

VERDAD RESOURCES

WATTENBERG FIELD

8N-60W-11 SONIC STAR 1101 PAD

SONIC STAR 1101-01H

Wellbore #1

Design #3

Anticollision Summary Report

12 August, 2020

HP

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-01H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 4898.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4898.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-01H	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 #3	Offset TVD Reference:	Offset Datum

Reference	Design #3		
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	8/12/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	1,700.00	Design #3 (Wellbore #1)	ISCWSA MWD	Fixed:v2:standard declination	
1,700.00	16,675.00	Design #3 (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 1101-02H - Wellbore #1 - Design #1	261.26	262.30	15.01	7.39	1.970	CC, ES
SONIC STAR 1101-02H - Wellbore #1 - Design #1	14,300.00	14,523.67	383.63	68.07	1.216	Level 2, SF
SONIC STAR 1101-03H - Wellbore #1 - Design #1	256.12	257.16	30.02	22.41	3.944	CC, ES
SONIC STAR 1101-03H - Wellbore #1 - Design #1	14,300.00	14,701.48	711.43	377.53	2.131	SF
SONIC STAR 1101-04H - Wellbore #1 - Design #1	254.51	255.54	45.03	37.42	5.917	CC, ES
SONIC STAR 1101-04H - Wellbore #1 - Design #1	14,400.00	14,652.05	962.67	593.79	2.610	SF
SONIC STAR 1101-05H - Wellbore #1 - Design #1	253.72	254.76	60.01	52.40	7.885	CC, ES
SONIC STAR 1101-05H - Wellbore #1 - Design #1	14,400.00	14,739.77	1,263.52	890.26	3.385	SF
SONIC STAR 1101-06H - Wellbore #1 - Design #1	253.97	256.02	75.02	67.41	9.857	CC, ES
SONIC STAR 1101-06H - Wellbore #1 - Design #1	300.00	302.42	75.18	67.53	9.826	SF
SONIC STAR 1101-07H - Wellbore #1 - Design #1	253.54	255.59	90.04	82.43	11.831	CC, ES
SONIC STAR 1101-07H - Wellbore #1 - Design #1	300.00	302.45	90.22	82.56	11.791	SF
SONIC STAR 1101-08H - Wellbore #1 - Design #1	253.74	256.80	105.05	97.44	13.803	CC, ES
SONIC STAR 1101-08H - Wellbore #1 - Design #1	300.00	303.49	105.24	97.59	13.753	SF
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	253.46	256.53	120.06	112.45	15.776	CC, ES
SONIC STAR 1101-09H - Wellbore #1 - Plan #1	1,300.00	1,294.31	200.44	187.67	15.697	SF
SONIC STAR 1101-10H - Wellbore #1 - Design #1	253.24	256.31	135.04	127.43	17.744	CC, ES
SONIC STAR 1101-10H - Wellbore #1 - Design #1	1,300.00	1,294.16	216.72	203.95	16.967	SF
SONIC STAR 1101-11H - Wellbore #1 - Design #1	253.42	257.50	150.05	142.44	19.716	CC, ES
SONIC STAR 1101-11H - Wellbore #1 - Design #1	1,400.00	1,388.49	250.00	236.22	18.149	SF
SONIC STAR 1101-12H - Wellbore #1 - Design #1	253.25	257.33	165.06	157.45	21.689	CC, ES
SONIC STAR 1101-12H - Wellbore #1 - Design #1	1,400.00	1,388.37	265.55	251.76	19.260	SF
SONIC STAR 1101-13H - Wellbore #1 - Design #1	253.11	257.19	180.08	172.47	23.662	CC, ES
SONIC STAR 1101-13H - Wellbore #1 - Design #1	1,500.00	1,479.98	300.54	285.71	20.266	SF
SONIC STAR 1101-14H - Wellbore #1 - Design #1	252.99	257.07	195.09	187.48	25.635	CC, ES
SONIC STAR 1101-14H - Wellbore #1 - Design #1	1,500.00	1,479.78	315.74	300.89	21.262	SF
SONIC STAR 1101-15H - Wellbore #1 - Design #1	252.90	256.98	210.07	202.46	27.603	CC, ES
SONIC STAR 1101-15H - Wellbore #1 - Design #1	1,600.00	1,569.55	352.43	336.50	22.120	SF
SONIC STAR 1101-16H - Wellbore #1 - Design #1	252.81	256.89	225.08	217.47	29.576	CC, ES
SONIC STAR 1101-16H - Wellbore #1 - Design #1	1,600.00	1,569.45	366.99	351.03	22.989	SF
8N-60W-12 Offsets						
COLORADO NATIONAL BANK #1 - Shell P&A Well - No						Out of range

