



Pretoria Radio Flyers: Safety Operating Procedures

Aim

To protect persons from injuries and damage to property during their visit at Pretoria Radio Flyers. (PRF)

Scope

The following covers the safety operating procedures as set out in the South African Model Aircraft Association (SAMAA) flight safety regulations so that references to SAMAA are minimal.

1. General
2. Liability
3. Frequency Control
4. Pilot Access
5. Airworthiness of Aircraft
6. Airmanship
7. Safety / Duty Officer
8. SAMAA PO 18 Definition and specification of Model aircraft.
9. Fixed Wing safety procedures
10. Helicopter safety procedures
11. Gliders safety procedures
12. Vintage aircraft and powered gliders safety procedures.
13. Drones safety procedures
14. Turbine Jets
15. Pre-flight Checklist



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Introduction

All pilots shall make themselves familiar with PRF Safety Operations Procedures, and shall abide by them. Failure to obey them will lead to disciplinary action.

On joining the club a copy of this document will be mailed to the new member on which he is required to sign acceptance of the rules.

1. General

- **Flight times**
- No internal combustion-powered aircraft may be flown before 08h00 any day of the week and on :
 - Sundays, not before 09h00 and not between 13h00 and 15h30.
- Special dispensation has been extended to PRF pattern flyers who may use this time slot when preparing for competitions.
- Electric-powered, aircraft and gliders are excluded, and helicopters of all types when flying at the heliport.

- **Conservation & Noise**
- Since PRF is adjacent to Rietvlei nature conservation reserve, the following must be adhered to:
 - The intentional chasing of birds and wild animal life is forbidden.
 - Members and persons, including visitors, willfully abusing or contravening the Nature Conservation act of 1983, will in terms of the club constitution, club rules, regulations, and appendices be subjected to disciplinary action.
 - No member may create a noise that exceeds 96 decibels at 3 meters. This applies to any device, a radio, a loudspeaker, or a model aircraft.



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- **Enforcement**

- A club member noted by any other club member as not complying with the safety rules will have their name referred to the next committee meeting. The Committee shall take appropriate action to ensure the member is fully conversant with the Club and SAMAA requirements.

- **Spectators, children, and pets**

- Children and pets are not permitted inside the apron area nor on the runways.
- Spectators, children, animals, and pets shall remain outside the pit and runway areas at all times unless in the custody of a member or official.
- Damage caused by members' children or pets to model aircraft will be the responsibility of that member and he will be liable for all the costs of replacement or repair.
- Members are responsible to ensure that their guests adhere to the rules.
- Spectators must stay behind the wooden fence at all times.
- No littering.
- The toilet doors need to be closed at all times.
- The last person leaving the field is responsible for locking the gate.

- **Alcohol or other intoxicating substances**

- The flying of a model aircraft within 6 hours after consuming alcohol is strictly prohibited.
- Pilots may not consume alcoholic beverages or performance-affecting substances during their flying session has ended.
- Pilots suspected of having recently consumed alcohol, performance-affecting medication, or intoxicating substances shall not be allowed to fly.
- The consumption of alcohol or intoxicating substances may invalidate a claim against the SAMAA insurance policy.

- **Smoking**

- Smoking is not recommended in the pit area due to the proximity of fuel and the possibility of damaging aircraft covering as a result of hot ashes falling on a model.



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- Smoking while flying a model aircraft is prohibited.
- **Medical Assistance**
It is recommended that all members carry a basic first aid kit in their vehicles. PRF does not currently have a qualified paramedic on duty or a First Aid kit. Fellow members are to render assistance in the event of an accident, and to call an ambulance should it be deemed necessary.
- **Evacuation plan**
- By design, the airfield clubhouse is bordered by effective fire breaks. The exit road is wide and easily accessible from both flying sites.
- Evaluate the emergency. If you think you or your property may be in danger, pack up and leave the airfield timeously.
- Be aware of the dangers of smoke inhalation.

