ISAF In-House Certification

IOM Sail Training Syllabus

The ISAF has developed 3 IOM training syllabus and courses as follows:-

- Sail
- Rig
- Hull and Appendage

This paper details the syllabus for Sail training and is to be used for the training and assessment of IOM Sail Measurers and for Measurers using the ISAF SCR sail Measurement. This syllabus, as with the other two, will be updated as and when the ISAF ERS and SCR Standards are amended and when there are new developments in construction and control.

The syllabus follows 15 sessions of the training and assessment course. Each session forms a separate part although the order and title of each of the sessions are the same as for the other two training and assessment courses. Some sessions are common to all three courses. The sessions are entitled:-

SESSION 1 INTRODUCTION
SESSION 2 RECAPITULATION OF PRE-COURSE WORK
SESSION 3 CERTIFICATION
SESSION 4 TOOLS, EQUIPMENT AND DOCUMENTATION
SESSION 5 PARTS AND TERMS
SESSION 6 CONDITIONS FOR MEASUREMENT
SESSION 7 CONSTRUCTION AND MATERIALS
SESSION 8 MEASUREMENT - MEASUREMENT POINTS
SESSION 9 MEASUREMENT - DIMENSIONS
SESSION 10 MEASUREMENT – OTHER CONTROLS
SESSION 11 IDENTIFICATION OF EQUIPMENT
SESSION 12 ADVERTISING
SESSION 13 IN-HOUSE CERTIFICATION
SESSION 14 ASSESSMENT PAPER
SESSION 15 FEEDBACK DISCUSSION

Text in blue is common to all 3 Training syllabus

Text in red is specific to Sails

SESSION 1 – INTRODUCTION

Introduction

Philosophy of ISAF Equipment Control

SESSION 2 – RECAPITULATION OF PRE-COURSE WORK

INTRODUCTION TO ERS

The Equipment Rules of Sailing consists of three parts:

- Part I – Rules for use of the equipment. The **boat** – the sports equipment used in sail racing – and the **personal equipment**
- Part II – Equipment definitions
- Part III – Rules governing equipment control and inspection

Revision

The equipment rules are revised and published every four years by the International Sailing Federation, the international authority for the sport. This edition becomes effective on 1 January 2005. Changes to the equipment rules are permitted under ISAF Regulations 32.1.2 and 32.2. No changes are contemplated before 2009, but any changes determined to be urgent before then will be announced through national authorities and posted on the ISAF website – www.sailing.org.

STATUS OF ERS

The ERS are adopted by ISAF as a code governing the use of equipment while racing. The ERS are made applicable as stated in Applicability, below:

ERS Applicability

The ERS may be made applicable by:

(a) **Class Rules**.

(b) Adoption by a rating authority for racing under its jurisdiction.

(c) Adoption in the notice of race and sailing instructions for an event.

(d) Prescriptions of an MNA for racing under its jurisdiction.

(e) Other ISAF codes and rules adopted by Council.

ERS Changes

The ERS may only be changed as follows:

(a) Prescriptions of an MNA may change an ERS rule, for racing under its jurisdiction.

(b) Sailing instructions may change an ERS rule by referring specifically to it and stating the change, but may not change any portion of the ERS adopted in **class rules**.

(c) A rating authority may change an ERS rule for racing within its jurisdiction.

(d) **Class rules** may change ERS rules B.7, B.9, H1, H2, H3, H.4, H5 and H.6.

These restrictions do not apply if rules are changed to develop or test proposed rules in local races. The MNA may prescribe that its approval is required for such changes.

ERS TERMINOLOGY

A term used in its defined sense is printed in "**bold**" type if defined in the ERS and in "*italic*" type if defined in the RRS.

ERS ABBREVIATIONS

ISAF	International Sailing Federation
MNA	ISAF Member National Authority
ICA	International Class Association
NCA	National Class Association
ERS	The Equipment Rules of Sailing
RRS	The Racing Rules of Sailing

GENERAL ERS TERMS AND MEASUREMENT RULES

C.2.1 Boat

The sports equipment used by the **crew** to take part in a race.

It comprises:

hull(**s**)
hull appendage(**s**)
ballast
rig
sail(**s**)
associated fittings
all other items of sports equipment used excluding consumables and **personal equipment**.

C.2.2 Sailboard

A **boat**.