HP

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Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 4898.00usft (RIG)
Reference Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4898.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-01H	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 #3	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	6,015.60	6,615.89	263.92	214.42	5.331	CC
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,050.00	6,622.58	266.98	214.11	5.050	ES
BOOMSLANG FED 8-60 14A-13-18-1 - Bison Planned W	6,100.00	6,632.32	281.77	225.21	4.981	SF
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	6,067.58	6,628.85	355.68	321.72	10.474	CC, ES
BOOMSLANG FED 8-60 14A-13-18-2 - Bison PR Well - A	6,150.00	6,648.74	369.57	333.27	10.179	SF
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	5,750.16	6,018.88	869.13	835.08	25.522	CC, ES
BOOMSLANG FED 8-60 14A-13-18-3 - Bison PR Well - A	6,000.00	6,717.90	918.19	881.43	24.980	SF
8N-60W-14 SCHNEIDER 1414 PAD						
SCHNEIDER 1414-12H - Wellbore #1 - Design #2	5,900.00	7,500.00	653.76	603.94	13.121	SF
SCHNEIDER 1414-12H - Wellbore #1 - Design #2	6,000.00	7,460.96	643.31	595.06	13.334	ES
SCHNEIDER 1414-12H - Wellbore #1 - Design #2	6,023.86	7,450.00	642.96	595.18	13.455	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
9N-60W-25 PEGGY 2501 PAD						
PEGGY 2501-01H - Verdad SI Well - Actual Baker Surve	16,675.00	11,867.00	764.91	492.76	2.811	CC, ES, SF
PEGGY 2501-02H - Verdad PR Well - Actual Baker Surve	16,675.00	11,888.00	673.24	493.11	3.738	CC, ES, SF
PEGGY 2501-04H - Wellbore #2 - Design #1	14,418.00	14,322.29	311.50	-71.90	0.812	Level 1, CC, ES, SF
PEGGY 2501-06H - Wellbore #2 - Design #1	14,436.15	14,238.85	934.97	549.62	2.426	CC, ES
PEGGY 2501-06H - Wellbore #2 - Design #1	14,500.00	14,221.14	936.99	550.11	2.422	SF
PEGGY 2501-08H - Wellbore #2 - Design #1						Out of range
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	6,531.99	17,549.49	1,290.53	1,020.57	4.780	CC
PINTAIL FED 2-11-8HN - Mallard Planned Well - Planned	16,675.00	7,432.65	1,295.18	1,017.36	4.662	ES, SF
PINTAIL FED 2-11-9HN - Mallard Planned Well - Planned	6,558.06	17,924.32	635.12	364.66	2.348	CC
PINTAIL FED 2-11-9HN - Mallard Planned Well - Planned	16,675.00	7,813.92	639.48	358.42	2.275	ES, SF
Shull 1-35-9-60 - Carrizo PR Well - Actual Precision Surv	16,675.00	10,722.00	1,473.67	1,195.31	5.294	CC, ES, SF
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 Site:	8N-60W-11 SONIC STAR 1101 PAD	MD Reference:	RKB = 20' @ 4898.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-01H	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 #3	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

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Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well SONIC STAR 1101-01H
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Site Error:	0.00 usft	North Reference:	True
Reference Well:	SONIC STAR 1101-01H	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 #3	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB = 20' @ 4898.00usft (RIG)