2. Liability

- Only ICASA Approved radio transmitting equipment, and approved frequencies, for model flying, will be used at a model flying field.
 - The responsibility for Radio Transmission equipment compliance lies with the user of the equipment.
- **Flight instruction and use of Buddy box:**
- A “buddy box” should be used as a teaching tool, whenever possible. A rated flight instructor (or a club member appointed by the committee) will be in charge of the master transmitter during the instruction period. Student Pilots are encourage to make use of flight simulators, this by no means will allow the student to fly on his own at the field.
- The instructor is responsible to ensure that the Student Pilots’ transmitter is fully functional and that all the SAMAA and club rules and regulations are obeyed.
- The Instructor shall carry no liability, in the event that the Student pilot’s model crashes.



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- **Accidents and Incidents**

- All model aircraft involved in incidents and non-insurance-related accidents shall be reported to the duty officer or his delegate present. The Pilot involved in the accident will complete the required forms and submit a report on the circumstances of the incident to the safety officer or a Committee Member.
- The following information is required:
 - The names of the member or members involved, their club numbers, and their SAMAA card numbers.
 - A brief report on the type of accident or incident and the reasons for its occurrence.
 - An estimate of the cost of the damage.
 - In the case the accident involves a third party, the procedure covered under insurance in the SAMAA operations Manual, Procedure PR 01 and PR 14 will be used.

- **Mid-Air Collisions**

These will occur on odd occasions, and to date, the agreement has been that as long as both aircraft are flying in the approved flying area, neither party will be held responsible for the collision. Each pilot will carry his costs.

3. Frequency Control

- All pilots using specifically 35 Mhz frequency **MUST** use the frequency board indicating their frequency to be used.
- Any other pilot on the same 35 Mhz frequency must leave his transmitter off, and obviously may not peg his frequency on the board.
- Pilots on 35 Mhz are limited to maximum 20 minutes flying slot while another member is waiting for his turn.



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4. Pilot Access

All PRF pilots must wear their club card together with their SAMAA card on their person to identify themselves at all times.

- **Visitors**

- All visitors on arrival at the club, are to introduce themselves and if they wish to fly they must arrange with any current PRF member, who will, once he is satisfied with their flying ability and SAMAA membership status, delegate a suitably qualified club member to stay with them while they are flying and make them feel welcome at PRF.
- Visitors must be accompanied by a suitably qualified club member or a club instructor, and be briefed on Club Rules and Regulations.
- Overseas visitors (casual) will generally be treated in the same way as local visitors.
- Overseas Visitors will be accompanied by a PRF club member when flying and the PRF member's SAMAA insurance will cover their activities.
- Visiting competition flyers; the SAMAA Committee will grant them honorary membership during their stay, but their insurance cover while they are visiting and flying in South Africa, will be covered by their overseas insurance. SAMAA will issue a letter to the visitor, clearly setting out the agreement, and conditions of his temporary membership.

- **Membership / Insurance**

- Any pilot who wishes to operate a model aircraft at PRF shall be a fully paid-up PRF member as well as a current member of the South African Model Aircraft Association (SAMAA).
- Membership of SAMAA provides insurance coverage for those flying at an approved flying field such as PRF.
- Proof of membership must be available for inspection at all times.
- Permission to fly may be withdrawn should a pilot fail to adhere to the flying and safety rules.



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- **Proficiencies**
- Only pilots with a “SOLO” rating (i.e. SAMAA solo) and higher, will be allowed to fly a model aircraft at the flying field unsupervised and in the presence of other pilots or spectators.
- All unqualified or pupil pilots will be accompanied by a suitably qualified instructor or pilot when flying until they have obtained their “solo” test qualification.
- No pilot may fly a model aircraft in an airshow unless he has the appropriate qualification (see SAMAA safety rules for Events, Displays, and Airshows).

