

J/109 Deep Keel 150% Genoa, 121sq.m. A-Sail VPP Data:

Based on ORC IMS 2004 Velocity Prediction program

Columns are as follows: VTW=Velocity True Wind, BTW=Beta True Wind (angle), VAW=Velocity Apparent Wind, BAW=Beta Apparent Wind (angle), V=Velocity (boatspeed), VMG=Velocity Made Good (directly to windward or leeward as the case may be), PHI = heel angle, REEF - program trying to quantify effect of flattening sails and bending mast, CL = calculated coefficient of lift, iter = # of iterations VPP used to generate best case boatspeed scenario.

For each wind condition grouping there are several rows of data for several sailing angles, three of these rows are for calculated OPTIMUM VMG data (indicated as such on right hand most column). First is Optimum Downwind VMG (OPTDN CL Asym) with Spinnaker, then Optimum downwind with Jib/Genoa ONLY (Jib OPTDN) and finally, Optimum Upwind (OPTUP).

| VTW | BTW | VAW | BAW | V | VMG | PHI | REEF | FLAT | CL | iter | |
|-----|-------|-------|--------|-------|--------|-----|--------|--------|---------|------|------------------------|
| 6.0 | 180.0 | 2.72 | 180.00 | 3.226 | -3.226 | 0.0 | 1.0000 | 1.0000 | -0.0693 | 4 | Asym Spin tacked on CL |
| 6.0 | 165.0 | 2.72 | 145.56 | 3.499 | -3.380 | 0.2 | 1.0000 | 1.0000 | 0.8146 | 3 | Asym Spin tacked on CL |
| 6.0 | 150.0 | 3.09 | 105.51 | 4.324 | -3.745 | 0.8 | 1.0000 | 1.0000 | 2.1363 | 5 | Asym Spin tacked on CL |
| 6.0 | 135.0 | 4.38 | 73.71 | 5.431 | -3.840 | 2.0 | 1.0000 | 1.0000 | 2.8689 | 6 | Asym Spin tacked on CL |
| 6.0 | 120.0 | 6.08 | 57.61 | 6.231 | -3.115 | 3.6 | 1.0000 | 1.0000 | 2.9294 | 5 | Asym Spin tacked on CL |
| 6.0 | 110.0 | 7.14 | 51.19 | 6.507 | -2.225 | 4.9 | 1.0000 | 1.0000 | 2.8674 | 4 | Asym Spin tacked on CL |
| 6.0 | 90.0 | 8.78 | 41.98 | 6.528 | 0.000 | 8.3 | 1.0000 | 1.0000 | 2.4420 | 4 | Asym Spin tacked on CL |
| 6.0 | 80.0 | 9.29 | 38.66 | 6.221 | 1.080 | 7.2 | 1.0000 | 1.0000 | 2.0594 | 3 | Asym Spin tacked on CL |
| 6.0 | 75.0 | 9.42 | 37.30 | 5.954 | 1.541 | 5.9 | 1.0000 | 1.0000 | 1.8539 | 3 | Asym Spin tacked on CL |
| 6.0 | 70.0 | 9.45 | 36.05 | 5.609 | 1.919 | 5.0 | 1.0000 | 1.0000 | 1.6599 | 3 | Asym Spin tacked on CL |
| 6.0 | 60.0 | 9.26 | 33.68 | 4.736 | 2.368 | 3.8 | 1.0000 | 1.0000 | 1.3216 | 4 | Asym Spin tacked on CL |
| 6.0 | 140.9 | 3.78 | 83.56 | 5.035 | -3.905 | 1.5 | 1.0000 | 1.0000 | 2.7392 | 4 | OPTDN CL Asym |
| 6.0 | 180.0 | 2.89 | 180.00 | 2.910 | -2.910 | 0.1 | 1.0000 | 1.0000 | -0.1158 | 4 | Jib |
| 6.0 | 165.0 | 2.92 | 149.04 | 3.097 | -2.992 | 0.3 | 1.0000 | 1.0000 | 0.1951 | 4 | Jib |
| 6.0 | 150.0 | 3.36 | 120.50 | 3.312 | -2.868 | 0.5 | 1.0000 | 1.0000 | 0.6258 | 4 | Jib |
| 6.0 | 135.0 | 4.11 | 94.07 | 3.806 | -2.691 | 0.8 | 1.0000 | 1.0000 | 1.0512 | 3 | Jib |
| 6.0 | 120.0 | 5.39 | 68.63 | 4.861 | -2.431 | 1.5 | 1.0000 | 1.0000 | 1.5217 | 4 | Jib |
| 6.0 | 110.0 | 6.50 | 56.82 | 5.541 | -1.895 | 2.2 | 1.0000 | 1.0000 | 1.7454 | 3 | Jib |
| 6.0 | 90.0 | 8.49 | 42.92 | 6.218 | 0.000 | 3.7 | 1.0000 | 1.0000 | 1.9082 | 3 | Jib |
| 6.0 | 80.0 | 9.24 | 37.99 | 6.277 | 1.090 | 4.5 | 1.0000 | 1.0000 | 1.9204 | 3 | Jib |
| 6.0 | 75.0 | 9.55 | 35.71 | 6.255 | 1.619 | 4.9 | 1.0000 | 1.0000 | 1.9215 | 4 | Jib |
| 6.0 | 70.0 | 9.81 | 33.54 | 6.196 | 2.119 | 5.3 | 1.0000 | 1.0000 | 1.9208 | 4 | Jib |
| 6.0 | 60.0 | 10.14 | 29.46 | 5.931 | 2.966 | 6.1 | 1.0000 | 1.0000 | 1.9178 | 4 | Jib |
| 6.0 | 52.0 | 10.17 | 26.49 | 5.535 | 3.408 | 6.3 | 1.0000 | 1.0000 | 1.9178 | 5 | Jib |
| 6.0 | 167.2 | 2.88 | 153.64 | 3.070 | -2.995 | 0.3 | 1.0000 | 1.0000 | 0.1370 | 3 | Jib OPTDN |
| 6.0 | 45.0 | 9.98 | 24.07 | 5.016 | 3.549 | 5.9 | 1.0000 | 1.0000 | 1.9131 | 5 | OPTUP |

