



SOUTH AFRICAN POWER FLYING ASSOCIATION

PRESIDENT'S TROPHY AIR RACE

OFFICIAL RULES AND REGULATIONS



AERO CLUB OF SOUTH AFRICA



FAI

FEDERATION AERONAUTIQUE INTERNATIONALE

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1 GENERAL

1.1 The PRESIDENT'S TROPHY AIR RACE is a handicap event held annually over two days with the finish as near to, the 31st May as possible.

1.2 The Race is organized and controlled by THE SOUTH AFRICAN POWER FLYING ASSOCIATION and the AERO CLUB OF SOUTH AFRICA and is officially sanctioned by the FEDERATION AERONAUTIQUE INTERNATIONALE (FAI) as a WORLD CLASS 1 event.

1.2.1 The event will be organized and executed in accordance with the valid sporting code of the FAI these Rules and Regulations and the Supplementary Rules and Regulations for the specific year's event.

1.2.2 The competition will be held in VFR conditions as defined by ICAO.

1.2.3 All competition times specified are local times, (UTC + 2 hours), and will be based on competition time.

1.2.4 The competition may be postponed, modified in its course (part or complete), partially or completely cancelled due to weather conditions or any force majeure at the discretion of the Race Director or Jury.

1.2.5 The Pilot in Command will be the only holder of the entry.

1.2.6 The same aircraft, power plants, propellers will be used throughout the event. Running repairs may be carried out during the event provided that they are officially recorded and reported to the Race Director or his representative. Should these repairs alter the performance, trim or in any way not conform to the Manufacturer's specifications, the Race Director has the right to take any further action as he deems fit. This action is final and binding and is not open to protest.

2. PARTICIPATION

2.1 The event is a handicap race for aircraft in GROUP 1 and in the CLASS Cla/O to Clf of the FAI sporting code but subject to the aircraft holding a Certificate of Airworthiness or acceptable permit to fly allowing sustained flight at maximum level speed at full throttle.

2.1.1 GROUP 1 aircraft are aircraft powered by one or more piston engined power plants.

2.1.2 The maximum takeoff weight must be less than 12 500 Kgs.

2.2 Aircraft entered must be able to maintain a minimum speed of 100 knots in level flight at sea level. This is the lowest handicap speed used.

2.3 Aircraft entered must have an endurance sufficient for the aircraft to cover at least 400 nautical miles plus reserves at sustained full throttle operation.

2.4.1 The Pilot in Command must hold a valid National Pilots, Private Pilot or higher license and have a valid FAI Competitor's license.

2.4.2 The Pilot in Command will have not less than 100 hours in Command. If the Navigator is not a PPL holder, the Pilot in Command must have not less than 200 hours in command.

2.4.3 Navigators and/or all other crew must hold valid FAI Competitor's licenses. The Navigator must be at least sixteen years old.

2.4.4 For handicapping purposes, aircraft with two or more seats will have two crew taken into account for the calculation of racing trim. In the event that more than two crew are carried, the Handicap Committee will still only take two crew into account for the calculation of racing trim.

2.4.5 No change may be made during the event in the nominated position of Pilot and Navigator.

2.5 The number of aircraft allowed to participate in the competition is at the discretion of the Race Director and all entries will be accepted on a "FIRST COME FIRST SERVED" basis. The maximum number of entries is 100. The Race Director

may, by means of supplementary rules, increase this number provided he has the agreement of the Safety Officer appointed for the event.

3 AIRCRAFT

3.1.1 The event is for standard production and OFFICIALLY modified aircraft as well as Amateur built aircraft.

3.1.2 An Officially modified aircraft is an aircraft with modification and accessories fitted to production type aircraft in order to increase its performance. These modifications and accessories must be approved by Civil Aviation Authorities, must not hinder or limit the normal operation of the aircraft and MUST be noted on the entry form. The Technical Officer of the Handicap Committee has the right to have the aircraft inspected or test flown and can assign competition parameters (speeds) to the aircraft which are not listed in the aircraft's manuals.