- **Airspace Use and Limitations**

Since Pretoria Radio Flyers is situated close to the Air Force Base Waterkloof Control Zone (CTR) and the “Pinedene” Flight Route, full-sized aircraft regularly over fly PRF field, and therefore:
- Pilots of model aircraft shall keep their model aircraft clear of full-size aircraft in flight at all times, irrespective of whether they believe the full-size aircraft is at fault or not.
- Pilots of model aircraft must land as soon as possible when a full-size aircraft approaches the field.
- Prohibited flying areas are shown on the notice board:
 - Corridor extending over pilots, pits, apron, and clubhouse.
 - Parking area and access road.
 - Neighboring houses.
 - All public roads.
 - Carnivore game park.
 - Altitude not higher than 400ft (122m) as per Civil Aviation Regulations.
 - Not closer to the other pilots than the middle of the runway.
 - The windsock on the right of the field is the furthest point a pilot is allowed to fly.
- Only taxiways are to be used for taxing onto the runway, taxing across the grass is not permitted.
- Take-off or landing on taxiways is prohibited.
- It is recommended that a maximum of six model aircraft be in the air at any one time.



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5. Airworthiness of Aircraft

Pre-Flights, Range Checks, Batteries and Failsafe

- Ensure to select the correct model on the radio before starting or connecting the batteries.
- All aircraft should be given a pre-flight check before the first flight of the day:
 - To check the proper functions of the various parts, with special reference to the radio, engines, propellers, control linkages, control surface slack, and the correct movement of the stick control.
- Perform a range check to ensure the proper functioning of the radio system.
- Models being range checked should be restrained, if the engine is running or electric motor power is connected.
- Pilots must ensure all batteries are fully charged before flying. Many R/C equipment “defects” are caused by faulty batteries, connecting wires, or switches.
- Battery failure will almost certainly cause an R/C model to crash and “Fail Safe” devices will not work if the battery fails. Therefore, you must take particular care of batteries, connecting wires and switches in their radio control equipment, and use a monitor to check the battery condition and/or a battery backup.
- Fail-safe settings on PCM receivers:
 - All PCM and 2,4 GHz receivers will be programmed:
 - To reduce the engine speed to low idle when interference or other problems cause the receiver to go into a “fail-safe” condition.
 - The rest of the channels will be left in a “fail-safe” hold.

6. Airmanship

- Do not step over aircraft in the pit area. Walk around them.
- Testing of engines will be done away from the pit area in the run-up area.
- All electric models must make use of a throttle cut switch and in on position while in the pit area until ready for flight.
- Do not start your engine with the tail of the aircraft pointing towards people or model aircraft.
- Engines started in the pit area shall not be throttled up, but run it at idle until clear of the pit area.
- No engine run-ups and tuning in the pits area.



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- All aircraft to be started on the designated starting areas to left and right sides of the pit area.
- Taxiing of any model aircraft in the pit area is prohibited. This includes Electric-powered aircraft.
- Additionally, it is considered good airmanship to inform the other pilots flying of the location of your model from time to time, especially when”
 - Positioning for a touch and go.
 - Approach to land.
 - Planning a low “Shoot-up”
- Make use of the normal aeronautical terms such as *downwind*, *base-leg*, and *finals* approach while flying in the circuit.
- Engine starting in the run-up bays:
 - Pilots must ensure that the aircraft is restrained and secured.
 - Pilots must ensure that the aircraft is restrained and or secured at the holding point behind the stop line with the help of an assistant while waiting to take-off and doing final engine run-up.
- No hovering is allowed in front of pilot stations that are occupied by other pilots.

7. Safety / Duty Officer

Since safety is the responsibility of everyone flying at PRF it is everyone’s duty to act as Safety officer and not only the chairman or the committee members.

Duties and Responsibilities of the Safety Officer

- The first qualified PRF member arriving at the club should act as the Flight Safety Officer, the safety officer on duty for the day.
- The dangers of flying accidents are ever-present at a flying field, all members and pilots are considered safety officers and are authorised to warn or speak to any pilot who is flying or behaving irresponsibly.
- The duties of the Safety Officer or his duly appointed Duty Officer are as follows:
- Check the wind direction, and nominate the most suitable runway. This runway may be changed if the wind changes, but all pilots are to be informed of the change.