| VTW | BTW | VAW | BAW | V | VMG | PHI | REEF | FLAT | CL | iter | |
|-----|-------|-------|--------|-------|--------|------|--------|--------|---------|------|------------------------|
| 8.0 | 180.0 | 3.66 | 180.00 | 4.266 | -4.266 | 0.1 | 1.0000 | 1.0000 | -0.0693 | 5 | Asym Spin tacked on CL |
| 8.0 | 165.0 | 3.68 | 146.13 | 4.600 | -4.444 | 0.4 | 1.0000 | 1.0000 | 0.7981 | 4 | Asym Spin tacked on CL |
| 8.0 | 150.0 | 4.19 | 108.75 | 5.520 | -4.781 | 1.2 | 1.0000 | 1.0000 | 2.0151 | 5 | Asym Spin tacked on CL |
| 8.0 | 135.0 | 5.68 | 80.02 | 6.589 | -4.659 | 2.8 | 1.0000 | 1.0000 | 2.7948 | 5 | Asym Spin tacked on CL |
| 8.0 | 120.0 | 7.53 | 65.16 | 7.124 | -3.562 | 5.4 | 1.0000 | 1.0000 | 2.9217 | 5 | Asym Spin tacked on CL |
| 8.0 | 110.0 | 8.64 | 57.78 | 7.310 | -2.500 | 10.4 | 1.0000 | 1.0000 | 2.9304 | 4 | Asym Spin tacked on CL |
| 8.0 | 90.0 | 10.40 | 45.51 | 7.291 | 0.000 | 19.2 | 1.0000 | 1.0000 | 2.7047 | 5 | Asym Spin tacked on CL |
| 8.0 | 80.0 | 11.17 | 40.70 | 7.107 | 1.234 | 19.7 | 1.0000 | 1.0000 | 2.3701 | 3 | Asym Spin tacked on CL |
| 8.0 | 75.0 | 11.54 | 38.76 | 6.961 | 1.802 | 18.1 | 1.0000 | 1.0000 | 2.1375 | 3 | Asym Spin tacked on CL |
| 8.0 | 70.0 | 11.84 | 37.08 | 6.747 | 2.308 | 15.5 | 1.0000 | 1.0000 | 1.8825 | 3 | Asym Spin tacked on CL |
| 8.0 | 60.0 | 12.02 | 34.21 | 5.983 | 2.991 | 9.5 | 1.0000 | 1.0000 | 1.4214 | 5 | Asym Spin tacked on CL |
| 8.0 | 143.8 | 4.69 | 94.38 | 6.041 | -4.876 | 1.8 | 1.0000 | 1.0000 | 2.4992 | 4 | OPTDN CL Asym |
| 8.0 | 180.0 | 3.86 | 180.00 | 3.865 | -3.865 | 0.1 | 1.0000 | 1.0000 | -0.1158 | 3 | Jib |
| 8.0 | 165.0 | 3.91 | 149.25 | 4.102 | -3.962 | 0.5 | 1.0000 | 1.0000 | 0.1924 | 4 | Jib |
| 8.0 | 150.0 | 4.51 | 121.09 | 4.363 | -3.778 | 0.9 | 1.0000 | 1.0000 | 0.6168 | 3 | Jib |
| 8.0 | 135.0 | 5.49 | 95.81 | 4.908 | -3.470 | 1.2 | 1.0000 | 1.0000 | 1.0209 | 3 | Jib |
| 8.0 | 120.0 | 7.00 | 72.69 | 5.948 | -2.974 | 2.0 | 1.0000 | 1.0000 | 1.4445 | 4 | Jib |
| 8.0 | 110.0 | 8.22 | 61.93 | 6.509 | -2.226 | 2.9 | 1.0000 | 1.0000 | 1.6489 | 3 | Jib |
| 8.0 | 90.0 | 10.41 | 47.62 | 7.015 | 0.000 | 5.5 | 1.0000 | 1.0000 | 1.8764 | 4 | Jib |
| 8.0 | 80.0 | 11.26 | 41.83 | 7.052 | 1.225 | 8.6 | 1.0000 | 1.0000 | 1.9116 | 4 | Jib |
| 8.0 | 75.0 | 11.63 | 39.07 | 7.032 | 1.820 | 10.2 | 1.0000 | 1.0000 | 1.9186 | 4 | Jib |
| 8.0 | 70.0 | 11.95 | 36.40 | 6.985 | 2.389 | 11.6 | 1.0000 | 1.0000 | 1.9213 | 4 | Jib |
| 8.0 | 60.0 | 12.44 | 31.30 | 6.786 | 3.393 | 14.0 | 1.0000 | 1.0000 | 1.9193 | 4 | Jib |
| 8.0 | 52.0 | 12.64 | 27.55 | 6.472 | 3.984 | 15.2 | 1.0000 | 1.0000 | 1.9175 | 4 | Jib |
| 8.0 | 167.8 | 3.86 | 154.96 | 4.060 | -3.968 | 0.5 | 1.0000 | 1.0000 | 0.1212 | 3 | Jib OPTDN |
| 8.0 | 43.5 | 12.53 | 24.21 | 5.850 | 4.243 | 13.9 | 1.0000 | 0.9690 | 1.8554 | 5 | OPTUP |

