WINDHOEK RADIO FLYERS

TRAINING MANUAL

March 2010

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INTRODUCTION

In the interest of the hobby and sport, it is essential that:

- A beginner pilot achieves an adequate flying standard before he/she is allowed to fly on his/her own without a qualified Trainer in attendance.
- further challenges be set to ensure and entice the model Pilot to improve his flying skills.

It is therefore important that all pilots of Windhoek Radio Flyers participate in the Proficiency Tests as set out in this document. Windhoek Radio Flyers choose the use the a merit proficiency system, namely the "SOLO", "BRONZE", "SILVER", "GOLD", "INSTRUCTOR" proficiencies. The "Bronze Merit" will be regarded by Windhoek Radio Flyers as the minimum requirement for any Radio Control Pilot to fly a model at any open day where public is in attendance.

The "SOLO" proficiency will ensure a model Pilot's ability to fly and control a model aircraft safely when other members are present, it will also ensure that the model Pilot has a good working knowledge of his Club's General and Safety Rules and has a working knowledge of Basic Aerodynamics.

DEFINITIONS

For clarity, it is important that some of the terms used in this document be defined:

Aircraft or Aeroplane -	shall mean any model sailplane or aircraft powered by an Internal Combustion, CO2, Jetex, Electric motor.
Frequency Peg -	will be the peg used to identify the radio frequencies in use at the field.
Frequency Peg Board -	shall mean the frequency control system used by the club to ensure control over all the frequencies which can be used at the field.
Instructor -	A recognised WRF Instructor who passed the Instructors proficiency. This person will be present to Instructor proficiency tests.
Judge-	An Instructor, Silver or Gold merit holder designated by the committee to judge other pilots as prescribed in this document.
Member -	a fully paid up member of WRF as per the constitution
Pilot -	a member who is in charge of an aeroplane, and who can fly a model aeroplane and has achieved the minimum qualifications of a "Solo" proficiency.
Pilot Area -	means designated area from which Pilots fly their aeroplanes.
Pit Area -	shall mean the area between the club house and the runways as described in the Safety Rules of WRF.
Rules and Regulations -	will be the WRF Rules and Regulations, the Club Rules and Regulations Special Rules and Regulations.
Student Pilot -	a Student Pilot is a member who is learning to fly a R/C model aeroplane. He will have WRF membership but has not as yet obtained his "Solo" status. HE SHALL ALWAYS BE ACCOMPANIED BY AN EXPERIENCED PILOT WITH A SILVER OR HIGHER PROFICIENCY.
Trainer -	A person qualified to teach a beginner to learn to fly and who has obtained at least a Silver proficiency level which makes him competent to coach beginners.
Transmitter -	shall be a purpose made, commercially manufactured unit which shall have been designed and manufactured to work within the tolerances of the frequency band without interfering with the adjacent frequency bands.
WRF -	Windhoek Radio Flyers Club (The Club)

Proficiency Rules at Windhoek Radio Flyers Club

1. All proficiency tests of Windhoek Radio Flyers must be flown with certified WRF Instructor present conducting the test.
2. Pilot relocating from any other clubs to WRF who hold proficiencies up to the Gold merit from other clubs will be subject to scrutiny before being recognized by WRF club. The Instructor Merit will have to be re-done at WRF.
3. For any pilot to fly a model aircraft on his own without a Silver or higher proficiency pilot in attendance, the pilot must have at least a SOLO proficiency.
4. For a pilot to fly a model aircraft at any open day where public is present, the pilot must have a BRONZE proficiency or higher. Solo pilots must have a pilot with a Silver or higher proficiency in attendance on the pilot spot when flying.
5. The Proficiency tests for the Solo proficiency will preferably be done by two Instructors, but may be conducted by at least one WRF Instructor and one member with a Silver merit.
6. The Proficiency tests for Bronze and Silver proficiencies will preferably be done by two Instructors, but may be conducted by at least one WRF Instructor and one member with a Gold merit.
7. The test for Gold proficiency will be done by two WRF Instructors.
8. Any Instructor Proficiency Tests will be judged by two Instructors, one of whom will be an Instructor for at least two years. Should this not be possible, the current committee will rule on the issue.
9. Members who have been flying regularly for more than one year, and who in the views of the Club Committee are adequately experienced, will automatically be awarded the “SOLO” proficiency.
10. All proficiencies of WRF members received before January 2010 will remain valid and will be recognized by The Club.
11. To obtain a Instructor merit, the pilot must:
    a. Be actively involved in the hobby for at least five consecutive years.
    b. Have a sound general knowledge of the hobby and the Club Rules and Regulations.
    c. Have a WRF Gold Merit for at least one year.
    d. Apply for the merit with the committee in writing.
    e. Be approved, in writing, by the committee for the merit.
    f. Pass the relevant proficiency test.
12. The score sheets are designed to score both rounds of whichever test the Pilot has taken, and are scored by both Instructors. These tests will be arranged and conducted in a formal manner, with the appropriately approved persons present at the tests. The test papers will be kept on record by the Secretary.
13. The judges will be present on the Pilot Spot when judging the Pilot being tested
14. It is pointed out that the purpose of these tests is to determine the Proficiency of the Pilot rather than the accuracy of flying the maneuvers.
15. The preflight check is a pass or fail and the final score is unaffected by this item. The divisor used is the number of maneuvers undertaken and scored. Obviously a fail in the preflight check is a test fail.
16. In any of the proficiency tests a score less than the minimum specified for the test is a failure for the whole test and the test must be repeated in total.
17. Two attempts at the same proficiency badge will be allowed on the same day provided time permits.
18. If a Pilot has failed both attempts at a proficiency level, he will have to wait and practice for one month before a retest will be allowed. The complete test will be redone, and no cognizance will be taken of previous attempts.
19. A Pilot may do his first test at any level up to Gold. A pass at any level of proficiency automatically qualifies the Pilot for the levels below.
20. The cost of the Proficiency Tests will be determined from time to time by the Committee.
21. Should a Pilot, for some valid reason, such as a dead stick, require to land, he shall be entitled to, and shall in no way be penalized provided he requests time out and then proceeds to land in a controlled manner on the runway in use. After the problem has been rectified, he will resume his test at the point it was interrupted.
22. The second test, or a second attempt following a failed test, will only be done after all pilots present completed one round of tests.
23. A compulsory Pilot’s briefing will be held at the beginning of the test session. The Judges will host this session. All Pilots doing tests will be properly briefed as to what is required of them. And at this time the candidates must clear any queries they have on the tests to be performed or the maneuvers required.
24. Although pilots should have a sound knowledge of what the practical test entails, they will not be required to know the sequence of the maneuvers as this will be called by the senior of the two Judges during the test.
25. The result of any test will be made know directly after the completion thereof and will be subsequently published.
26. An Instructor may, at the discretion of the present committee, be requested to redo his/her Instructor’s proficiency
27. The decision of the Judges is final. Any complaints should be forwarded to the committee for adjudication and the decision of the committee shall be binding.
28. At least one of the Judges should not have been directly involved in the training of the Student Pilot.

