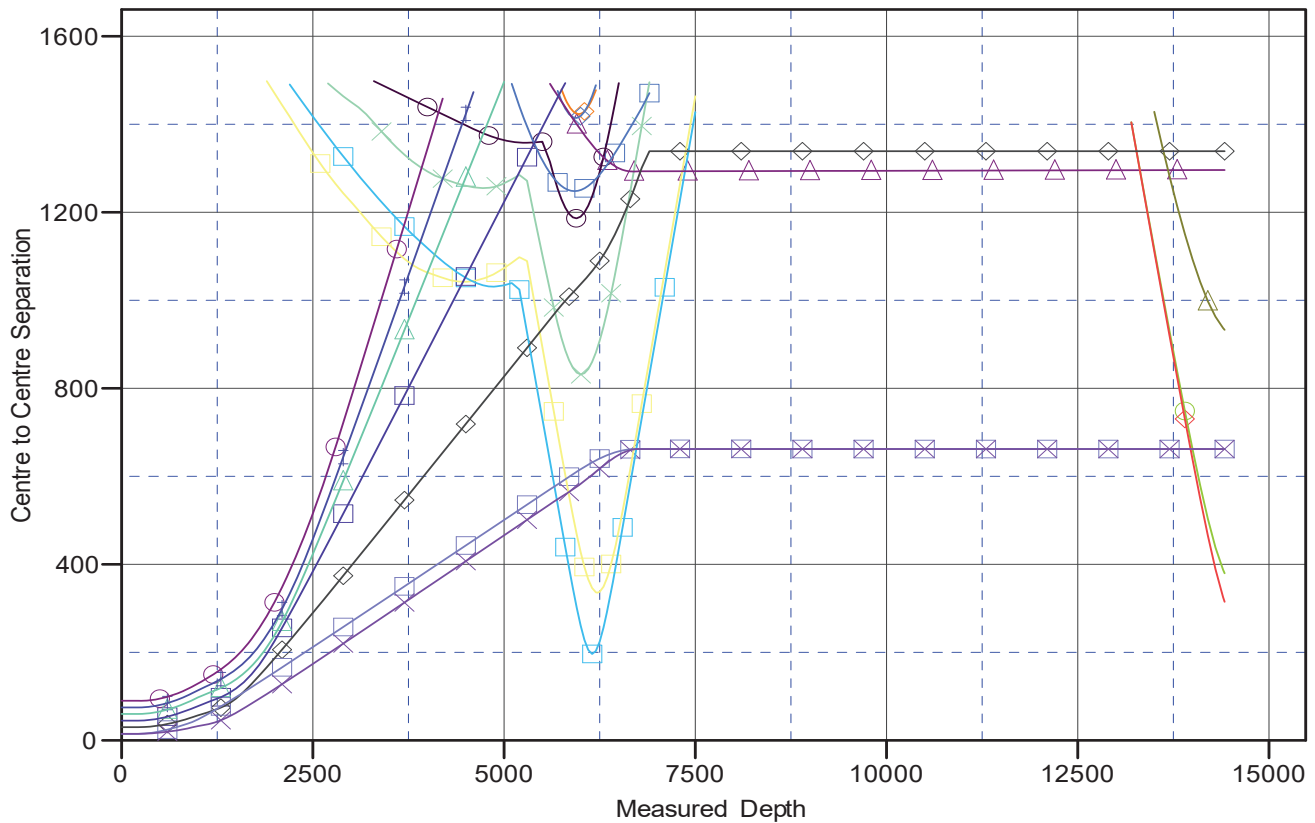
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-03H

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	PINTAIL FED 2-11-94N, Mallard Planned Well, Planned MWD Surveys V0	SONIC STAR 1101-16H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-184, Bison Planned Well, Planned Bison Surveys V0	PEGGY 2501-08H, 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 2501-08H, 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 1101-05H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	SCHNEIDER 1414-12H, Wellbore #1, Design #2 V0	SONIC STAR 1101-11H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-184, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-03H, Plan B, Design #1 V0	SONIC STAR 1101-13H, Plan B, Design #1 V0

