PART C - Event Measurement

C.1 Introduction

In this part of the guide the term **event measurement** refers to the measurement, inspection, checking and/or control of equipment undertaken at an event solely in support of the event. It does not include any measurement necessary to obtain a **certificate** or **certification mark**, which might otherwise be a requirement of **class rules**. Care should be taken not to confuse **event measurement** with **fundamental measurement**, as a measurer's authority and channel of communications in each case are very different.

Although **event measurement** can encompass the complete boat, this guide deals mainly with the measurement of **sails**. If more than just **sails** are to be measured then the recommendations given in this guide should be included as an integral part of the full measurement planning and strategy.

C.2 Event Measurer's Authority

Event measurers obtain their authority solely from the race committee of the event at which they measure (RRS 78.3). **Official measurers** and **International measurers** have no authority to undertake **event measurement** unless specifically appointed for the task by the race committee. ISAF appeal case 57 refers. Should an MNA or CA wish one of its measurers to be involved in **event measurement** then it should ask the race committee to appoint him well in advance of the event.

Although it is common practice with a number of classes for **fundamental measurement** to be undertaken just prior to a major event, it is wise for such measurement to be undertaken by a measurer other than the **event measurer**. To act in both capacities creates a conflict of authority. It follows that where an **event measurer** is presented with an item of equipment, which he initially measured, then, if possible, he should pass the item to another **event measurer** for checking.

An **event measurer** is under the sole jurisdiction of the race committee to which all formal reports of non-compliance should be made (RRS 78.3). Should an **event measurer** be in any doubt as to the application of a rule or measurement instruction, the question should be referred to the **certification authority** for the class in the country where the event takes place (ERS H.1.4).

C.3 Class Association Authority

A CA has no direct authority or jurisdiction over **event measurement** except in the capacity of an organising authority or part of an organising authority (RRS 87.1). A **certification authority** has no power to invalidate or withdraw the measurement **certificate** of a boat while it is competing in an event. ISAF appeal case 57 refers.

C.4 Racing Rules

The racing rule with most relevance to **event measurement** is RRS 78.3. This is reproduced below.

RRS 78.3
When a measurer for an event concludes that a boat or personal equipment does not comply the class rules, he shall report the matter in writing to the race committee, which shall protest the boat.

C.5 Event Measurer's Responsibility

RRS 78.3 gives **event measurers** initial authority for determining whether or not an item complies with **class rules**. This authority is only held while event measuring.

If the measurer formally concludes that an item does not comply, he has no alternative other than to report the matter in writing to the race committee, which ***shall*** protest the boat.

In most cases it is unlikely that a protest committee will take action against a boat until after it has raced and so, in reality, an **event measurer's** strategy in dealing with a boat found not to comply will differ depending upon whether he is acting before or after the boat has raced.

Prior to racing

Prior to racing, and in the case of a series this should be taken to mean the first race of the series, an **event measurer's** prime responsibility is to achieve a state where all equipment complies with the rules. In line with this responsibility, if a measurer establishes non-compliance then he should require correction. It is only after a measurer has done this and the defect is not corrected that he should report the matter to the race committee.

In other words, prior to racing the **event measurer** should actively endeavour to achieve rule compliance, but be conciliatory, with the interests of the competitors in mind.

After the start of racing

After racing has started, an **event measurer's** prime responsibility is to judge compliance as required to do so by the race committee, through the Sailing Instructions, or by the protest committee as a result of a protest.

When an **event measurer** is given the authority through Sailing Instructions to undertake spot checks, care should be taken in the choice of the items to be checked. It should be borne in mind that there are no alternative penalties for the infringement of an equipment rule. Non-compliance with even a minor, non-performance or non-safety related measurement rule is likely to lead to disqualification. Measurers should be cautious when checking an item that was not measured prior to racing or which might have inadvertently changed or distorted since **fundamental measurement**. If a competitor deliberately cheats then the item will either be obvious, in which case it is incumbent on another competitor to protest, or be so obscure that it is unlikely to be found by random spot checks.

Therefore, after racing has started the **event measurer** should be a reactive policeman in a similar manner to a Juror.