3.1.3 Removal of steps, Aerials (except HF), seats or any normal operating equipment from the aircraft in order to lower the aircraft's weight or increase its speed, is prohibited and will be penalized. (SEE CHAPTER 15)

3.1.4 Taping of air vents or any part of the aircraft will result in time penalties. (SEE CHAPTER 15)

3.2 Each aircraft will carry all documents required by the Civil Aviation Regulations and amendments which are in force at the time.

3.3 Aircraft are not required to have any extra or special insurance cover by the Organizers, but it is in the competitor's own interest to ensure that insurance covers are adequate and that cover is extended to cover the competition.

3.4 All aircraft must be equipped with a serviceable radio capable of Tx and Rx on all the required competition and locality frequencies.

3.5 The use of GPS (Global Positioning System) equipment will NOT be allowed. Permanently mounted systems will be sealed and portable equipment NOT to be taken on board.

3.6 All fuel tanks, including auxiliary and officially modified fuel tanks. will be filled before the start of each day's event and will be checked by Race Officials before each take-off. This requirement will also apply to test flights for handicapping purposes.

3.7.1 It is a condition of entry that every aircraft must have its Race Number and the main event Sponsor's decal prominently displayed on either side of the fuselage. Secondary Sponsor's decals may be displayed providing they do not obscure either the numbers or the main Sponsor's decals.

3.7.2 The full details of the Secondary Sponsor and the details of decals, etc. should be communicated to the Race Director with the entry form, but must in any case be received 15 days before the event. These details must be forwarded by pre-paid Registered post.

4 ENTRY

4.1 Entry forms and copies of the Rules and Regulations are available from The South African Power Flying Association website (www.sapfa.org.za)

4.2.1 The Entry Form is to be completed and returned to the SA Power Flying Association electronically via the website.

4.2.2 All entry forms must reach the Race Director before the entry date stipulated on the website. If there are vacancies late entries MAY be accepted at the sole discretion of the Race Director.

4.2.3 The Entrant, Navigators and/or all Crew are jointly and severally responsible for the accuracy and completeness of the entry form.

4.3.1 Entry fees are set out in the Supplementary Rules.

4.3.2 If entries are accepted after the closing date entrants will be required to pay a late entry fee as published in the entry forms. This is in addition to any other fees prescribed in the Supplementary Rules or entry forms. This late entry fee is not refundable under any circumstances.

4.4.1 The entry is regarded as accepted only when the prescribed form is received in its completed form together with the required entry fees.

4.4.2 Entry forms not fully completed and signed by all crew and/or passengers will not be accepted. Delays due to this or any other circumstances will not be accepted as reason for entries to be accepted late or without a late entry fee.

4.5 The Race Director reserves the right to allocate race numbers. Requests for special or specific numbers will be entertained if possible, provided the number requested has not already been allocated. Requests for special numbers will only be entertained if the entry form has been completed, the full entry fee has been paid and the entry is received by the Race Director by the closing date. General numbers will be allocated from No. 1 strictly on a "FIRST COME FIRST SERVED" basis.

4.6.1 Entry fees are not refundable but should a justified reason be given for withdrawal, the Race Director may, at his discretion, refund up to 75% of the entry fee. Fees will not be refunded after the aircraft and crew have checked in at the Race Registration Desk on the day prior to the start of the Race. Entry fees will not be refunded to any competitor or crew who is disqualified for any reason.

4.6.2 In the case of complete cancellation of the event (NOT POSTPONEMENT) the Race Director may direct a refund of up to 50% of the entry fee.

4.7 Accommodation cost, transport, meals and banquet costs may or may not be included in the entry fee. Should they be included, no rebate will be given to crews who do not make use of the facilities for any reason. Please see the Supplementary Rules.

4.8.1 Check-in time will be 12h00 local time on the day prior to Race Day 1 or any other day or time specified in the Supplementary Rules.

