SOUTH WEST YACHT TIME CORRECTION SYSTEM (YTC)

POLICY AND PROCEDURES for the 2018 racing season

Introduction

1. The South West Yacht Time Correction system (abbreviated to YTC), formerly known as the Falmouth Area Yardstick system, has been developed over recent years to assist the wide variety of yacht-types that take part in local and club-based events to race competitively and fairly. It is based on the statistical models developed by Professor Linda Wolstenholme, of the Cass Business School and Emsworth Slipper SC.
2. The aim of this document is to set out the process by which a boat's YTC number is developed. The ethos throughout is to develop the number in a fair, open and transparent manner, if necessary bringing the yacht's skipper into the discussion where appropriate. It is intended that the YTC process will assist the achievement of fair racing as required by the Racing Rules of Sailing.
3. Yachts competing in racing will be allocated a YTC number using the process shown in paragraphs 6 to 10 below.
4. A yacht's YTC number may be used by individual clubs at their discretion.

Documentation

5. All entrants are to complete & submit a web-based YTC Form (see the example screen-shot at Appendix A). Each club or organising committee in the YTC scheme has a tailor-made form and this document will be administered by the club or organising committee concerned, with assistance if required from the YTC Main Committee, before the entrant's first race of the season. If there is a significant change to a yacht's data during the season a new form should be submitted to the club concerned for that yacht. Entrants will receive a YTC certificate showing the YTC number allocated and the data on which that YTC number is based (see example at Appendix B); this is generated automatically by the YTC software. If a yacht's sails are measured by a YTC sail measurer during that process, a YTC sail measurement certificate will be issued: see the example at Appendix C.

Process for developing a YTC number

6. In general, a yacht's raw YTC number will be calculated automatically by the YTC software using the formulae in paragraphs 11 and 12 below, although some boats (e.g. light displacement boats, gaff-rigged boats) will be allocated a YTC number using the formulae and other pertinent data as necessary. This number will then be adjusted to reflect the yacht's engine and propeller configuration, rig and downwind sail area using the tables in paragraph 14 below. The number so calculated shall be the boat's YTC number for events and the basic number for club events.
7. Failure to complete the YTC Form before racing may result in a temporary YTC number being issued until the necessary boat data has been obtained and checked and the necessary calculations have been completed. Late entries may also be allocated a temporary YTC number, until the necessary calculations can be completed.
8. When issued, a temporary YTC number shall not be altered; also, any results using this number shall not be altered retrospectively.
9. Queries concerning individual YTC numbers shall be made in writing to the YTC Main Committee (email address: admin@swytc.org.uk).
10. A boat's YTC number may be used at other events, at the discretion of the relevant organising committee.

Formulae

11. Yachts will be issued a raw YTC number which will be based on the formulae in the table below:

	Fin-keeled boats	Bilge-keeled boats
Formula	YTC = k_f(2091 -407d +86d^2 - 30.5*L - 59.6 (SA/L^2) – 810 $SA^{1/3}$/ $D^{1/4}$)	YTC = k_f (2211 -1389d +431d^2 - 137*B/L - 54.9*$L^{1/2}$+ 455*SA/$D^{2/3}$)
Notes	for flat single keels k_f = 1, and for long keels k_f = 0.98; for non-flat keels (bulbs, winged, etc), k_f = 1 - 0.003*k_g and k_g ranges from 1 for a slight flare or bulb to 5 for a winged keel.	for twin bilge keels, k_f = 1; for triple bilge keels, k_f = 1.01

12. Both formulae use data declared by the entrant; d = draft, B = beam, L = LOA – 0.5*(LOA-LWL), SA = total sail area (upwind sails only, largest sail area in use), D = displacement empty/dry.

Rig- And Engine-Related Adjustments

13. The formulae in paragraph 11 above assume a boat has a two-blade fixed propeller and a spinnaker.
14. Raw numbers will be adjusted to reflect declared engine, prop and sail configurations, using the tables below:

Engine related

	Percentage allowance
2-blade fixed propeller	0% (this configuration is assumed in the formulae)
3-blade fixed propeller	+2%
Folding propeller	-1%
Outboard (able to be lifted clear of water)	-2%

Rig related

	Percentage allowance
Use of conventional or asymmetric spinnaker	0% (this configuration is assumed in the formulae)
No use of spinnaker or other downwind sail	+2.5%
In mast reefing	+2%
Twin mast ketch	+3%
Spinnaker Area Allowance (to account for variation in spinnaker area)	The formula 1.75 - (DSA/USA) generates the percentage required.