C.6 Event Measurement Planning

Pro-active **event measurement** of **sails** should be undertaken prior to the first race. Subsequent **sail** measurement will be reactive and, apart from ensuring that some measurement facilities are available, cannot be planned.

Planning for pre-event measurement is usually a matter of "horse trading" between a CA, measurement authority, organising authority and the **event measurer** as to the amount of time, help and money available for the job. Before planning is started, the **event measurer** should open lines of communication with these organisations and continue to consult them on all matters of planning and resources. This dialogue will also highlight measurement concerns and areas where measurement data is needed, and may be important in cases where rule interpretations are required.

Consultation should be started in sufficient time to enable the **event measurement** requirements to be included in the Notice of Race and Sailing Instructions (see Appendix IV & V).

C.7 Sail Limitations

It is important to know whether or not the event will be subject to **sail** limitations where each boat is permitted to use a limited number of mainsails, headsails and spinnakers. **Sail** limitations will help to provide an estimate of the number of **sails** to be measured and will also mean that **event limitation marks** have to be applied as a priority measurement task, with appropriate rubber stamps and ink pads available. If **sail** limitations are not in force then an indication of the likely number of **sails** each boat will use will be required. This will vary from class to class.

C.8 Time, People and Money

Start the planning process by calculating the amount of time needed to measure all **sails** fully.

Apply the expected number of entries and the number and type of **sails** each is likely to use to estimates of time needed for measurement as given in the tabulation below.

For example - if there are likely to be 50 boats each with two mainsails, two headsails and two spinnakers then, using the tables below, the total time will be: -

(50x2x10½) [Mainsail] +(50x2x7)[Headsail]+(50x2x7½)[Spinnaker] = 2,500 mins
increase this time by 20% as a contingence.

2500 x 1.2 = 3,000 mins i.e. 50 hours
this estimate can be used to assess the time and the number of measurers/helpers needed.

A typical event measurement day is 10 hours and the measurement team needed to measure each sail will consist of a measurer and a helper. (The owner/competitor should not be included as the helper).

Taking the 50 hours requirement from the above example would give 5 days using one measurement team or 1 day using 5 measurement teams or any variation in between.

If it is not possible to achieve the day/team requirement then the extent of measurement will need to be reduced until a balance is reached. This should be undertaken by omitting the measurement of the least performance related items as listed in the tables below. Omit items from the bottom of each table first and move up the lists omitting items until the balance is reached.

Note that limitation stamping must not be omitted if the event is subject to **sail** limitation rules.

Whatever is finally decided regarding measurement time and the number of measurers/helpers, this must be agreed with the organising authority and referred to in the Notice of Race and Sailing Instructions (see Appendix IV & V).

Each of the following tables lists individual **sail** measurements in the order in which measurement should be undertaken together with the approximate time needed for each. The times assume template measurement for mainsail and headsail and batten measurement for spinnakers with all measurement undertaken on tables.

Mainsail	**Mins**
Limit Marking and recording	2
Leech Length Half Width Three-quarter Width Quarter Width Upper Width Top Width Foot Length Luff Length	2
Cloth Type Cloth Weight	1
Upper Batten Pocket Position Upper Batten Pocket Length	1/2
Primary Reinforcement at Corners Primary Reinforcement elsewhere Secondary Reinforcement at Corners Secondary Reinforcement elsewhere	1
Lower Batten Pocket Position Lower Batten Pocket Length	1/2
Intermediate Batten Pocket Position Intermediate Batten Pocket Length	1/2
Tabling Seams Window area Window position Class insignia Sail numbers Sailmaker's mark	3

Headsail	**Mins**
Limit Marking and recording	1
Luff Length Leech Length Foot Length Foot Median Luff Perpendicular Top Width	2
Cloth Type Cloth Weight	1
Primary Reinforcement at corners Primary Reinforcement elsewhere Secondary Reinforcement at corners Secondary Reinforcement elsewhere	1
Tabling Seams Window area Window Position Sailmaker's Mark	2

Spinnaker	**Mins**
Limit Marking and recording	1
Leech Length Foot Median Foot Length Diagonals Half Width Three-quarter Width Quarter Width	3
Cloth Weight	1
Primary Reinforcement at corners Secondary Reinforcement at corners	1/2
Tabling Seams Sail Numbers Sailmaker's mark	2

C.9 Measurer's Fees

Any fees or expenses required by the measurers are the responsibility of the organising authority. It is important that agreement on this point is made prior to the event. The **event measurer** should not assume payment or expect to cover costs direct from competitors (see A.3).