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| VTW | BTW | VAW | BAW | V | VMG | PHI | REEF | FLAT | CL | iter | | | | |
|------|-------|-------|--------|-------|--------|------|--------|--------|---------|------|-------|-------|--------|-------|
| 10.0 | 180.0 | 4.68 | 180.00 | 5.232 | -5.232 | 0.1 | 1.0000 | 1.0000 | -0.0693 | 5 | Asym | Spin | tacked | on CL |
| 10.0 | 165.0 | 4.73 | 147.13 | 5.603 | -5.412 | 0.6 | 1.0000 | 1.0000 | 0.7697 | 4 | Asym | Spin | tacked | on CL |
| 10.0 | 150.0 | 5.38 | 113.00 | 6.479 | -5.611 | 1.6 | 1.0000 | 1.0000 | 1.8551 | 5 | Asym | Spin | tacked | on CL |
| 10.0 | 135.0 | 7.00 | 87.78 | 7.276 | -5.145 | 3.5 | 1.0000 | 1.0000 | 2.6584 | 5 | Asym | Spin | tacked | on CL |
| 10.0 | 120.0 | 8.88 | 71.87 | 7.706 | -3.853 | 9.9 | 1.0000 | 1.0000 | 2.8834 | 5 | Asym | Spin | tacked | on CL |
| 10.0 | 110.0 | 9.92 | 63.30 | 7.824 | -2.676 | 16.7 | 1.0000 | 1.0000 | 2.9263 | 4 | Asym | Spin | tacked | on CL |
| 10.0 | 90.0 | 11.77 | 49.63 | 7.626 | 0.000 | 23.5 | 1.0000 | 0.8504 | 2.4255 | 5 | Asym | Spin | tacked | on CL |
| 10.0 | 80.0 | 12.70 | 44.09 | 7.425 | 1.289 | 23.5 | 1.0000 | 0.7821 | 2.0664 | 3 | Asym | Spin | tacked | on CL |
| 10.0 | 75.0 | 13.12 | 41.45 | 7.303 | 1.890 | 23.2 | 1.0000 | 0.7799 | 1.9155 | 3 | Asym | Spin | tacked | on CL |
| 10.0 | 70.0 | 13.51 | 38.98 | 7.153 | 2.447 | 22.6 | 1.0000 | 0.8109 | 1.7785 | 3 | Asym | Spin | tacked | on CL |
| 10.0 | 60.0 | 14.08 | 34.59 | 6.682 | 3.341 | 19.9 | 1.0000 | 1.0000 | 1.5379 | 5 | Asym | Spin | tacked | on CL |
| 10.0 | 149.7 | 5.40 | 112.45 | 6.496 | -5.611 | 1.6 | 1.0000 | 1.0000 | 1.8759 | 2 | OPTDN | CL | Asym | |
| 10.0 | 180.0 | 4.90 | 180.00 | 4.762 | -4.762 | 0.2 | 1.0000 | 1.0000 | -0.1158 | 4 | Jib | | | |
| 10.0 | 165.0 | 4.97 | 149.81 | 5.034 | -4.862 | 0.8 | 1.0000 | 1.0000 | 0.1852 | 4 | Jib | | | |
| 10.0 | 150.0 | 5.71 | 122.26 | 5.317 | -4.604 | 1.2 | 1.0000 | 1.0000 | 0.5983 | 3 | Jib | | | |
| 10.0 | 135.0 | 6.90 | 98.13 | 5.855 | -4.140 | 1.7 | 1.0000 | 1.0000 | 0.9811 | 3 | Jib | | | |
| 10.0 | 120.0 | 8.56 | 77.56 | 6.672 | -3.336 | 2.6 | 1.0000 | 1.0000 | 1.3526 | 3 | Jib | | | |
| 10.0 | 110.0 | 9.81 | 67.45 | 7.064 | -2.416 | 3.6 | 1.0000 | 1.0000 | 1.5435 | 3 | Jib | | | |
| 10.0 | 90.0 | 12.10 | 51.74 | 7.494 | 0.000 | 9.6 | 1.0000 | 1.0000 | 1.8254 | 5 | Jib | | | |
| 10.0 | 80.0 | 12.98 | 44.96 | 7.516 | 1.305 | 14.3 | 1.0000 | 1.0000 | 1.8946 | 4 | Jib | | | |
| 10.0 | 75.0 | 13.35 | 41.73 | 7.480 | 1.936 | 16.6 | 1.0000 | 1.0000 | 1.9107 | 4 | Jib | | | |
| 10.0 | 70.0 | 13.67 | 38.59 | 7.411 | 2.535 | 18.7 | 1.0000 | 1.0000 | 1.9187 | 4 | Jib | | | |
| 10.0 | 60.0 | 14.25 | 32.99 | 7.171 | 3.586 | 20.5 | 1.0000 | 0.9560 | 1.8363 | 5 | Jib | | | |
| 10.0 | 52.0 | 14.62 | 29.10 | 6.880 | 4.236 | 19.5 | 1.0000 | 0.8851 | 1.6975 | 4 | Jib | | | |
| 10.0 | 168.6 | 4.89 | 156.91 | 4.973 | -4.874 | 0.6 | 1.0000 | 1.0000 | 0.0987 | 3 | Jib | OPTDN | | |
| 10.0 | 41.3 | 14.70 | 24.32 | 6.188 | 4.650 | 16.9 | 1.0000 | 0.8100 | 1.5516 | 6 | OPTUP | | | |

