

EXTRACTION OIL & GAS

Weld County

Sec 32-T6N-R67W

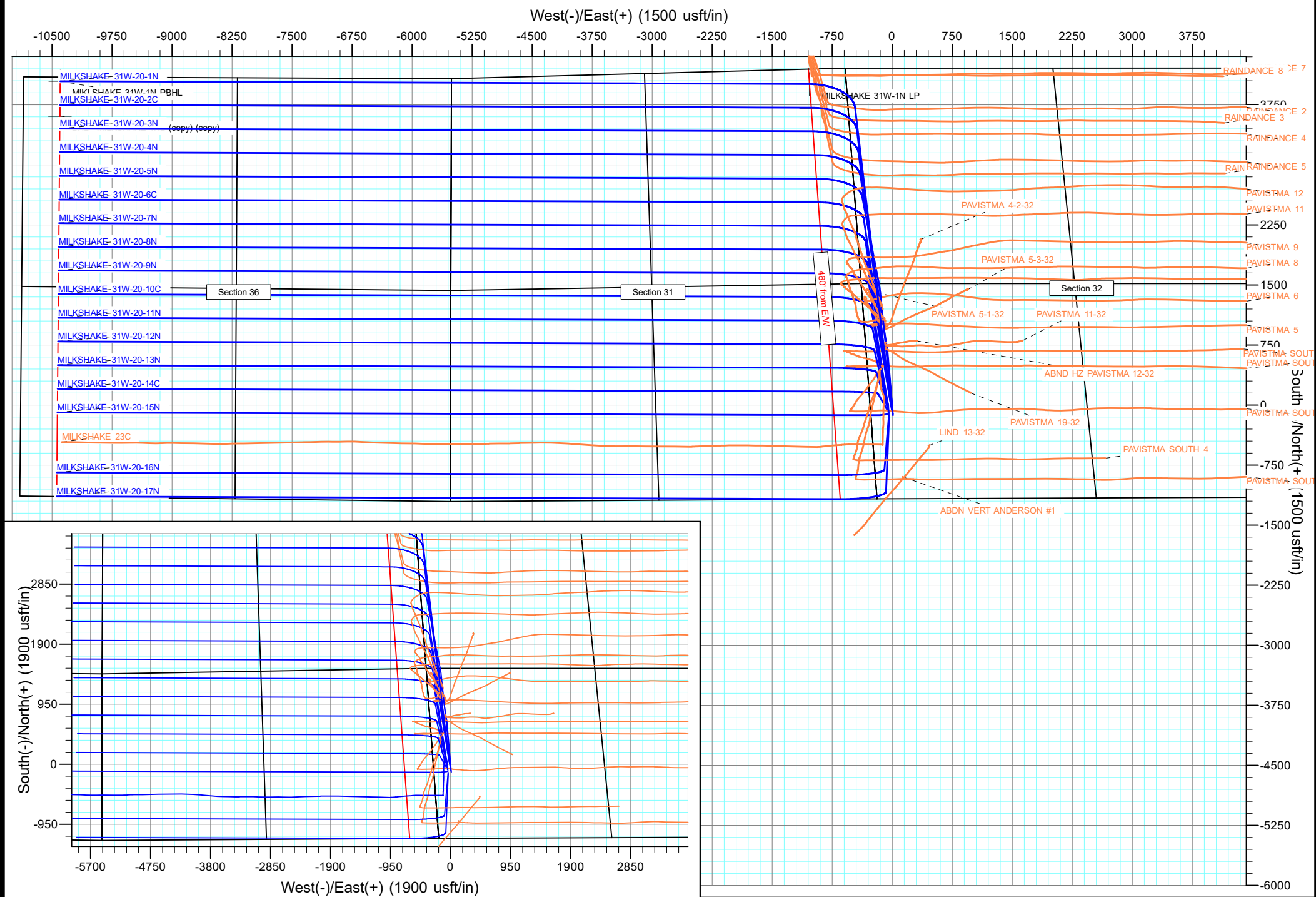
MILKSHAKE 31W-20-17N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

07 September, 2017



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well MILKSHAKE 31W-20-17N
Project:	Weld County	TVD Reference:	KB 25' @ 4973.00usft
Reference Site:	Sec 32-T6N-R67W	MD Reference:	KB 25' @ 4973.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	MILKSHAKE 31W-20-17N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDT_32Bit_ODBC
Reference Design:	PROPOSAL 1	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	9/7/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,316.00	PROPOSAL 1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard

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						
Sec 30-T6N-R67W						
RAINDANCE 2 - Wellbore #1 - Wellbore #1	1,184.37	1,661.08	4,557.49	4,547.96	478.196	CC
RAINDANCE 2 - Wellbore #1 - Wellbore #1	1,200.00	1,687.41	4,557.52	4,547.84	470.935	ES
RAINDANCE 2 - Wellbore #1 - Wellbore #1	11,400.00	6,674.00	6,209.65	6,092.00	52.781	SF
RAINDANCE 3 - Wellbore #1 - Wellbore #1	1,246.74	1,819.45	4,545.30	4,535.33	455.546	CC, ES
RAINDANCE 3 - Wellbore #1 - Wellbore #1	11,200.00	6,882.15	5,967.12	5,851.44	51.585	SF
RAINDANCE 4 - Wellbore #1 - Wellbore #1	6,386.69	7,439.48	4,487.16	4,433.89	84.234	CC
RAINDANCE 4 - Wellbore #1 - Wellbore #1	6,400.00	7,441.95	4,487.17	4,433.81	84.093	ES
RAINDANCE 4 - Wellbore #1 - Wellbore #1	11,100.00	6,721.00	5,801.95	5,688.34	51.068	SF
RAINDANCE 5 - Wellbore #1 - Wellbore #1	6,459.72	7,564.00	4,161.28	4,105.46	74.548	CC, ES
RAINDANCE 5 - Wellbore #1 - Wellbore #1	10,600.00	6,862.00	5,284.08	5,176.07	48.922	SF
RAINDANCE 6 - Wellbore #1 - Wellbore #1	6,682.39	7,817.07	4,013.36	3,955.02	68.786	CC
RAINDANCE 6 - Wellbore #1 - Wellbore #1	6,700.00	7,817.04	4,013.40	3,954.98	68.702	ES
RAINDANCE 6 - Wellbore #1 - Wellbore #1	10,500.00	7,071.56	5,081.54	4,973.64	47.096	SF
RAINDANCE 7 - Wellbore #1 - Wellbore #1	879.88	911.40	4,658.59	4,653.01	834.721	CC
RAINDANCE 7 - Wellbore #1 - Wellbore #1	900.00	928.71	4,658.60	4,652.88	815.500	ES
RAINDANCE 7 - Wellbore #1 - Wellbore #1	11,800.00	6,572.00	6,679.70	6,556.36	54.159	SF
RAINDANCE 8 - Wellbore #1 - Wellbore #1	0.00	27.29	4,661.45			
RAINDANCE 8 - Wellbore #1 - Wellbore #1	100.00	113.94	4,661.69	4,661.36	10,000.000	ES
RAINDANCE 8 - Wellbore #1 - Wellbore #1	11,800.00	6,665.00	6,593.82	6,469.05	52.846	SF

