

# **VERDAD RESOURCES**

**WATTENBERG FIELD**

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

**SONIC STAR 1101-07H**

**Wellbore #1**

**Design #1**

## **Anticollision Summary Report**

**20 August, 2020**

# HP

## Anticollision Summary Report

<b>Company:</b>	VERDAD RESOURCES	<b>Local Co-ordinate Reference:</b>	Well SONIC STAR 1101-07H
<b>Project:</b>	WATTENBERG FIELD	<b>TVD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-07H	<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>	Wellbore #1	<b>Database:</b>	EDM 5000.16 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	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	15,077.94	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	248.00	90.04	82.43	11.838	CC, ES
SONIC STAR 1101-01H - Wellbore #1 - Design #3	300.00	296.92	90.20	82.55	11.792	SF
SONIC STAR 1101-02H - Wellbore #1 - Design #1	250.00	249.00	75.03	67.42	9.865	CC, ES
SONIC STAR 1101-02H - Wellbore #1 - Design #1	1,300.00	1,285.61	128.00	114.84	9.726	SF
SONIC STAR 1101-03H - Wellbore #1 - Design #1	250.00	249.00	60.02	52.41	7.891	CC, ES
SONIC STAR 1101-03H - Wellbore #1 - Design #1	15,041.17	14,700.38	1,239.04	866.21	3.323	SF
SONIC STAR 1101-04H - Wellbore #1 - Design #1	250.00	249.00	45.00	37.40	5.917	CC, ES
SONIC STAR 1101-04H - Wellbore #1 - Design #1	15,077.94	14,652.05	937.90	570.57	2.553	SF
SONIC STAR 1101-05H - Wellbore #1 - Design #1	250.00	249.00	30.03	22.42	3.948	CC
SONIC STAR 1101-05H - Wellbore #1 - Design #1	300.00	298.82	30.06	22.41	3.929	ES
SONIC STAR 1101-05H - Wellbore #1 - Design #1	15,060.09	14,739.77	631.79	267.10	1.732	SF
SONIC STAR 1101-06H - Wellbore #1 - Design #1	250.00	250.00	15.02	7.41	1.974	CC
SONIC STAR 1101-06H - Wellbore #1 - Design #1	15,067.94	14,841.52	334.02	-12.38	0.964	Level 1, ES, SF
SONIC STAR 1101-08H - Wellbore #1 - Design #1	259.33	260.35	15.01	7.40	1.972	CC
SONIC STAR 1101-08H - Wellbore #1 - Design #1	15,077.94	15,086.50	334.43	-22.85	0.936	Level 1, ES, SF
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	254.74	255.76	30.03	22.42	3.945	CC
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	300.00	301.12	30.04	22.39	3.926	ES
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	15,077.94	15,225.43	632.22	261.70	1.706	SF
SONIC STAR 1101-10H - Wellbore #1 - Design #1	253.17	254.18	45.00	37.39	5.914	CC
SONIC STAR 1101-10H - Wellbore #1 - Design #1	300.00	301.17	45.03	37.38	5.885	ES
SONIC STAR 1101-10H - Wellbore #1 - Design #1	15,077.94	15,482.51	929.28	556.27	2.491	SF
SONIC STAR 1101-11H - Wellbore #1 - Design #1	254.77	256.80	60.02	52.40	7.885	CC
SONIC STAR 1101-11H - Wellbore #1 - Design #1	300.00	302.21	60.04	52.39	7.847	ES
SONIC STAR 1101-11H - Wellbore #1 - Design #1	15,077.94	15,539.99	1,245.56	872.36	3.338	SF
SONIC STAR 1101-12H - Wellbore #1 - Design #1	253.86	255.89	75.03	67.42	9.859	CC
SONIC STAR 1101-12H - Wellbore #1 - Design #1	300.00	302.25	75.06	67.41	9.809	ES
SONIC STAR 1101-12H - Wellbore #1 - Design #1	1,800.00	1,805.99	112.52	89.05	4.795	SF
SONIC STAR 1101-13H - Wellbore #1 - Design #1	253.24	255.27	90.04	82.43	11.832	CC
SONIC STAR 1101-13H - Wellbore #1 - Design #1	300.00	302.28	90.08	82.43	11.772	ES
SONIC STAR 1101-13H - Wellbore #1 - Design #1	1,900.00	1,904.88	138.00	113.33	5.594	SF
SONIC STAR 1101-14H - Wellbore #1 - Design #1	252.77	254.80	105.05	97.45	13.806	CC, ES
SONIC STAR 1101-14H - Wellbore #1 - Design #1	1,900.00	1,905.39	157.05	132.31	6.350	SF
SONIC STAR 1101-15H - Wellbore #1 - Design #1	252.47	254.50	120.03	112.42	15.775	CC, ES
SONIC STAR 1101-15H - Wellbore #1 - Design #1	2,000.00	2,003.13	183.33	157.23	7.024	SF
SONIC STAR 1101-16H - Wellbore #1 - Design #1	252.22	254.25	135.04	127.44	17.748	CC, ES
SONIC STAR 1101-16H - Wellbore #1 - Design #1	2,000.00	2,003.58	201.25	175.07	7.687	SF