Note: DSA is the sum of the declared spinnaker and mainsail areas;
USA is the sum of the declared genoa (or jib) and mainsail areas.

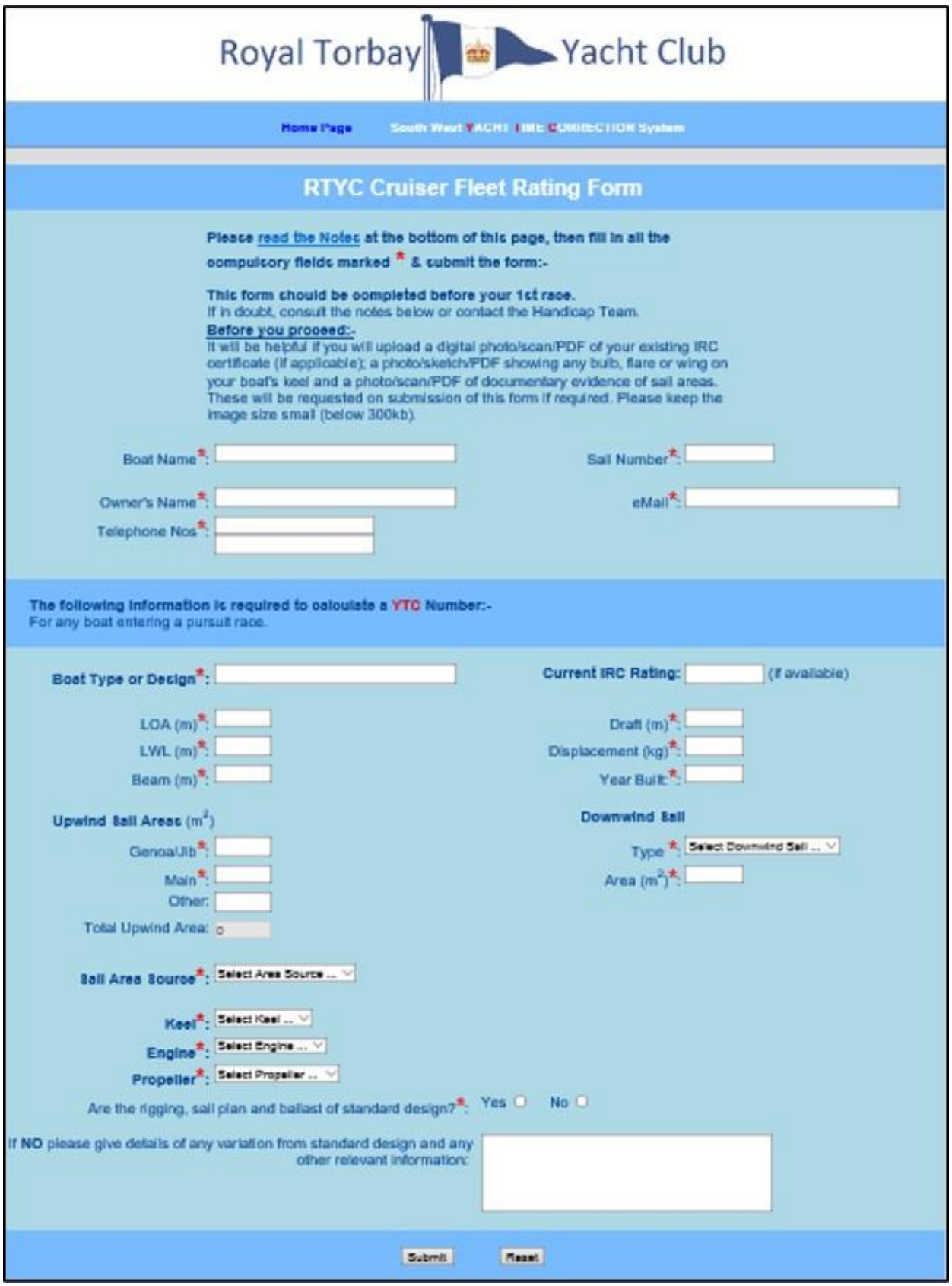
Collection of race timings data

15. An important part of the YTC quality control process lies in verifying that, under normal race conditions, boats perform approximately to their YTC number. This is achieved by comparing their calculated performance number in a race, or series of races, with their YTC number. This performance number is calculated by the YTC software, using the YR2 process, from the elapsed times recorded for each boat on a race spotting or recording sheet.
16. A specimen proforma for recording these data in a fleet race is at Appendix D. The specimen proforma for a pursuit race is at Appendix E. These forms are normally completed by the race committee team. Clubs in the YTC scheme should compile a file of these recording sheets as the season progresses; these data files will then inform the end-of-season performance review process.

    Note. Quite clearly, normal club spotting or recording sheets, or Sailwave print-outs, could be adapted for this task. However, in order to achieve proper analysis of the results, all the data fields shown on the templates should be on such an adapted form and should be completed for each race and the boats sailing in that race.

The YTC Committee thanks Professor Linda Wolstenholme (Cass Business School and Emsworth Slipper SC) for her kind permission to use her handicap models

APPENDIX A **AN EXAMPLE OF THE WEB-BASED YTC DATA ENTRY FORM**



Royal Torbay Yacht Club

Home Page South West YACHT TIME CORRECTION System

RTYC Cruiser Fleet Rating Form

Please read the Notes at the bottom of this page, then fill in all the compulsory fields marked * & submit the form:-

This form should be completed before your 1st race.
If in doubt, consult the notes below or contact the Handicap Team.

Before you proceed:-
It will be helpful if you will upload a digital photo/scan/PDF of your existing IRC certificate (if applicable); a photo/sketch/PDF showing any bulb, flare or wing on your boat's keel and a photo/scan/PDF of documentary evidence of sail areas. These will be requested on submission of this form if required. Please keep the image size small (below 300kb).

