

VERDAD RESOURCES

WATTENBERG FIELD

8N-60W-11 SONIC STAR 1101 PAD

SONIC STAR 1101-03H

Wellbore #1

Design #1

Anticollision Summary Report

20 August, 2020

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-03H
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 1101-03H	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	14,701.48	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	30.02	22.42	3.947	CC, ES
SONIC STAR 1101-01H - Wellbore #1 - Design #3	14,701.48	14,276.92	711.05	378.36	2.137	SF
SONIC STAR 1101-02H - Wellbore #1 - Design #1	250.00	250.00	15.01	7.41	1.974	CC
SONIC STAR 1101-02H - Wellbore #1 - Design #1	14,701.48	14,523.67	334.12	-14.37	0.959	Level 1, ES, SF
SONIC STAR 1101-04H - Wellbore #1 - Design #1	250.00	250.00	15.01	7.41	1.974	CC
SONIC STAR 1101-04H - Wellbore #1 - Design #1	14,701.48	14,643.19	334.02	-20.08	0.943	Level 1, ES, SF
SONIC STAR 1101-05H - Wellbore #1 - Design #1	250.00	250.00	29.99	22.38	3.942	CC, ES
SONIC STAR 1101-05H - Wellbore #1 - Design #1	14,701.48	14,721.96	632.02	263.10	1.713	SF
SONIC STAR 1101-06H - Wellbore #1 - Design #1	251.77	252.78	45.00	37.39	5.915	CC, ES
SONIC STAR 1101-06H - Wellbore #1 - Design #1	14,701.48	14,815.39	937.78	566.22	2.524	SF
SONIC STAR 1101-07H - Wellbore #1 - Design #1	251.32	252.33	60.02	52.41	7.889	CC, ES
SONIC STAR 1101-07H - Wellbore #1 - Design #1	14,701.48	15,042.34	1,239.04	866.16	3.323	SF
SONIC STAR 1101-08H - Wellbore #1 - Design #1	252.11	254.14	75.03	67.42	9.861	CC, ES
SONIC STAR 1101-08H - Wellbore #1 - Design #1	1,400.00	1,401.37	124.51	109.71	8.412	SF
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	251.77	253.80	90.04	82.43	11.834	CC, ES
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	1,400.00	1,401.64	142.67	127.84	9.615	SF
SONIC STAR 1101-10H - Wellbore #1 - Design #1	251.52	253.55	105.02	97.41	13.803	CC, ES
SONIC STAR 1101-10H - Wellbore #1 - Design #1	1,500.00	1,498.08	172.05	155.93	10.672	SF
SONIC STAR 1101-11H - Wellbore #1 - Design #1	252.00	255.04	120.03	112.42	15.774	CC, ES
SONIC STAR 1101-11H - Wellbore #1 - Design #1	1,600.00	1,593.85	203.78	186.35	11.693	SF
SONIC STAR 1101-12H - Wellbore #1 - Design #1	251.79	254.83	135.04	127.43	17.748	CC, ES
SONIC STAR 1101-12H - Wellbore #1 - Design #1	1,600.00	1,593.95	220.37	202.86	12.591	SF
SONIC STAR 1101-13H - Wellbore #1 - Design #1	251.62	254.66	150.06	142.45	19.721	CC, ES
SONIC STAR 1101-13H - Wellbore #1 - Design #1	1,700.00	1,687.10	253.62	234.78	13.463	SF
SONIC STAR 1101-14H - Wellbore #1 - Design #1	251.47	254.52	165.07	157.46	21.695	CC, ES
SONIC STAR 1101-14H - Wellbore #1 - Design #1	1,700.00	1,687.07	269.74	250.82	14.258	SF
SONIC STAR 1101-15H - Wellbore #1 - Design #1	251.37	254.41	180.05	172.44	23.663	CC, ES
SONIC STAR 1101-15H - Wellbore #1 - Design #1	1,700.00	1,687.22	285.26	266.27	15.026	SF
SONIC STAR 1101-16H - Wellbore #1 - Design #1	251.28	254.32	195.06	187.45	25.637	CC, ES
SONIC STAR 1101-16H - Wellbore #1 - Design #1	1,700.00	1,687.30	300.94	281.90	15.810	SF
8N-60W-12 Offsets						
COLORADO NATIONAL BANK #1 - Shell P&A Well - No						Out of range

