

VERDAD RESOURCES

WATTENBERG FIELD

1N-65W-30 JOHNSON PAD

JOHNSON 01N-65W-30-2S

Wellbore #1

Design #1

Anticollision Summary Report

05 February, 2018

Hewlett-Packard

Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well JOHNSON 01N-65W-30-2S
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 5020.00usft (RIG)
Reference Site:	1N-65W-30 JOHNSON PAD	MD Reference:	RKB = 20' @ 5020.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	JOHNSON 01N-65W-30-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.14 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:	MD Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 5,000.00 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.45 Sigma	Casing Method:	Added to Error Values

Survey Tool Program	Date	2/5/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	1,700.00	Design #1 (Wellbore #1)	ISCWSA REV 2 MWD	Fixed:v2:standard declination
1,700.00	17,902.24	Design #1 (Wellbore #1)	ISCWSA REV 2 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						
1N-65W-19 Offsets						
APOLLO #1 - VESSELS P/A Well - No Surveys	17,041.51	7,215.00	4,067.41	3,587.60	8.477	CC
APOLLO #1 - VESSELS P/A Well - No Surveys	17,100.00	7,215.00	4,067.83	3,587.05	8.461	ES
APOLLO #1 - VESSELS P/A Well - No Surveys	17,400.00	7,215.00	4,083.18	3,598.16	8.419	SF
APOLLO #1A - VESSELS D/A Well - No Surveys	17,197.73	4,891.00	3,818.88	3,494.58	11.776	CC
APOLLO #1A - VESSELS D/A Well - No Surveys	17,200.00	4,891.00	3,818.88	3,494.55	11.775	ES
APOLLO #1A - VESSELS D/A Well - No Surveys	17,600.00	4,891.00	3,840.01	3,511.08	11.675	SF
DECHANT #1-19 - XOG PR Well - No Surveys	13,607.09	7,226.00	1,344.26	943.97	3.358	CC, ES, SF
ELLS XX #19-4D - Kerr McGee SI Well - No Surveys	13,647.49	7,201.00	4,047.20	3,646.85	10.109	CC
ELLS XX #19-4D - Kerr McGee SI Well - No Surveys	13,700.00	7,201.00	4,047.54	3,646.32	10.088	ES
ELLS XX #19-4D - Kerr McGee SI Well - No Surveys	14,100.00	7,201.00	4,072.42	3,665.35	10.004	SF
1N-65W-30 JOHNSON PAD						
JOHNSON 01N-65W-30-10H - Wellbore #1 - Design #1	200.00	201.00	159.93	152.36	21.130	CC, ES
JOHNSON 01N-65W-30-10H - Wellbore #1 - Design #1	17,902.63	17,745.52	1,902.93	1,411.25	3.870	SF
JOHNSON 01N-65W-30-11H - Wellbore #1 - Design #1	200.00	201.00	179.82	172.25	23.757	CC, ES
JOHNSON 01N-65W-30-11H - Wellbore #1 - Design #1	17,902.63	17,769.14	2,259.88	1,768.56	4.600	SF
JOHNSON 01N-65W-30-6H - Wellbore #1 - Design #1	200.00	200.00	19.89	12.32	2.627	CC
JOHNSON 01N-65W-30-3H - Wellbore #1 - Design #1	17,902.63	17,858.43	239.93	-251.53	0.488	Level 1, ES, SF
JOHNSON 01N-65W-30-4H - Wellbore #1 - Design #1	200.00	200.00	39.77	32.20	5.255	CC
JOHNSON 01N-65W-30-4H - Wellbore #1 - Design #1	300.00	300.63	39.79	32.14	5.201	ES
JOHNSON 01N-65W-30-4H - Wellbore #1 - Design #1	17,902.63	17,807.83	572.81	81.28	1.165	Level 2, SF
JOHNSON 01N-65W-30-5H - Wellbore #1 - Design #1	200.00	200.00	59.94	52.37	7.920	CC
JOHNSON 01N-65W-30-5H - Wellbore #1 - Design #1	300.00	300.89	59.98	52.33	7.841	ES
JOHNSON 01N-65W-30-5H - Wellbore #1 - Design #1	17,902.63	17,932.67	820.69	334.95	1.690	SF
JOHNSON 01N-65W-30-6H - Wellbore #1 - Design #1	200.00	200.00	79.83	72.26	10.547	CC
JOHNSON 01N-65W-30-6H - Wellbore #1 - Design #1	200.02	200.02	79.83	72.26	10.547	ES
JOHNSON 01N-65W-30-6H - Wellbore #1 - Design #1	17,902.63	17,827.62	904.85	412.55	1.838	SF
JOHNSON 01N-65W-30-7H - Wellbore #1 - Design #1	200.00	200.00	99.99	92.42	13.211	CC
JOHNSON 01N-65W-30-7H - Wellbore #1 - Design #1	200.00	200.00	99.99	92.42	13.211	ES
JOHNSON 01N-65W-30-7H - Wellbore #1 - Design #1	17,902.63	17,739.25	1,237.79	746.73	2.521	SF
JOHNSON 01N-65W-30-8N - Verdad PR Well - Actual BH	226.99	222.53	119.73	112.16	15.822	CC, ES
JOHNSON 01N-65W-30-8N - Verdad PR Well - Actual BH	12,300.00	11,877.00	2,026.04	1,800.66	8.989	SF
JOHNSON 01N-65W-30-9H - Wellbore #1 - Design #1	200.00	200.00	139.76	132.20	18.466	CC, ES
JOHNSON 01N-65W-30-9H - Wellbore #1 - Design #1	17,902.63	17,900.10	1,881.76	1,391.07	3.835	SF
JOHNSON 1N-65W-30-1S - Wellbore #1 - Design #1	900.00	904.34	20.04	11.07	2.234	CC
JOHNSON 1N-65W-30-1S - Wellbore #1 - Design #1	17,902.63	18,066.96	175.01	-124.22	0.585	Level 1, ES, SF