4.8.2 Aircraft and crews not checked in by the published check-in time are accepted as withdrawn. Re-acceptance with or without a time penalty is at the discretion of the Race Director.

4.8.3 Aircraft may not be moved or taxied in the designated open parking area without the permission of the Race Director.

5 TECHNICAL REQUIREMENTS

5.1 Competitors aircraft will be parked in the designated open parking area with all the other race aircraft from the time they are checked in until the final results are published, to enable the technical scrutineers and Race Officials to monitor the aircraft.

5.2 Fuel (AVGAS 100 only is guaranteed) and oil, etc. will be available and must be paid by either cash or fuel card after each refueling.

5.3.1 Each entrant will provide a copy of the performance schedule of his aircraft to the Race Director should it be requested.

5.3.2 An aircraft equipment list and weight & balance data must be available should the Race Director require it.

5.3.3 Aircraft logbooks must be made available to the Race Director if requested.

6 TEST FLIGHTS

6.1.1 The Race Director may require any aircraft to be test flown without giving a reason. The total cost of the test flight, including fuel, oil or aircraft time, etc; will be borne by the competitor with no recourse to the Organizers.

6.1.2 An entrant may request that his aircraft is test flown and such request must be made in writing to the Race Director by 09h00 five days prior to Race Day 1. Such request must state reasons for the request.

6.1.3 The Race Director and/or Handicapping Committee may or may not grant a request for a test flight. This decision is final.

6.2.1 The Test Flight will be conducted under supervision of an Official with a total of two persons on board in terms of the rules on such course or method as decided on by the Race Director. All fuel tanks will be full and all luggage compartments etc. will be empty.

6.2.2 The Test Flight will be performed using an FAI/GAC approved GPS logger and as briefed by the Official in charge of test flying.

6.2.3 The Pilot-in-Command will fly the aircraft over the course at FULL THROTTLE in all directions.

7 PROTESTS

7.1 The Entry Holder (Pilot-in-Command) is the only person who has the right to make a complaint or protest.

7.2 In conformity with the FAI Sporting Code complaints will conform to the following procedures:

a) COMPLAINT is a written request made by a competitor to the Race Director, or one of his representatives when a controversy has arisen over an operative evaluation. It must be presented within one (1) hour from the time that the provisional result is published or controversy has arisen.

b) PROTEST must be presented in writing together with a caution fee of R500, 00. The protest must be forwarded to the JURY within one (1) hour from the time a competitor has been advised that his complaint has been rejected. Only in the case where a protest refers to the validity of an entry application must it be presented at least six (6) hours before the starting time.

7.3 The deposited fee will be returned if the protest is upheld.

7.4 All protests will be decided by the appointed Jury whose decision is final and not subject to appeal.

7.5 No other form of complaint or protest will be accepted.

7.6 A competitor may not lodge a complaint or protest against another competitor.

8 INTERNATIONAL LANGUAGE

8.1 English is the official language of the competition.

9 FORMAT AND FINAL RESULT

9.1.1 The route will normally consist of two set courses of approximately 350 nautical miles flown by all competitors on consecutive days.

9.1.2 The Scoring/Handicap Committee will publish a list of all participating aircraft with their respective handicap speeds and a list of takeoff times for Race Day 1 as soon as all calculations have been completed and checked. These speeds will be the same as previously determined, or altered as a result of a test flight

9.1.3 The course will not be announced to Competitors until the Race Briefing.

9.2 To determine the final result the following procedure will be followed:

9.2.1 Each aircraft will be handicapped by the Scoring/Handicap Committee who will take into account some or all of the following:

Aircraft Manufacturer's Specifications;

Race Trim and All Up Weight;

Previous Race Performance of type and specific aircraft;

Flight Test Results.

9.2.2 On Race; Day 1 each aircraft will be timed around the first set course with the fastest aircraft departing first.

9.2.3 Day 2 start times will be calculated using the course distance and handicap speed to enable the aircraft to finish at the nominated finish time. This start time will be delayed/advanced by the amount of time lost/gained against handicap on Day 1.