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well MILKSHAKE 31W-20-17N
Project:	Weld County	TVD Reference:	KB 25' @ 4973.00usft
Reference Site:	Sec 32-T6N-R67W	MD Reference:	KB 25' @ 4973.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	MILKSHAKE 31W-20-17N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDT_32Bit_ODBC
Reference Design:	PROPOSAL 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						
Sec 32-T6N-R67W						
ABDN VERT ANDERSON #1 - Wellbore #1 - Design #1	5,258.73	5,176.99	202.12	76.93	1.614	CC, ES, SF
ABND HZ PAVISTMA 12-32 - Wellbore #1 - Wellbore #1	911.87	908.72	924.67	919.88	192.894	CC, ES
ABND HZ PAVISTMA 12-32 - Wellbore #1 - Wellbore #1	6,850.00	6,783.62	1,970.83	1,922.87	41.093	SF
LIND 13-32 - Wellbore #1 - Wellbore #1	4,480.02	4,525.17	289.53	251.58	7.630	CC, ES
LIND 13-32 - Wellbore #1 - Wellbore #1	4,500.00	4,543.21	289.67	251.60	7.609	SF
MILKSHAKE 23C - ORIGINAL WELLBORE - WB #1 - PA	4,815.47	4,912.09	332.86	302.78	11.067	CC
MILKSHAKE 31W-20-11N - ORIGINAL WELLBORE - PR	17,300.00	17,369.00	701.85	160.35	1.296	Level 3, ES, SF
MILKSHAKE 31W-20-10C - ORIGINAL WELLBORE - PR	900.00	901.00	126.04	120.03	20.979	CC, ES
MILKSHAKE 31W-20-10C - ORIGINAL WELLBORE - PR	17,316.00	17,356.74	2,533.57	1,976.37	4.547	SF
MILKSHAKE 31W-20-11N - ORIGINAL WELLBORE - PR	900.00	901.00	107.77	101.76	17.938	CC, ES
MILKSHAKE 31W-20-11N - ORIGINAL WELLBORE - PR	17,316.00	17,149.66	2,231.78	1,672.91	3.993	SF
MILKSHAKE 31W-20-12N - ORIGINAL WELLBORE - PR	900.00	901.00	89.87	83.86	14.958	CC, ES
MILKSHAKE 31W-20-12N - ORIGINAL WELLBORE - PR	17,316.00	17,129.01	1,936.32	1,377.14	3.463	SF
MILKSHAKE 31W-20-13N - ORIGINAL WELLBORE - PR	900.00	900.00	71.98	65.98	11.988	CC, ES
MILKSHAKE 31W-20-13N - ORIGINAL WELLBORE - PR	17,316.00	17,120.84	1,640.86	1,081.35	2.933	SF
MILKSHAKE 31W-20-14C - ORIGINAL WELLBORE - PR	900.00	900.00	54.08	48.07	9.006	CC, ES
MILKSHAKE 31W-20-14C - ORIGINAL WELLBORE - PR	17,316.00	17,312.39	1,357.01	801.27	2.442	SF
MILKSHAKE 31W-20-15N - ORIGINAL WELLBORE - PR	900.00	900.00	35.81	29.81	5.964	CC, ES
MILKSHAKE 31W-20-15N - ORIGINAL WELLBORE - PR	17,316.00	17,143.61	1,049.58	489.30	1.873	SF
MILKSHAKE 31W-20-16N - ORIGINAL WELLBORE - PR	900.00	900.00	17.90	11.90	2.982	CC
MILKSHAKE 31W-20-16N - ORIGINAL WELLBORE - PR	17,316.00	17,253.53	299.82	-261.59	0.534	Level 1, ES, SF
MILKSHAKE 31W-20-1N - ORIGINAL WELLBORE - PR	100.00	100.00	152.25	151.98	566.288	CC, ES
MILKSHAKE 31W-20-1N - ORIGINAL WELLBORE - PR	17,316.00	17,956.90	5,186.36	4,629.20	9.308	SF
MILKSHAKE 31W-20-2C - ORIGINAL WELLBORE - PR	200.00	200.00	135.48	134.49	137.430	CC, ES
MILKSHAKE 31W-20-2C - ORIGINAL WELLBORE - PR	17,316.00	18,001.43	4,894.22	4,337.41	8.790	SF
MILKSHAKE 31W-20-3N - ORIGINAL WELLBORE - PR	300.00	300.00	119.04	117.34	69.910	CC, ES
MILKSHAKE 31W-20-3N - ORIGINAL WELLBORE - PR	17,316.00	17,743.85	4,595.45	4,037.84	8.241	SF
MILKSHAKE 31W-20-4N - ORIGINAL WELLBORE - PR	400.00	400.00	102.76	100.34	42.467	CC, ES
MILKSHAKE 31W-20-4N - ORIGINAL WELLBORE - PR	17,316.00	17,647.34	4,299.99	3,742.12	7.708	SF
MILKSHAKE 31W-20-5N - ORIGINAL WELLBORE - PR	500.00	500.00	87.58	84.44	27.922	CC, ES
MILKSHAKE 31W-20-5N - ORIGINAL WELLBORE - PR	17,316.00	17,562.27	4,004.53	3,446.45	7.176	SF
MILKSHAKE 31W-20-6C - ORIGINAL WELLBORE - PR	600.00	600.00	73.46	69.61	19.064	CC, ES
MILKSHAKE 31W-20-6C - ORIGINAL WELLBORE - PR	17,316.00	17,635.28	3,713.43	3,155.93	6.661	SF
MILKSHAKE 31W-20-7N - ORIGINAL WELLBORE - PR	700.00	700.00	61.56	56.99	13.469	CC, ES
MILKSHAKE 31W-20-7N - ORIGINAL WELLBORE - PR	17,316.00	17,394.41	3,413.61	2,855.07	6.112	SF
MILKSHAKE 31W-20-8N - ORIGINAL WELLBORE - PR	800.00	799.00	52.99	47.70	10.028	CC
MILKSHAKE 31W-20-8N - ORIGINAL WELLBORE - PR	900.00	898.55	53.39	47.40	8.901	ES
MILKSHAKE 31W-20-8N - ORIGINAL WELLBORE - PR	17,316.00	17,326.52	3,118.15	2,559.36	5.580	SF
MILKSHAKE 31W-20-9N - ORIGINAL WELLBORE - PR	900.00	899.00	143.94	137.94	23.987	CC, ES
MILKSHAKE 31W-20-9N - ORIGINAL WELLBORE - PR	17,316.00	17,224.87	2,822.69	2,264.42	5.056	SF
PAVISTMA 11 - Wellbore #1 - Wellbore #1	869.46	882.00	1,339.87	1,336.98	463.154	CC, ES
PAVISTMA 11 - Wellbore #1 - Wellbore #1	9,900.00	6,601.00	4,229.08	4,139.54	47.231	SF
PAVISTMA 11-32 - Wellbore #1 - Wellbore #1	914.00	911.38	895.48	890.82	192.059	CC, ES
PAVISTMA 11-32 - Wellbore #1 - Wellbore #1	6,700.00	6,888.01	2,549.17	2,490.00	43.077	SF
PAVISTMA 12 - Wellbore #1 - Wellbore #1	870.20	882.00	1,353.93	1,351.04	467.586	CC, ES
PAVISTMA 12 - Wellbore #1 - Wellbore #1	9,100.00	9,100.00	4,104.93	4,013.21	44.754	SF
PAVISTMA 19-32 - Wellbore #1 - Wellbore #1	939.97	945.07	861.35	856.35	172.126	CC, ES
PAVISTMA 19-32 - Wellbore #1 - Wellbore #1	6,700.00	6,786.68	1,638.60	1,581.89	28.896	SF
PAVISTMA 4-2-32 - Wellbore #1 - Wellbore #1	0.00	0.00	1,117.71			
PAVISTMA 4-2-32 - Wellbore #1 - Wellbore #1	200.00	185.81	1,118.33	1,117.48	1,313.503	ES
PAVISTMA 4-2-32 - Wellbore #1 - Wellbore #1	9,200.00	7,370.75	4,204.67	4,130.22	56.476	SF
PAVISTMA 5 - Wellbore #1 - Wellbore #1	969.32	1,002.34	1,169.57	1,166.05	332.219	CC
PAVISTMA 5 - Wellbore #1 - Wellbore #1	1,000.00	1,033.27	1,169.74	1,166.04	316.534	ES