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Anticollision Summary Report

Company:	VERDAD RESOURCES	Local Co-ordinate Reference:	Well JOHNSON 01N-65W-30-2S
Project:	WATTENBERG FIELD	TVD Reference:	RKB = 20' @ 5020.00usft (RIG)
Reference Site:	1N-65W-30 JOHNSON PAD	MD Reference:	RKB = 20' @ 5020.00usft (RIG)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	JOHNSON 01N-65W-30-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	3.28 usft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.14 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						
1N-65W-30 Offsets						
GILMORE #1-30 - ARLIAN INC P/A Well - No Surveys	11,477.82	7,221.00	1,581.46	1,230.47	4.506	CC, ES
GILMORE #1-30 - ARLIAN INC P/A Well - No Surveys	11,500.00	7,221.00	1,581.62	1,230.47	4.504	SF
LEHL #1 - DEM P/A Well - No Surveys	8,980.63	7,237.00	760.77	464.49	2.568	CC, ES, SF
Lehl 30-7 - XOG Planned Well - Planned IPT Surveys	7,772.59	12,536.31	2,577.28	2,441.73	19.013	ES
Lehl 30-7 - XOG Planned Well - Planned IPT Surveys	7,800.00	12,508.85	2,577.22	2,442.05	19.067	CC
Lehl 30-7 - XOG Planned Well - Planned IPT Surveys	13,000.00	7,800.00	2,665.24	2,513.01	17.508	SF
1N-65W-31 Offsets						
Lochbuie 2A-31H - CPR Planned Well - Planned CPR We	7,100.00	7,002.69	18.61	-37.04	0.334	Level 1, ES
Lochbuie 2A-31H - CPR Planned Well - Planned CPR We	7,120.79	7,014.59	7.18	-34.39	0.173	Level 1, CC, SF
Lochbuie 2B-31H - CPR Planned Well - Planned CPR We	5,000.00	4,918.12	86.32	48.10	2.259	SF
Lochbuie 2B-31H - CPR Planned Well - Planned CPR We	5,039.34	4,956.82	86.03	48.08	2.267	CC, ES
Lochbuie 2C-31H - CPR Planned Well - Planned CPR W	4,115.48	4,048.42	197.05	166.30	6.407	CC, ES
Lochbuie 2C-31H - CPR Planned Well - Planned CPR W	4,200.00	4,130.88	197.92	166.86	6.372	SF
Lochbuie 2D-31H - CPR Planned Well - Planned CPR W	3,704.33	3,630.17	393.69	365.93	14.181	CC
Lochbuie 2D-31H - CPR Planned Well - Planned CPR W	3,800.00	3,723.50	394.25	365.74	13.831	ES
Lochbuie 2D-31H - CPR Planned Well - Planned CPR W	4,400.00	4,319.64	418.35	386.05	12.952	SF
Lochbuie 2E-31H - CPR Planned Well - Planned CPR We	2,928.24	2,888.91	338.97	316.02	14.770	CC, ES
Lochbuie 2E-31H - CPR Planned Well - Planned CPR We	3,200.00	3,147.39	349.20	324.54	14.157	SF
Lochbuie 2F-31H - CPR Planned Well - Planned CPR We	2,563.60	2,535.93	386.10	364.98	18.281	CC
Lochbuie 2F-31H - CPR Planned Well - Planned CPR We	2,600.00	2,569.83	386.33	364.92	18.049	ES
Lochbuie 2F-31H - CPR Planned Well - Planned CPR We	2,900.00	2,849.26	405.04	381.73	17.371	SF
Lochbuie 2G-31H - CPR Planned Well - Planned CPR W	2,275.08	2,258.95	406.45	386.33	20.196	CC
Lochbuie 2G-31H - CPR Planned Well - Planned CPR W	2,300.00	2,281.80	406.58	386.25	20.005	ES
Lochbuie 2G-31H - CPR Planned Well - Planned CPR W	2,600.00	2,556.94	426.59	404.30	19.141	SF
Lochbuie 2H-31H - CPR Planned Well - Planned CPR W	2,126.97	2,115.67	426.13	406.65	21.881	CC, ES
Lochbuie 2H-31H - CPR Planned Well - Planned CPR W	2,400.00	2,360.48	442.94	421.51	20.667	SF
1N-66W-13 Offsets						
AZUL 13-24HZ - Kerr McGee Planned Well - Planned AP	13,069.39	13,113.86	307.23	79.97	1.352	Level 3, CC
AZUL 13-24HZ - Kerr McGee Planned Well - Planned AP	17,902.63	8,281.84	317.71	39.73	1.143	Level 2, ES, SF

