2017 Handicapping Synopsis
Monday-Night Racing at SPSC

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Time-on-Time Handicapping

We will carry on with the time-on-time handicapping and performance data that we have used at SPSC since 2012 (skipping 2010 and 2011 where we did things a little differently). Your rating will be a rolling average of the performance of your individual boat in seconds per nautical mile — in the next race this handicap will divide your elapsed time to determine your corrected time.

Computing the Rolling Handicap

For each race we will compute a time-on-time handicap (and call it the imputed handicap) that would give every boat the same corrected time (with a per race normalization factor to minimize differences from initial ECPHRF derived numbers). Each boat will have its final rating determined by collecting the previous seven imputed handicaps discarding the extreme values and averaging the middle five by geometric mean (this being time-on-time handicapping). The initial rating will be replicated sufficiently (in a small geometric series, +1% between terms, to speed up the initial handicap convergence) to make up seven numbers. This will happen until the boat has raced at least seven times — after the seventh race imputed ratings will be independent of the initial rating. After the eighth race the oldest imputed rating will be discarded. All this is shown on the Monday-night scratch sheet available from the main results page of the web site www.southportsailingclub.com/results.html.

Reported Corrected Times

Corrected times will be calculated as $t \times \frac{\bigstar k}{k}$ and reported rounded to the closest second. Here $\bigstar k$ is the handicap of a scratch boat used as a common reference for all boats. The choice of $\bigstar k$ is arbitrary as it has no effect on how a boat will place — using the fastest boat is traditional. We will use the winning boat and report how far behind in corrected time subsequent boats are. This isn't a very meaningful number except for the winning boat itself (i.e. how much later the winning boat would have needed to finish to tie with each of the subsequent boats in turn) but does completely order results.

The Failures of PHRF Numbers and Initial Handicaps

Using results data from Monday-night racing we have determined two alternative conversion formulas from ECPHRF handicaps to estimated average performance of ECPHRF Rating $+ 800\,{}^{\text{s}}/_{\text{mi.}}$ on one hand or $2\times$(ECPHRF Rating$+300\,{}^{\text{s}}/_{\text{mi.}}$) on the other. These can be used for either time-on-distance or time-on-time handicapping for round-the-buoys racing on Lake St. Clair. They differ from the ECPHRF Rating$+500\,{}^{\text{s}}/_{\text{mi.}}$ formula that we first used in 2012 that turned out to be not only absurdly optimistic as to average speeds but also woefully inadequate to account for the performance difference between boats. Most of this shortfall was undoubtedly owing to the difference in race readiness between the lower rated boats favoured by racers and the higher rated boats favoured by cruisers — but it wasn't possible to isolate the underlying performance potential of a boat using the available data and it is against the spirit of Monday nights to do so — we want members to be able to race their boats as is. It was hoped that over time a reasonable initial handicapping formula would become apparent. Aggregate performance has become pretty clear. But new boats introduced into the fleet have so muddied the waters that trying to predict relative performance from ECPHRF handicaps alone has become almost impossible.

It would seems best to accelerate the convergence to a rolling performance handicap, and possibly separate the initial handicap from the normalization factors which prevents the rolling rating for the entire fleet from drifting over time. The ECPHRF Rating $+ 800\,{}^{\text{s}}/_{\text{mi.}}$ formula should work very well for latter purpose. Perhaps we should cut down the length of the rolling average from a history of 7 races down to 5. Changing the geometric series to have $+10\%$ between terms should make these numbers much more likely to pruned out as extremes and greatly speed up initial convergence. Your input would be appreciated.

Carrying-On Regardless for 2017

Rather than using the $2 \times (\text{ECPHRF} + 300\,{}^{\text{s}}/_{\text{mi.}})$ formula as-is, which would require a $\times{}^{10}/_{7}$ gauge transformation of the initial and imputed handicaps carried over from previous years (up to seven such imputed handicaps for each boat — see the scratch sheet), we will maintain the historical gauge and use a functionally equivalent transformation of ${}^{7}/_{5} \times (\text{ECPHRF} + 300\,{}^{\text{s}}/_{\text{mi.}}) = 700\,{}^{\text{s}}/_{\text{mi.}} + {}^{7}/_{5} \times (\text{ECPHRF} - 200\,{}^{\text{s}}/_{\text{mi.}})$. Since 2014 the formula has been

$$\text{Initial rating} = \begin{cases} 630\,{}^{\text{s}}/_{\text{mi.}} + {}^{7}/_{6} \times (\text{ECPHRF} - 150\,{}^{\text{s}}/_{\text{mi.}}) & \text{when ECPHRF} < 150\,{}^{\text{s}}/_{\text{mi.}} \\ 700\,{}^{\text{s}}/_{\text{mi.}} + {}^{7}/_{5} \times (\text{ECPHRF} - 200\,{}^{\text{s}}/_{\text{mi.}}) & \text{when } 150\,{}^{\text{s}}/_{\text{mi.}} < \text{ECPHRF} < 250\,{}^{\text{s}}/_{\text{mi.}} \\ 770\,{}^{\text{s}}/_{\text{mi.}} + {}^{7}/_{6} \times (\text{ECPHRF} - 250\,{}^{\text{s}}/_{\text{mi.}}) & \text{when } 250\,{}^{\text{s}}/_{\text{mi.}} < \text{ECPHRF} \end{cases}$$

We may decide to change the gauge in 2018 by multiplying all handicaps by $\times{}^{10}/_{7}$ so that rolling handicaps can serve as an estimate of time to complete a course in average conditions. This would not effect corrected times in any way.