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well MILKSHAKE 31W-20-17N
Project:	Weld County	TVD Reference:	KB 25' @ 4973.00usft
Reference Site:	Sec 32-T6N-R67W	MD Reference:	KB 25' @ 4973.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	MILKSHAKE 31W-20-17N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDT_32Bit_ODBC
Reference Design:	PROPOSAL 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						
Sec 32-T6N-R67W						
PAVISTMA 5 - Wellbore #1 - Wellbore #1	8,400.00	6,657.00	2,529.88	2,472.66	44.214	SF
PAVISTMA 5-1-32 - Wellbore #1 - Wellbore #1	174.44	171.84	1,132.00	1,131.31	1,652.833	CC, ES
PAVISTMA 5-1-32 - Wellbore #1 - Wellbore #1	8,800.00	7,130.01	3,060.89	2,990.47	43.469	SF
PAVISTMA 5-3-32 - Wellbore #1 - Wellbore #1	0.00	0.00	1,099.39			
PAVISTMA 5-3-32 - Wellbore #1 - Wellbore #1	700.00	689.48	1,099.69	1,095.18	243.858	ES
PAVISTMA 5-3-32 - Wellbore #1 - Wellbore #1	6,800.00	6,886.41	2,757.53	2,704.75	52.242	SF
PAVISTMA 6 - Wellbore #1 - Wellbore #1	924.64	946.11	1,191.90	1,188.64	365.024	CC, ES
PAVISTMA 6 - Wellbore #1 - Wellbore #1	8,700.00	6,807.94	2,921.55	2,858.17	46.099	SF
PAVISTMA 7 - Wellbore #1 - Wellbore #1	648.22	652.84	1,192.64	1,188.51	289.089	CC
PAVISTMA 7 - Wellbore #1 - Wellbore #1	800.00	797.37	1,193.34	1,188.18	231.094	ES
PAVISTMA 7 - Wellbore #1 - Wellbore #1	8,700.00	8,700.00	2,989.77	2,912.91	38.897	SF
PAVISTMA 8 - Wellbore #1 - Wellbore #1	0.00	5.92	1,214.65			
PAVISTMA 8 - Wellbore #1 - Wellbore #1	500.00	499.02	1,216.08	1,213.56	482.079	ES
PAVISTMA 8 - Wellbore #1 - Wellbore #1	9,200.00	6,600.00	3,339.90	3,264.82	44.484	SF
PAVISTMA 9 - Wellbore #1 - Wellbore #1	0.00	5.49	1,230.30			
PAVISTMA 9 - Wellbore #1 - Wellbore #1	9,300.00	6,647.11	3,530.62	3,451.74	44.759	SF
PAVISTMA SOUTH 1 - Wellbore #1 - Wellbore #1	0.00	3.32	643.40			
PAVISTMA SOUTH 1 - Wellbore #1 - Wellbore #1	7,900.00	6,872.26	1,967.83	1,911.48	34.924	SF
PAVISTMA SOUTH 2 - Wellbore #1 - Wellbore #1	367.59	371.11	631.25	629.30	323.489	CC
PAVISTMA SOUTH 2 - Wellbore #1 - Wellbore #1	912.11	918.29	632.84	627.02	108.672	ES
PAVISTMA SOUTH 2 - Wellbore #1 - Wellbore #1	7,900.00	6,957.00	1,752.24	1,695.78	31.032	SF
PAVISTMA SOUTH 3 - Wellbore #1 - Wellbore #1	0.00	3.45	620.64			
PAVISTMA SOUTH 3 - Wellbore #1 - Wellbore #1	924.90	933.79	624.36	618.41	105.004	ES
PAVISTMA SOUTH 3 - Wellbore #1 - Wellbore #1	7,000.00	7,066.14	1,070.32	1,019.39	21.015	SF
PAVISTMA SOUTH 4 - Wellbore #1 - Wellbore #1	4,016.16	4,124.42	460.83	427.00	13.620	CC
PAVISTMA SOUTH 4 - Wellbore #1 - Wellbore #1	7,100.00	7,175.04	467.17	414.13	8.807	SF
PAVISTMA SOUTH 4 - Wellbore #1 - Wellbore #1	7,125.08	7,176.67	466.57	413.77	8.837	ES
PAVISTMA SOUTH 5 - Wellbore #1 - Wellbore #1	6,950.00	7,130.38	212.08	158.93	3.991	SF
PAVISTMA SOUTH 5 - Wellbore #1 - Wellbore #1	6,979.72	7,137.35	210.18	157.76	4.010	CC, ES