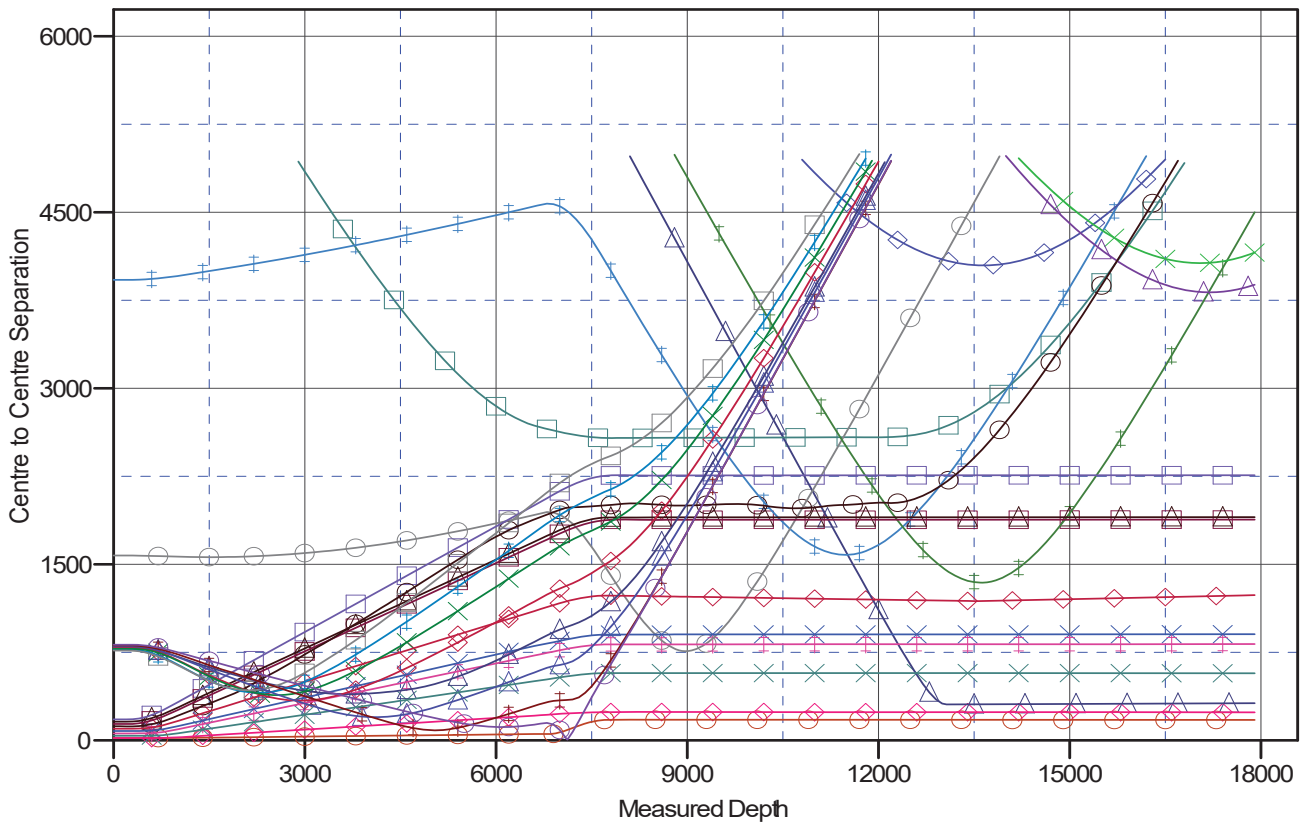
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Reference Depths are relative to RKB = 20' @ 5020.00usft (RIG)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: JOHNSON 01N-65W-30-2S
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.51°

