

VERDAD RESOURCES

**WATTENBERG FIELD
2N-64W-24 ARNOLD-BOYD PAD
BOYD 2413-09H**

**Plan A
Design #1**

Anticollision Summary Report

11 March, 2022

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Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well BOYD 2413-09H
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20 @ 4944.00usft (Drilling Rig)
Reference Site:	2N-64W-24 ARNOLD-BOYD PAD	MD Reference:	RKB = 20 @ 4944.00usft (Drilling Rig)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	BOYD 2413-09H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Plan A	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	3/11/2022			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	1,934.00	Design #1 (Plan A)	ISCWSA MWD	Fixed:v2:standard declination	
1,934.00	17,267.30	Design #1 (Plan A)	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						
2N-64W-13 L.E. GERKIN PAD						
L.E. GERKIN 10H - Plan A - Design #1						Out of range
L.E. GERKIN 10H - Plan A - VERDAD Existing Surface						Out of range
L.E. GERKIN 11H - Plan A - Design #2	17,267.30	7,107.61	1,289.36	1,047.65	5.334	CC, ES, SF
L.E. GERKIN 11H - Plan A - VERDAD Existing Surface						Out of range
L.E. GERKIN 12H - Plan A - Design #1	17,267.30	7,124.67	776.69	536.97	3.240	CC, ES, SF
L.E. GERKIN 12H - Plan A - VERDAD Existing Surface						Out of range
L.E. GERKIN 13H - Plan A - Design #1	17,267.30	7,111.18	264.87	29.38	1.125	Level 2, CC, ES, SF
L.E. GERKIN 13H - Plan A - VERDAD Existing Surface						Out of range
L.E. GERKIN 14H - Plan A - Design #1	8,269.82	16,109.47	234.15	-5.51	0.977	Level 1, CC, ES, SF
L.E. GERKIN 14H - Plan A - VERDAD Existing Surface						Out of range
L.E. GERKIN 15H - Plan A - Design #1	8,262.96	16,126.80	745.53	498.43	3.017	CC, ES, SF
L.E. GERKIN 15H - Plan A - VERDAD Existing Surface						Out of range
L.E. GERKIN 9H - Plan A - Design #1						Out of range
L.E. GERKIN 9H - Plan A - VERDAD Existing Surface						Out of range
2N-64W-13 Offsets						
ARNOLD #1 - Barrett Resources P/A Well - No Surveys	15,946.27	6,728.00	537.53	113.31	1.267	Level 3, CC, ES
ARNOLD #1 - Barrett Resources P/A Well - No Surveys	16,000.00	6,728.00	540.21	113.46	1.266	Level 3, SF
DARYL L ARNOLD #1 - Amoco D/A Well - No Surveys						Out of range
2N-64W-24 ARNOLD-BOYD PAD						
BOYD 2413-05H - Plan A - Design #1	200.00	200.00	64.04	56.47	8.461	CC, ES
BOYD 2413-05H - Plan A - Design #1	230.90	230.69	64.09	56.50	8.445	SF
BOYD 2413-06H - Plan A - Design #1	200.32	200.32	48.10	40.53	6.355	CC
BOYD 2413-06H - Plan A - Design #1	230.90	230.89	48.10	40.51	6.337	ES, SF
BOYD 2413-07H - Plan A - Design #1	230.90	230.90	32.16	24.57	4.237	CC, ES
BOYD 2413-07H - Plan A - Design #1	17,263.59	17,123.36	1,035.00	597.86	2.368	SF
BOYD 2413-08H - Plan A - Design #1	230.90	230.90	16.22	8.63	2.137	CC, ES
BOYD 2413-08H - Plan A - Design #1	17,267.30	17,178.75	517.23	80.61	1.185	Level 2, SF
BOYD 2413-10H - Plan A - Design #1	202.22	202.22	15.94	8.37	2.106	CC
BOYD 2413-10H - Plan A - Design #1	230.90	230.86	15.96	8.37	2.102	ES
BOYD 2413-10H - Plan A - Design #1	17,267.30	17,391.53	517.79	82.30	1.189	Level 2, SF
BOYD 2413-11H - Plan A - Design #1	200.00	199.00	31.88	24.31	4.213	CC, ES
BOYD 2413-11H - Plan A - Design #1	17,267.30	17,608.65	1,034.95	597.65	2.367	SF