# HP

## Anticollision Summary Report

<b>Company:</b>	VERDAD RESOURCES	<b>Local Co-ordinate Reference:</b>	Well SONIC STAR 1101-07H
<b>Project:</b>	WATTENBERG FIELD	<b>TVD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-07H	<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>	Wellbore #1	<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						
8N-60W-12 Offsets						
COLORADO NATIONAL BANK #1 - Shell P&A Well - No						Out of range
8N-60W-14 Offsets						
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,554.04	8,275.69	46.75	-95.01	0.330	Level 1, CC, ES, SF
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	6,695.15	8,464.91	143.60	50.51	1.543	CC
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	6,700.00	8,466.79	143.69	49.34	1.523	ES
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	6,750.00	8,485.96	154.49	51.66	1.502	SF
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	6,507.25	8,359.93	682.27	584.27	6.962	CC, ES
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	6,600.00	8,395.15	694.27	593.33	6.879	SF
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	6,484.91	8,353.85	1,327.71	1,229.54	13.525	CC
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	6,500.00	8,360.24	1,327.96	1,229.41	13.475	ES
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	6,600.00	8,401.62	1,342.12	1,241.29	13.311	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

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<b>Project:</b>	WATTENBERG FIELD	<b>TVD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-07H	<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>	Wellbore #1	<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 - 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	15,077.94	14,238.85	982.44	616.35	2.684	CC, ES, SF
PEGGY 2501-08H - Wellbore #2 - Design #1	15,077.94	14,399.40	348.61	3.54	1.010	Level 2, CC, ES, SF
PEGGY 2501-10H - Wellbore #2 - Design #1	15,077.94	14,235.97	476.34	199.12	1.718	CC, ES, SF
PEGGY 2501-12H - Wellbore #2 - Design #1	15,077.94	14,306.14	1,015.05	654.82	2.818	CC, ES, SF
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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<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-07H	<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>	Wellbore #1	<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
9N-60W-36 Offsets						
STATE-HUSKY #1 - Bennett D/A Well - No Surveys						Out of range

## Anticollision Summary Report

<b>Company:</b>	VERDAD RESOURCES	<b>Local Co-ordinate Reference:</b>	Well SONIC STAR 1101-07H
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<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-07H	<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>	Wellbore #1	<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 = 20' @ 4900.00usft (RIG)

