

EXTRACTION OIL & GAS

Weld County

Sec 32-T6N-R67W

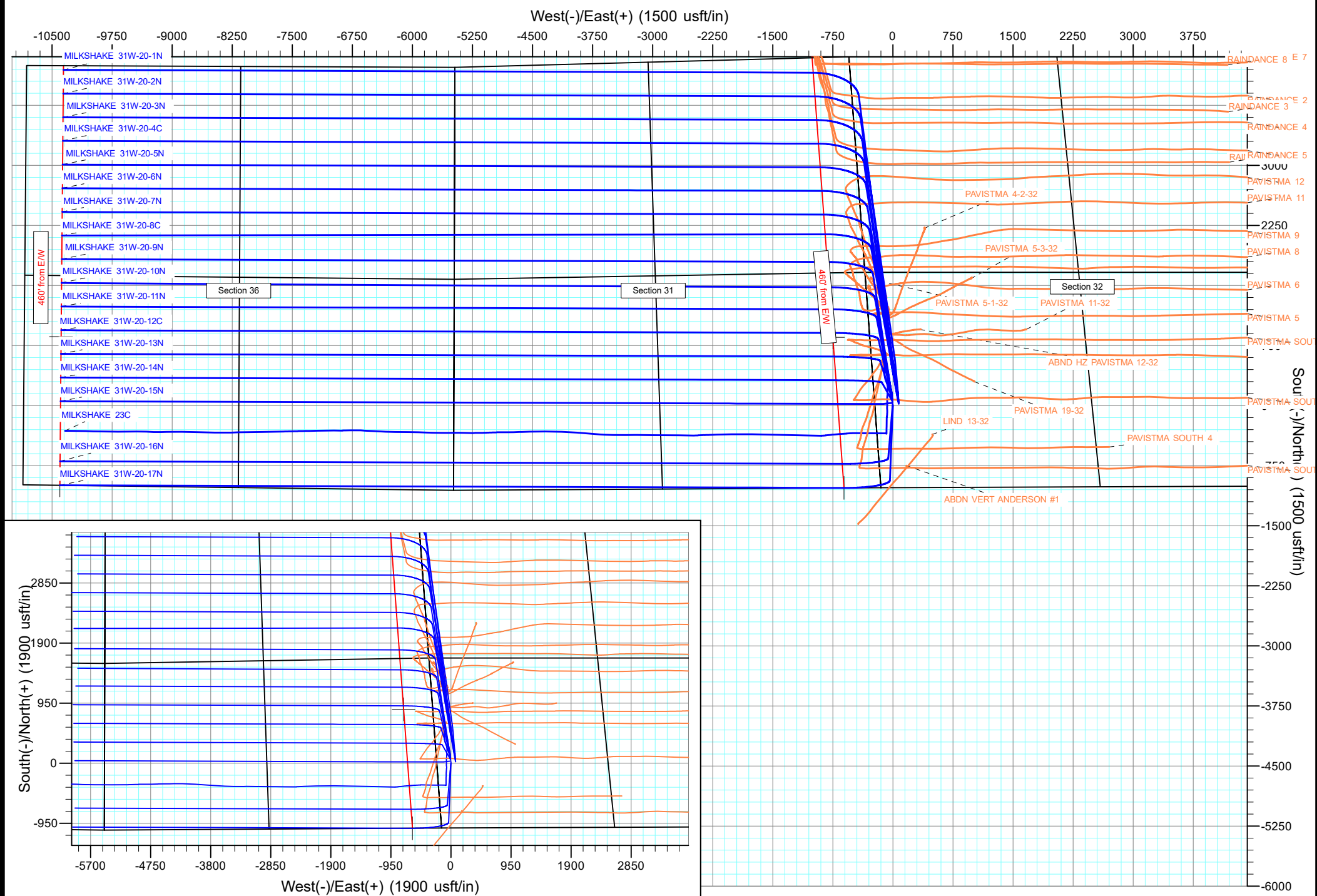
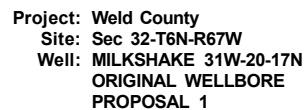
MILKSHAKE 31W-20-2N