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-03H
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 1101-03H	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	6,213.09	7,132.68	50.04	-29.34	0.630	Level 1, CC, ES, SF
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	6,326.01	7,295.69	156.90	103.79	2.954	CC
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well -	6,350.00	7,300.80	159.09	103.65	2.869	ES, SF
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	6,158.51	7,323.16	740.03	685.76	13.637	CC, ES
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well -	6,200.00	7,333.06	742.47	687.52	13.510	SF
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	6,129.00	7,181.00	1,332.71	1,278.95	24.789	CC, ES
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well -	6,250.00	7,197.72	1,349.41	1,294.30	24.483	SF
8N-60W-14 SCHNEIDER 1414 PAD						
SCHNEIDER 1414-12H - Wellbore #1 - Design #2	5,800.00	7,541.22	1,165.47	1,113.39	22.381	SF
SCHNEIDER 1414-12H - Wellbore #1 - Design #2	5,938.75	7,546.48	1,156.85	1,105.35	22.462	ES
SCHNEIDER 1414-12H - Wellbore #1 - Design #2	5,941.94	7,546.82	1,156.85	1,105.37	22.470	CC
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

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-03H
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 1101-03H	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	14,701.48	14,322.29	461.45	173.29	1.601	CC, ES, SF
PEGGY 2501-06H - Wellbore #2 - Design #1	14,701.48	14,238.85	469.49	202.78	1.760	CC, ES, SF
PEGGY 2501-08H - Wellbore #2 - Design #1	14,701.48	14,399.40	962.47	593.22	2.607	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
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	6,870.80	17,926.13	1,279.70	1,023.86	5.002	CC
PINTAIL FED 2-11-9HN - Mallard Planned Well - Planned	7,000.00	17,907.21	1,280.86	1,017.20	4.858	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

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-03H
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 1101-03H	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

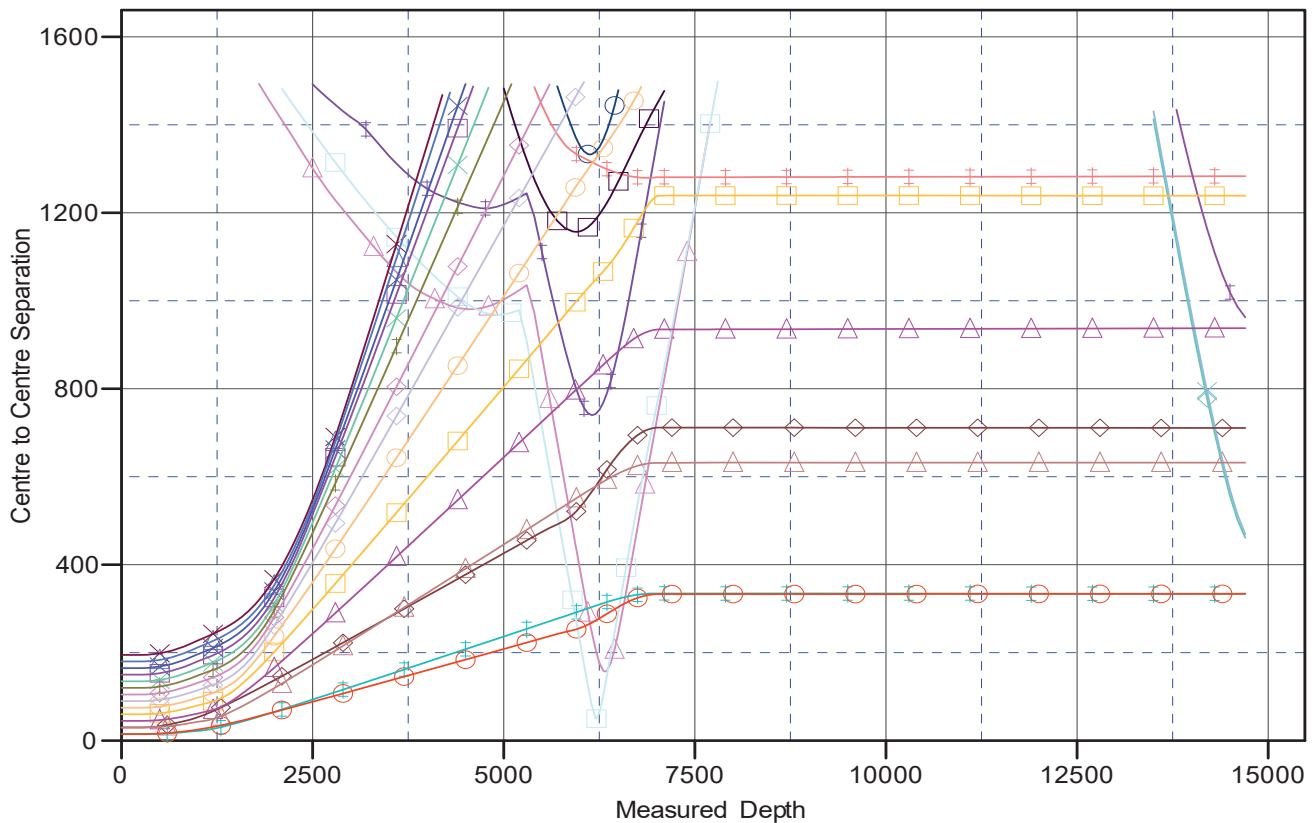
HP
Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-03H
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 1101-03H	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' @ 4899.00usft (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