Offset Depths are relative to Offset Datum

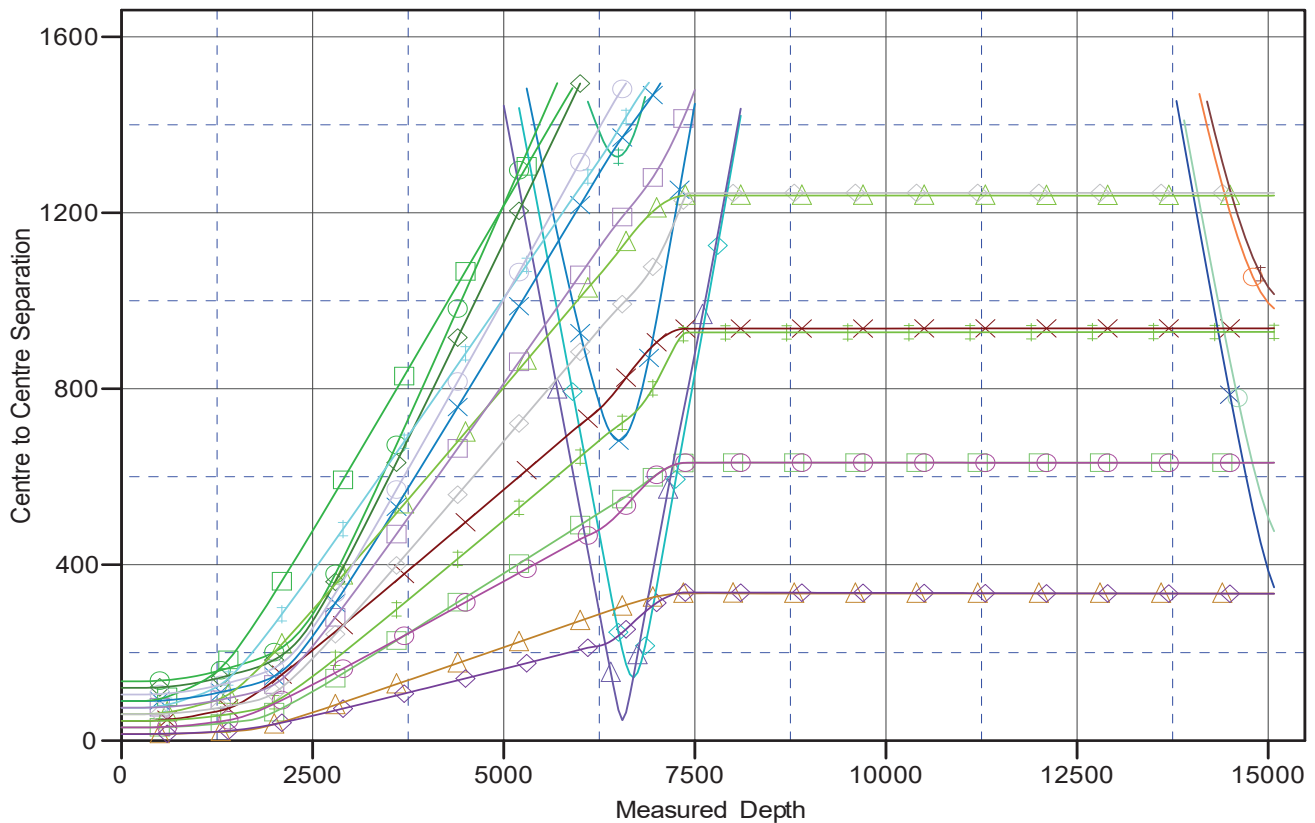
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-07H

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 2501-12H, 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, Design #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 1101-08H, Wellbore #1, Design #1 V0  
 SONIC STAR 1101-02H, 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 1101-10H, Wellbore #1, Design #1 V0  
 SONIC STAR 1101-01H, Wellbore #1, Design #1 V0  
 SONIC STAR 1101-14H, Wellbore #1, Design #1 V0  
 SONIC STAR 1101-12H, Wellbore #1, Design #1 V0  
 SONIC STAR 1101-05H, Wellbore #1, Design #1 V0  
 SONIC STAR 1101-11H, Wellbore #1, Design #1 V0

## Anticollision Summary Report

<b>Company:</b>	VERDAD RESOURCES	<b>Local Co-ordinate Reference:</b>	Well SONIC STAR 1101-07H
<b>Project:</b>	WATTENBERG FIELD	<b>TVD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Reference Site:</b>	8N-60W-11 SONIC STAR 1101 PAD	<b>MD Reference:</b>	RKB = 20' @ 4900.00usft (RIG)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SONIC STAR 1101-07H	<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>	Wellbore #1	<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 = 20' @ 4900.00usft (RIG)

