

VERDAD RESOURCES

WATTENBERG FIELD

8N-60W-11 SONIC STAR 1101 PAD

SONIC STAR 1101-09H

Plan B

Design #1

Anticollision Summary Report

09 November, 2020

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-09H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 16' @ 4897.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 16' @ 4897.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-09H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	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	11/9/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	1,500.00	Design #1 (Plan B)	ISCWSA MWD	Fixed:v2:standard declination	
1,500.00	15,183.77	Design #1 (Plan B)	ISCWSA MWD	Fixed:v2:standard declination	

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-11 SONIC STAR 1101 PAD						
SONIC STAR 1101-01H - Plan B - Design #1	200.00	198.00	60.06	52.49	7.934	CC, ES, SF
SONIC STAR 1101-03H - Plan B - Design #1	200.00	199.00	45.04	37.47	5.951	CC, ES
SONIC STAR 1101-03H - Plan B - Design #1	280.00	278.53	45.35	37.72	5.941	SF
SONIC STAR 1101-05H - Plan B - Design #1	204.49	203.49	30.03	22.46	3.966	CC, ES
SONIC STAR 1101-05H - Plan B - Design #1	15,145.06	14,601.53	1,324.08	951.80	3.557	SF
SONIC STAR 1101-07H - Plan B - Design #1	204.54	204.54	15.01	7.44	1.982	CC
SONIC STAR 1101-07H - Plan B - Design #1	280.00	279.97	15.03	7.40	1.969	ES
SONIC STAR 1101-07H - Plan B - Design #1	1,800.00	1,795.78	35.76	14.31	1.667	SF
SONIC STAR 1101-11H - Plan B - Design #1	280.00	280.00	14.97	7.34	1.961	CC
SONIC STAR 1101-11H - Plan B - Design #1	2,200.00	2,204.87	37.47	6.59	1.213	Level 2, ES, SF
SONIC STAR 1101-13H - Plan B - Design #1	288.39	289.41	29.98	22.34	3.922	CC
SONIC STAR 1101-13H - Plan B - Design #1	300.00	301.04	29.99	22.33	3.917	ES
SONIC STAR 1101-13H - Plan B - Design #1	2,200.00	2,201.41	70.11	39.25	2.272	SF
SONIC STAR 1101-16H - Plan B - Design #1	344.41	345.62	44.76	37.06	5.811	CC, ES
SONIC STAR 1101-16H - Plan B - Design #1	2,100.00	2,086.16	104.67	77.97	3.920	SF
8N-60W-12 Offsets						
COLORADO NATIONAL BANK #1 - Shell P&A Well - No						Out of range

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Reference Well:	SONIC STAR 1101-09H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	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)	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	6,870.25	9,103.32	183.04	23.12	1.145	Level 2, CC
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,950.00	9,137.45	201.04	7.44	1.038	Level 2, 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	6,943.71	9,281.08	320.45	211.90	2.952	CC
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	7,000.00	9,302.80	326.89	206.00	2.704	ES
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	7,050.00	9,321.43	342.92	213.50	2.650	SF
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,730.33	9,195.60	776.31	649.12	6.104	CC
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,750.00	9,204.08	776.80	648.23	6.042	ES
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,850.00	9,245.29	794.41	659.72	5.898	SF
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well - A	6,659.18	9,113.89	1,405.11	1,275.19	10.815	CC
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well - A	6,700.00	9,147.27	1,406.75	1,275.14	10.688	ES
BOOMSLANG FED 8-60 14A-13-18-4 - Bison PR Well - A	6,850.00	9,212.00	1,441.01	1,304.01	10.519	SF
BOOMSLANG FED 8-60 14A-13-18-5 - Bison Planned W	6,659.15	8,750.21	1,180.89	999.64	6.515	CC
BOOMSLANG FED 8-60 14A-13-18-5 - Bison Planned W	6,700.00	8,771.16	1,182.71	998.70	6.427	ES
BOOMSLANG FED 8-60 14A-13-18-5 - Bison Planned W	6,800.00	8,820.46	1,202.31	1,012.31	6.328	SF
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	6,692.38	8,942.84	1,416.05	1,238.64	7.982	CC
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	6,700.00	8,946.71	1,416.11	1,238.18	7.959	ES
BOOMSLANG FED 8-60 14A-13-18-6 - Bison Planned W	6,900.00	9,041.51	1,460.00	1,270.27	7.695	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						Out of range
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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Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 16' @ 4897.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-09H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan B	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 - 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						Out of range
PEGGY 2501-06H - Wellbore #2 - Design #1						Out of range
PEGGY 2501-08H - Wellbore #2 - Design #1	15,183.77	14,399.40	1,111.50	730.08	2.914	CC, ES, SF
PEGGY 2501-10H - Wellbore #2 - Design #1	15,183.77	14,235.97	483.91	107.00	1.284	Level 3, CC, ES, SF
PEGGY 2501-12H - Wellbore #2 - Design #1	15,183.77	14,306.14	223.46	-43.78	0.836	Level 1, CC, ES, SF
PEGGY 2501-14H - Wellbore #2 - Design #1	15,183.77	14,647.68	826.21	468.39	2.309	CC, ES, SF
PEGGY 2501-16H - Wellbore #2 - Design #1	15,183.77	14,670.32	1,423.60	1,046.38	3.774	CC, ES, SF