Boat Name*: Sail Number*:

Owner's Name*: eMail*:

Telephone Nos*:

The following information is required to calculate a YTC Number:-
For any boat entering a pursuit race.

Boat Type or Design*: Current IRC Rating: (if available)

LOA (m)*: Draft (m)*:
LWL (m)*: Displacement (kg)*:
Beam (m)*: Year Built*:

Upwind Sail Areas (m^2) Downwind Sail

Genoa/Jib*: Type*: Select Downwind Sail ...
Main*: Area (m^2)*:
Other:
Total Upwind Area: 0

Sail Area Source*: Select Area Source ...

Keel*: Select Keel ...
Engine*: Select Engine ...
Propeller*: Select Propeller ...

Are the rigging, sail plan and ballast of standard design?*: Yes No

If NO please give details of any variation from standard design and any other relevant information:

Submit Reset

Notes for the South West Yacht Time Correction System Form

These notes are designed to explain what the YTC Team are trying to achieve with the YTC Form and how you can help us to achieve it. All the information you provide on the form is used in the calculation of the basic YTC number and the more accurate the information you give us, the more accurate the resulting YTC number will be. In general, it is more helpful to the YTC Team to give as much information as possible. If you have any questions about the YTC number you are given, please contact the YTC team in writing, preferably by email to admin@swytc.org.uk, with your questions.

It would be very helpful if all the dimensions discussed below are stated in metric units, i.e. metres (m), square metres (m^2) and kilograms (kg) as appropriate.

Basic Yacht Information - Yacht Name, Sail Number etc.
The important bit here is the type or design of the yacht. It is important to give us as much information as possible, especially the year of build and which mark it is: Mk I, Mk II etc. If you have an IRC number for the boat please state it and, if possible, upload a copy of the certificate as a PDF file when prompted to do so by the software.

Dimensions of Boat.