C.2.3 Major Axes

The three major axes of the **boat** at 90° to each other – vertical, longitudinal and transverse – shall be related to the waterplane with the **boat** in measurement trim and the **hull** centreplane. See H.3

H.3.1 For a **boat**, unless otherwise specified, words such as “fore”, “aft”, “above”, “below”, “height”, “depth”, “length”, “beam”, “freeboard”, “inboard” and “outboard” shall be taken to refer to the **boat** in measurement trim. All measurements denoted by these, or similar words, shall be taken parallel to one of the three **major axes**.

H.3.2 For a component, unless otherwise specified, width, thickness, length etc. shall be measured as appropriate for that component, if relevant without reference to the **major axes**.

H.3.3 Unless otherwise specified, measurements shall be the shortest distance between the measurement points.

H.3.4 Unless otherwise specified, longitudinal measurements shall be taken parallel to the longitudinal **major axis**.

C.2.4 Boat Length

The longitudinal distance between the aftermost point and the foremost point on the **boat** with **sails** and **spars** set as appropriate. See H.3.4.

C.2.5 Ballast

Weight installed to influence the stability, flotation or total weight of the **boat**. It can be of any material and positioned anywhere in the **boat**.

C.2.6 Corrector Weight

Weight installed in accordance with the **class rules** to correct deficiency in weight and/or its distribution.

C.2.7 Limit Mark

A clearly visible mark of a single colour contrasting to the part(s) on which it is placed indicating a measurement point.

C.2.8 Event Limitation Mark

A mark placed by a race committee on equipment whose replacement at the event is controlled by the **class rules**.

C.3 RULES

C.3.1 Class Rules

The rules that specify the **boat** as it shall be used for racing.

C.3.2 Closed Class Rules

Class rules where anything not specifically permitted by the **class rules** is prohibited.

C.3.3 Open Class Rules

Class rules where anything not specifically prohibited by the **class rules** is permitted.

C.4 EQUIPMENT CONTROL AND INSPECTION

See H.1 and H.2.

C.4.1 Fundamental Measurement

The control methods used as the primary means to establish the physical properties of equipment.

C.4.2 Certification Control

Control for **certification** required by **class rules**, or a **certification authority**, which may include **fundamental measurement.**

C.4.3 Equipment Inspection

Control carried out at an event as required by the notice of race and the sailing instructions which may include **fundamental measurement**.

C.4.4 Official Measurer

A person appointed or recognised, by the MNA of the country where the control takes place, to carry out **certification control**.

C.4.5 Equipment Inspector

A person appointed by a race committee to carry out **equipment inspection**.

C.4.6 International Measurer

A person authorised by the ISAF to inspect prototype boats of specific ISAF classes and recognised by ISAF as qualified to assist in **equipment inspection** at international events for those classes.

H.1 Certification Control

H.1.1 An **official measurer** shall not carry out **certification control** of any part of a **boat** owned, designed or built by himself, or in which he is an interested party, or has a vested interest, except where permitted by the MNA.

H.1.2 If an **official measurer** is in any doubt as to the application of, or compliance with, the **class rules** he shall consult the **certification authority** before signing a certification control form or attaching a **certification mark**.

H.1.3 An **official measurer** shall only carry out **certification control** in another country with the prior agreement of the MNA for that country.

H.2 EQUIPMENT INSPECTION

H.2.1 If an **equipment inspector** is in any doubt as to the application of, or compliance with, the **class rules**, the question should be referred to the **certification authority** in the country where the event takes place, which if in doubt shall consult the authority responsible for interpreting the **class rules**.

SESSION 3 – CERTIFICATION

C.5 CERTIFICATION

C.5.1 Certification Authority

For the **hull**, the ISAF, the MNA of the owner, or their delegates.

For other items, the ISAF, the MNA in the country where the **certification** shall take place, or their delegates.

C.5.2 Certify

To issue a **certificate**, or to attach a **certification mark** after successful **certification control**.

C.5.3 Certificate

Documentary proof, issued by the **certification authority,** of successful **certification control** of the **hull**, or any other parts required by the **class rules** or a **certification authority**.

C.5.4 Certification Mark

Proof of successful **certification control** of a part requiring **certification**, attached or made by an **official measurer**.

A.2.1 Having a Certificate

The **boat** shall have such valid **certificate** as required by its **class rules** or the **certification authority**.