C.10 Facilities

Event **sail** measurement should be carried out under cover in good conditions of light, without wind or draughts. Ideally measurement should be carried out on tables. These should be about a metre high with a single flat working surface, although separate tables with their legs taped together will often suffice. Measuring on tables eliminates the need to bend down and to kneel and thus minimises the fatigue associated with **sail** measurement. If tables are not available then a gymnasium or dance floor is a good measuring surface. If the only available floor is concrete this can be covered with polythene sheeting taped down over the measurement templates. Measuring on grass will not give satisfactory results. Allow sufficient room for all measurement teams to be working simultaneously.

A table and chairs should be provided for each measurement team and food and drink should be available at normal times.

C.11 Preparation

a) Documentation
In addition to the RRS, ERS, **class rules**, Measurement Forms, interpretations and the Guide to Sail Measurement etc, an event measurement form, a measurement log and a sail number change request form will be needed.

The event measurement form, issued to competitors upon registration, should detail the boat and its sail and plaque number (taken from the **certificate**) and give advice as to where and when to attend for measurement, the number of **sails** permitted, the state in which they should be presented, and a section enabling the **event measurer** to record measurement details and stamp. The final part of the form, the declaration, should be signed by the competitor upon completion of measurement. This declaration officially confirms the items marked and that they will not be changed during the event without the prior approval of the Jury.

The measurement log, which is often a simple exercise book, should be used by the measurer to record the number of **sails**, their serial number, manufacturer etc. against each of the boats competing in the event. It is recommended that at least one separate page is used for each boat and, within the time available, as much relevant information as possible is recorded.

The sail number change request form should be a proforma for issue to competitors wishing to request the permission of the race committee to use **sails** displaying different sail numbers from those required by their **certificate** and **class rules**. This is a request for a dispensation under RRS 77 & RRS Appendix G. These forms are not specifically related to measurement but do help to reduce time and are convenient for competitors.

Illustrations of typical documentation is given in the Appendix VI & VII.

b) Setting out
Event sail measuring to the ERS should be undertaken using templates and measuring battens for small and medium size **sails**. Large **sails** should be measured with steel tapes.

c) Mainsails and Headsails
CAs will often have ready made mylar or similar area check templates which, if possible, should be used. These can be laid flat on the measuring surface, taped or pinned down and checked against the **class rules** for accuracy using **fundamental measurement** procedures. If ready made templates are not available they can be created using masking tape directly on the measuring surface. The following diagram illustrates a typical mainsail tape template. If measurement is to be undertaken on a polythene sheet then the masking tape should be fixed to the surface below the sheet. Use actual **sails** to help position and lay out templates.

d) Spinnaker
Because of the difficulty in laying spinnakers flat, it is not advisable to measure these using templates.

For small sized spinnakers measurement battens are recommended. If these are already available from the CA then the dimensions should be checked prior to use. Alternatively it is quite easy to make suitable battens, marking the dimensions with felt tipped pens.

For large spinnakers, measurement with a steel tape using **fundamental measurement** procedures is recommended.

e) Reinforcement and sail numbers
For **reinforcement** and sail number sizes, perspex or rigid polythene transparent templates may be used. These can be placed over the item being measured and any deviation in size seen through the template.

f) Batten Pocket Lengths and Widths
Batten pocket length, inside and outside, and width may be checked using measurement battens similar to those used for spinnaker measurement.

g) Other Equipment
In addition to templates and battens, equipment recommended for **fundamental measurement** should also be available (see Appendix I).