Dimension	Definition	Unit
LOA	Length overall of the hull ONLY, excluding bowsprit, pushpit, pulpit, & transom hung rudders.	metres
LWL	Length on the waterline. This may be given by manufacturers or may be measured.	metres
Beam	Measured at the widest part at deck level.	metres
Draft	Measured from the water line to the lowest point on the keel.	metres
Displacement	This is the weight of the boat dry, as it came out of the manufacturer's premises, with no fuel, water and no other gear.	kilograms

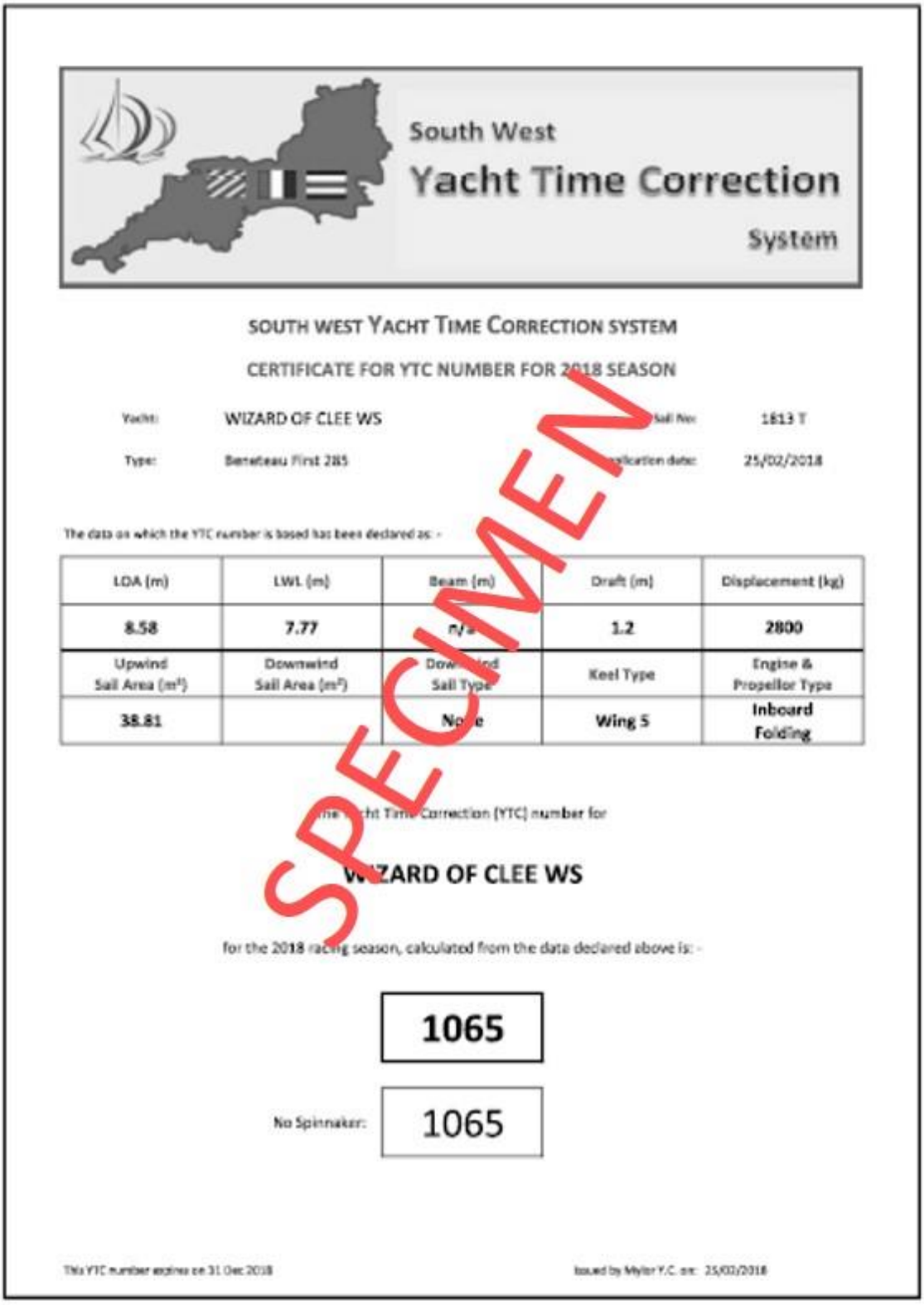
Sails
The sail areas you declare should be as quoted by the sailmaker concerned, boat manufacturer or, ideally, they should be measured by a YTC sail measurer; the areas should be stated in square metres (m^2). If you are in doubt you are encouraged to request that your sails be measured. It is better not to estimate the size of the sails, as in general a less favourable YTC number than you might prefer might be the result. Please declare the areas of the largest upwind sails you will use. Similarly, for the downwind sails, please declare the largest spinnaker or asymmetric sails you will use, the type of spinnaker and the sail area. Please upload a sailmaker's certificate, email or a YTC Sail Measurement certificate when prompted to do by the software. Also, please do not use the sail area data as given by www.sailboatdata.com. It is usually misleading and often wrong.