A.2.2 Compliance with a Certificate

The **boat** shall comply with its **certificate**.

See also RRS rule 78 Compliance with Class Rules: Certificates.

SESSION 4 – TOOLS, EQUIPMENT AND DOCUMENTATION

SESSION 5 – PARTS AND TERMS

Subsection A – Trilateral Sails

Definitions relating to:

"MAINSAIL" also apply to "Foresail" and "Mizzen"

"HEADSAIL" also apply to "Jib", "Genoa", "Gennaker" and "Staysail".

G.1 GENERAL SAIL TERMS

G.1.1 Sail

An item of equipment attached to the **rig**, used to propel the **boat** including any of the following added parts when they are present:

sail reinforcements
batten pockets
windows
stiffening
tabling
attachments
other parts as permitted by **class rules**

G.1.2 Body of the Sail

The **sail** excluding the areas where parts are added as per G.1.1.

G.1.3 Ply

A sheet of sail material.

G.1.4 Soft Sail

A **sail** where the **body of the sail** is capable of being folded flat in any direction without damaging any **ply** other than by creasing.

G.1.5 Woven Ply

A **ply** which, when torn, can be separated into fibres without leaving evidence of a film.

G.1.6 Laminated Ply

A **ply** made up of more than one layer.

G.1.7 Single-Ply Sail

A **sail**, except at **seams**, where all parts of the **body of the sail** consist of only one **ply**.

G.1.8 Double Luff Sail

A **sail** with more than one **luff**, or a **sail** passing around a stay or **spar** and attached back on itself.

G.1.9 Seam

Overlap where two or more **ply** forming the **body of the sail** are joined.

G.1.10 Tabling

Additional **ply** or folded **ply** overlap(s) at a **sail edge**.

G.1.11 Batten Pocket

Additional **ply** to form a pocket for a batten.

G.1.12 Sail Opening

Any opening other than openings created by **attachments** or **batten pockets**.

G.1.13 Window

Transparent **ply** covering a **sail opening**.

G.1.14 Stiffening

Corner boards and battens.

G.1.15 Attachments

Bolt ropes,
tablings that surround, or are fixed to, bolt ropes,
luff wires including any cringles and seizing,
cringles,
straps,
hanks,
slides,
adjustment eyes,
adjustment points,
reefing eyes,
reefing points, and
blocks and their fastenings.

See H.5.3.

G.2 SAIL EDGES

G.2.1 Foot

The bottom edge.

G.2.2 Leech

(a) MAINSAIL and HEADSAIL: The aft edge.

(b) SPINNAKER: The edges other than the **foot**.

G.2.3 Luff

MAINSAIL and HEADSAIL: The fore edge(s).

G.3 SAIL CORNERS

G.3.1 Clew

The area where the **foot** and the **leech** meet.

G.3.2 Head

The area at the top.

G.3.3 Tack

The area where the **luff** and the **foot** meet.

Subsection B – Additions for Other Sails

The following definitions for other sails,

e.g. "Gaff Sails", "Lugsails" and "Spritsails",
are additional to or vary those given in Subsection A of this Section.

G.2 SAIL EDGES

G.2.4 Head

The top edge.

G.3 SAIL CORNERS

G.3.4 Peak

*The area where the **head** and the **leech** meet.*

G.3.5 Throat

*The area where the **head** and the **luff** meet.*

SESSION 6 – CONDITIONS FOR MEASUREMENT

H.5 SAIL MEASUREMENT

H.5.1 Conditions of Sail

The **sail** shall

be dry,

not be attached to **spars** or **rigging**,

have all battens removed,

have pockets of any type flattened out,

have just sufficient tension applied to remove wrinkles across the line of the measurement being taken and

have only one measurement taken at a time.

H.5.2 Hollows in Sail Edges

Where the **sail edge** is hollow;

between adjacent **batten pockets**;

between the **aft head point** and adjacent **batten pocket**;

between the **clew point** and adjacent **batten pocket**;

between the **tack point** and adjacent **batten pocket**;

at an **attachment**.

and a measurement point falls in the hollow, the **sail** shall be flattened out in the area of the **sail edge**, the hollow shall be bridged by a straight line and the shortest distance from the measurement point to the straight line shall be measured. This distance shall be added to the measurement being taken.