ORIGINAL WELLBORE

PROPOSAL 1

Anticollision Report

31 October, 2017



Anticollision Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well MILKSHAKE 31W-20-2N
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-20-2N	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	10/31/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,847.59	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	7,987.99	7,071.67	115.01	42.71	1.591	CC
RAINDANCE 2 - Wellbore #1 - Wellbore #1	8,000.00	7,069.59	115.67	41.49	1.559	ES, SF
RAINDANCE 3 - Wellbore #1 - Wellbore #1	8,050.00	7,112.97	63.61	-14.38	0.816	Level 1, ES, SF
RAINDANCE 3 - Wellbore #1 - Wellbore #1	8,059.87	7,112.89	62.89	-10.56	0.856	Level 1, CC
RAINDANCE 4 - Wellbore #1 - Wellbore #1	7,800.00	7,057.81	165.69	88.49	2.146	SF
RAINDANCE 4 - Wellbore #1 - Wellbore #1	7,839.34	7,063.91	161.72	87.18	2.169	CC, ES
RAINDANCE 5 - Wellbore #1 - Wellbore #1	7,266.98	6,540.84	337.41	244.64	3.637	CC, ES
RAINDANCE 5 - Wellbore #1 - Wellbore #1	7,300.00	6,567.28	338.09	245.11	3.636	SF
RAINDANCE 6 - Wellbore #1 - Wellbore #1	7,117.82	6,424.00	360.51	268.69	3.926	CC, ES, SF
RAINDANCE 7 - Wellbore #1 - Wellbore #1	8,174.78	7,070.44	454.49	386.22	6.657	CC
RAINDANCE 7 - Wellbore #1 - Wellbore #1	8,200.00	7,062.41	455.29	385.63	6.536	ES
RAINDANCE 7 - Wellbore #1 - Wellbore #1	8,300.00	7,029.07	473.10	398.15	6.312	SF
RAINDANCE 8 - Wellbore #1 - Wellbore #1	8,303.46	7,130.11	423.83	356.26	6.273	CC
RAINDANCE 8 - Wellbore #1 - Wellbore #1	8,350.00	7,111.25	426.58	355.84	6.030	ES
RAINDANCE 8 - Wellbore #1 - Wellbore #1	8,462.26	7,066.23	454.00	375.85	5.809	SF