C.12 Undertaking Measurement

C.12.1 Prior to racing

a) Certification mark checks
Prior to measurement, checks should be made to verify that the sail number displayed on a **sail** corresponds with that of the boat and also that the **sail** possesses an authentic **certification mark**.

If the sail number is different from the boat, the competitor should complete a sail number change request form for submission to the race committee (see Appendix VI).

If a **sail** does not posses an authentic initial **certification mark** as required by most **class rules**, it should not be measured. The competitor should be asked to present an alternative **sail** or to arrange for independent initial measurement prior to resubmitting the **sail** at a later time.

Event measurers should be aware of the common misunderstanding that a **sail** has been measured and **certification marked**, usually at a previous event, when in fact such was purely check measurement. Sometimes **event limitation marks** have been marked at the tack and not the clew contrary to ISAF recommendations.

b) Limitation marking

Where the event is subject to sail limitations each sail to be used should be marked prior to the first race.

Marking should be undertaken only when the measurer is satisfied that the sail complies with pre-event measurement requirements. The **event limitation mark** should be positioned at the clew. Additionally, on headsails, the sail number of the boat should be added next to the **event limitation mark** to enable the sail is attributed to the correct boat when checking **event limitation marks** during the event.

Similar marking techniques as those used for initial sail **certification marks** may be used, although the mark will probably be to a unique design and if possible state, "sail limitation mark".