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Reference Well:	SONIC STAR 1101-09H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
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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-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						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

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Reference Depths are relative to RKB = 16' @ 4897.00usft (RIG)

Offset Depths are relative to Offset Datum

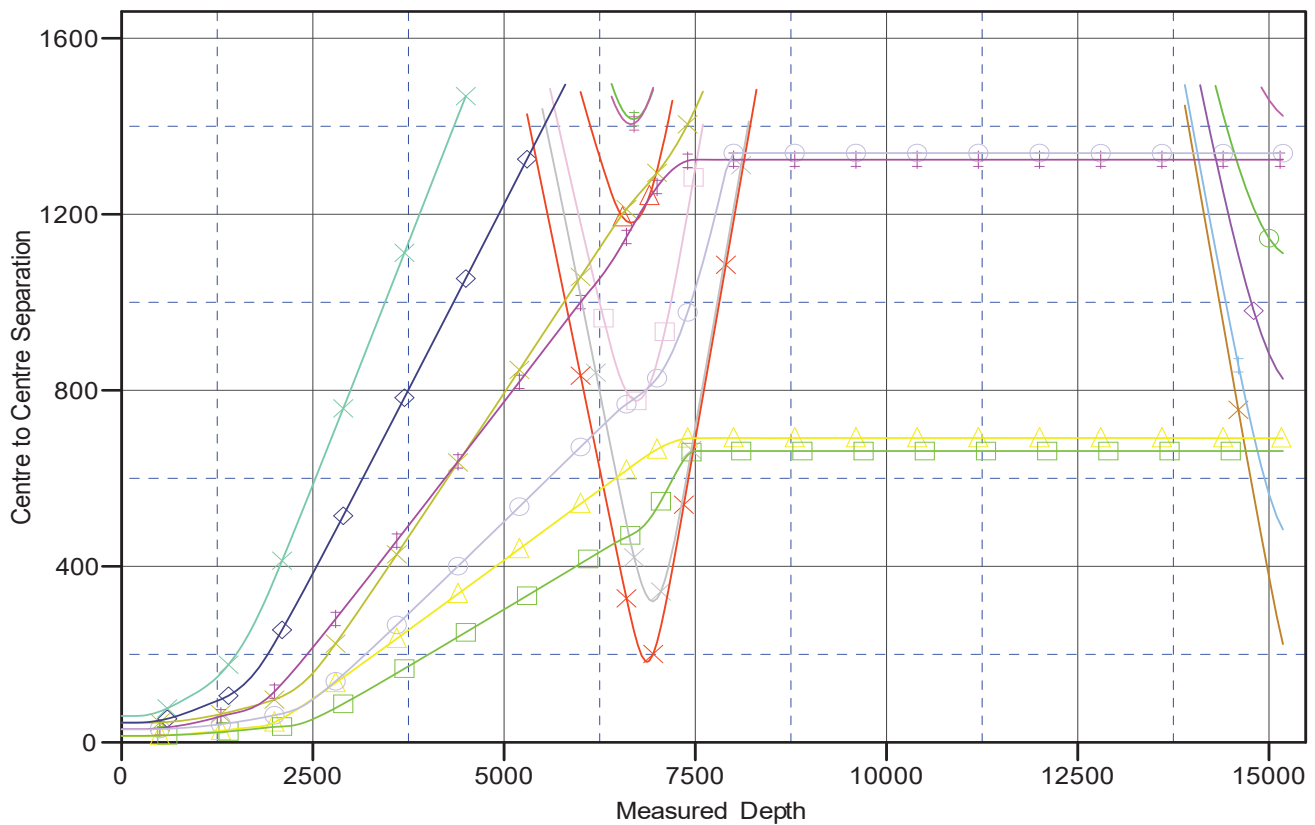
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-09H