SESSION 7 – CONSTRUCTION AND MATERIALS

G.6 SAIL REINFORCEMENT

G.6.1 Primary Reinforcement

An unrestricted number of additional layers of **ply** of permitted material:

at a corner

at a adjustment point

at a reefing point adjacent to the **luff**

at a reefing point adjacent to the **leech**

at a **sail** recovery point

where permitted by the **class rules**

G.6.2 Secondary Reinforcement

Not more than two additional layers of **ply** of permitted material each not thicker than the maximum thickness of the **ply** of the **body of the sail**:

at a corner

at an adjustment point

at a reefing point adjacent to the **luff**

at a reefing point adjacent to the **leech**

at a **sail** recovery point

to form a **flutter patch**

to form a **chafing patch**

to form a **batten pocket patch**

where permitted by the class rules

G.6.3 Batten Pocket Patch

Secondary reinforcement at the inner end of a **batten pocket**.

G.6.4 Chafing Patch

Secondary reinforcement where a **sail** can touch a **spreader**, stanchion, shroud or **spinnaker pole**.

G.6.5 Flutter Patch

Secondary reinforcement on the **leech** or the **foot** at the end of a **seam**.

H.6 CHECKING MATERIALS

Unless specifically prescribed by the **class rules**, materials are not subject to **certification control**.

SESSION 8 – MEASUREMENT - MEASUREMENT POINTS

G.4 SAIL CORNER MEASUREMENT POINTS

G.4.1 Clew Point

The intersection of the **foot** and the **leech**, each extended as necessary.

G.4.2 Head Point

(a) MAINSAIL: The intersection of the **luff**, extended as necessary, and the line through the highest point of the **sail** at 90° to the **luff**.

(b) HEADSAIL: The intersection of the **luff**, extended as necessary, and the line through the highest point of the **sail**, excluding **attachments**, at 90° to the **luff**.

(c) SPINNAKER: The intersection of the **leeches**, extended as necessary.

G.4.3 Tack Point

The intersection of the **foot** and the **luff**, each extended as necessary.

G.5 OTHER SAIL MEASUREMENT POINTS

G.5.1 Quarter Leech Point

The point on the **leech** equidistant from the **half leech point** and the **clew point**.

G.5.2 Half Leech Point

The point on the **leech** equidistant from the **head point** and the **clew point**.

G.5.3 Three-Quarter Leech Point

The point on the **leech** equidistant from the **head point** and the **half leech point**.

G.5.4 Upper Leech Point

The point on the **leech** a specified distance from the **head point**.

G.5.5 Aft Head Point

The intersection of the **leech** extended as necessary and the line through the **head point** at 90° to the **luff**.

G.5.6 Mid Foot Point

(a) MAINSAIL and HEADSAIL: The point on the **foot** equidistant from the **tack point** and the **clew point**.

(b) SPINNAKER: The point on the **foot** equidistant from the **clew points**.

Subsection B – Additions for Other Sails

G.4 SAIL CORNER MEASUREMENT POINTS

G.4.4 Peak Point

*The intersection of the **head** and **leech**, each extended as necessary.*

G.4.5 Throat Point

*The intersection of the **head** and **luff**, each extended as necessary.*

G.5 OTHER SAIL MEASUREMENT POINTS

G.5.2 Half Leech Point

*The point on the **leech** equidistant from the **peak point** and the **clew point**.*

G.5.3 Three-Quarter Leech Point

*The point on the **leech** equidistant from the **peak point** and the **half leech point**.*

G.5.4 Upper Leech Point

*The point on the **leech** a specified distance from the **peak point**.*

SESSION 9 – MEASUREMENT - DIMENSIONS

G.7 PRIMARY SAIL DIMENSIONS

See also H.5

H.5.3 Excluding Attachments

Attachments at a **sail edge**, other than a bolt rope and **tabling**, shall be ignored when measuring.

G.7.1 Foot Length

(a) MAINSAIL and HEADSAIL: The distance between the **clew point** and the **tack point**.

(b) SPINNAKER: The distance between the **clew points**.

G.7.2 Leech Length

The distance between the **head point** and the **clew point**.

G.7.3 Luff Length

The distance between the **head point** and the **tack point**.

G.7.4 Quarter Width

(a) MAINSAIL and HEADSAIL: The shortest distance between the **quarter leech point** and the **luff**.

(b) SPINNAKER: The distance between the **quarter leech points**.