Figure 22. Typical Sail Limitation Mark

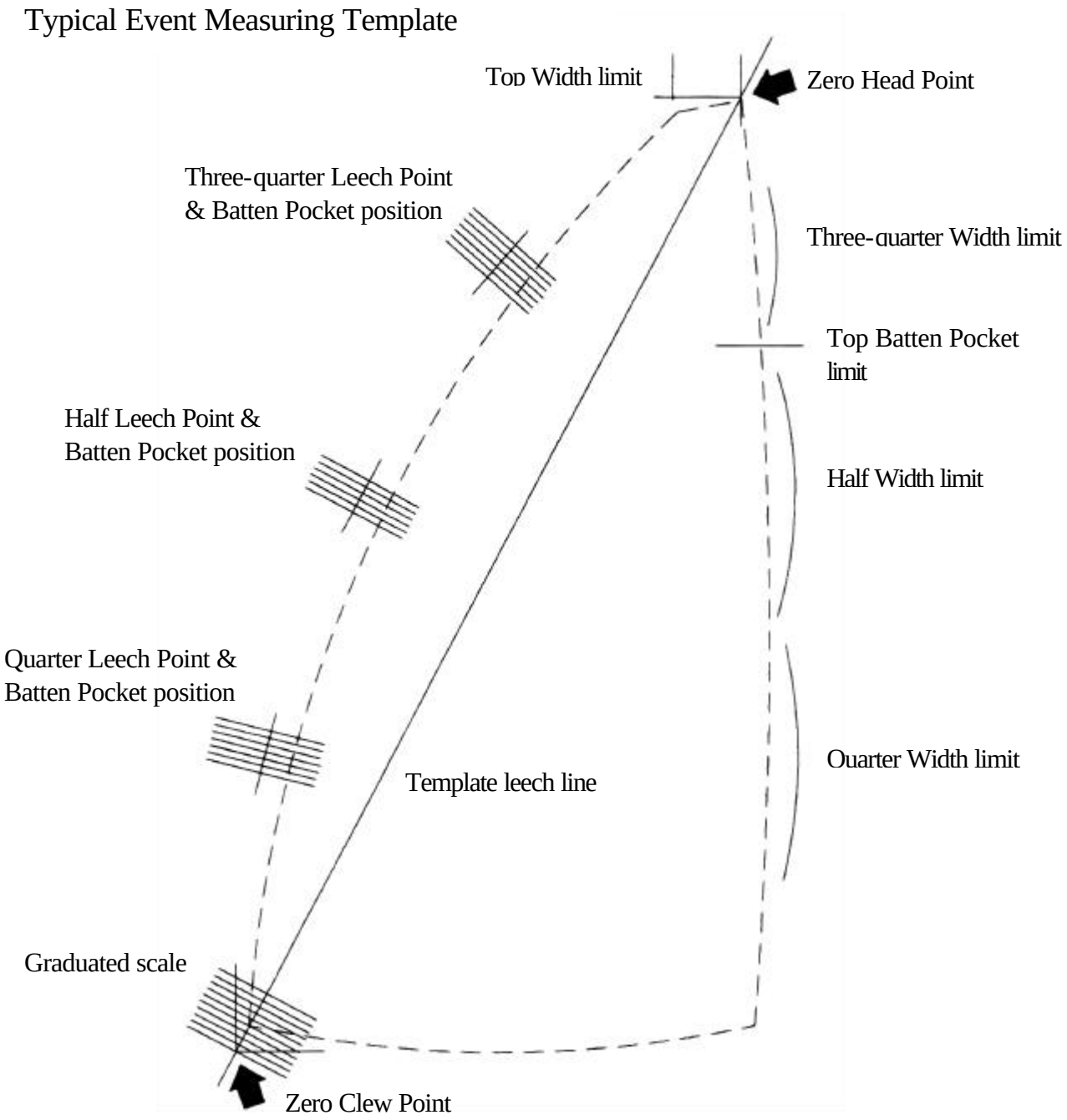

Figure 23. Typical Event Measuring Template

c) Mainsail Measurement

When checking a measurement by template, the sail shall be pulled with sufficient tension to remove the wrinkles across the line of the measurement, as specified in ERS H.4.1.

The sail should be laid on the measuring template so that the **head point** is on the template's zero head point and the **clew point** is on the graduated scale of the template leech line in the area of the clew. Use the normal sail measurement batten to determine corner points if necessary. The measurer should be at the clew with helper at the head. The measurer should advise the helper of the gradation upon which the

clew point rests and the leech points marked on the sail at the corresponding leech gradations.

Lengths and widths may now be measured and the **batten pocket** positions and **top width** checked. If any of these is close to the rule limits then it should be rechecked using **fundamental measurement** procedures.

Cloth type and weight are checked using a standard thickness micrometer and feeler gauge (see B.2).

The measurement helper can next check the inside and outside **batten pocket** lengths and widths, using measurement battens, at the same time as the measurer checks **reinforcement** and sail number using a perspex template.

Any remaining measurement can be carried out using either perspex templates or battens as appropriate.

d) Headsail measurement
The headsail should be checked in a similar manner as the mainsail.

e) Spinnaker measurement
Due to difficulty in laying a spinnaker flat, it is not recommended that template measurement is used. Accordingly, if widths and the foot median are to be measured, it will be necessary to fold the sail to find **leech points** and **mid foot point**. This should be done first, with the points being clearly marked on the **sail**.

Leech length and **foot median** should be checked against the measuring batten. The helper should zero the batten at the **head point** and the measurer check the **sail** at the other end. The batten should be placed on top of the sail, which should be pulled with the tension as required by ERS H.4.1.

The sail may now be moved around under the measurement batten to enable the **widths** to be checked.

Cloth weight, **reinforcement**, sail numbers and any other items may be checked in a similar manner as for the mainsail.

f) Action in cases of non-compliance
During pre-race measurement, if a measurer concludes that a sail does not comply with rules, in the first instance, the competitor should rectify the item either by alteration or by the submission of an alternative sail. If the competitor challenges the accuracy of the **event measurement**, the sail should be remeasured, preferably by another measurer, using the **fundamental measurement** procedure. If the sail still proves to be unsatisfactory (or in cases of doubt) the competitor should again be requested to rectify the item. If this request is still refused, the measurer should make a report to the race committee in accordance with RRS 78.3.

g) Recording
During pre race measurement, upon completion of the measurement and prior to stamping the sail, the event measurement form should be completed and details of the sail entered into the measurement log. It is important that the sail can be uniquely identified and so, if it does not possess a manufacturer's serial number or an initial measurer's unique number, the **event measurer** should mark such on the sail.

h) Impounding of sails prior to racing
It is sometimes the case that, subsequent to measurement but prior to the first race and where sail limitation is in force, a competitor decides to change his choice of sails and requests the measurement of alternatives. In such cases, prior to measuring the replacement, the competitor should present one of the previously checked and **event limitation marked** sails for the **mark** to be crossed out or the sail impounded for the duration of the event. Impounded sails should not be returned until after the last race (unless otherwise dictated by the Jury).