9.2.4 The aircraft final position will then be determined by their position on crossing the finish line after successfully completing the second set course and after considering any penalties and/or handicap speed adjustments and/or disqualifications and/or any adjustments to start times in terms of rule 9.4.

9.2.5 Final placing will be changed should any time penalties or disqualifications have been accrued by the competitors.

9.3 Aircraft NOT observed at, or turning inside the checkpoints will be disqualified.

9.4 It is up to the competitor to have his aircraft ready for take-off at his appointed take-off time. Adjustments will be made if the delay in a competitor's take-off is due to circumstances caused by the organiser or an official. The inability to start the aircraft or to be at the start gate at the appointed time due to electrical or mechanical defect will not be adjusted for.. The Jury may allow an exception to this rule on request of the Race Director in respect of a delayed start on Day 1.

9.5 Dangerous/low flying etc. or unsporting behavior will result in disqualification or the imposing of time penalties. The minimum height over turn points will be 200ft and the maximum height over turn points will be 500ft.

9.6 A list of time penalties and/or disqualifications will be published and posted where all participants will have access to it. This will be done as soon as possible after the last aircraft has landed on each day. The participants will be briefed at the official briefing on the place of posting this list and it is the sole responsibility of the participants to make sure that they read this.

9.7 No preliminary results will be published after completion of the designated final set course.

9.8 The Final Results will be announced at a function held after the designated final set course.

9.9 No complaints or protests will be accepted after the final result has been announced.

9.10 Should the basic setup of the Race be changed due to weather or other circumstances a Schedule of Procedure will be published by the Organizers.

9.11 No cash prizes will be awarded.

9.11.1 Trophies and prizes will be as laid out in the Appendix and further prizes, if any, will be laid out in the Supplementary Rules.

9.12 In the case of a tie the winning aircraft will share the trophy.

10 ACCEPTANCE OF RULES AND REGULATIONS

10.1 The competition requirements will be written in English.

10.2 For the purposes of interpretation of the FAI Statutes and Sporting Code the official language shall be English.

10.3.1 The entrant (Pilot-in-Command), Navigators, Crew and all Passengers will, on registration, sign an acknowledgement that they are aware of the Rules, Regulations, Conditions and Format of the event and that they agree to abide by all Rules, Regulations, Conditions and Format as laid down.

10.3.2 All participants agree to comply, in all respects with any instructions or requests regarding the Race, or safety thereof, which may be given to them by any of the Officials appointed by the Aero Club of South Africa.

10.3.3 All participants acknowledge that they are bound by the Rules as administered and interpreted by the Aero Club of South Africa and agree to accept any decisions made by them or their Officials as final and binding.

10.3.4 All participants acknowledge that the event is an amateur sporting event and that they should compete in a sporting manner and their behaviour must be beyond reproach.

10.4 The briefings which will take place will be detailed in the Supplementary Regulations or be posted at the airfield and hotel where competitors will be staying.

10.4.1 It is a condition of entry and of participation in the event that all crew will be present at all briefings.

11 INDEMNITY

11 The participants, by the signing of the entry or registration form,

- a) Entirely indemnify and agree to hold free from any harm the Aero Club of South Africa, the Organizers, Officials, assistants, agents, servants, members and representatives of all concerned in The organization running and control of the Race against any claim whatsoever arising which may have or which may arise as a result of the Organizer's act of omission whilst participating in the said Race.
- b) The participants acknowledge that they are fully aware of the risks, danger: and perils attendant on participation in the Race.
- c) The participants also assume and furthermore agree also to indemnify any fellow competitor, Sponsor or the donors of any prizes or any other person against all claims and damages arising out of the participation in the Race whether caused by ascent, flight, descent or ground movement by the participant or whether caused by the participant's actions or the acts, actions omissions or proceedings of any persons assembling or assembled to witness or be present at such ascent, flight, descent. or ground movement.

12 RACE DIRECTOR

12.1 The Race Director will be appointed by the Aero Club of South Africa or The South African Power Flying Association before the 1st January.