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- Ensure that the pilot boxes are used. The duty officer may relax these rules at his discretion on a once-off basis, under special circumstances such as sun, wind, and runway direction and clear line-of-sight problems.
- Ensure that all pilots flying on the field adhere to the club rules and regulations and safety rules.
- Advise, help and attend to visitors, and if required, settle minor disputes.
- Ensure that pilots flying at the field are fully informed of any special precautions being enforced on that day.
- Ensure that any visitors that wish to fly are accompanied and attended to by a suitably qualified club pilot.
- No visitors are allowed to fly unattended at a club field. A visitor who wishes to fly must introduce himself to the duty/safety officer. The duty/safety officer must ensure that the visitor:
 - Has a valid SAMAA membership.
 - He knows the safety rules and regulations.
 - He is a competent flyer.
 - When flying he is attended by a qualified pilot.
- That the use of radios on illegal frequencies is prohibited without exception.
- The safety or duty officer should have available copies of:
 - a) the warning notices
 - b) the incident reports
 - c) the daily duty officer report
- When the Safety Officer of the day leaves he should hand-over to the next qualified club member.

8. Specifications of Fixed wing and Helicopter models: SAMAA PO 18

- Fixed Wing Model Aircraft shall not exceed the following general specifications:
- Maximum flying weight with fuel 25kg
- Maximum wingspan (powered) 5m
- Maximum wingspan (unpowered) 6m
- Maximum surface area 5m²
- Maximum wing load 15kg/m²
- Maximum swept volume of piston motor(s) 250 cc
- Electric motors, maximum load voltage 72 volts



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- Maximum thrust of turbine 25Kgs (250 Newton)
- Model helicopters shall not exceed the following general specifications:
 - Maximum weight (with fuel) (with batteries) 6,5 kgs.
 - Maximum swept area of lifting rotor(s) counting only once any superimposed areas 2,5m² (Provided that in the case of co-axial model helicopters whose rotors are further than one rotor diameter apart, the area of both rotors is counted, and may not exceed 2,5 m²) The tail rotor must be driven by the main rotor and must not be driven by a separate engine/motor.
 - Piston motor swept volume 2 cycle maximum 15 cc.
 - Piston motor swept volume 4 cycle maximum 20 cc.
 - Piston motor swept volume gasoline maximum 25 cc.
 - Electric motors, maximum load voltage 51 volts.
 - The use of an electric rate sensor is limited to rotation about the yaw axis.
 - Rotor Blades; all-metal, main or tail rotor blades are prohibited.

9. Fixed Wing safety

- Ensure to select the correct model on the radio before starting or connecting the batteries.
- Pilots ready for take-off must stop at the taxiway holding line.
- Pilots must be sure of the designated circuit and runway in use before taking off.
- When it is safe to take off pilot must announce entering the runway and announce “taking off”.
- Take-off by fixed-wing aircraft is not allowed from any place other than the runway in use.
- All takeoffs will be into the wind and the turnout at the end of the takeoff run will be away from the pits or clubhouse, this turnout will also define the direction of the circuits to be flown.
- All pilots will fly from the designated pilot boxes for the runway in use. Pilots may move nearer the runway for take-offs and landings. It is not recommended that pilots stand on the runway during takeoff.