Offset Depths are relative to Offset Datum

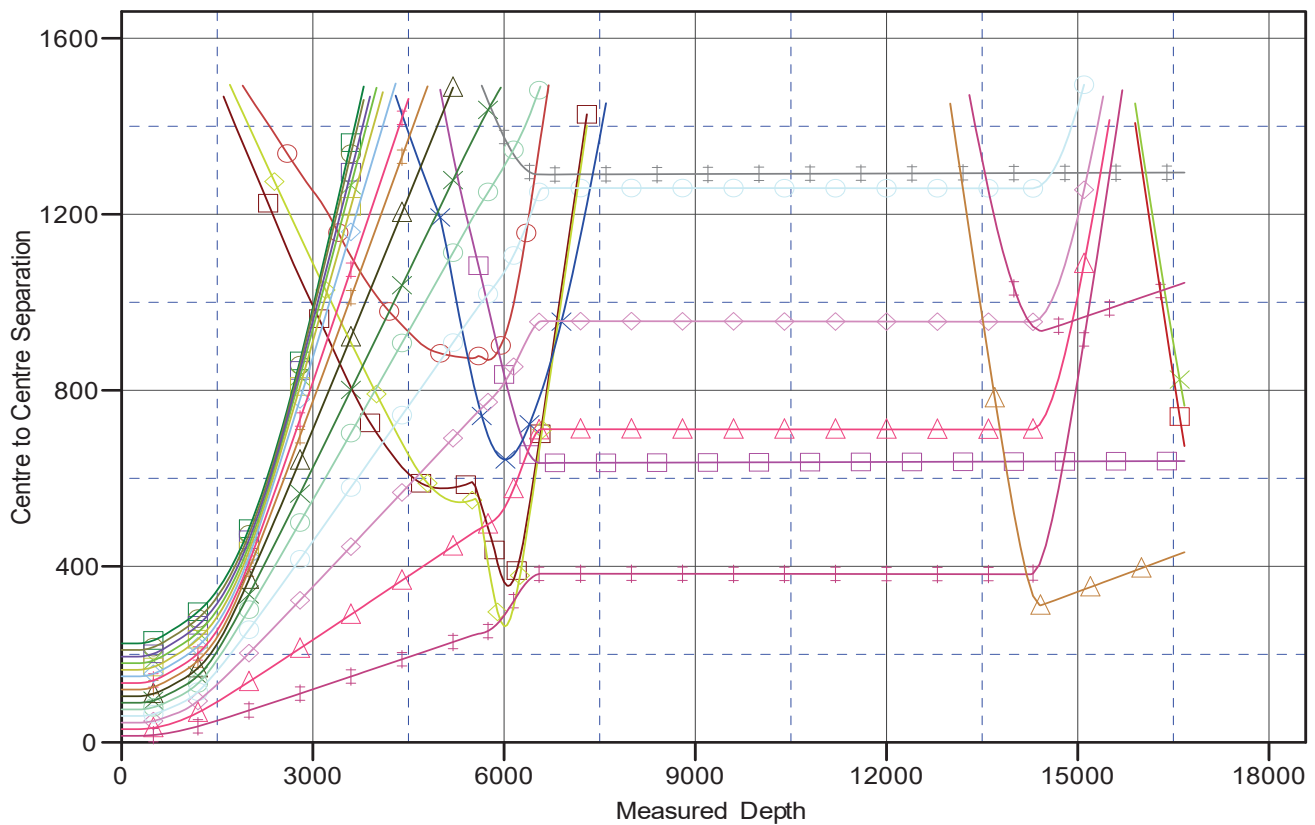
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-01H

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, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-15H, Wellbore#1, Design #1 V0	SONIC STAR 1101-14H, Wellbore#1, Design #1 V0
BOOMSLAND FED 8-60 14A-13-183, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-04H, Wellbore#1, Design #1 V0	SONIC STAR 1101-12H, Wellbore#1, Design #1 V0
BOOMSLAND FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	SONIC STAR 1101-07H, Wellbore#1, Design #1 V0	SONIC STAR 1101-05H, Wellbore#1, Design #1 V0
PINTAIL FED 2-11-8H, Mallard Planned Well, Planned Mallard Surveys V0	SONIC STAR 1101-08H, Wellbore#1, Design #1 V0	SONIC STAR 1101-11H, Wellbore#1, Design #1 V0
PINTAIL FED 2-11-9H, Mallard Planned Well, Planned MWD Surveys V0	SONIC STAR 1101-13H, Wellbore#1, Design #1 V0	PEGGY 2501-01H, Verdard SI Well, Actual Baker Surveys V0
Shull 1-35-980, Carizzo PR Well, Actual Precision Survey Grid to True V0	SONIC STAR 1101-06H, Wellbore#1, Design #1 V0	PEGGY 2501-02H, Verdard PR Well, Actual Baker Surveys V0
SCHNEIDER 1414-12H, Wellbore #1, Design #2 V0	SONIC STAR 1101-03H, Wellbore#1, Design #1 V0	PEGGY 2501-04H, Wellbore #2, Design #1 V0
SONIC STAR 1101-08H, Wellbore#1, Plan #1 V0	SONIC STAR 1101-02H, Wellbore#1, Design #1 V0	
SONIC STAR 1101-16H, Wellbore#1, Design #1 V0	SONIC STAR 1101-10H, Wellbore#1, Design #1 V0	

Anticollision Summary Report

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Reference Well:	SONIC STAR 1101-01H	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 #3	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB = 20' @ 4898.00usft (RIG)

