



# The RYA Portsmouth Yardstick Scheme 2006

## Portsmouth Yardstick Race Results & Achieved Performance Spreadsheet

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### **Introduction to RYA\_YR2\_v1.xls spreadsheet:**

The RYA Race Result & Achieved Performance spreadsheet, using Microsoft Excel software, calculates Portsmouth Yardstick race results using a Visual Basic 'macro' sub-routine. It deals with up to 50 boats in a single race, using either conventional or 'average lap time' rules, calculates corrected times and arranges boats in finish order. It also carries out a RYA YR2 calculation to find the Standard Corrected Time (SCT) for the race and computes the achieved performance for each boat. A race result sheet with position & performance data can be printed including notes on how the achieved performance is calculated. The spreadsheet can be copied for subsequent races to minimise the re-typing of boat names, sail numbers, etc. This spreadsheet does not calculate series positions from multiple races but a future version may be developed with that facility.

### **Operation:**

You require a PC with Microsoft Windows and Excel 97 or later application software. When you open the file 'RYA\_YR2\_v1.xls', a dialogue box may appear warning you that the spreadsheet contains 'macros' and giving you options to '**Disable Macros**' or '**Enable Macros**'. Select '**Enable Macros**', since the source is guaranteed virus free. You may have to change your Excel security setting, before opening the file, by selecting 'Tools' from the menu bar, 'Options' from the 'pop-down' menu & selecting the 'Security' tab. Click on the 'Macro Security' button and select 'Medium' which alerts you but allows you to proceed. The 'RYA\_YR2\_v1.xls' file is 'Read only' protected to prevent accidental overwriting and you will be alerted if you try to save it under the same name.

### **Data Input:**

1. Enter the race title, date and start time in 24 hour clock format 'hh:mm:ss' if you are using real clock finish times; otherwise leave the start time as '00:00:00' if entering elapsed times.
2. Enter boat name, type & sail number information in whatever format you wish.
3. Enter a Portsmouth Number (PN) and the PN status for each boat. Status should be PY (Primary Yardstick), SY (Secondary Yardstick), RN (Recorded Number), CN (Club Number) or TN (Trial Number) and can be in capital or lower case letters.
4. Enter the finish time, elapsed or real clock, for each boat in the 'Finish time' column in 24 hour clock format 'hh:mm:ss'. Non-finisher designations DNF, RET, OCS, DSQ, etc. can also be entered in this column.
5. If using 'average lap time' rules, enter the number of laps completed by individual boats in the 'Laps' column. Spreadsheet assumes one lap if no data is entered.
6. Once all data is entered, initiate the macro by pressing '**Ctrl+y**' (Control key and 'y' key simultaneously) and boats will be ordered in finish positions. The SCT and performance data will also be displayed if the number of boats contributing to the SCT calculation meets the minimum requirement that you have set (default value in cell N3: 2). The spreadsheet is also re-formatted for consistent positioning of displayed data in case it has been imported from another source.

**Notes:**

As you enter a 'Finish time', the spreadsheet checks that it is later than the 'Start time' and if not, immediately displays 'Finish time earlier than start!' above the 'Start time' box. When the macro is run it checks that a PN is entered for every boat with a finish time and if not, sorts the remaining boats but suppresses race position data. For overnight races of less than 24 hours length, enter the start time as 00:00:00 & use elapsed times. Corrected times for 'average lap time races' are based on the highest number of laps completed by any boat in the race. Corrected times are rounded to the nearest second to reflect realistic timing accuracy. If two or more boats have identical corrected times, they have the same race position placing and the next boat place is two or more behind.

NB: The spreadsheet is not configured to accept start & finish dates, hence cannot deal with race durations beyond 24 hours. If there is demand for this, it may be added in a later version.

The spreadsheet SCT calculation excludes all boats with Trial Number (TN) status since their handicaps are not well established. Club Number (CN) status boats are also, by default, excluded from the SCT calculation but you can opt to include them by deleting 'CN' from cell N2. This may be appropriate if you are short of PY, SY & RN status boats and are confident of the handicaps for CN status boats.

The SCT is only considered valid if the corrected times of at least two boats have been averaged to calculate it, otherwise the SCT box remains blank and no performance data is displayed. You can increase the 'minimum number of contributing boats' requirement by changing the default value of 2 in cell N3, but cannot set it below 2. The 'SCT input' column shows which boats have contributed to the SCT by 'yes'. By definition, all TN status boats and 'poor' performance boats are excluded. See YR2 explanation below.

The 'Achieved performance' for each boat is calculated by dividing its elapsed time by the SCT, multiplying by 1000 & rounding to the nearest integer. The '%' column gives its percentage performance relative to its PN. Any boat with a corrected time slower than the RYA YR2 'poor performance' limit is shown as 'Poor' in the YR2 column. Poor performances should be excluded in calculating a boat's average achieved performance over a series or a season of racing.

If after running the calculation macro, changes are made to handicap values or finish times that do not affect the finishing order, the revised SCT & achieved performance values will appear immediately. If the changes do affect the order, the race result data is blanked out & the calculation macro must be re-run.

After entering the boat data you can create duplicate result 'sheets', each with the same list of boats, in a single Excel 'workbook' for a regatta or race series. Click on the 'Edit' pop-down menu in the toolbar and select 'Move or copy sheet...'. In the dialogue box select the 'Create a copy' checkbox and select where you want the sheet positioned in the workbook by using the 'Before sheet' box. Each sheet has a 'tab' at the bottom of the screen with 'Race #' already entered. You can double click on it to select and change the tab name to 'Race #1', 'Race 14 Aug 2006', etc.

### **Warning – Don't do this!:**

**DO NOT USE THE 'cut'** (Ctrl+x) command to shift 'PY H/cap', 'H/cap status', 'Finish time' or 'Laps' information around the spreadsheet, since this corrupts the embedded formulae and '#REF!' warnings will appear. If you do this accidentally, use the 'Edit' pop down menu from the toolbar and 'undo' commands to recover. To shift data, use the 'copy' (Ctrl+c), 'paste' (Ctrl+v) and 'delete' commands.

### **Printing & File Saving:**

The spreadsheet is formatted to print on A4 in 'portrait' mode and includes notes below the results to explain the RYA YR2 achieved performance process. The file 'RYA\_YR2\_v1.xls' is protected from being overwritten by a 'Read only' designation and can only be saved under a different name. If you attempt to save it under the same name, a warning dialogue box will appear followed by the 'Save as' dialogue box.

### **Problem Solving:**

All spreadsheet calculation & results cells are protected from inadvertent data entry apart from those for boat name, type, sail number, handicap number, handicap status, finish time & number of laps. Only the latter four cells are involved with the calculations.

If you 'copy & paste' finish time data that appear to be in 'hh:mm:ss' format from another spreadsheet and the results macro fails to calculate the race result, you may find that the imported times are in 'text' rather than 'time' format. Use this procedure to convert text format times to numeric format:

**Step 1:** Open a temporary worksheet & copy the text format time data into it. Select an adjacent cell, click on the 'Insert' pop-down menu and select the 'Function' command. In the 'Paste function' dialogue box, select 'Text' in the 'Function category' box and 'Value' in the 'Function name' box. Click 'OK' & in the 'Value' dialogue box marked 'Text', enter the adjacent cell address of the data you want to convert. Select 'OK' & the converted data appears as a decimal value of one day (e.g.12:35:40 = 0.524769).

**Step 2:** Reformat this cell in the temporary worksheet using the 'Format' pop-down menu, select 'Cells' & 'Time' category. Select the preferred 'hh:mm:ss' format & click 'OK'. The cell will now have the finish time in the correct format and can be copied down to convert a column of text data.

**Step 3:** To move the converted data from the temporary worksheet into the results spreadsheet, copy the cells, and select the appropriate finish time cell in the results spreadsheet. Click on the 'Edit' pop-down menu, select 'Paste Special...' and click on the 'Values' button ('Values and number formats' in Excel 2002) followed by 'OK'. This pastes the time format data into the results spreadsheet without linking it to the temporary worksheet.

### **Spreadsheet Workings:**

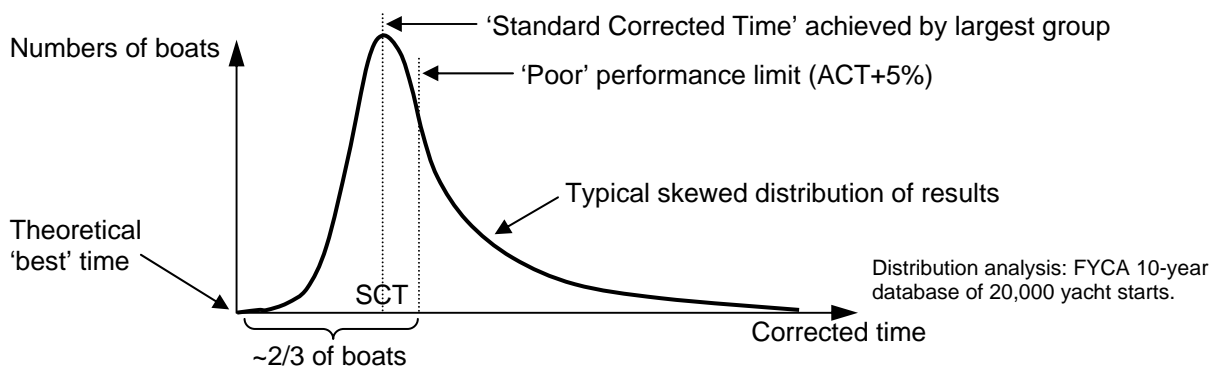
All spreadsheet calculations are in columns 'P-AY' to the right of the race data columns and are open to view. Although the spreadsheet cells are 'protected' on opening the file or after running the calculation macro, this protection can be switched off by clicking on the 'Tools' pop-down menu, selecting the 'Protect document' command and the sub-command 'Unprotect sheet'. Protection will be re-imposed if the macro is re-run. The spreadsheet explanation notes can be modified or deleted by this route.

## Hints:

Use the RYA YR2 published PNs & status whenever possible and start to assess the performance of TN status boats in your fleet to establish their PNs as 'Club Number' (CN) status. Boats that are sailing short crewed or with a reduced sail wardrobe, should be identified in the race results sheet (e.g. Fireball {No spinnaker}, Hunter 701 {single-handed}). These performances should be excluded in an overall performance assessment for the boat when fully crewed with a full set of sails.

## RYA YR2 Calculation Explanation:

For any given race, there will be an unknown theoretical 'best possible' corrected time that could be achieved by a boat sailing perfectly, tacking on the right wind shifts, avoiding adverse currents, etc. In practice boats are not perfect and their crews make mistakes that cause them to sail slower than this optimum. The resultant distribution of corrected times across a fleet will typically be 'skewed' since it is easier to make mistakes than to avoid them. A few boats may come close to the theoretical achievable time, some will make an average number of mistakes & there will be a diminishing tail of slower boats making increasing numbers of errors. Performance assessment requires a comparison standard against which to measure each boat. If this standard is simply the average of all corrected times in a skewed distribution, it will be weighted towards the poor performance end and the majority of boats will appear to have sailed better than 'average', distorting the assessment. The performance standard is defined instead as the corrected time achieved by the largest group of boats; that is the peak or 'mode' of the distribution. Boats that achieved this Standard Corrected Time (SCT) will have sailed 'to handicap'.



The YR2 procedure allows for the typical 'skewed' distribution in calculating the SCT. The average of corrected times for the top two thirds of the PY, SY & RN boats in the race gives the Average Corrected Time (ACT). ACT+5%, corresponding to the statistically average performer relative to handicap two thirds down the fleet, defines the 'poor performance' limit. The corrected times of all PY, SY & RN boats faster than ACT+5% are then averaged to give the SCT for the race. This new group of boats may be the same as the original two thirds or more or less, depending on the performance distribution in each race. The elapsed time for each boat is divided by the SCT and multiplied by 1000 to give its 'achieved performance'. Corrected times worse than ACT+5% are defined as 'poor' and should be excluded in calculating a boat's average performance for handicap assessment.

**Jim Scott – Portsmouth Yardstick Advisory Group**