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Reference Wellbore	Plan A	Database:	EDM 5000.16 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Summary						
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Offset Well - Wellbore - Design						
2N-64W-24 ARNOLD-HELEN PAD						
HELEN 2536-05H - Plan B - Design #2	200.00	200.00	331.45	323.88	43.792	CC, ES
HELEN 2536-05H - Plan B - Design #2	2,000.00	1,878.53	666.73	646.36	32.745	SF
HELEN 2536-06H - Plan B - Design #2	200.98	201.98	318.59	311.02	42.088	CC
HELEN 2536-06H - Plan B - Design #2	230.90	231.20	318.60	311.01	41.974	ES
HELEN 2536-06H - Plan B - Design #2	5,700.00	5,480.59	1,499.19	1,445.08	27.703	SF
HELEN 2536-07H - Plan B - Design #2	312.12	312.55	306.20	298.54	39.956	CC, ES
HELEN 2536-07H - Plan B - Design #2	6,950.00	6,804.35	1,324.98	1,255.41	19.046	SF
HELEN 2536-08H - Plan B - Design #2	327.38	327.44	294.21	286.53	38.323	CC
HELEN 2536-08H - Plan B - Design #2	400.00	398.62	294.28	286.52	37.931	ES
HELEN 2536-08H - Plan B - Design #2	7,050.00	6,870.80	872.47	799.87	12.018	SF
HELEN 2536-09H - Plan B - Design #2	2,276.27	2,271.26	233.40	209.07	9.591	CC
HELEN 2536-09H - Plan B - Design #2	2,400.00	2,394.30	233.76	208.75	9.346	ES
HELEN 2536-09H - Plan B - Design #2	7,050.00	6,920.52	396.89	321.61	5.272	SF
HELEN 2536-10H - Plan B - Design #2	7,050.00	6,950.99	70.63	-6.72	0.913	Level 1, ES, SF
HELEN 2536-10H - Plan B - Design #2	7,064.07	6,952.33	69.24	0.75	1.011	Level 2, CC
HELEN 2536-11H - Plan A - Design #1	2,300.00	2,299.87	38.53	17.16	1.803	SF
HELEN 2536-11H - Plan A - Design #1	2,400.00	2,398.67	33.90	16.68	1.968	ES
HELEN 2536-11H - Plan A - Design #1	2,420.44	2,418.87	33.76	17.09	2.025	CC
HELEN 2536-12H - Plan A - Design #1	1,800.00	1,799.91	74.69	55.47	3.886	SF
HELEN 2536-12H - Plan A - Design #1	1,900.00	1,897.63	69.97	52.02	3.898	ES
HELEN 2536-12H - Plan A - Design #1	1,925.88	1,922.92	69.75	52.30	3.996	CC
2N-64W-24 Offsets						
BOYD 24-1H - VERDAD PR Well - Actual BKR Surveys	269.54	273.34	99.90	92.26	13.073	CC, ES
BOYD 24-1H - VERDAD PR Well - Actual BKR Surveys	300.00	303.88	99.97	92.30	13.030	SF
BOYD 24-4H - VERDAD PR Well - Actual BKR Surveys	0.00	3.00	80.23			
BOYD 24-4H - VERDAD PR Well - Actual BKR Surveys	300.00	303.73	81.02	73.36	10.573	SF
HELEN 24-3H - VERDAD PR Well - Actual BKR Surveys	161.54	160.54	361.11	353.55	47.774	CC, ES
HELEN 24-3H - VERDAD PR Well - Actual BKR Surveys	300.00	284.25	363.92	356.26	47.515	SF
HELEN 24-4H - VERDAD PR Well - Actual BKR Surveys	0.00	0.00	345.04			
HELEN 24-4H - VERDAD PR Well - Actual BKR Surveys	1,253.40	1,130.00	495.44	483.79	42.549	SF
MCCLINTOCK ET AL #1 - JUNIPER D/A Well - No Surve	9,043.40	6,750.00	919.18	643.68	3.336	CC, ES
MCCLINTOCK ET AL #1 - JUNIPER D/A Well - No Surve	9,100.00	6,750.00	920.92	644.30	3.329	SF

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Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB = 20 @ 4944.00usft (Drilling Rig)