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Site Error:	0.00 usft	North Reference:	True
Reference Well:	MILKSHAKE 31W-20-2N	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	200.00	177.00	884.68	881.65	292.342	CC
ABDN VERT ANDERSON #1 - Wellbore #1 - Design #1	300.00	276.98	886.42	880.88	159.817	ES
ABDN VERT ANDERSON #1 - Wellbore #1 - Design #1	5,800.00	5,100.73	3,419.66	3,293.88	27.189	SF
ABND HZ PAVISTMA 12-32 - Wellbore #1 - Wellbore #1	2,467.56	2,282.71	29.06	6.93	1.313	Level 3, CC, ES, SF
LIND 13-32 - Wellbore #1 - Wellbore #1	205.09	161.87	1,684.27	1,683.58	2,451.509	CC, ES
LIND 13-32 - Wellbore #1 - Wellbore #1	5,600.00	5,557.21	3,097.79	3,050.18	65.077	SF
MILKSHAKE 23C - ORIGINAL WELLBORE - WB #1 - PA	1,379.81	1,379.30	144.56	137.73	21.165	CC, ES
MILKSHAKE 23C - ORIGINAL WELLBORE - WB #1 - PA	17,848.51	17,369.00	4,213.72	3,660.97	7.623	SF
MILKSHAKE 31W-20-10N - ORIGINAL WELLBORE - PR	278.60	279.59	75.07	73.52	48.348	CC
MILKSHAKE 31W-20-10N - ORIGINAL WELLBORE - PR	400.00	400.84	75.30	72.87	31.044	ES
MILKSHAKE 31W-20-10N - ORIGINAL WELLBORE - PR	17,848.51	17,174.27	2,363.67	1,809.60	4.266	SF
MILKSHAKE 31W-20-11N - ORIGINAL WELLBORE - PR	200.00	201.00	77.21	76.22	78.034	CC
MILKSHAKE 31W-20-11N - ORIGINAL WELLBORE - PR	300.00	300.98	77.61	75.91	45.490	ES
MILKSHAKE 31W-20-11N - ORIGINAL WELLBORE - PR	17,848.51	17,135.37	2,659.09	2,105.30	4.802	SF
MILKSHAKE 31W-20-12C - ORIGINAL WELLBORE - PR	200.00	201.00	83.20	82.21	84.094	CC, ES
MILKSHAKE 31W-20-12C - ORIGINAL WELLBORE - PR	17,848.51	17,291.42	2,959.96	2,406.00	5.343	SF
MILKSHAKE 31W-20-13N - ORIGINAL WELLBORE - PR	200.00	200.00	92.54	91.56	93.876	CC, ES
MILKSHAKE 31W-20-13N - ORIGINAL WELLBORE - PR	17,848.51	17,103.48	3,249.99	2,695.60	5.862	SF
MILKSHAKE 31W-20-14N - ORIGINAL WELLBORE - PR	200.00	200.00	103.96	102.97	105.458	CC, ES
MILKSHAKE 31W-20-14N - ORIGINAL WELLBORE - PR	17,848.51	17,106.41	3,545.81	2,991.09	6.392	SF
MILKSHAKE 31W-20-15N - ORIGINAL WELLBORE - PR	200.00	200.00	117.31	116.32	118.996	CC, ES
MILKSHAKE 31W-20-15N - ORIGINAL WELLBORE - PR	17,848.51	17,122.83	3,841.26	3,286.17	6.920	SF
MILKSHAKE 31W-20-16N - ORIGINAL WELLBORE - PR	200.00	200.00	131.53	130.54	133.421	CC, ES
MILKSHAKE 31W-20-16N - ORIGINAL WELLBORE - PR	17,848.51	17,226.97	4,591.01	4,035.01	8.257	SF
MILKSHAKE 31W-20-17N - ORIGINAL WELLBORE - PR	200.00	200.00	146.56	145.57	148.667	CC, ES
MILKSHAKE 31W-20-17N - ORIGINAL WELLBORE - PR	17,848.51	17,289.41	4,890.83	4,334.43	8.790	SF
MILKSHAKE 31W-20-1N - ORIGINAL WELLBORE - PR	100.00	100.00	17.90	17.64	66.597	CC
MILKSHAKE 31W-20-1N - ORIGINAL WELLBORE - PR	17,848.51	17,958.81	295.45	-256.69	0.535	Level 1, ES, SF
MILKSHAKE 31W-20-3N - ORIGINAL WELLBORE - PR	200.00	200.00	17.90	16.92	18.163	CC
MILKSHAKE 31W-20-3N - ORIGINAL WELLBORE - PR	17,848.51	17,743.03	295.47	-257.19	0.535	Level 1, ES, SF
MILKSHAKE 31W-20-4C - ORIGINAL WELLBORE - PR	200.00	200.00	36.15	35.17	36.673	CC, ES
MILKSHAKE 31W-20-4C - ORIGINAL WELLBORE - PR	17,848.51	17,804.29	617.73	81.54	1.152	Level 2, SF
MILKSHAKE 31W-20-5N - ORIGINAL WELLBORE - PR	200.00	200.00	54.06	53.07	54.836	CC, ES
MILKSHAKE 31W-20-5N - ORIGINAL WELLBORE - PR	17,848.51	17,558.54	886.38	332.91	1.601	SF
MILKSHAKE 31W-20-6N - ORIGINAL WELLBORE - PR	200.00	200.00	71.96	70.98	72.999	CC, ES
MILKSHAKE 31W-20-6N - ORIGINAL WELLBORE - PR	17,848.51	17,465.27	1,181.83	628.77	2.137	SF
MILKSHAKE 31W-20-7N - ORIGINAL WELLBORE - PR	200.00	200.00	89.87	88.88	91.161	CC, ES
MILKSHAKE 31W-20-7N - ORIGINAL WELLBORE - PR	17,848.51	17,387.35	1,477.29	924.21	2.671	SF
MILKSHAKE 31W-20-8C - ORIGINAL WELLBORE - PR	200.00	201.00	108.11	107.12	109.274	CC, ES
MILKSHAKE 31W-20-8C - ORIGINAL WELLBORE - PR	17,848.51	17,485.35	1,781.76	1,229.97	3.229	SF
MILKSHAKE 31W-20-9N - ORIGINAL WELLBORE - PR	530.01	528.28	74.90	71.53	22.226	CC
MILKSHAKE 31W-20-9N - ORIGINAL WELLBORE - PR	600.00	602.30	75.42	71.52	19.307	ES
MILKSHAKE 31W-20-9N - ORIGINAL WELLBORE - PR	17,848.51	17,213.79	2,068.18	1,514.91	3.738	SF
PAVISTMA 11 - Wellbore #1 - Wellbore #1	4,350.53	3,939.73	199.04	152.74	4.298	CC
PAVISTMA 11 - Wellbore #1 - Wellbore #1	4,400.00	3,986.82	199.69	152.09	4.195	ES
PAVISTMA 11 - Wellbore #1 - Wellbore #1	4,500.00	4,083.20	203.97	154.12	4.091	SF
PAVISTMA 11-32 - Wellbore #1 - Wellbore #1	2,328.38	2,149.72	98.82	79.30	5.062	CC, ES, SF
PAVISTMA 12 - Wellbore #1 - Wellbore #1	5,128.19	4,687.54	201.94	140.53	3.288	CC, ES
PAVISTMA 12 - Wellbore #1 - Wellbore #1	5,200.00	4,752.54	203.66	140.91	3.246	SF
PAVISTMA 19-32 - Wellbore #1 - Wellbore #1	2,173.76	2,031.79	82.76	64.30	4.483	CC, ES, SF
PAVISTMA 4-2-32 - Wellbore #1 - Wellbore #1	3,677.52	3,301.13	437.11	398.87	11.432	CC
PAVISTMA 4-2-32 - Wellbore #1 - Wellbore #1	3,700.00	3,320.96	437.21	398.50	11.297	ES
PAVISTMA 4-2-32 - Wellbore #1 - Wellbore #1	4,800.00	4,379.48	564.74	504.81	9.424	SF

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-20-2N
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-20-2N	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	2,953.06	2,704.02	77.94	51.50	2.948	CC, ES, SF
PAVISTMA 5-1-32 - Wellbore #1 - Wellbore #1	3,748.75	3,402.76	136.48	94.84	3.278	CC, ES
PAVISTMA 5-1-32 - Wellbore #1 - Wellbore #1	3,800.00	3,449.07	138.19	95.75	3.256	SF
PAVISTMA 5-3-32 - Wellbore #1 - Wellbore #1	2,652.82	2,359.50	436.03	412.01	18.149	CC
PAVISTMA 5-3-32 - Wellbore #1 - Wellbore #1	2,700.00	2,401.95	436.61	411.80	17.596	ES
PAVISTMA 5-3-32 - Wellbore #1 - Wellbore #1	3,100.00	2,745.19	498.92	467.95	16.109	SF
PAVISTMA 6 - Wellbore #1 - Wellbore #1	3,290.06	2,994.92	140.16	109.04	4.504	CC
PAVISTMA 6 - Wellbore #1 - Wellbore #1	3,300.00	3,004.25	140.21	108.90	4.478	ES, SF
PAVISTMA 7 - Wellbore #1 - Wellbore #1	3,197.68	2,909.61	104.74	72.84	3.283	CC
PAVISTMA 7 - Wellbore #1 - Wellbore #1	3,200.00	2,911.69	104.75	72.78	3.276	ES, SF
PAVISTMA 8 - Wellbore #1 - Wellbore #1	2,959.30	2,691.14	267.66	239.50	9.507	CC, ES
PAVISTMA 8 - Wellbore #1 - Wellbore #1	3,100.00	2,815.32	276.82	246.70	9.191	SF
PAVISTMA 9 - Wellbore #1 - Wellbore #1	3,754.16	3,407.31	179.32	139.50	4.502	CC, ES
PAVISTMA 9 - Wellbore #1 - Wellbore #1	3,800.00	3,449.22	180.28	139.59	4.430	SF
PAVISTMA SOUTH 1 - Wellbore #1 - Wellbore #1	2,020.85	1,908.49	133.14	115.21	7.429	CC, ES
PAVISTMA SOUTH 1 - Wellbore #1 - Wellbore #1	2,100.00	1,976.38	138.62	119.96	7.426	SF
PAVISTMA SOUTH 2 - Wellbore #1 - Wellbore #1	1,946.45	1,848.16	118.39	101.56	7.033	CC, ES, SF
PAVISTMA SOUTH 3 - Wellbore #1 - Wellbore #1	1,783.32	1,698.74	167.14	152.27	11.238	CC, ES
PAVISTMA SOUTH 3 - Wellbore #1 - Wellbore #1	1,800.00	1,711.93	167.42	152.34	11.106	SF
PAVISTMA SOUTH 4 - Wellbore #1 - Wellbore #1	1,529.55	1,487.49	179.41	166.66	14.072	CC, ES
PAVISTMA SOUTH 4 - Wellbore #1 - Wellbore #1	1,600.00	1,541.56	184.94	171.51	13.768	SF
PAVISTMA SOUTH 5 - Wellbore #1 - Wellbore #1	1,389.34	1,371.08	196.63	184.68	16.465	CC, ES
PAVISTMA SOUTH 5 - Wellbore #1 - Wellbore #1	1,500.00	1,453.64	209.26	196.42	16.302	SF