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- Only one runway at a time is to be used, this runway will be the one most directly into the wind and will be selected by the pilots or safety officer on the day.
- A change in wind direction may require the selection of another runway. A call out must be made and must be acknowledge by everyone flying.
- For take-offs, and landings pilots should stand between their model and other pilots on the flight line.
- All pilots flying will take off and land in the same direction and on the same runway.
- A helper may go onto the runway with aircraft that needs a final run-up before take-off, provided that:
 - The intention is announced to the other pilots flying,
 - No aircraft is taking off or landing,
 - No aircraft is on a low fly past.
- Shoot-ups or overflying the runway may only be done into the wind.
- But, downwind shoot-ups will be done at least 10 meters on the far side of the runway, and again only after the pilot has announced his intention.
- Landing aircraft have right of way over taking off aircraft.
- Dead stick Aircraft have right of way over aircraft taking off.
- Do not land or take-off in an opposite direction than the current circuit in use.
- Pilots must warn other pilots of their intention of crossing the runway. A good lookout must be kept for low-flying aircraft.
- Practicing take-offs and landings may be done with the agreement of other pilots flying, and only after the pilot has announced his intentions.
- Crossing the runway in use, to retrieve a model aircraft will only be done after informing all the pilots flying.
- Even after the pilots have been informed, crossing the flight line is done solely at the downed pilot's or his assistant's, risk. The pilot flying will not be held responsible or liable should an accident or injury occur to a person or persons who are on the flying side of the field.
- After landing- post flight control, your priority is to get your aircraft model off the runway away from the pilots on the flight line, and announce "runway clear"
- All aircraft must stop on the taxiway at the stop line to;
 - Cut the engine, electric planes must make use of a throttle cut switch.
 - Switch the receiver off or disconnect the electric power to your electric aircraft.



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- Switch the transmitter off.
- Get the model back to the pits.
- At all times pilots are to communicate their intentions with those around them by calling out in the following manner:
 - *“Runway”* – when entering the runway or crossing the runway to retrieve an aircraft:
 - *“Take-Off”*
 - *“Touch and Go”*
 - *“Landing”*
 - *“Dead Stick”*

10. Helicopter safety

- The following is relevant to helicopter flying at PRF.
- Ensure to select the correct model on the radio before starting or connecting the batteries.
- Ensure the Helicopter is in an airworthy state, e.g, the main blades are secure and in a good condition, RX batteries are fully charged and all bolts are securely tightened, (and secured with “lock-tite”).
- Helicopters may be started, but not run above ¼ throttle, in the pit area.
- No engine run-ups in the pits area.
- Not allowed to fly between pits and Helipads.
- Not allowed to take-off or land in the pits area including the grass in front of the pits.
- The flight line is at least 30 meters in front of the pads (Helicopters).
- The windsocks to the front of the pads are the furthest point allowed.
- Hovering is to be done in the demarcated 10 x 10 m safe operating area.
- Hovering and setup are to be done on the hovering pads.
- No general flying at the hovering pads. Strictly for hovering.
- Only one helicopter is in the air at a time unless there is mutual consent by all pilots flying.
- Helicopter flying at PRF may occur simultaneously with that fixed-wing flying on the condition that only 2.4 GHz is used.



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11. Drone safety

- Remotely operated hobby or toy aircraft and drone flying rules:
- Do not, through act or omission, endanger the safety of any aircraft or person therein or any person or property through the negligent operation of any drone or remotely piloted aircraft, or model aircraft.
- Fly or operate a drone or remotely piloted aircraft, toy, or model aircraft 50 m or closer to:
 - Any person or group of persons, on sports fields, road races, at schools, or at any social events.
 - Any property without permission from the property owner.
- Unless approved by the SACAA, do not fly or operate a drone, remotely piloted aircraft, toy or model aircraft:
 - Near manned aircraft.
 - 10km or closer to an aerodrome which includes an airport, helipad, or airfield.
 - A drone that weighs more than 7 kilograms (15.4 pounds), for which you don't have a license.
 - In controlled airspace.
 - In restricted airspace.
 - In prohibited airspace.
- Do not fly or operate a drone or remotely piloted aircraft, toy, or model aircraft higher than 122 meters / 400 feet from the ground, unless approved by the Director of Civil Aviation of the SACAA.
- General Basic Drone Flying Rules to which you must adhere:
 - You may not fly a drone within 10km of an airport.
 - You may not fly nearer than 50 meters from people, buildings, or roads.
 - "Hobby" drones must be flown within line of sight.
 - Drones may not be flown at night.