C.12.2 After racing has started

The only sail measurement that should be undertaken after racing has started is limitation stamp checking and any measurement required by the race or protest committee. In the latter case it is recommended that this is undertaken using the **fundamental measurement** procedures.

C.13 Notice of Race & Sailing Instructions

The pre and post race measurement requirements should be included in the Notice of Race and Sailing Instructions. See Appendix IV & V for suggested wordings.

C.14 Measurement Protests & Appeals

a) Who can protest?
A boat and the race committee may protest a boat in respect of class rule and measurement/rating **certificate** infringements. An MNA, CA and an **event measurer** have no right to protest. RRS 60.1, 60.2 and 78.3 refer.

b) Making a report under RRS 78.3
Where a measurer makes a report to the race committee in accordance with the requirements of RRS 78.3, such report should be in writing, giving details of the sail number and plaque number, name and owner of the boat in question, together with details of the **class rule** or rules and interpretations considered defective, at what time these were noted as being defective, what action if any has been undertaken by the owner or representative and whether or not, in the opinion of the measurer, the defect was in existence before and/or after a race.

In receiving a report under RRS 78.3 the race committee has no alternative other than to protest the boat. A measurer should bear this in mind and may consider discussing the matter informally with the chairman of the protest committee before making a formal report, particularly if the deficiencies are in respect of many boats.

c) Giving evidence
When asked to give evidence to a protest committee a measurer should restrict his comments to fact and not enter into discussions as to the meaning or interpretation of either class or racing rules. It should also be noted that convention and precedent only exist in cases of official rule interpretation by the authorised authority or racing rule appeal cases. The fact that something was permitted at the last major event of the class does not mean that it should be considered as a precedent for future events.

d) Damaged equipment
A competitor will sometimes request permission from a protest committee to use an

alternative sail when that previously measured and limitation stamped has been damaged. The measurer may be asked to give evidence as to whether or not, in his opinion, the extent and cause of the damage justifies a replacement.

In such a case the measurer should decline to give evidence respectfully pointing out that the cause and extent of damage to the sail and its possible future use is not a matter dealt with by class rules or measurement but a matter for subjective consideration. The protest committee itself may well be more qualified to judge these matters than an **event measurer**.

e) Class rule interpretation or application

Where, under RRS 64.3(b), a protest committee is in any doubt about the meaning of a measurement rule, it should refer the question, together with the facts found, to the authority responsible for interpreting the rule. This authority will usually be the ISAF, an MNA, or a CA technical committee. It is not an **event measurer**.

f) Action under RRS 69 - Gross Misconduct

Action or the promotion of action under RRS 69 is a very serious matter and should only be entered into after due consideration of all the factors involved in the alleged gross misconduct.

To date there have only been two types of incidents where such action has been undertaken involving measurement or a measurer.

The first was where an **event measurer**, whilst carrying out his duties, was verbally abused by a competitor. In such a case only the measurer can judge the degree of abuse and whether or not this warrants promotion of action under this rule.

The second was where there was an undisputed case of either measurement cheating or fraudulent **certification marking**. In such cases, provided that there is no doubt whatsoever, the measurer should not hesitate to promote the initiation of action under RRS 69.

g) Appeals

The right of appeal is dealt with by RRS 70. This permits a race committee to appeal the decision of a jury provided that the race committee was a party to the protest. This would be the case if action had been taken under RRS 78.3 and the protest hearing was not undertaken by the race committee itself.

An **event measurer** and a CA have no right of appeal.

C.15 Post Event Action

Subsequent to the event, the **event measurer** should ensure that all impounded sails and any **certificates** retained for the duration of the event are returned to their rightful owners. In addition, a written report giving details of the extent of measurement, any problems encountered and any subsequent action take, should be prepared and passed to the NA and class concerned. The measurer should also prepare a report of the event measurement and submit this to his authorising authority.

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