Ladder Plot



LEGEND

AZUL 1324H2, Kerr McGee Planned Well, Planned APC Survey V0	JOHNSON 01N-65W-30-15W Wellbore #1, Design #1 V0	Lochbue2D-31H, CRR Planned Well, Planned CRR Well Not Actual Survey V0
Lehi307, XOG Planned Well, Planned PT Survey V0	JOHNSON 01N-65W-30-7H Wellbore #1, Design #1 V0	Lochbue2E-31H, CRR Planned Well, Planned CRR Well Not Actual Survey V0
GLMORE #1-30, ARJUNNCPA Well, No Survey V0	JOHNSON 01N-65W-30-9H Wellbore #1, Design #1 V0	Lochbue2G-31H, CRR Planned Well, Planned CRR Well Not Actual Survey V0
LEHL #1 DEM PIA Well, No Survey V0	JOHNSON 01N-65W-30-6H Wellbore #1, Design #1 V0	Lochbue2F-31H, CRR Planned Well, Planned CRR Well Not Actual Survey V0
ELLSX0819-4D, Kerr McGee SW Well, No Survey V0	JOHNSON 01N-65W-30-8N, Verdad PR Well, Actual BHS Survey V0	Lochbue2H-31H, CRR Planned Well, Planned CRR Well Not Actual Survey V0
DECHW1 #1-19, XOG PR Well, No Survey V0	JOHNSON 01N-65W-30-10H Wellbore #1, Design #1 V0	Lochbue2C-31H, CRR Planned Well, Planned CRR Well Not Actual Survey V0
APOLLO #1, VESSEL SPA Well, No Survey V0	JOHNSON 01N-65W-30-5H Wellbore #1, Design #1 V0	Lochbue2B-31H, CRR Planned Well, Planned CRR Well Not Actual Survey V0
APOLLO #3A, VESSEL SDA Well, No Survey V0	JOHNSON 01N-65W-30-3H Wellbore #1, Design #1 V0	Lochbue2A-31H, CRR Planned Well, Planned CRR Well Not Actual Survey V0
JOHNSON 01N-65W-30-11H Wellbore #1, Design #1 V0	JOHNSON 01N-65W-30-4H Wellbore #1, Design #1 V0	