BOOMSLAND FED 8-60 14A-13-182, 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-13-183, Beacon PR Well, Actual Baker Surveys V0
BOOMSLAND FED 8-60 14A-13-181, Beacon Planned Well, Planned Beacon MWD Surveys V0
PINTAIL FED 2-11-9H, Mallard Planned Well, Planned 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

SCHNEIDER 1414-12H, Wellbore #1, Design #2 V0
SONIC STAR 1101-09H, Wellbore #1, Plan #1 V0
SONIC STAR 1101-09H, Wellbore #1, Design #1 V0
SONIC STAR 1101-10H, Wellbore #1, Design #1 V0
SONIC STAR 1101-15H, 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 1101-04H, Wellbore #1, Design #1 V0
SONIC STAR 1101-01H, Wellbore #1, Design #3 V0

SONIC STAR 1101-02H, Wellbore #1, Design #1 V0
SONIC STAR 1101-09H, Wellbore #1, Design #1 V0
SONIC STAR 1101-12H, Wellbore #1, Design #1 V0
SONIC STAR 1101-10H, Wellbore #1, Design #1 V0
SONIC STAR 1101-05H, Wellbore #1, Design #1 V0
SONIC STAR 1101-11H, Wellbore #1, Design #1 V0
SONIC STAR 1101-13H, Wellbore #1, Design #1 V0
SONIC STAR 1101-14H, Wellbore #1, Design #1 V0