12.2 The Race Director is responsible for the organizing of the event and selection of Working Groups, a Treasurer, Secretary, Chief Marshal, Chief Ground Marshal, Chief Judge, Safety Officer, Technical Officer, PRO Officer and Liaison Officer (for ground arrangements).

12.3 The Race Director will control the entire event and have final say over all matters pertaining to the running of the event.

12.4 The Race Director will not be responsible for the handicapping or the selection of the Chief Handicapper or his/her committee. (Sec Chapter 14).

12.5 The Race Director will not be responsible for the selection or operation of the Jury. (See Chapter 13).

13 JURY

13.1 The Jury, which will consist of three members, will be appointed by The Aero Club of South Africa or the SA Power Flying Association.

13.2 The duty of the Jury is determined by the FAI Sporting Code and these Regulations.

13.3 The Jury will have the power to:

- a) Make partial or total changes in the competitions due to sporting, safety or security circumstances upon request and proposal from the Race Director.
- b) Verify and/or change technical requirements, handicaps, times and penalties.
- c) Receive the competitors for protests.
- d) Adjudicate all protests.
- e) Call for any papers, times, handicaps, officials or entrants which might be needed for a decision in d) above.
- f) Exclude any participant who endangers the competition or other entrants and/or who breaks the rules which apply to the event or who breaks the Air Navigation Regulations and their amendments that is in force at the time.

14 SCORING/HANDICAP COMMITTEE

14.1 The Chief Scorer/Handicapper will be selected by the Aero Club of South Africa or SA Power Flying Association.

14.2 The Chief Scorer/Handicapper will select a committee to assist him with the Handicapping, Time Controlling, Tabulating and Computing. There must be sufficient people on the committee to ensure the expedient release of all handicaps and results.

14.3 The Chief Handicapper and his committee will work completely independently from the Race Director and the other Organizers and will, except for the Jury, have final say in all matters relating to handicapping.

14.4 The Chief Handicapper will make him/herself available with the necessary information to the Race Director and/or the Jury to discuss any COMPLAINT or PROTEST. The Jury's decision is final.

14.5 The Handicap committee may, at their discretion, alter or revise any published handicap speed at any time before, during or after the Race and convey its decision, with motivation, to the appointed Jury. The Jury may then approve or reject the revised handicap speed and the Handicap Committee will then apply the agreed handicap speed. In determining handicap speeds the Handicap Committee must at all times take only the previous and present performance of the aircraft, as well as Test Flight data (where applicable) into account and not the performance of the crew, whether by reputation or by previous performance.

14.6 The objective of the Handicap Committee must be to keep the number of changes to handicaps to a minimum and the amendments, if any, should be done prior to the publishing of the start times for Day 2 of the Race. Amendments to handicaps after the start of Day 2 should only be made if the Jury has good reason to believe that it is necessary and will preserve the integrity of the Race.

15 GENERAL PRINCIPLES

15.1 Substitution of parts of the aircraft is forbidden, with the following exceptions:

- a) Normal consumable items of the landing gear.
- b) Items of the ignition and fuel systems and their accessories.
- c) Parts of the electric system and of the radio communication systems.

15.1.1 Small repairs not in contrast with this chapter (15.1) are allowed, as approved, in each case, by the Technical Officer or the Race Director.

15.1.2 Time delays for any repairs and running repairs carried out under 15.1 above will not be taken into account by the Organizers within the normal operation of the event. i.e. Any repairs being done during aircraft scheduled flight time will not be compensated for.

15.2 When not otherwise stated all distance will be in Nautical Miles, speeds in Knots, heights in Feet AGL, altitude in Feet AMSL, and winds (except take-off winds) in Degrees True. All coefficients and percentage data will be rounded to the first decimal place with figures from 0,5 to 0,9 rounded up and figures from 0,1 to 0,4 rounded down.

15.3 Aircraft without numbers and decals may be excluded from the competition.

15.4 Heights and altitudes crossing checkpoints, turning points or finish lines will be detailed in briefings, but will not be below 200 feet AGL.