| VTW | BTW | VAW | BAW | V | VMG | PHI | REEF | FLAT | CL | iter | | | | |
|------|-------|-------|--------|-------|--------|------|--------|--------|---------|------|-------|-------|--------|-------|
| 12.0 | 180.0 | 5.78 | 180.00 | 6.109 | -6.109 | 0.2 | 1.0000 | 1.0000 | -0.0693 | 5 | Asym | Spin | tacked | on CL |
| 12.0 | 165.0 | 5.89 | 148.52 | 6.460 | -6.240 | 0.8 | 1.0000 | 1.0000 | 0.7304 | 4 | Asym | Spin | tacked | on CL |
| 12.0 | 150.0 | 6.74 | 118.13 | 7.121 | -6.167 | 2.1 | 1.0000 | 1.0000 | 1.6700 | 4 | Asym | Spin | tacked | on CL |
| 12.0 | 135.0 | 8.40 | 94.13 | 7.800 | -5.515 | 4.4 | 1.0000 | 1.0000 | 2.5063 | 5 | Asym | Spin | tacked | on CL |
| 12.0 | 120.0 | 10.16 | 77.05 | 8.193 | -4.096 | 14.9 | 1.0000 | 1.0000 | 2.8309 | 6 | Asym | Spin | tacked | on CL |
| 12.0 | 110.0 | 10.97 | 67.65 | 8.189 | -2.801 | 23.2 | 1.0000 | 1.0000 | 2.9084 | 4 | Asym | Spin | tacked | on CL |
| 12.0 | 90.0 | 13.17 | 53.47 | 7.840 | 0.000 | 25.2 | 0.9857 | 0.7371 | 2.0857 | 5 | Asym | Spin | tacked | on CL |
| 12.0 | 80.0 | 14.21 | 47.25 | 7.615 | 1.322 | 24.9 | 0.9735 | 0.6709 | 1.7722 | 4 | Asym | Spin | tacked | on CL |
| 12.0 | 75.0 | 14.68 | 44.28 | 7.487 | 1.938 | 24.7 | 0.9717 | 0.6551 | 1.6428 | 3 | Asym | Spin | tacked | on CL |
| 12.0 | 70.0 | 15.12 | 41.41 | 7.342 | 2.511 | 24.4 | 0.9732 | 0.6553 | 1.5251 | 3 | Asym | Spin | tacked | on CL |
| 12.0 | 60.0 | 15.87 | 36.18 | 6.934 | 3.467 | 23.0 | 1.0000 | 0.7323 | 1.3166 | 5 | Asym | Spin | tacked | on CL |
| 12.0 | 159.9 | 6.08 | 137.89 | 6.659 | -6.255 | 1.1 | 1.0000 | 1.0000 | 1.0391 | 4 | OPTDN | CL | Asym | |
| 12.0 | 180.0 | 6.00 | 180.00 | 5.592 | -5.592 | 0.3 | 1.0000 | 1.0000 | -0.1158 | 4 | Jib | | | |
| 12.0 | 165.0 | 6.10 | 150.54 | 5.885 | -5.685 | 1.0 | 1.0000 | 1.0000 | 0.1757 | 3 | Jib | | | |
| 12.0 | 150.0 | 6.97 | 123.79 | 6.162 | -5.336 | 1.6 | 1.0000 | 1.0000 | 0.5745 | 3 | Jib | | | |
| 12.0 | 135.0 | 8.35 | 101.13 | 6.584 | -4.656 | 2.2 | 1.0000 | 1.0000 | 0.9308 | 3 | Jib | | | |
| 12.0 | 120.0 | 10.11 | 82.30 | 7.149 | -3.574 | 3.2 | 1.0000 | 1.0000 | 1.2641 | 3 | Jib | | | |
| 12.0 | 110.0 | 11.41 | 72.08 | 7.473 | -2.556 | 4.5 | 1.0000 | 1.0000 | 1.4554 | 4 | Jib | | | |
| 12.0 | 90.0 | 13.68 | 54.89 | 7.867 | 0.000 | 14.1 | 1.0000 | 1.0000 | 1.7717 | 5 | Jib | | | |
| 12.0 | 80.0 | 14.45 | 47.15 | 7.831 | 1.360 | 20.4 | 1.0000 | 1.0000 | 1.8744 | 5 | Jib | | | |
| 12.0 | 75.0 | 14.79 | 43.60 | 7.746 | 2.005 | 22.8 | 1.0000 | 0.9851 | 1.8723 | 4 | Jib | | | |
| 12.0 | 70.0 | 15.24 | 40.67 | 7.638 | 2.612 | 22.7 | 1.0000 | 0.9222 | 1.7645 | 4 | Jib | | | |
| 12.0 | 60.0 | 16.01 | 35.03 | 7.380 | 3.690 | 22.2 | 1.0000 | 0.8212 | 1.5779 | 5 | Jib | | | |
| 12.0 | 52.0 | 16.48 | 30.71 | 7.106 | 4.375 | 21.4 | 1.0000 | 0.7576 | 1.4539 | 4 | Jib | | | |
| 12.0 | 169.3 | 5.98 | 159.01 | 5.806 | -5.706 | 0.8 | 1.0000 | 1.0000 | 0.0753 | 4 | Jib | OPTDN | | |
| 12.0 | 39.8 | 16.72 | 24.62 | 6.373 | 4.894 | 18.9 | 1.0000 | 0.6834 | 1.3096 | 6 | OPTUP | | | |