Offset Depths are relative to Offset Datum

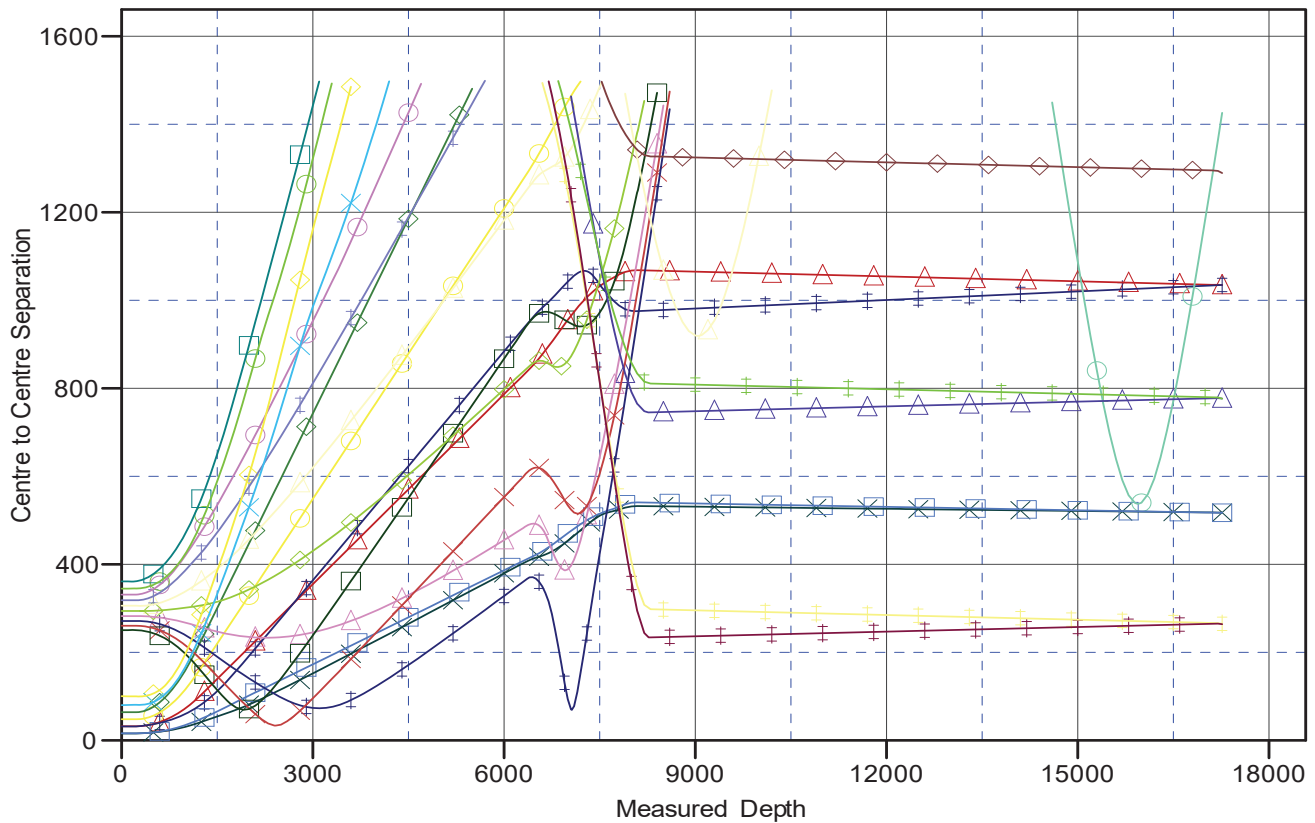
Central Meridian is -105.500000

Coordinates are relative to: BOYD 2413-09H

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.65°

Ladder Plot



LEGEND

BOYD 241307H, Plan A, Design#1 V0	HELEN 2536-11H, Plan A, Design#1 V0	MOQUINTOOK ET AL #1, JUNIPER DIA Well, No Surveys V0
BOYD 241311H, Plan A, Design#1 V0	HELEN 2536-07H, Plan B, Design#2 V0	HELEN 24-3H, VERDAD PR Well, Actual BKR Surveys V0
BOYD 241308H, Plan A, Design#1 V0	HELEN 2536-12H, Plan A, Design#1 V0	L.E. GERKIN 13H, Plan A, Design#1 V0
BOYD 241305H, Plan A, Design#1 V0	HELEN 2536-05H, Plan B, Design#2 V0	L.E. GERKIN 11H, Plan A, Design#2 V0
BOYD 241310H, Plan A, Design#1 V0	HELEN 2536-08H, Plan B, Design#2 V0	L.E. GERKIN 15H, Plan A, Design#1 V0
BOYD 241308H, Plan A, Design#1 V0	HELEN 2536-06H, Plan B, Design#2 V0	L.E. GERKIN 14H, Plan A, Design#1 V0
ARNOLD #1, Barnett Resources PA Well, No Surveys V0	HELEN 24-4H, VERDAD PR Well, Actual BKR Surveys V0	L.E. GERKIN 12H, Plan A, Design#1 V0
HELEN 2536-09H, Plan B, Design#2 V0	BOYD 24-1H, VERDAD PR Well, Actual BKR Surveys V0	
HELEN 2536-10H, Plan B, Design#2 V0	BOYD 24-4H, VERDAD PR Well, Actual BKR Surveys V0	