15.5 Checkpoint, Turning point and Finishing line phases will be started 3 N.M. from designated point. Aircraft may not enter this phase with an inbound track variance or more than 45 degrees on either side of track. i.e. Aircraft approaching from the wrong direction must circle at least 3 N.M. out and approach from the correct direction.

15.6 Once an aircraft has entered the above phases it may not make any sharp variations in direction or altitude until it has passed the designated point.

15.7 Once an aircraft has passed the designated point a sharp lookout must be kept before turning onto the new heading. Altitude must be changed gradually - NO PULL-UPS.

15.8 Notwithstanding 15.7, aircraft passing the finish line, shall, unless specifically given a procedural change during the briefing, continue on the same heading and at the same altitude for a distance of at least one (1) nautical mile before ANY change in heading or altitude will be allowed.

15.9 Penalties for transgressors of sections 15.5 and 15.6 will be a minimum of one (1) minute and the entrant may be disqualified at the discretion of the Race Control. NO complaints or protests will be accepted in this regard.

16 TIMING AND PENALTIES

16.1 Competitors are to ensure that they are available at the starting line and ready for take-off at least 2 minutes before take-off. If longer time is required by the Organizers at a specific event you will be notified at the briefing. A longer time given at a briefing will supercede this time and the new time given will be accepted as part of these Rules.

16.2 For control purposes, times should be taken for all competitors at every checkpoint and turning point so that the Organizers can check the progress of all entrants.

16.3 For purposes of results the timing at the finish will be taken by reference to an FAI approved logger. The Competition director should arrange an alternative timing method at the finish that may be used in the case of logger failure

16.4 At the Finish line at least 4 observers working independently will list the aircraft in their overhead finishing order to prevent any discrepancies. One further observer will list the aircraft in their landing order.

16.5 Checkpoints and turning points will be established and manned from 15 minutes before the first aircraft is scheduled to pass until 30 minutes after the last aircraft is scheduled to pass.

16.6 Radio communication between aircraft competing is forbidden except for reasons of safety.

16.7 Radio calls and communication will be detailed in the briefings.

16.8 The PRESIDENT'S TROPHY AIR RACE is a race against the clock with each aircraft having a specific handicap speed. All handicap speeds are calculated at the aircraft's maximum speed (at full throttle) it is expected to obtain or be able to obtain over the set course.

16.9 Penalties will only be applied to competitors who infringe the Rules.

16.9.1 Minimum time penalty given will be 30 seconds per infringement.

16.9.3 Maximum time penalty will be 6 minutes per infringement.

16.10 Cheating or unsporting behaviour, including deliberate attempts to deceive or mislead officials, willful interference with other competitors, verbal abuse of officials or other competitors, falsification of documents, use of forbidden equipment or prohibited drugs, violations of airspace, or repeated serious infringements of rules should, result in disqualification

17 SUPPLEMENTARY RULES

17.1.1 The Supplementary Rules will be promulgated for each specific event and will be read as part of these standard format Rules and Regulations.

17.1.2 A Supplementary Rule published supercedes any other contradicting Rule for the term of that specific event.

17.2 The official maps and charts will be designated in the Supplementary Rules.

18 TERMS

FAI SPORTING CODE

18.1 The basic code of operations for all Aviation sporting events held worldwide. All events or competitions held by FAI member countries will conform broadly to this code.

PRESIDENT'S TROPHY AIR RACE - OFFICIAL RULES AND REGULATIONS

18.2 The blanket Rules and Regulations promulgated to cover all the normal running and operating procedures of the President's Trophy Air Race held on an annual basis.

SUPPLEMENTARY RULES AND REGULATIONS

18.3 These are supplementary Rules and Regulations put out by the Race Director of one specific year's event. They are valid only for the Race period. They are in effect for the year of promulgation.

The Supplementary Rules will be in addition to and not instead of the Official Rules except that, should there be any contradiction between the Official Rules and the Supplementary Rules, the Supplementary Rules will supercede the Official Rules.