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 Based on ORC IMS 2004 Velocity Prediction program

| VTW | BTW | VAW | BAW | V | VMG | PHI | REEF | FLAT | CL | iter | | | | |
|------|-------|-------|--------|-------|--------|------|--------|--------|---------|------|-------|-------|--------|-------|
| 14.0 | 180.0 | 7.07 | 180.00 | 6.801 | -6.801 | 0.3 | 1.0000 | 1.0000 | -0.0693 | 4 | Asym | Spin | tacked | on CL |
| 14.0 | 165.0 | 7.27 | 150.39 | 7.082 | -6.841 | 1.1 | 1.0000 | 1.0000 | 0.6780 | 3 | Asym | Spin | tacked | on CL |
| 14.0 | 150.0 | 8.21 | 122.39 | 7.617 | -6.597 | 2.5 | 1.0000 | 1.0000 | 1.5251 | 4 | Asym | Spin | tacked | on CL |
| 14.0 | 135.0 | 9.87 | 98.86 | 8.282 | -5.856 | 5.9 | 1.0000 | 1.0000 | 2.3684 | 6 | Asym | Spin | tacked | on CL |
| 14.0 | 120.0 | 11.32 | 81.19 | 8.607 | -4.303 | 20.0 | 1.0000 | 1.0000 | 2.7742 | 6 | Asym | Spin | tacked | on CL |
| 14.0 | 110.0 | 12.09 | 71.75 | 8.434 | -2.884 | 25.9 | 0.9615 | 1.0000 | 2.6629 | 7 | Asym | Spin | tacked | on CL |
| 14.0 | 90.0 | 14.57 | 56.69 | 8.002 | 0.000 | 25.3 | 0.8963 | 0.7799 | 1.8353 | 5 | Asym | Spin | tacked | on CL |
| 14.0 | 80.0 | 15.69 | 49.96 | 7.755 | 1.347 | 25.0 | 0.8870 | 0.6943 | 1.5626 | 4 | Asym | Spin | tacked | on CL |
| 14.0 | 75.0 | 16.20 | 46.75 | 7.618 | 1.972 | 24.8 | 0.8872 | 0.6648 | 1.4486 | 3 | Asym | Spin | tacked | on CL |
| 14.0 | 70.0 | 16.68 | 43.62 | 7.468 | 2.554 | 24.6 | 0.8891 | 0.6510 | 1.3473 | 3 | Asym | Spin | tacked | on CL |
| 14.0 | 60.0 | 17.52 | 37.82 | 7.076 | 3.538 | 23.5 | 0.9126 | 0.6832 | 1.1629 | 4 | Asym | Spin | tacked | on CL |
| 14.0 | 168.7 | 7.16 | 157.76 | 6.984 | -6.849 | 0.9 | 1.0000 | 1.0000 | 0.4779 | 3 | OPTDN | CL | Asym | |
| 14.0 | 180.0 | 7.20 | 180.00 | 6.325 | -6.325 | 0.4 | 1.0000 | 1.0000 | -0.1158 | 4 | Jib | | | |
| 14.0 | 165.0 | 7.36 | 151.60 | 6.590 | -6.365 | 1.4 | 1.0000 | 1.0000 | 0.1622 | 4 | Jib | | | |
| 14.0 | 150.0 | 8.35 | 125.99 | 6.804 | -5.892 | 2.1 | 1.0000 | 1.0000 | 0.5400 | 3 | Jib | | | |
| 14.0 | 135.0 | 9.86 | 104.47 | 7.096 | -5.018 | 2.8 | 1.0000 | 1.0000 | 0.8765 | 3 | Jib | | | |
| 14.0 | 120.0 | 11.70 | 86.21 | 7.532 | -3.766 | 4.0 | 1.0000 | 1.0000 | 1.1922 | 3 | Jib | | | |
| 14.0 | 110.0 | 13.03 | 75.73 | 7.832 | -2.679 | 6.0 | 1.0000 | 1.0000 | 1.3858 | 5 | Jib | | | |
| 14.0 | 90.0 | 15.08 | 57.25 | 8.161 | 0.000 | 18.9 | 1.0000 | 1.0000 | 1.7254 | 6 | Jib | | | |
| 14.0 | 80.0 | 15.85 | 49.30 | 8.017 | 1.392 | 23.9 | 1.0000 | 0.9375 | 1.7337 | 5 | Jib | | | |
| 14.0 | 75.0 | 16.37 | 46.04 | 7.907 | 2.047 | 23.9 | 1.0000 | 0.8650 | 1.6286 | 4 | Jib | | | |
| 14.0 | 70.0 | 16.86 | 42.87 | 7.789 | 2.664 | 23.8 | 1.0000 | 0.8050 | 1.5328 | 4 | Jib | | | |
| 14.0 | 60.0 | 17.72 | 36.78 | 7.518 | 3.759 | 23.4 | 1.0000 | 0.7113 | 1.3663 | 5 | Jib | | | |
| 14.0 | 52.0 | 18.27 | 32.12 | 7.246 | 4.461 | 22.7 | 1.0000 | 0.6538 | 1.2554 | 4 | Jib | | | |
| 14.0 | 171.2 | 7.18 | 163.31 | 6.489 | -6.413 | 1.0 | 1.0000 | 1.0000 | 0.0302 | 4 | Jib | OPTDN | | |
| 14.0 | 38.9 | 18.66 | 25.03 | 6.487 | 5.046 | 20.3 | 1.0000 | 0.5828 | 1.1174 | 6 | OPTUP | | | |