G.7.5 Half Width

(a) MAINSAIL and HEADSAIL: The shortest distance between the **half leech point** and the **luff**.

(b) SPINNAKER: The distance between the **half leech points**.

G.7.6 Three-Quarter Width

(a) MAINSAIL and HEADSAIL: The shortest distance between the **three-quarter leech point** and the **luff**.

(b) SPINNAKER: The distance between the **three-quarter leech points**.

G.7.7 Upper Width

(a) MAINSAIL and HEADSAIL: The shortest distance between the **upper leech point** and the **luff**.

(b) SPINNAKER: The distance between the **upper leech points**.

G.7.8 Top Width

The distance between the **head point** and the **aft head point**.

G.7.9 Diagonal

(a) SPINNAKER: The distance between a **clew point** and the opposite **half leech point**.

G.7.10 Foot Median

The distance between the **head point** and the **mid foot point**.

G.7.11 Luff Perpendicular

(a) MAINSAIL and HEADSAIL: The shortest distance between the **clew point** and the **luff**.

G.8 OTHER SAIL DIMENSIONS

See also H.5

G.8.1 Batten Pocket Length

(a) INSIDE: The distance between the **sail edge** and the internal extreme end of the **batten pocket**, measured parallel to the pocket centreline. The effect of any elastic or other retaining device shall be ignored.

(b) OUTSIDE: The distance between the **sail edge** and the external extreme end of the **batten pocket**, measured parallel to the pocket centreline.

G.8.2 Batten Pocket Width

(a) INSIDE: The greatest distance between inside edges of the **batten pocket** measured at 90° to pocket centreline. Local widening for batten insertion shall be ignored.

(b) OUTSIDE: The greatest distance between the outside edges of the **batten pocket** measured at 90° to the pocket centreline. Local widening for batten insertion shall be ignored.

G.8.3 Foot Irregularity

The maximum distance between the edges of the **foot** when first the **tack point** and then the **clew point** are superimposed on any part of the **foot**.

G.8.4 Reinforcement Size

(a) AT A CORNER: The greatest dimension of the **sail reinforcement** from a **sail corner measurement point**.

(b) ELSEWHERE: The greatest dimension of the **sail reinforcement**.

G.8.5 Seam Width

The width of a **seam** measured at 90° to the **seam**.

G.8.6 Tabling Width

The width of a **tabling** measured at 90° to the **sail edge**.

G.8.7 Attachment Size

(a) AT A CORNER OR AN EDGE

(1) LENGTH

AT THE HEAD: The dimension from the **head point** along the **luff** or its extension to a line through the highest point of the **attachment** at 90° to the **luff**.

AT THE TACK: The dimension from the **tack point** along the **luff** or its extension to a line through the lowest point of the **attachment** at 90° to the **luff**.

AT THE CLEW: The greatest dimension from the **clew point**.

AT AN EDGE: The greatest dimension from the **sail edge**.

(2) WIDTH

The greatest dimension measured perpendicular to the length.

(b) ELSEWHERE

The greatest dimension of the **attachment**.

Subsection B – Additions for Other Sails

G.7 PRIMARY SAIL DIMENSIONS

See H.5.

G.7.2 Leech Length

*The distance between the **peak point** and the **clew point**.*

G.7.3 Luff Length

*The distance between the **throat point** and the **tack point**.*

G.7.9 Diagonal

*The distance between the **throat point** and the **clew point**.*

G.7.10 Foot Median

*The distance between the **peak point** and the **mid foot point**.*

G.7.12 Head Length

*The distance between the **peak point** and the **throat point**.*

SESSION 10 – MEASUREMENT – OTHER CONTROLS

Items that might be in class rules not dealt with by the ERS such as:-

Colour

Permitted Items

Panels

SESSION 11 – IDENTIFICATION OF EQUIPMENT

A.3 IDENTIFICATION ON SAILS

See RRS rule 77 Identification on Sails.

SESSION 12 – ADVERTISING

A.4 ADVERTISING

See RRS 79 - ISAF Regulation 20, Advertising Code

Sailmakers Marks

SESSION 13 – IN-HOUSE CERTIFICATION

Concept

Structure - CAR

IOM – Internal Official Measurer

SESSION 14 – ASSESSMENT PAPER

SESSION 15 – FEEDBACK DISCUSSION

CLOSE