APPENDIX 1

There will be no cash prizes. The following Floating Trophies will be awarded.

PRESIDENT'S TROPHY	To the aircraft and crew placed first overall.
AIR CHARTER TROPHY	To the second placed aircraft and crew.
VINCENT MACLEAN TROPHY	To the third placed aircraft and crew.
NATAL MERCURY TROPHY	To the first placed Kwa-Zulu Natal crew.
HOOFSAD PERS TROPHY	To the first placed Northern Provinces aircraft and crew.
NORTHERN REVIEW TROPHY	To the first placed Far Northern Provinces aircraft and crew.
STELLALANDER TROPHY	To the first placed Cape aircraft and crew.
PHOENIX-VOLKSWAGEN TROPHY	To the first placed Free State aircraft and crew.
GATSBY TROPHY	Best handicap Performance on first day.
PROFFESIONAL AVIATION TROPHY	Best handicap Performance on day 2.
WAKEFIELD TROPHY	To the first placed woman pilot.
KASSIE KASSELMAN TROPHY	To the first placed father and son team.
JOHN SAYERS TROPHY	To the first placed Turbocharged aircraft
BLOEMFONTEIN FLYING CLUB TROPHY	Team with less than 1000 hours
ATNS TROPHY	To the youngest competitor
DOLF KRUGER TROPHY	To the first placed homebuilt aircraft and crew.
CAA TROPHY	For Professionalism
BEECHCRAFT TROPHY	To the first placed Beechcraft
PLACO TROPHY	To the first placed Piper
COMAIR TROPHY	To the first placed Cessna
SOUTHERN AFRICA MOONEY TROPHY	To the first placed Mooney
VICKERS TROPHY	To the competitor/crew giving the most meritorious performance.
STAYERS TROPHY	To the crew finishing under exceptional circumstances
KWA ZULU NATAL ADVERTISER TROPHY	To the aircraft and crew covering the course in the fastest time.
CARLETONVILLE TROPHY	To the first placed Baron
ANN WHITE TROPHY (formerly the Preller/Germishuys Trophy)	Handicap Committee Award.

For purposes of the awarding of the geographical trophies the following official provinces will apply:-

The Cape is defined as the Eastern Cape, Western Cape and Northern Cape Provinces,
The Far Northern Provinces are defined as the North West and Limpopo Provinces, and
The Northern Provinces are defined as Gauteng and Mpumalanga.

Plaques will be awarded to the pilots and navigators placed first, second and third.

As all trophies are floating, please return them to the Aero Club by the end of February of the following year. Recipients must ensure that they are returned in a presentable condition.

APPENDIX II

Effects of Variables on the Race

This appendix is included for information only and does not form part of the official rules and regulations

The effect of Handicap Speed on the Race Finishing time.

Assuming a race of two 300 Nm stages, then with a Speed of 100 Kts, this would take 6 Hours of flying. A one minute of advantage would work back to a ground speed of 100.279 Kts (0.279%) and at 200 Kts the one minute advantage works back to a ground speed of 201.117 Kts (0.559 %)

One minute of advantage or disadvantage is deemed to be an acceptable error in determining a handicap.

A percentage adjustment to handicap speeds does not give all aircraft the same finishing time adjustment. If an adjustment to handicap speeds is required it should be calculated as minutes of advantage over the course distance.

The effect of course distance on results.

Since the measured course distance has a profound effect on the results, the handicapping committee will be charged with confirming the official distances. While it would be best to use the GPS reading taken at each point, it will be considered sufficient to determine these from a 1:50 000 map. Since various earth models are used to calculate earth distances, the distance must be determined using the Great Circle Model.