| VTW | BTW | VAW | BAW | V | VMG | PHI | REEF | FLAT | CL | iter | | | | |
|------|-------|-------|--------|-------|--------|------|--------|--------|---------|------|-------|-------|--------|-------|
| 16.0 | 180.0 | 8.53 | 180.00 | 7.322 | -7.322 | 0.4 | 1.0000 | 1.0000 | -0.0693 | 3 | Asym | Spin | tacked | on CL |
| 16.0 | 165.0 | 8.76 | 152.09 | 7.569 | -7.311 | 1.4 | 1.0000 | 1.0000 | 0.6311 | 3 | Asym | Spin | tacked | on CL |
| 16.0 | 150.0 | 9.73 | 125.56 | 8.070 | -6.989 | 3.0 | 1.0000 | 1.0000 | 1.4217 | 4 | Asym | Spin | tacked | on CL |
| 16.0 | 135.0 | 11.31 | 102.42 | 8.756 | -6.192 | 9.3 | 1.0000 | 1.0000 | 2.2520 | 6 | Asym | Spin | tacked | on CL |
| 16.0 | 120.0 | 12.32 | 84.75 | 8.941 | -4.471 | 25.0 | 1.0000 | 1.0000 | 2.7147 | 6 | Asym | Spin | tacked | on CL |
| 16.0 | 110.0 | 13.42 | 75.41 | 8.649 | -2.958 | 26.1 | 0.9023 | 1.0000 | 2.3174 | 8 | Asym | Spin | tacked | on CL |
| 16.0 | 90.0 | 15.99 | 59.39 | 8.139 | 0.000 | 25.4 | 0.8229 | 0.8175 | 1.6231 | 5 | Asym | Spin | tacked | on CL |
| 16.0 | 80.0 | 17.17 | 52.25 | 7.868 | 1.366 | 25.1 | 0.8163 | 0.7175 | 1.3859 | 4 | Asym | Spin | tacked | on CL |
| 16.0 | 75.0 | 17.72 | 48.83 | 7.721 | 1.998 | 25.0 | 0.8173 | 0.6793 | 1.2861 | 3 | Asym | Spin | tacked | on CL |
| 16.0 | 70.0 | 18.23 | 45.52 | 7.562 | 2.586 | 24.7 | 0.8208 | 0.6535 | 1.1966 | 3 | Asym | Spin | tacked | on CL |
| 16.0 | 60.0 | 19.14 | 39.26 | 7.173 | 3.586 | 23.9 | 0.8379 | 0.6613 | 1.0378 | 4 | Asym | Spin | tacked | on CL |
| 16.0 | 172.7 | 8.56 | 166.35 | 7.407 | -7.346 | 0.8 | 1.0000 | 1.0000 | 0.2566 | 3 | OPTDN | CL | Asym | |
| 16.0 | 180.0 | 8.57 | 180.00 | 6.889 | -6.889 | 0.5 | 1.0000 | 1.0000 | -0.1158 | 5 | Jib | | | |
| 16.0 | 165.0 | 8.78 | 152.90 | 7.114 | -6.871 | 1.7 | 1.0000 | 1.0000 | 0.1461 | 4 | Jib | | | |
| 16.0 | 150.0 | 9.84 | 128.32 | 7.283 | -6.307 | 2.7 | 1.0000 | 1.0000 | 0.5034 | 4 | Jib | | | |
| 16.0 | 135.0 | 11.43 | 107.40 | 7.507 | -5.308 | 3.5 | 1.0000 | 1.0000 | 0.8300 | 4 | Jib | | | |
| 16.0 | 120.0 | 13.33 | 89.31 | 7.882 | -3.941 | 5.1 | 1.0000 | 1.0000 | 1.1360 | 4 | Jib | | | |
| 16.0 | 110.0 | 14.59 | 78.59 | 8.162 | -2.792 | 9.2 | 1.0000 | 1.0000 | 1.3314 | 4 | Jib | | | |
| 16.0 | 90.0 | 16.27 | 59.06 | 8.366 | 0.000 | 23.8 | 1.0000 | 1.0000 | 1.6879 | 6 | Jib | | | |
| 16.0 | 80.0 | 17.37 | 51.58 | 8.148 | 1.415 | 24.9 | 1.0000 | 0.8364 | 1.5201 | 4 | Jib | | | |
| 16.0 | 75.0 | 17.93 | 48.12 | 8.025 | 2.077 | 24.9 | 1.0000 | 0.7660 | 1.4265 | 3 | Jib | | | |
| 16.0 | 70.0 | 18.45 | 44.75 | 7.895 | 2.700 | 24.8 | 1.0000 | 0.7086 | 1.3410 | 4 | Jib | | | |
| 16.0 | 60.0 | 19.40 | 38.28 | 7.608 | 3.804 | 24.4 | 1.0000 | 0.6214 | 1.1923 | 5 | Jib | | | |
| 16.0 | 52.0 | 20.02 | 33.35 | 7.332 | 4.514 | 23.7 | 1.0000 | 0.5689 | 1.0930 | 4 | Jib | | | |
| 16.0 | 172.8 | 8.55 | 167.00 | 7.005 | -6.950 | 1.1 | 1.0000 | 1.0000 | -0.0056 | 3 | Jib | OPTDN | | |
| 16.0 | 38.4 | 20.54 | 25.54 | 6.558 | 5.136 | 21.3 | 1.0000 | 0.5029 | 0.9644 | 6 | OPTUP | | | |