Offset Depths are relative to Offset Datum

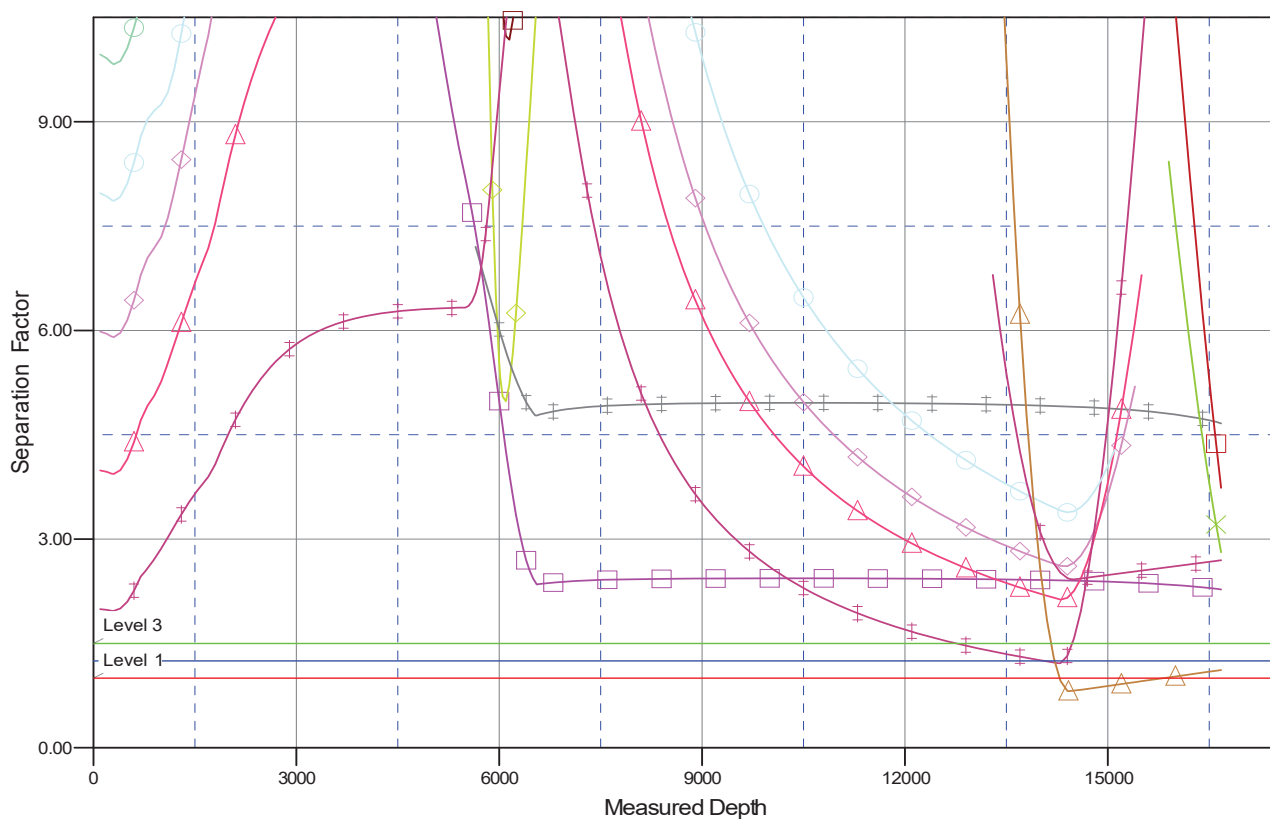
Central Meridian is -105.500000

Coordinates are relative to: SONIC STAR 1101-01H

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	SONIC STAR 1101-15H, Wellbore #1, Design #1 V0	SONIC STAR 1101-14H, Wellbore #1, Design #1 V0
BOOMSLANG FED 8-60 14A-13-183, Bison PR Well, Actual Baker Surveys V0	SONIC STAR 1101-04H, Wellbore #1, Design #1 V0	SONIC STAR 1101-12H, Wellbore #1, Design #1 V0
BOOMSLANG FED 8-60 14A-13-181, Bison Planned Well, Planned Bison MWD Surveys V0	SONIC STAR 1101-07H, Wellbore #1, Design #1 V0	SONIC STAR 1101-05H, Wellbore #1, Design #1 V0
PINTAIL FED 2-11-8HN, Mallard Planned Well, Planned Mallard Surveys V0	SONIC STAR 1101-08H, Wellbore #1, Design #1 V0	SONIC STAR 1101-11H, Wellbore #1, Design #1 V0
PINTAIL FED 2-11-9HN, Mallard Planned Well, Planned MWD Surveys V0	SONIC STAR 1101-13H, Wellbore #1, Design #1 V0	PEGGY 2501-01H, Verdad SI Well, Actual Baker Surveys V0
Shut-I-35-960, Caribou PR Well, Actual Precision Survey Grid to True V0	SONIC STAR 1101-06H, Wellbore #1, Design #1 V0	PEGGY 2501-02H, Verdad PR Well, Actual Baker Surveys V0
SCHNEIDER 1414-12H, Wellbore #1, Design #2 V0	SONIC STAR 1101-03H, Wellbore #1, Design #1 V0	PEGGY 2501-04H, Wellbore #2, Design #1 V0
SONIC STAR 1101-02H, Wellbore #1, Plan #1 V0	SONIC STAR 1101-02H, Wellbore #1, Design #1 V0	
SONIC STAR 1101-16H, Wellbore #1, Design #1 V0	SONIC STAR 1101-10H, Wellbore #1, Design #1 V0	