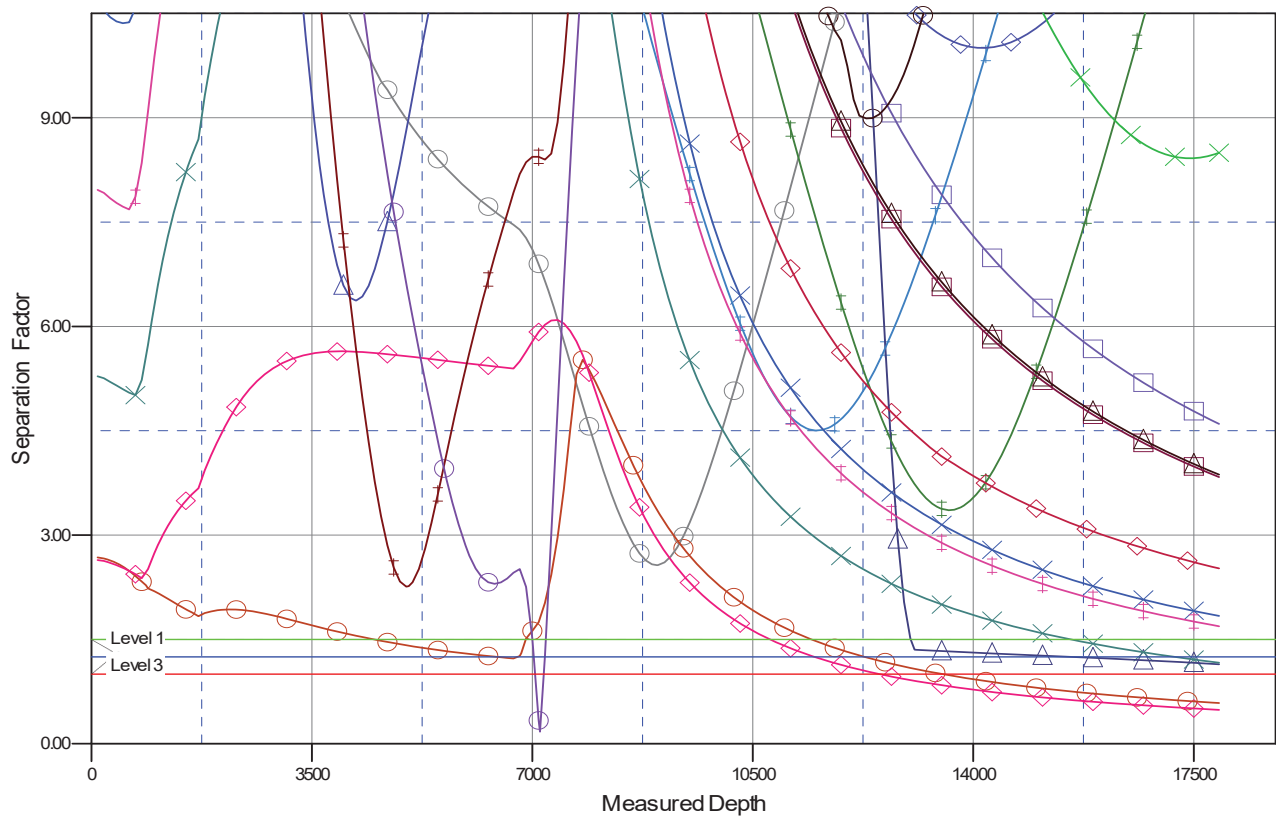
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Anticollision Summary Report

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Reference Depths are relative to RKB = 20' @ 5020.00usft (RIG)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: JOHNSON 01N-65W-30-2S
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.51°

Separation Factor Plot



LEGEND

AZLL 1324H2, Kerr McGee Planned Well, Planned APC Survey V0	JOHNSON 01N-65W-30-1S Wellbore #1, Design #1 V0	Lochbue2D-31H CRR Planned Well, Planned CRR Well Not Actual Survey V0
Lehi307, XOG Planned Well, Planned PT Survey V0	JOHNSON 01N-65W-30-7H Wellbore #1, Design #1 V0	Lochbue2E-31H CRR Planned Well, Planned CRR Well Not Actual Survey V0
GLMORE #1-30, ARLININCPA Well, No Survey V0	JOHNSON 01N-65W-30-9H Wellbore #1, Design #1 V0	Lochbue2G-31H CRR Planned Well, Planned CRR Well Not Actual Survey V0
LEHL #1, DEMPIA Well, No Survey V0	JOHNSON 01N-65W-30-6H Wellbore #1, Design #1 V0	Lochbue2F-31H CRR Planned Well, Planned CRR Well Not Actual Survey V0
ELLSX0919-4D, Kerr McGee SW Well, No Survey V0	JOHNSON 01N-65W-30-8N, Verdad PR Well, Actual BHS Survey V0	Lochbue2H-31H CRR Planned Well, Planned CRR Well Not Actual Survey V0
DECHW191-19, XOG PR Well, No Survey V0	JOHNSON 01N-65W-30-10H Wellbore #1, Design #1 V0	Lochbue2C-31H CRR Planned Well, Planned CRR Well Not Actual Survey V0
APOLLO #1A, VESSEL SPA Well, No Survey V0	JOHNSON 01N-65W-30-5H Wellbore #1, Design #1 V0	Lochbue2B-31H CRR Planned Well, Planned CRR Well Not Actual Survey V0
APOLLO #1A, VESSEL SDA Well, No Survey V0	JOHNSON 01N-65W-30-3H Wellbore #1, Design #1 V0	Lochbue2A-31H CRR Planned Well, Planned CRR Well Not Actual Survey V0
JOHNSON 01N-65W-30-11H Wellbore #1, Design #1 V0	JOHNSON 01N-65W-30-4H Wellbore #1, Design #1 V0	