J/109 Deep Keel 150% Genoa, 121sq.m. A-Sail VPP Data:
 Based on ORC IMS 2004 Velocity Prediction program

| VTW | BTW | VAW | BAW | V | VMG | PHI | REEF | FLAT | CL | iter | |
|------|-------|-------|--------|-------|--------|------|--------|--------|---------|------|------------------------|
| 20.0 | 180.0 | 11.64 | 180.00 | 8.180 | -8.180 | 0.6 | 1.0000 | 1.0000 | -0.0693 | 4 | Asym Spin tacked on CL |
| 20.0 | 165.0 | 11.87 | 154.41 | 8.437 | -8.150 | 2.0 | 1.0000 | 1.0000 | 0.5679 | 4 | Asym Spin tacked on CL |
| 20.0 | 150.0 | 12.82 | 129.58 | 8.990 | -7.786 | 4.3 | 1.0000 | 1.0000 | 1.2949 | 5 | Asym Spin tacked on CL |
| 20.0 | 135.0 | 13.92 | 107.27 | 9.785 | -6.919 | 17.3 | 1.0000 | 1.0000 | 2.0845 | 7 | Asym Spin tacked on CL |
| 20.0 | 120.0 | 14.82 | 90.65 | 9.464 | -4.732 | 27.3 | 0.9181 | 1.0000 | 2.1874 | 10 | Asym Spin tacked on CL |
| 20.0 | 110.0 | 16.15 | 80.92 | 9.039 | -3.092 | 26.6 | 0.8061 | 1.0000 | 1.8043 | 4 | Asym Spin tacked on CL |
| 20.0 | 90.0 | 18.84 | 63.67 | 8.357 | 0.000 | 25.7 | 0.7090 | 0.8770 | 1.2890 | 4 | Asym Spin tacked on CL |
| 20.0 | 80.0 | 20.13 | 55.90 | 8.032 | 1.395 | 25.4 | 0.7069 | 0.7576 | 1.1080 | 4 | Asym Spin tacked on CL |
| 20.0 | 75.0 | 20.74 | 52.18 | 7.863 | 2.035 | 25.2 | 0.7088 | 0.7080 | 1.0308 | 3 | Asym Spin tacked on CL |
| 20.0 | 70.0 | 21.31 | 48.57 | 7.685 | 2.628 | 25.0 | 0.7134 | 0.6678 | 0.9611 | 3 | Asym Spin tacked on CL |
| 20.0 | 60.0 | 22.32 | 41.68 | 7.270 | 3.635 | 24.3 | 0.7285 | 0.6381 | 0.8397 | 4 | Asym Spin tacked on CL |
| 20.0 | 173.8 | 11.65 | 169.45 | 8.250 | -8.202 | 1.2 | 1.0000 | 1.0000 | 0.1798 | 3 | OPTDN CL Asym |
| 20.0 | 180.0 | 11.61 | 180.00 | 7.710 | -7.710 | 0.8 | 1.0000 | 1.0000 | -0.1158 | 5 | Jib |
| 20.0 | 165.0 | 11.84 | 155.05 | 7.923 | -7.653 | 2.5 | 1.0000 | 1.0000 | 0.1204 | 4 | Jib |
| 20.0 | 150.0 | 12.95 | 131.94 | 8.069 | -6.988 | 4.0 | 1.0000 | 1.0000 | 0.4472 | 4 | Jib |
| 20.0 | 135.0 | 14.60 | 111.73 | 8.242 | -5.828 | 6.3 | 1.0000 | 1.0000 | 0.7637 | 4 | Jib |
| 20.0 | 120.0 | 16.40 | 93.83 | 8.535 | -4.267 | 11.2 | 1.0000 | 1.0000 | 1.0564 | 4 | Jib |
| 20.0 | 110.0 | 17.41 | 82.78 | 8.753 | -2.994 | 16.7 | 1.0000 | 1.0000 | 1.2526 | 4 | Jib |
| 20.0 | 90.0 | 19.04 | 63.19 | 8.587 | 0.000 | 26.3 | 0.9756 | 0.8881 | 1.3600 | 6 | Jib |
| 20.0 | 80.0 | 20.33 | 55.25 | 8.314 | 1.444 | 25.9 | 0.9370 | 0.7793 | 1.2014 | 4 | Jib |
| 20.0 | 75.0 | 20.93 | 51.48 | 8.168 | 2.114 | 25.7 | 0.9230 | 0.7302 | 1.1313 | 4 | Jib |
| 20.0 | 70.0 | 21.51 | 47.83 | 8.016 | 2.742 | 25.5 | 0.9145 | 0.6840 | 1.0668 | 4 | Jib |
| 20.0 | 60.0 | 22.58 | 40.79 | 7.692 | 3.846 | 25.1 | 0.9159 | 0.5925 | 0.9506 | 5 | Jib |
| 20.0 | 52.0 | 23.33 | 35.42 | 7.395 | 4.553 | 24.6 | 0.9360 | 0.5148 | 0.8665 | 5 | Jib |
| 20.0 | 173.8 | 11.59 | 169.62 | 7.806 | -7.760 | 1.6 | 1.0000 | 1.0000 | -0.0297 | 3 | Jib OPTDN |
| 20.0 | 38.4 | 24.16 | 26.87 | 6.608 | 5.175 | 23.0 | 1.0000 | 0.3874 | 0.7428 | 7 | OPTUP |

J109A.DAT J109USSA.OFF Cert#: Yacht: J109
 Class: Designer: RODNEY JOHNSTONE

Ratings Before Wind Averaging and NOT multiplied by Dynamic Allowance.

| VTW | WW/LW | OLYMPIC | CR | LR | OCEAN | CC CR | CC LR |
|------|-------|---------|-------|-------|-------|-------|-------|
| 6.0 | 968.1 | 905.4 | 729.7 | 696.7 | 866.2 | 833.6 | 780.7 |
| 8.0 | 793.3 | 749.2 | 614.9 | 594.3 | 694.0 | 680.9 | 652.3 |
| 10.0 | 708.0 | 676.8 | 561.4 | 545.9 | 600.5 | 603.5 | 586.7 |
| 12.0 | 655.6 | 634.5 | 529.4 | 515.9 | 542.9 | 557.9 | 545.9 |
| 14.0 | 619.5 | 606.0 | 507.4 | 494.2 | 502.9 | 529.5 | 518.9 |
| 16.0 | 595.5 | 586.3 | 491.9 | 478.1 | 474.4 | 511.0 | 500.3 |
| 20.0 | 567.3 | 562.6 | 471.7 | 454.3 | 433.2 | 488.4 | 475.5 |