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	PEGGY 2501-10H, Wellbore #2, Design #1 V0	SONIC STAR 1101-07H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-185, Bison Planned Well, Planned Bison Surveys V0	PEGGY 2501-12H, Wellbore #2, Design #1 V0	SONIC STAR 1101-01H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-186, Bison Planned Well, Bison Planned Surveys V0	PEGGY 2501-16H, Wellbore #2, Design #1 V0	SONIC STAR 1101-05H, 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 1101-11H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	PEGGY 2501-14H, Wellbore #2, Design #1 V0	SONIC STAR 1101-13H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-184, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-16H, Plan B, Design #1 V0	SONIC STAR 1101-03H, Plan B, Design #1 V0

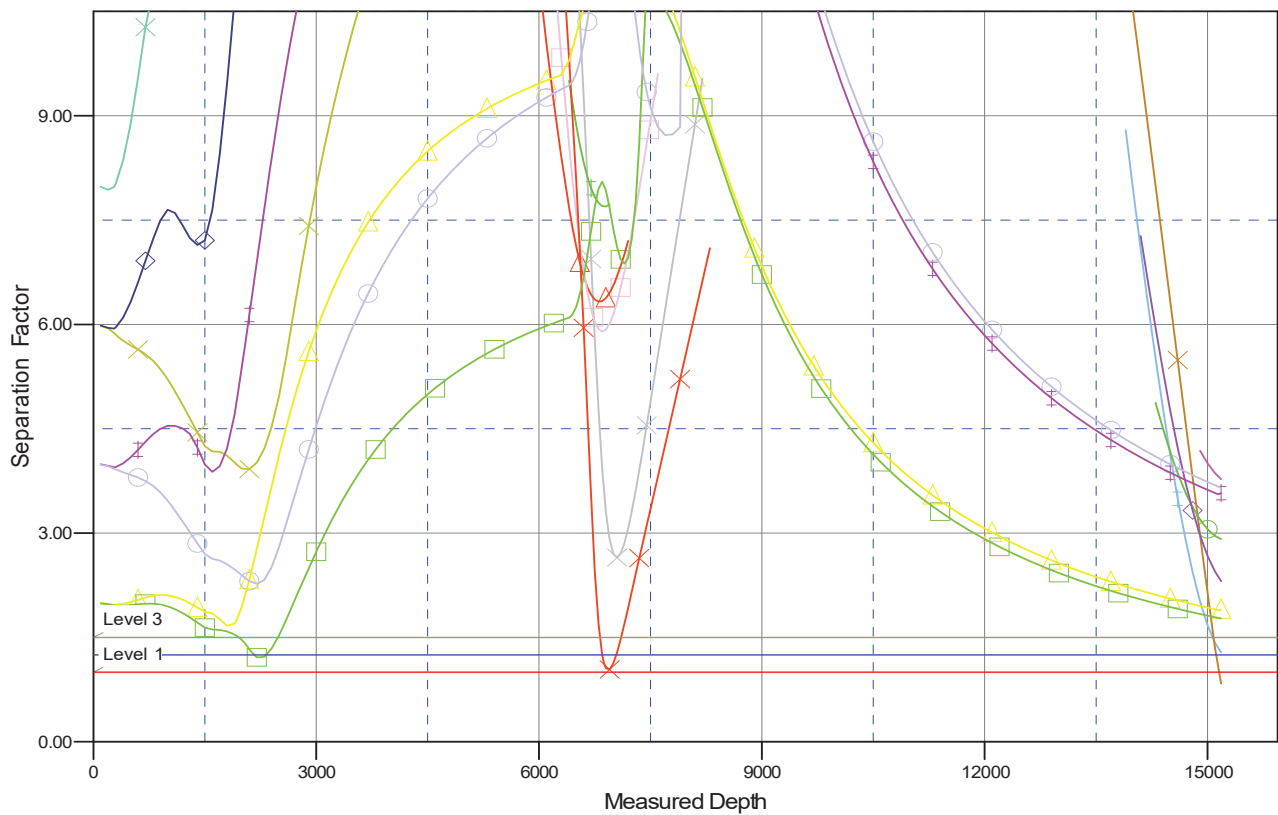
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Reference Depths are relative to RKB = 16' @ 4897.00usft (RIG)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-09H
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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	PEGGY 2501-10H, Wellbore #2, Design #1 V0	SONIC STAR 1101-07H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-185, Bison Planned Well, Planned Bison Surveys V0	PEGGY 2501-12H, Wellbore #2, Design #1 V0	SONIC STAR 1101-01H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-186, Bison Planned Well, Bison Planned Surveys V0	PEGGY 2501-16H, Wellbore #2, Design #1 V0	SONIC STAR 1101-05H, 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 1101-11H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	PEGGY 2501-14H, Wellbore #2, Design #1 V0	SONIC STAR 1101-13H, Plan B, Design #1 V0
BOOMSLANG FED 8-60 14A-13-184, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-16H, Plan B, Design #1 V0	SONIC STAR 1101-03H, Plan B, Design #1 V0