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<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 16' @ 4896.00usft (RIG)
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<b>Reference Well:</b>	SONIC STAR 1101-03H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.28 usft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Plan B	<b>Database:</b>	EDM 5000.16 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Offset Datum

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

Offset Depths are relative to Offset Datum

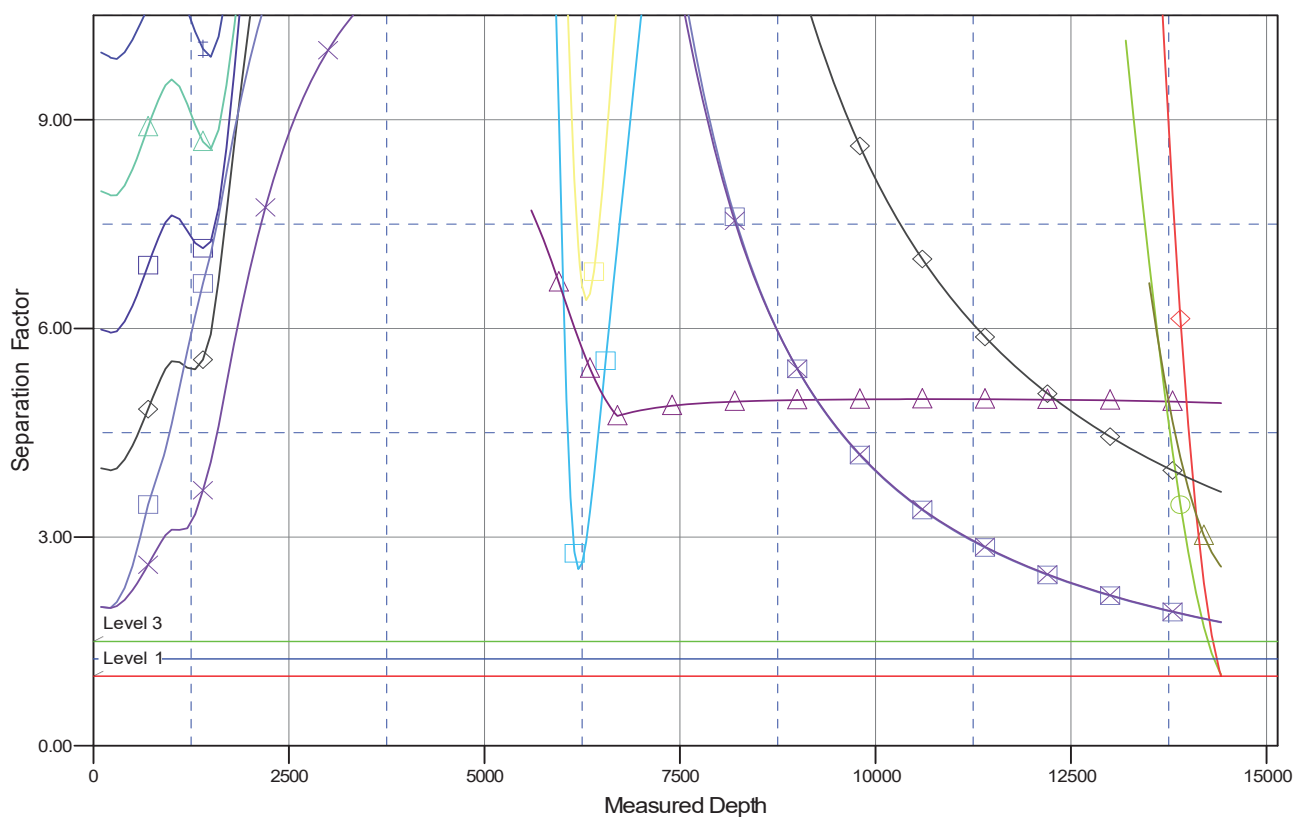
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-03H

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	PINTAIL FED 2-11-09-RN, Matard Planned Well, Planned MWD Surveys 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 2501-08H, 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 1101-05H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	SCHNEIDER 1414-12H, Wellbore #1, Design #2 V0	SONIC STAR 1101-11H, 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 1101-13H, Plan B, Design #1 V0