Offset Depths are relative to Offset Datum

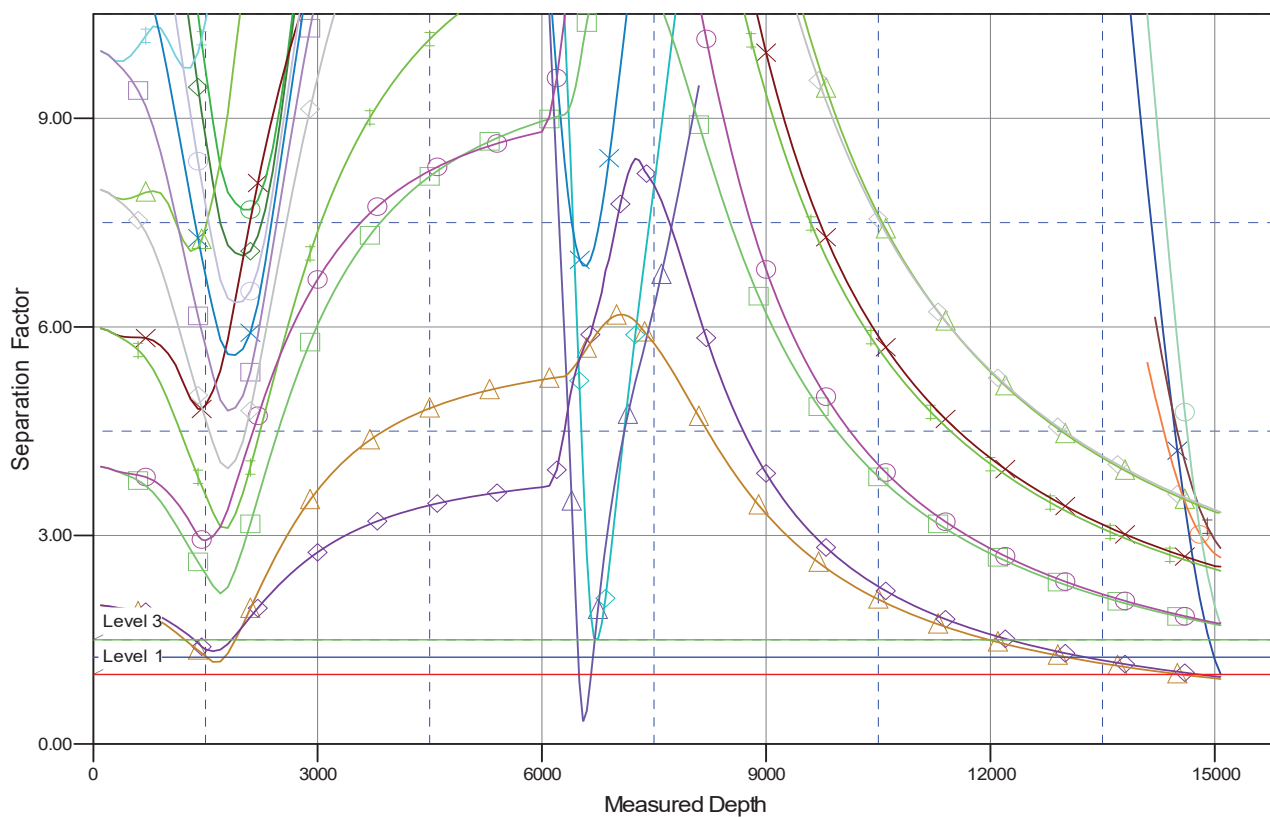
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-07H

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.94°

## Separation Factor Plot



## LEGEND

BOOMSISLAND FED 8-60 14A-13-182, Bison PR Well, Actual Baker Surveys V0  
 BOOMSISLAND FED 8-60 14A-13-183, Bison PR Well, Actual Baker Surveys V0  
 BOOMSISLAND FED 8-60 14A-13-184, Bison PR Well, Actual Baker Surveys V0  
 BOOMSISLAND FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0  
 PEGGY 2501-08H, Wellbore #2, Design #1 V0  
 PEGGY 2501-12H, 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 1101-08H, Wellbore #1, Design #1 V0  
 SONIC STAR 1101-02H, 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 1101-10H, 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 1101-05H, Wellbore #1, Design #1 V0  
 SONIC STAR 1101-11H, Wellbore #1, Design #1 V0