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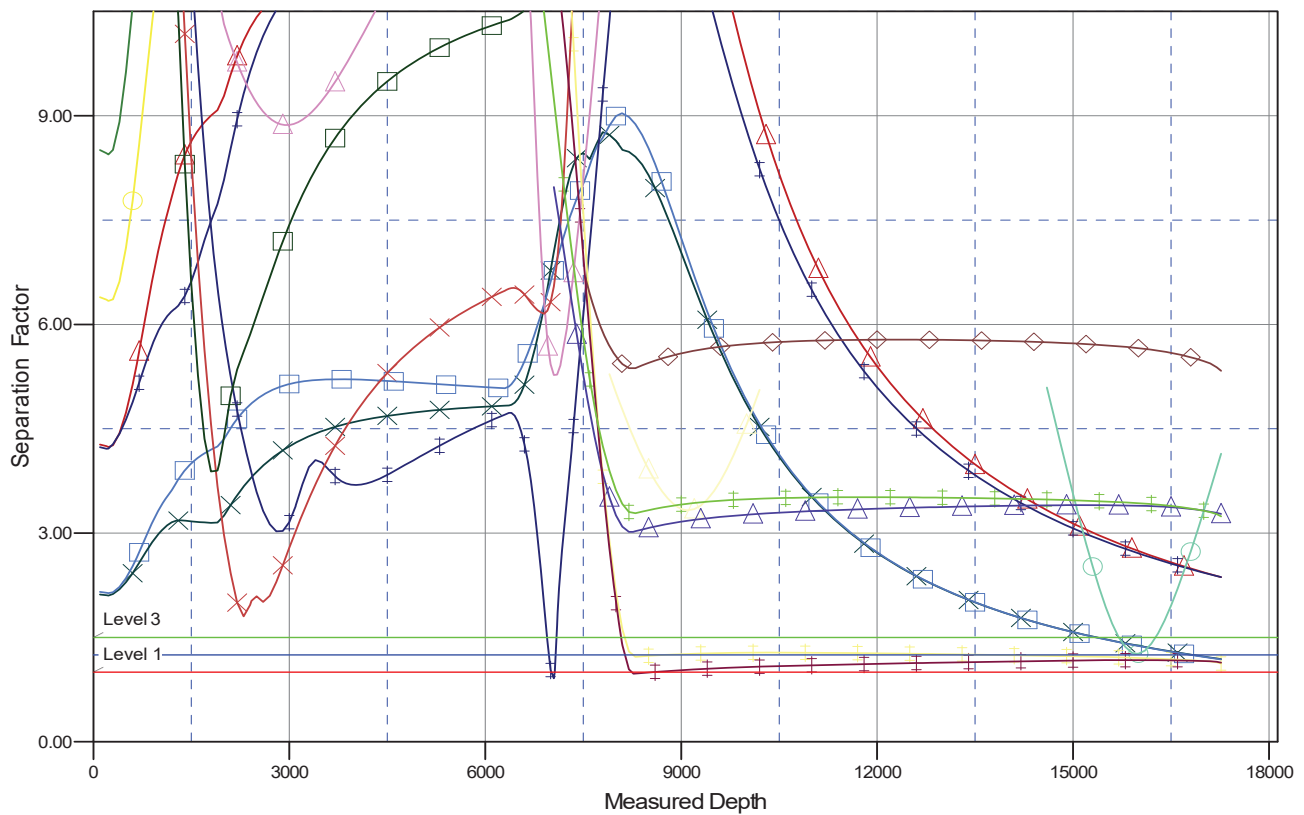
Central Meridian is -105.500000

Coordinates are relative to: BOYD 2413-09H

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.65°

Separation Factor Plot



LEGEND

BOYD 241307H, Plan A, Design#1 V0	HELEN 2536-11H, Plan A, Design#1 V0	MCQUINTOCK ET AL #1, JUNIPER/DIA Well, No Surveys V0
BOYD 241311H, Plan A, Design#1 V0	HELEN 2536-07H, Plan B, Design#2 V0	HELEN 24-3H, VERDAD PR Well, Actual BKR Surveys V0
BOYD 241308H, Plan A, Design#1 V0	HELEN 2536-12H, Plan A, Design#1 V0	L.E. GERKIN 13H, Plan A, Design#1 V0
BOYD 241309H, Plan A, Design#1 V0	HELEN 2536-05H, Plan B, Design#2 V0	L.E. GERKIN 11H, Plan A, Design#2 V0
BOYD 241310H, Plan A, Design#1 V0	HELEN 2536-08H, Plan B, Design#2 V0	L.E. GERKIN 15H, Plan A, Design#1 V0
BOYD 241308H, Plan A, Design#1 V0	HELEN 2536-06H, Plan B, Design#2 V0	L.E. GERKIN 14H, Plan A, Design#1 V0
ARNOLD #1, Barnett Resources PA Well, No Surveys V0	HELEN 24-4H, VERDAD PR Well, Actual BKR Surveys V0	L.E. GERKIN 12H, Plan A, Design#1 V0
HELEN 2536-09H, Plan B, Design#2 V0	BOYD 24-1H, VERDAD PR Well, Actual BKR Surveys V0	
HELEN 2536-10H, Plan B, Design#2 V0	BOYD 24-4H, VERDAD PR Well, Actual BKR Surveys V0	