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12. Glider safety

- Gliders are limited in terms of the Civil Aviation Authority regulations, to maximum heights of 122 meters / 400 feet above ground level.
- Glider pilots, as with other model aircraft pilots, will keep their gliders clear of full-size aircraft, and at a level below any over-flying full-size aircraft at all times.
- Landings will be on the far side of the runway in use and away from the club facilities, spectators, and other pilots.
- Glider pilots will use the same frequency control board and transmitter control procedure as all other pilots.
- Glider pilots will not cross the runway in use to retrieve their gliders without the agreement of other the pilots flying.
- Gliders pilots will also obey all PRF club safety operation procedures.
- The safety / duty pilot is to ensure that the glider pilots are suitably experienced, and if not, assist as required.
- Take-offs or hand launches will be done into the wind, away from the clubhouse, pit area, pilot box, spectators, parking areas, and beyond or in front of the pilots presently flying.

13. Vintage aircraft and power gliders safety

- All pilots flying vintage and or power-model gliders must informed when they plan for take-off or hand launching and must also move to the pilot box area.
 - All hand launches must be announced and executed in front of other pilots flying, hence the reason why pilots must make use of the pilot box areas.
 - Glide landings will all be made either on the runway in use or across the runway in use.
 - The same procedures as for gliders (“Preparing for take-off”) must be adhere to before crossing the runway.



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14. Turbine jets safety

- A Turbine jet Engine is an engine where the air is drawn in at the inlet is compressed, and heated by the burning of fuel, the resulting hot gases are delivered to a turbine that drives the compressor.
- The hot gases leave the engine to provide thrust or the thrust is provided by a ducted fan/propeller, driven from the turbine.
- Turbine jet engines have many unique inherent features, namely; continuous combustion, high temperatures, high energy release rates, and the potential for unconfined combustion, especially during the starting phase.
- Gas turbine jet operation requires that operators must be aware of the flying characteristics which arise from the application of gas turbine power. Paying particular attention to:
 - The delay in response to opening the throttle. The high speeds can result from the available thrust not decreasing with increasing airspeed.
 - The residual thrust at engine idle speed can make for difficulties in slowing the aircraft down for landing.
- All pilots flying turbine jet aircraft will at least have a Silver proficiency rating and have achieved a special jet turbine proficiency rating.
- All pilots who wish to fly a turbine jet model aircraft, but do not have the required SAMAA rating must be accompanied by a suitably qualified turbine jet-rated pilot when flying.
- Turbine jet flyers must have a CO2 extinguisher at hand when flying.
- Turbine jet model aircraft may not be started in the pit area or near spectators.
- Suitable fire extinguishers, and equipment, and safety personnel must be available to assist when turbine jets are operated.
- All turbine jets will fly at least 50 meters from spectators, only for take-offs and landings, this distance may be reduced to 30 meters from spectators.



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15. Pre-flight Checklists

- Standard and detailed checklists are available on the PRF web page.
- Checklists are to assist the pilot, this section has been set out in a logical sequence so that each check or set of checks follows the previous one.
- Student pilots must practice and become familiar with this checklist.
- This checklist is a general checklist and should be used in part or in whole by all pilots to check their aircraft before the first flight of the day.
- The detailed preflight checklist is to be used by all pilots who are doing their proficiency tests. (Also available on the PRF web page.)
- Between Flight Checks must be done before every take-off:
 - If the aircraft has suffered damage or a heavy landing, all checks listed above must be repeated.
 - Check all controls before starting the engine, especially for binding control links or slowing of servos. Re-check all controls for correct operation at high engine speed.

Check that battery capacity or voltage under load is greater than the minimum for safe radio control operation before take-off. The use of a “Go”, or “No Go” tester is considered to be a sufficient test