Using the points 29:00:00 S, 26:00:00 E and 29:00:00 S, 27:00:00 E, the model on website http://www.fai.org/distance_calculation/ give the distance using WGS84 as 52.613 Nm and using FAI Sphere as 52.512 Nm, using the great circle model, the distance is reported as 52.477 Nm, using the Approximate Ellipsoidal Distance the same distance is reported as 52.463 Nm, Oziexplorer using the Spherical reports the distance as 52.477 Nm or ellipsoid as 52.560 Nm and Airobserver reports the distance as 52.477 Nm.

The effect of GPS accuracy on the Test Flight.

A coordinate logged by a GPS has an accuracy of ± 4.5 m. During the test flight a test leg of 3 minutes is proposed. At 100 Kts the distance is 9260 ± 9 m and therefore the average speed measured would be 100 ± 0.0971 Kts. At 200 Kts the error remains at 200 ± 0.0971 Kts. At less than 0.1 % this is sufficiently accurate.

Effect of Wind on the Test Flight.

Flying a square of four legs during a test flight does not mathematically negate the effect of wind on the average speed.

The error is maximised when the wind is a 45 degrees to the four legs. At an Air Speed of 100 Kts and a wind speed of 15 Kts, the average of the four speeds is 100.567 and at 200 Kts the error decreases to 200.282 Kts.

Flying one leg into the wind and one leg with the wind would mathematically cancel the effect of the wind but it is impossible to guarantee the wind direction and any cross wind component would produce an error in the average speed. Mathematically it is possible to solve for the wind on three legs (assuming that the wind is constant over the course) and therefore calculate a zero wind speed. The three legs need to be around 90 degrees apart to give best accuracy to the calculations. The accuracy can be enhanced by flying a four leg course and solving for the winds and airspeed on four combinations of the legs, and then taking the average result. The four leg course would provide error checking for variations in the wind or any attempt by the pilot to decrease his handicap speed.

The effect of the Atmosphere on Handicap speed.

It is well known that altitude, temperature and relative humidity have a marked effect on aircraft performance. While drag decreases with altitude and temperature, engine performance also decreases. The maximum full throttle ground speed is reached between sea level and the service ceiling, but the relationship is specific to each aircraft design. For the C172 it would appear to occur around 5000 ft with the curve being relatively flat from 4000 ft to 6000 ft. So while the effect might not be pronounced on the race, these variables should be defined. Most aircraft performance charts use the ISA density altitude to describe the aircraft's performance, and therefore an ISA density altitude should be defined for the test flight.

The altitude needs to be out of ground effect and turbulence, this will be 1000 ft above the airfield. For South Africa, a density altitude of 7000 ft is chosen and the ISA air temperature will be 1 Degree C.

On an average day the QNH would be 1020 mbar and therefore the GPS altitude would be 7217 ft. This needs to be adjusted lower by 92 ft / degree above the ISA temperature of 1 Degree C. So on an average day of 1020 mbar and Temp of ISA +15 Deg C, the GPS altitude would be 5837 ft. (This is more than 1000 ft AGL above most of our competition airfields.)

The effect of wind on the race

The race is normally composed of two days with either triangular or square courses. In order to illustrate the effect we assume a course of 300 Nm and an equilateral triangle and a square.

Using the equilateral triangular course of 300 Nm, the flying time is maximised when one of the legs is flown into the wind. And similarly the flying time is minimised when one of the legs is flown with the wind. Using a wind of 15 Knots and Airspeed of 100 Knots, the minimum flying time is 3:00:39 and maximum flying time is 3:01:25. At an airspeed of 200 Knots, the minimum flying time is 1:30:06 and maximum flying time is 1:30:09.

Using a square course of 300 Nm, the minimum flying time is when the wind is at 45 degrees to one leg and the maximum is when the wind is parallel to one leg. Using a wind of 15 Knots and Airspeed of 100 Knots, the minimum flying time is 3:00:59 and maximum flying time is 3:01:05. At an airspeed of 200 Knots, the minimum flying time is 1:30:08 and maximum flying time is 1:30:08.

Faster aircraft clearly have an advantage as the wind speed increases. This advantage might be lost with the increased difficulty of accurate navigation and less time to take advantage of varying winds at different altitudes.