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 162-MWD OWSG													Offset Well Error:	0.00 usft
Sec 30-T6N-R67W - RAINDANCE 2 - Wellbore #1 - Wellbore #1														
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning	
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	23.47	23.47	0.00	0.04	-11.82	4,548.34	-951.51	4,646.80					
100.00	100.00	97.98	97.98	0.13	0.15	-11.81	4,548.68	-951.50	4,647.25	4,646.96	0.29	N/A		
200.00	200.00	177.30	177.29	0.49	0.31	-11.81	4,549.49	-951.49	4,648.24	4,647.44	0.80	5,819.876		
300.00	300.00	863.16	861.57	0.85	2.75	-11.82	4,518.23	-945.20	4,646.37	4,642.79	3.58	1,297.768		
400.00	400.00	976.38	974.02	1.21	3.19	-11.80	4,505.54	-941.35	4,634.69	4,630.36	4.33	1,069.920		
500.00	500.00	1,078.95	1,075.88	1.57	3.60	-11.80	4,493.80	-938.83	4,622.98	4,617.93	5.05	915.359		
600.00	600.00	1,286.49	1,281.58	1.93	4.45	-11.77	4,467.52	-931.02	4,609.57	4,603.42	6.16	748.903		
700.00	700.00	1,328.02	1,322.72	2.29	4.62	-11.76	4,462.20	-929.04	4,596.07	4,589.41	6.66	690.098		
800.00	800.00	1,381.00	1,375.31	2.64	4.84	-11.75	4,456.18	-926.74	4,583.89	4,576.68	7.21	635.846		
900.00	900.00	1,432.80	1,426.78	3.00	5.04	-11.74	4,450.81	-924.58	4,572.73	4,564.97	7.75	589.654		
1,000.00	999.98	1,509.85	1,503.38	3.34	5.35	166.03	4,443.17	-921.26	4,563.83	4,555.46	8.37	545.074		
1,100.00	1,099.84	1,588.93	1,582.04	3.67	5.67	166.09	4,435.72	-917.87	4,558.79	4,549.81	8.99	507.286		
1,184.37	1,183.90	1,661.08	1,653.84	3.96	5.95	166.12	4,428.98	-915.81	4,557.49	4,547.96	9.53	478.196	CC	
1,200.00	1,199.45	1,687.41	1,680.05	4.01	6.06	166.13	4,426.48	-915.22	4,557.52	4,547.84	9.68	470.935	ES	
1,300.00	1,298.70	1,786.21	1,778.33	4.36	6.45	166.17	4,416.86	-912.37	4,559.24	4,548.87	10.38	439.371		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation