

SYSDRILL  
Closest Approach + Clearance Factor Report  
Wellbore: Ocho LD 17-378HN (PWB)  
Wellpath: Ocho LD 17-378HN (PWP#1)

Ellipse separations are reported ONLY if BOTH wells have uncertainty data  
Only Depth and Magnetic Reference Field error terms are correlated across tie points  
Scan limit is calculated on CENTRE to CENTRE distance

Summary data uses Closest Approach clearance calculation for all minima  
Hole size/Casings ARE Included  
Hole size/Casings are NOT subtracted from Centre-Centre distance  
Confidence limit of 95.00% / 2.80 SD.

<b>Wellbore</b>			
Name	Ocho LD 17-378HN (PWB)		
Created	1-Sep-2016		
Last Revised	1-Sep-2016		
<b>Well</b>			
Name	Ocho LD 17-378HN		
Government ID			
Last Revised	1-Sep-2016		
<b>Slot</b>			
Name	Slot W06 - Ocho LD 17-378HN		
Grid Northing	1237744.197		
Grid Easting	3164197.428		
Latitude	N39 59 4 2108		
Longitude	W104 54 50.5116		
North		-74.680	
East		0.560	
<b>Installation</b>			
Name	Ocho	3164196.374	
Easting		1237818.868	
Northing			
Map Name	<unknown>		
North Alignment	True		
<b>Field</b>			
Name	Wattenburg	41136929.757	
Easting		12284170.646	
Northing			
Map Name	<unknown>		
North Alignment	Grid		

Clearance Summary											
Offset WellName	Offset Wellbore	Offset Slot	Offset Structure	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]	
ESRCH - MARK MCELWAIN 2	ESRCH - MARK MCELWAIN 2 (AWB)	ZZ-ESRCH - MARK MCELWAIN 2	Ocho		2.160	16622.810	16622.810	-75.520	16622.810	0.030	16622.810
KPK - EDSTROM UNIT 1	KPK - EDSTROM UNIT 1 (AWB)	ZZ-KPK - EDSTROM UNIT 1	Ocho		13.520	11342.850	11342.850	-19.970	11335.300	0.420	11342.850
Ocho LD 17-379HC	Ocho LD 17-379HC (PWB)	Slot W05 - Ocho LD 17-379HC	Ocho		14.210	3800.000	18125.850	7.510	3800.000	1.850	18125.850
Ocho LD 17-377HN	Ocho LD 17-377HN (PWB)	Slot W07 - Ocho LD 17-377HN	Ocho		15.310	4281.500	7710.820	7.830	4281.500	1.830	18110.240
KPK - BROWN 13-8	KPK - BROWN 13-8 (AWB)	ZZ-KPK - BROWN 13-8	Ocho		16.100	12681.630	12681.630	-29.610	12680.450	0.350	12680.450
BCHP - STONEHOCKER 21-8	BCHP - STONEHOCKER 21-8 (AWB)	ZZ-BCHP - STONEHOCKER 21-8	Ocho		28.060	5104.210	8589.900	17.680	5100.000	2.560	5068.900
Ocho LD 17-379HN	Ocho LD 17-379HN (PWB)	Slot W04 - Ocho LD 17-379HN	Ocho		29.150	3706.000	18125.850	22.600	3707.350	2.100	18125.850
Ocho LD 17-377HC	Ocho LD 17-377HC (PWB)	Slot W08 - Ocho LD 17-377HC	Ocho		30.600	4281.500	4281.500	23.120	4281.500	2.640	18110.240
BCHP - STONEHOCKER 11-8H	BCHP - STONEHOCKER 11-8H (AWB)	ZZ-BCHP - STONEHOCKER 11-8H	Ocho		38.080	8645.620	8645.620	14.610	8628.610	1.540	8628.610
Ocho LD 17-376HN	Ocho LD 17-376HN (PWB)	Slot W09 - Ocho LD 17-376HN	Ocho		45.540	4281.500	4281.500	38.060	4281.500	3.950	18125.850
STARLIGHT - MARK MCELWAIN 1	STARLIGHT - MARK MCELWAIN 1 (AWB)	ZZ-STARLIGHT - MARK MCELWAIN 1	Ocho		55.010	14000.300	14000.300	-0.590	13992.780	0.990	13992.780
Ocho LD 17-374HN	Ocho LD 17-374HN (PWB)	Slot W10 - Ocho LD 17-374HN	Ocho		60.840	4281.500	4281.500	53.360	4281.500	5.680	18125.850
Ocho LD 17-374HC	Ocho LD 17-374HC (PWB)	Slot W11 - Ocho LD 17-374HC	Ocho		75.040	4281.500	4281.500	67.570	4281.500	6.360	18125.850
Ocho LD 17-370HN	Ocho LD 17-370HN (PWB)	Slot W15 - Ocho LD 17-370HN	Ocho		83.310	4560.370	4560.370	75.320	4560.370	10.400	4576.770
Ocho LD 17-373HN	Ocho LD 17-373HN (PWB)	Slot W12 - Ocho LD 17-373HN	Ocho		89.980	4281.500	4281.500	82.500	4281.500	7.930	18125.850
Ocho LD 17-362HC	Ocho LD 17-362HC (PWB)	Slot E06 - Ocho LD 17-362HC	Ocho		99.760	3083.990	7290.030	94.200	3100.390	17.800	3149.610
Ocho LD 17-362HN	Ocho LD 17-362HN (PWB)	Slot E05 - Ocho LD 17-362HN	Ocho		100.870	2616.000	2616.000	96.080	2616.000	20.810	2673.880
Ocho LD 17-363HN	Ocho LD 17-363HN (PWB)	Slot E07 - Ocho LD 17-363HN	Ocho		100.930	3225.000	3225.000	95.150	3225.000	17.330	3280.840
Ocho LD 17-361HN	Ocho LD 17-361HN (PWB)	Slot E04 - Ocho LD 17-361HN	Ocho		104.240	2167.000	2167.000	100.170	2167.000	25.230	2247.380
Ocho LD 17-364HN	Ocho LD 17-364HN (PWB)	Slot E08 - Ocho LD 17-364HN	Ocho		104.350	3571.000	3571.000	98.020	3571.000	16.350	3641.730
Ocho LD 17-372HC	Ocho LD 17-372HC (PWB)	Slot W13 - Ocho LD 17-372HC	Ocho		105.280	4281.500	4281.500	97.800	4281.500	9.710	18125.850
Ocho LD 17-364HC	Ocho LD 17-364HC (PWB)	Slot E09 - Ocho LD 17-364HC	Ocho		109.210	3987.000	10300.000	102.210	3987.000	15.470	4068.240
Ocho LD 17-365HN	Ocho LD 17-365HN (PWB)	Slot E10 - Ocho LD 17-365HN	Ocho		116.280	4281.500	18095.060	108.610	4281.500	15.480	4330.710
Ocho LD 17-372HN	Ocho LD 17-372HN (PWB)	Slot W14 - Ocho LD 17-372HN	Ocho		120.580	4281.500	4281.500	113.100	4281.500	10.260	18125.850
Ocho LD 17-367HN	Ocho LD 17-367HN (PWB)	Slot E11 - Ocho LD 17-367HN	Ocho		124.840	4281.500	18100.000	117.360	4281.500	16.610	4330.710
BCHP - STONEHOCKER 12-8H	BCHP - STONEHOCKER 12-8H (AWB)	ZZ-BCHP - STONEHOCKER 12-8H	Ocho		126.380	10216.300	10216.300	99.590	10236.220	4.120	10285.430
Ocho LD 17-367HC	Ocho LD 17-367HC (PWB)	Slot E12 - Ocho LD 17-367HC	Ocho		134.340	4281.500	12504.090	126.870	4281.500	17.520	18125.850
Ocho LD 17-368HN	Ocho LD 17-368HN (PWB)	Slot E13 - Ocho LD 17-368HN	Ocho		145.040	4281.500	13408.870	137.560	4281.500	15.810	18125.850
Ocho LD 17-369HN	Ocho LD 17-369HN (PWB)	Slot E14 - Ocho LD 17-369HN	Ocho		156.500	4281.500	4281.500	149.020	4281.500	14.170	18125.850
PDC - MCELWAIN 13-17	PDC - MCELWAIN 13-17 (AWB)	ZZ-PDC - MCELWAIN 13-17	Ocho		158.760	16049.480	16049.480	85.370	16059.710	2.160	16059.710
Ocho LD 17-369HC	Ocho LD 17-369HC (PWB)	Slot E15 - Ocho LD 17-369HC	Ocho		168.190	4281.500	4281.500	160.710	4281.500	13.610	18125.850
PDC - MCELWAIN 2	PDC - MCELWAIN 2 (AWB)	ZZ-PDC - MCELWAIN 2	Ocho		309.020	17566.940	17566.940	222.810	17552.490	3.570	17552.490
PDC - MCELWAIN 11-17	PDC - MCELWAIN 11-17 (AWB)	ZZ-PDC - MCELWAIN 11-17	Ocho		385.890	14430.050	14430.050	327.150	14419.290	6.530	14400.000
PDC - MCELWAIN 12-17	PDC - MCELWAIN 12-17 (AWB)	ZZ-PDC - MCELWAIN 12-17	Ocho		386.100	15037.320	15037.320	321.960	15026.250	5.990	15000.000
BCHP - STONEHOCKER 8-5	BCHP - STONEHOCKER 8-5 (AWB)	ZZ-BCHP - STONEHOCKER 8-5	Ocho		569.920	9176.630	9176.630	553.760	9169.950	34.210	9038.710
KMG - EDSTROM 24-8 1	KMG - EDSTROM 24-8 1 (AWB)	ZZ-KMG - EDSTROM 24-8 1	Ocho		995.340	12354.500	12354.500	954.680	12352.360	24.390	12288.750
BCHP - STONEHOCKER 22-8H	BCHP - STONEHOCKER 22-8H (AWB)	ZZ-BCHP - STONEHOCKER 22-8H	Ocho		1002.140	1319.580	10166.450	999.060	1319.580	52.930	10022.970
SYG - BROWN 11-8	SYG - BROWN 11-8 (AWB)	ZZ-SYG - BROWN 11-8	Ocho		1188.070	11253.570	11253.570	1152.610	11253.570	33.380	11171.260
MERIT - MCELWAIN 1	MERIT - MCELWAIN 1 (AWB)	ZZ-MERIT - MCELWAIN 1	Ocho		1375.440	14000.000	14000.000	1320.590	14000.000	25.070	13976.380
PDC - STONEHOCKER 32-8	PDC - STONEHOCKER 32-8 (AWB)	ZZ-PDC - STONEHOCKER 32-8	Ocho		1736.580	4281.500	10179.100	1727.640	4281.500	109.000	10761.150
PDC - LEISLE 8-5	PDC - LEISLE 8-5 (AWB)	ZZ-PDC - LEISLE 8-5	Ocho		1904.580	4281.500	9220.470	1869.870	4281.500	175.650	11040.380
PDC - MCELWAIN 32-17	PDC - MCELWAIN 32-17 (AWB)	ZZ-PDC - MCELWAIN 32-17	Ocho		2021.360	15748.030	15748.030	1951.190	15748.030	28.780	15813.650
PDC - MCELWAIN 34-17	PDC - MCELWAIN 34-17 (AWB)	ZZ-PDC - MCELWAIN 34-17	Ocho		2578.470	18125.850	18125.850	2486.400	18125.850	28.010	18125.850
SYG - QUEBEC-N INVESTMENT 1	SYG - QUEBEC-N INVESTMENT 1 (AWB)	ZZ-SYG - QUEBEC-N INVESTMENT 1	Ocho		2584.850	11307.650	11307.650	2553.300	11318.990	80.190	11729.000
KMG - QUEBEC NORTH 34-8	KMG - QUEBEC NORTH 34-8 (AWB)	ZZ-KMG - QUEBEC NORTH 34-8	Ocho		3051.660	12354.770	12354.770	3011.040	12368.770	73.150	12877.300
PDC - MC ELWAIN 4	PDC - MC ELWAIN 4 (AWB)	ZZ-PDC - MC ELWAIN 4	Ocho		3267.730	17262.690	17262.690	3184.250	17273.620	38.830	17568.900
KPK - QUEBEC NORTH 12-8	KPK - QUEBEC NORTH 12-8 (AWB)	ZZ-KPK - QUEBEC NORTH 12-8	Ocho		3417.100	4281.500	11220.470	3408.200	4281.500	114.540	12655.900
KPK - NORTH QUEBEC 16-8	KPK - NORTH QUEBEC 16-8 (AWB)	ZZ-KPK - NORTH QUEBEC 16-8	Ocho		3938.870	12582.530	12582.530	3896.020	12600.000	85.630	13730.310
PDC - MCELWAIN 41-17	PDC - MCELWAIN 41-17 (AWB)	ZZ-PDC - MCELWAIN 41-17	Ocho		3967.080	14226.410	14226.410	3910.360	1525.250	67.570	14993.440
PDC - MCELWAIN 42-17	PDC - MCELWAIN 42-17 (AWB)	ZZ-PDC - MCELWAIN 42-17	Ocho		4045.490	15239.500	15239.500	3979.900	15255.910	60.020	15944.880
PDC - MCELWAIN 44-17A	PDC - MCELWAIN 44-17A (AWB)	ZZ-PDC - MCELWAIN 44-17A	Ocho		4210.240	18125.850	18125.850	4118.430	18125.850	45.860	18125.850

<b>Reference Wellbore Survey Tool Program</b>			
Survey Name	Planned		
MD[ft]		18125.850	
Survey Tool	WdW Rate Gyro		
Error Model	Standard		

Clearance Data												
Reference MD(ft)	Reference TVD(ft)	Reference North(ft)	Reference East(ft)	Offset Well	Offset MD(ft)	Offset TVD(ft)	Offset North(ft)	Offset East(ft)	Angle From Highside (deg)	Closest Approach Distance (ft)	Ellipse Separation (ft)	Clearance Factor
0.000	0.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	0.000	74.200	-2600.590	-1577.000	-148.800	3042.280	3041.320	
100.000	100.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	25.800	100.000	-2600.590	-1577.000	-148.800	3041.380	3039.960	2149.790
200.000	200.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	125.800	200.000	-2600.590	-1577.000	-148.800	3041.380	3039.440	1565.230
300.000	300.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	225.800	300.000	-2600.590	-1577.000	-148.800	3041.380	3039.080	1321.370
400.000	400.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	325.800	400.000	-2600.590	-1577.000	-148.800	3041.380	3038.780	1168.490
500.000	500.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	425.800	500.000	-2600.590	-1577.000	-148.800	3041.380	3038.510	1058.980
600.000	600.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	525.800	600.000	-2600.590	-1577.000	-148.800	3041.380	3038.260	974.800
700.000	700.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	625.800	700.000	-2600.590	-1577.000	-148.800	3041.380	3038.030	907.140
800.000	800.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	725.800	800.000	-2600.590	-1577.000	-148.800	3041.380	3037.800	851.050
900.000	900.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	825.800	900.000	-2600.590	-1577.000	-148.800	3041.380	3037.590	803.480
1000.000	1000.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	925.800	1000.000	-2600.590	-1577.000	-148.800	3041.380	3037.390	762.420
1100.000	1100.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1025.800	1100.000	-2600.590	-1577.000	-148.800	3041.380	3037.190	726.480
1200.000	1200.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1125.800	1200.000	-2600.590	-1577.000	-148.800	3041.380	3037.000	694.650
1300.000	1300.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1225.800	1300.000	-2600.590	-1577.000	-148.800	3041.380	3036.810	666.210
1400.000	1400.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1325.800	1400.000	-2600.590	-1577.000	-148.800	3041.380	3036.630	640.570
1500.000	1500.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1425.800	1500.000	-2600.590	-1577.000	-148.800	3041.380	3036.450	617.310
1600.000	1600.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1525.800	1600.000	-2600.590	-1577.000	-148.800	3041.380	3036.280	596.080
1700.000	1700.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1625.800	1700.000	-2600.590	-1577.000	-148.800	3041.380	3036.100	576.590
1800.000	1800.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1725.800	1800.000	-2600.590	-1577.000	-148.800	3041.380	3036.310	600.570
1900.000	1900.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1825.800	1900.000	-2600.590	-1577.000	-148.800	3041.380	3036.150	581.380
2000.000	2000.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	1925.800	2000.000	-2600.590	-1577.000	-148.800	3041.380	3035.980	563.630
2100.000	2100.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	2025.800	2100.000	-2600.590	-1577.000	-148.800	3041.380	3035.820	547.140
2200.000	2200.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	2125.800	2200.000	-2600.590	-1577.000	-148.800	3041.380	3035.660	531.780
2300.000	2300.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	2225.800	2300.000	-2600.590	-1577.000	-148.800	3041.380	3035.500	517.420
2400.000	2400.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	2325.800	2400.000	-2600.590	-1577.000	-148.800	3041.380	3035.340	503.960
2500.000	2500.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	2425.800	2500.000	-2600.590	-1577.000	-148.800	3041.380	3035.180	490.500
2600.000	2600.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	2525.800	2600.000	-2600.590	-1577.000	-148.800	3041.380	3035.030	477.400
2700.000	2700.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	2625.800	2700.000	-2600.590	-1577.000	-148.800	3041.380	3034.880	468.150
2800.000	2800.000	0.000	0.000	0.000 KPK - EDSTROM UNIT 1	2725.800	2800.000	-2600.590	-1577.000	-148.800	3041.380	3034.730	457.510