Offset Design Sec 30-T6N-R67W - RAINDANCE 2 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 usft
Survey Program: 162-MWD OWSG												Offset Well Error:	0.00 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	23.65	23.65	0.00	0.04	-12.96	4,417.19	-1,016.91	4,532.74				
100.00	100.00	98.71	98.71	0.13	0.15	-12.96	4,417.54	-1,016.90	4,533.19	4,532.90	0.29	N/A	
200.00	200.00	178.99	178.99	0.49	0.31	-12.96	4,418.36	-1,016.89	4,534.18	4,533.37	0.80	5,634.186	
300.00	299.98	845.16	843.69	0.85	2.68	-8.01	4,389.05	-1,011.18	4,531.34	4,527.81	3.53	1,284.436	
400.00	399.84	963.33	961.06	1.22	3.14	-8.06	4,375.87	-1,007.16	4,514.55	4,510.24	4.32	1,045.880	
500.00	499.45	1,061.47	1,058.52	1.59	3.53	-8.13	4,364.68	-1,004.59	4,494.32	4,489.29	5.03	893.053	
600.00	598.70	1,263.15	1,258.48	1.97	4.35	-8.24	4,339.49	-997.57	4,469.44	4,463.31	6.13	729.158	
700.00	697.47	1,319.42	1,314.19	2.38	4.58	-8.33	4,332.11	-994.84	4,440.50	4,433.81	6.70	663.193	
800.00	795.62	1,381.00	1,375.31	2.82	4.84	-8.43	4,325.03	-992.14	4,409.58	4,402.29	7.28	605.332	
900.00	893.06	1,412.15	1,406.25	3.29	4.96	-8.55	4,321.78	-990.85	4,376.23	4,368.46	7.77	563.435	
1,000.00	989.64	1,485.18	1,478.85	3.80	5.25	-8.68	4,314.42	-987.73	4,340.35	4,331.94	8.40	516.405	
1,100.00	1,085.27	1,557.78	1,551.05	4.35	5.54	-8.83	4,307.47	-984.57	4,301.69	4,292.65	9.05	475.573	
1,200.00	1,179.82	1,632.11	1,625.00	4.94	5.84	-9.02	4,300.54	-981.88	4,260.26	4,250.57	9.70	439.389	
1,300.00	1,273.17	1,753.72	1,746.01	5.57	6.32	-9.27	4,288.85	-978.77	4,215.73	4,205.22	10.51	400.927	
1,400.00	1,365.21	1,804.12	1,796.16	6.26	6.52	-9.50	4,284.05	-977.22	4,168.06	4,156.97	11.09	375.799	
1,500.00	1,455.84	1,953.40	1,944.66	6.99	7.11	-9.85	4,269.49	-972.87	4,117.37	4,105.37	12.01	342.925	
1,600.00	1,544.94	2,000.59	1,991.57	7.76	7.30	-10.14	4,264.62	-971.61	4,063.22	4,050.64	12.58	322.956	
1,662.73	1,600.00	2,146.95	2,136.98	8.28	7.90	-10.51	4,248.40	-967.83	4,027.43	4,014.10	13.33	302.196	
1,700.00	1,632.51	2,167.94	2,157.80	8.59	7.99	-10.54	4,245.89	-967.11	4,005.52	3,991.96	13.55	295.547	
1,727.73	1,656.71	2,183.62	2,173.36	8.82	8.05	-10.57	4,244.06	-966.52	3,989.25	3,975.54	13.72	290.793	
1,800.00	1,719.38	2,210.00	2,199.55	9.44	8.16	-8.79	4,241.07	-965.40	3,946.42	3,932.31	14.11	279.681	

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