Wind Averaged Ratings multiplied by Dynamic allowance.

| VTW | WW/LW | OLYMPIC | CR | LR | OCEAN | CC CR | CC LR |
|------|-------|---------|-------|-------|-------|-------|-------|
| 6.0 | 990.4 | 927.4 | 814.8 | 782.9 | 927.9 | 909.7 | 863.5 |
| 8.0 | 810.1 | 765.7 | 666.2 | 643.2 | 734.3 | 730.8 | 700.8 |
| 10.0 | 718.8 | 687.4 | 588.4 | 570.3 | 625.6 | 634.0 | 613.4 |
| 12.0 | 664.3 | 643.0 | 543.7 | 528.1 | 558.1 | 577.2 | 561.8 |
| 14.0 | 627.7 | 613.6 | 516.1 | 501.3 | 512.9 | 541.8 | 529.0 |
| 16.0 | 603.0 | 593.4 | 497.5 | 482.4 | 480.3 | 518.8 | 506.7 |
| 20.0 | 573.6 | 569.0 | 473.4 | 455.7 | 434.8 | 490.4 | 477.2 |

General purpose rating (W/ DA): 605.0 Time on time multiplier (W/ DA): 0.9943

Ocean course performance line scoring time factor (W/ DA): 0.827
 Ocean course performance line scoring distance factor (W/ DA): 97.1

J/109 Deep Keel 150% Genoa, 121sq.m. A-Sail VPP Data:
 Based on ORC IMS 2004 Velocity Prediction program

----- 2004 TIME ALLOWANCES IN SEC/MI BY TRUE WIND VELOCITY & ANGLE -----
 ----- NOT Wind Averaged. These have been multiplied by Dynamic Allowance -----

| Wind Velocity: | 6kt | 8kt | 10kt | 12kt | 14kt | 16kt | 20kt |
|----------------|--------|--------|--------|--------|--------|--------|--------|
| BEAT ANGLES: | 45.0ø | 43.5ø | 41.3ø | 39.8ø | 38.9ø | 38.4ø | 38.4ø |
| BEAT VMG: | 1015.8 | 849.8 | 775.4 | 736.7 | 714.5 | 702.0 | 696.7 |
| 52ø: | 651.4 | 557.1 | 524.1 | 507.4 | 497.5 | 491.7 | 487.5 |
| R 60ø: | 607.9 | 531.3 | 502.8 | 488.5 | 479.5 | 473.9 | 468.7 |
| E 75ø: | 576.4 | 512.7 | 482.0 | 465.5 | 456.0 | 449.3 | 441.5 |
| A 90ø: | 552.3 | 494.5 | 472.8 | 458.3 | 441.8 | 430.9 | 419.9 |
| C 110ø: | 554.1 | 493.2 | 460.8 | 440.3 | 427.5 | 416.8 | 398.9 |
| H 120ø: | 578.7 | 506.2 | 467.9 | 440.1 | 418.9 | 403.2 | 381.0 |
| 135ø: | 663.8 | 547.1 | 495.5 | 462.3 | 435.4 | 411.7 | 368.5 |
| 150ø: | 799.6 | 640.3 | 556.5 | 506.4 | 473.3 | 446.8 | 401.0 |
| RUN VMG: | 923.3 | 739.3 | 642.6 | 576.4 | 526.4 | 490.7 | 439.6 |
| GYBE ANGLES: | 140.9ø | 143.8ø | 149.7ø | 159.9ø | 168.7ø | 172.7ø | 173.8ø |

NOTE: To convert any time allowance above to speed in knots: Kt = 3600/TA

----- 2004 WIND-AVERAGED TIME ALLOWANCES FOR SELECTED COURSES -----
 ----- Already multiplied by Dynamic Allowance -----

| | | | | | | | |
|---------------|-------|-------|-------|-------|-------|-------|-------|
| Wnd/Lwd VMG | 990.4 | 810.1 | 718.8 | 664.3 | 627.7 | 603.0 | 573.6 |
| Olympic 6-leg | 927.4 | 765.7 | 687.4 | 643.0 | 613.6 | 593.4 | 569.0 |
| Circular Rndm | 814.8 | 666.2 | 588.4 | 543.7 | 516.1 | 497.5 | 473.4 |
| Non-Spinnaker | 909.7 | 730.8 | 634.0 | 577.2 | 541.8 | 518.8 | 490.4 |
| Ocean for PCS | 927.9 | 734.3 | 625.6 | 558.1 | 512.9 | 480.3 | 434.8 |

International Level Class Time Allowances NOT wind averaged (W/ DA).

| Wind | Beat | 110 Reach | VMG Run |
|------|--------|-----------|---------|
| 6 | 1015.8 | 554.1 | 923.3 |
| 10 | 775.5 | 460.8 | 642.7 |
| 20 | 696.6 | 398.9 | 439.7 |

ORC ILC overall rating for ILC racing and for size limits (W/ DA): 678.9

Dynamic Allowance has ALREADY been used to multiply the ratings in all IMS output files: 1.0000
 Dynamic Allowance expressed as a percentage credit: 0.00%

Age Allowance for optional use as a rating multiplier by scoring programs: 1.0015
 Age Allowance expressed as a percentage credit: 0.15%

This boat's Accommodation Certificate status is: CRUISER/RACER
 These Allowances differ from 0.0 only for CRUISER/RACERS.

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