Configuration.
The keel type, engine & propeller configurations are used in the YTC calculation to calculate your YTC number. It is important to let us know whether your keel has a wing, bulb or flare, and the extent of it. Sketches or photographs of the keel will be helpful and can be uploaded when prompted to do so by the software.

Indemnity.
A boat's YTC number is generated by the YTC team in good faith, using the data supplied, historical data and, where necessary, pertinent data from other sources. The YTC team attempts at all times to give an accurate and fair YTC number but the team cannot be held responsible or liable for any losses of any type, however incurred.

Return to top

APPENDIX B **AN EXAMPLE YTC CERTIFICATE**



South West
Yacht Time Correction
System

SOUTH WEST YACHT TIME CORRECTION SYSTEM

CERTIFICATE FOR YTC NUMBER FOR 2018 SEASON

Yacht: WIZARD OF CLEE WS Sail No: 1813 T

Type: Beneteau First 285 Application date: 25/02/2018

The data on which the YTC number is based has been declared as: -

LOA (m)	LWL (m)	Beam (m)	Draft (m)	Displacement (kg)
8.58	7.77	n/a	1.2	2800
Upwind Sail Area (m^2)	Downwind Sail Area (m^2)	Downwind Sail Type	Keel Type	Engine & Propellor Type
38.81		None	Wing S	Inboard Folding

The Yacht Time Correction (YTC) number for

WIZARD OF CLEE WS

for the 2018 racing season, calculated from the data declared above is: -

1065

No Spinnaker: 1065

SPECIMEN

This YTC number expires on 31 Dec 2018 Issued by Mylor Y.C. on: 25/02/2018

APPENDIX C **AN EXAMPLE YTC SAIL MEASUREMENT CERTIFICATE**

27/02/2018 South West Yacht Time Correction System - Sail Measurement Certificate

South West Yacht Time Correction System

Sail Measurement Certificate

Boat_Name:	Wizard of Clee	Sail_Number:	GBR1813T
Headsail	(m)	**Mainsail**	(m)
Headboard (HHB):	.07	Headboard (MHB):	.134
Luff_Length (HLU):	9.32	Luff_P (MLP):	9.19
Luff_Perp (HLP):	4.57	Foot_E (MFE):	3.34
1/4 (HQW):	3.37	1/4 (MQW):	2.804
1/2 (HHW):	2.21	1/2 (MHW):	2.07
3/4 (HTW):	1.082	3/4 (MTW):	1.16
7/8 (HUW):	.56	7/8 (MUW):	.65
Mid_Width (HMW):	3.5		
Foot_Length (HFL):	4.78		
Ratio HMW/HFL:	0.732		
Downwind Sail	(m)	**Sail Area**	(m^2)
Sail_Type (SST):	White Sail	Headsail:	20.951
Luff_Length (SLU):		Mainsail:	17.857
Leech_Length (SLE):		Downwind:	0.0
Half_Width (SHW):		Total Upwind Area:	38.808
Foot_Length (SFL):		Total Downwind Area:	38.808
		Ratio Downwind/Upwind:	1
Comments:	Test measurement		
Measurer:	A Davis	Date:	27/02/2018

SPECIMEN

APPENDIX D

TEMPLATE YTC RACE DATA COLLECTION SHEET FOR A FLEET RACE

CLUB	RACE (Series, race number)	TIME OF START FOR CLASS	DATE

CLASS	COURSE SAILED	Wind direction / speed at start	Wind direction / speed at finish

Sail number	Boat	Owner	YTC number	Finishing time	Elapsed time	Corrected time	Position

APPENDIX E

TEMPLATE YTC RACE DATA COLLECTION SHEET FOR A PURSUIT RACE

CLUB	**RACE** (Series, race number)	**DATE**

CLASS	**COURSE SAILED**	**Wind direction / speed at start**	**Wind direction / speed at finish**

Sail number	**Boat**	**Owner**	**YTC number**	**Start time**	**Finishing time**	**Elapsed time**	**Corrected time**	**Position**