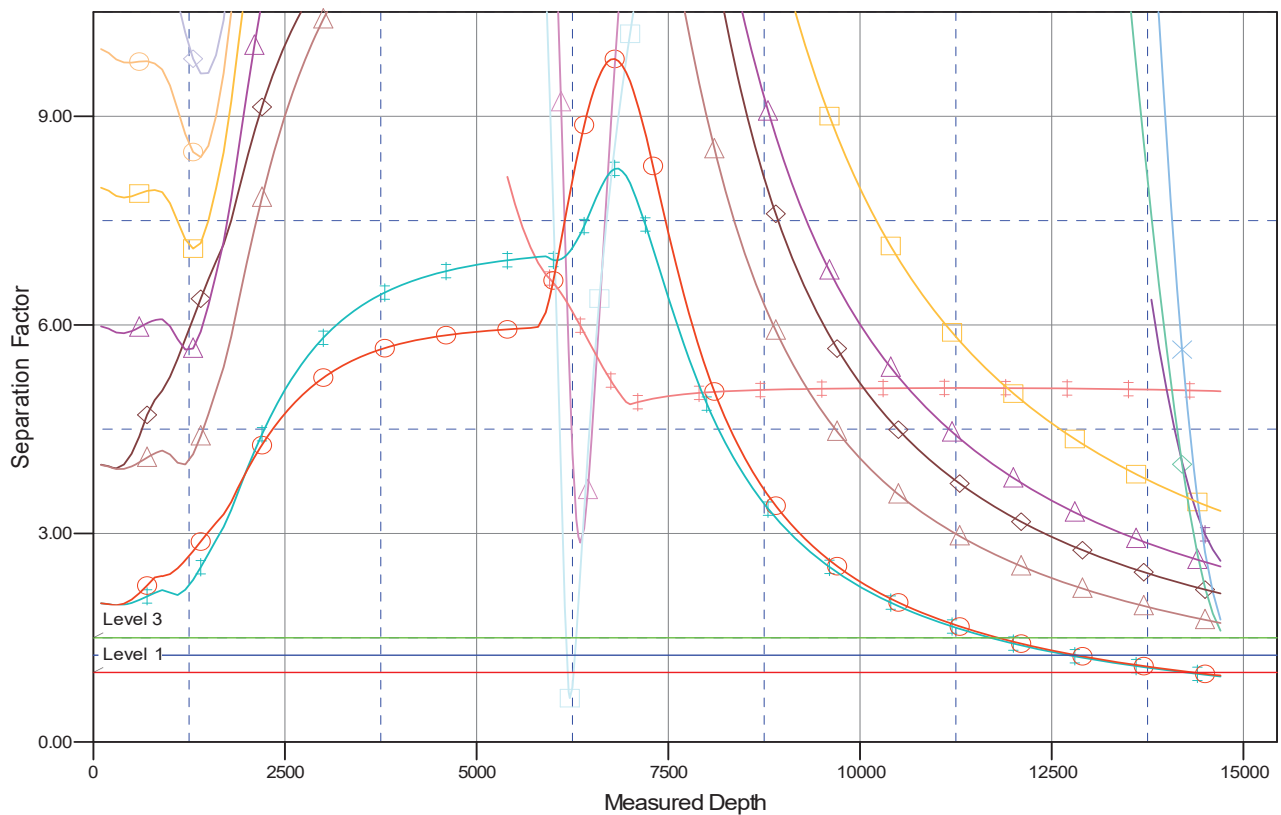
HP
Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-03H
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 1101-03H	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' @ 4899.00usft (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

BOOMSLAND FED 8-60 14A-13-182, 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-13-183, Bison PR Well, Actual Baker Surveys V0
BOOMSLAND FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0
PINTAIL FED 2-11-9HN, Mallard Planned Well, Planned 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

SCHNEIDER 1414-12H, Wellbore #, Design #2 V0
SONIC STAR 1101-02H, Wellbore #1, Plan #1 V0
SONIC STAR 1101-16H, Wellbore #1, Design #1 V0
SONIC STAR 1101-15H, 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 1101-04H, Wellbore #1, Design #1 V0
SONIC STAR 1101-01H, Wellbore #1, Design #3 V0

SONIC STAR 1101-02H, Wellbore #1, Design #1 V0
SONIC STAR 1101-06H, Wellbore #1, Design #1 V0
SONIC STAR 1101-12H, Wellbore #1, Design #1 V0
SONIC STAR 1101-10H, Wellbore #1, Design #1 V0
SONIC STAR 1101-07H, Wellbore #1, Design #1 V0
SONIC STAR 1101-05H, Wellbore #1, Design #1 V0
SONIC STAR 1101-11H, Wellbore #1, Design #1 V0
SONIC STAR 1101-13H, Wellbore #1, Design #1 V0
SONIC STAR 1101-14H, Wellbore #1, Design #1 V0