TEACHING A STUDENT PILOT TO FLY

The objective of this section is to assist and remind the Trainer of things that he takes for granted and assumes others know.

The duties of the Club Trainer are to:

1.1 CHECKOUT THE STUDENT PILOT/BEGINNER'S AEROPLANE

Each and every aeroplane should be inspected structurally, and for the correct installation of the radio, motor and other equipment. For this purpose it is suggested that the preflight checklist in this document be used.

1.2 FIELD ETIQUETTE AND SAFETY RULES

The Trainer must go through the Club Rules covering:
(a) – Club Rules and Flying Procedures;
(b) – Safety Rules, Safety Code and Procedures

THIS IS EXTREMELY IMPORTANT.

1.3 GENERAL INSTRUCTION

The Trainer's third duty covers a fairly large scope and the Instructor must do his best to cover the subjects listed below. It is in the best interest of the sport that the Instructor does his best to give the Student Pilot a foundation in the following:

1.3.1 Theory of Flight

- Basics
- speed/lift. (Bernoulli principles).
- Stalling
- centre of gravity
- the 3 axis (yaw, pitch, roll)
- control surface function
- air density and temperature
- mass and wing loading.

1.3.2 Radio Functions

- very basic theory
- actions and functions of Transmitter
- actions and functions of Receiver
- checks, range, batteries, etc
- maintenance and charging
- PCM receiver "failsafe" settings

1.3.3 Frequency Control

- describe both systems used in Namibia, i.e. "PEG ON" and "PEG OFF" in detail, emphasizing discipline and consequences of failure to observe the rules

1.3.4 Pre-Flight Checks

- control checks
- radio/start up/mixture at high – low rpm/mixture when aircraft nose up, reliable idle, etc.
- taxi and runway discipline
- runway entrance, hold for landing aeroplane, permission from other Pilots flying
- club flying and safety rules

1.3.5 Flying (theory)

- take-off procedures (use of rudder at lower speeds)

- power for height, elevator for speed
- acquisition of stick “feel” – practice
- simple turns and correction during maneuvers
- normal turns and maneuvers
- disorientation - stick time
- dangers of flying through the sun or directly overhead
- basic aerobatics and correction
- changing altitude
- accurate positioning of aeroplane in the sky
- approach and landing pattern
- landing
- touch and go’s
- identification of Student Pilot’s weakness, revision and practice to improve.
- first solo flight
- Solo Proficiency Test.
- one month check-up and correction of any problem.

1.4. TAKE-OFF AND FLYING (practical)

NO STUDENT PILOT MAY FLY HIS AIRCRAFT WITHOUT SUPERVISION FROM THE APPROPRIATE PERSONS.

Once the student pilot has listened to all the above theory, he is now ready to fly, but only after:

1.4.1 Pre Flight Checks

- Re-check control movements before you taxi
- Taxi
- explain up elevator for a tail dragger
- straight taxiing
- torque effect
- Nose wheel effective
- Speed (i.e. enough power for take off)
- Refuel if necessary
- Explain “stick under the wing that’s down” theory of orientation when aeroplane is coming towards the Pilot
- Explain stick movements, and use of trims and rates if necessary
- Explain position of hands and fingers on the transmitter
- Give commands to Student Pilot and check his response to positioning aeroplane.

1.4.2 Flight Checks

- Take-off
- speed control
- keep climb out flattish until safe height attained
- Check and adjust trims on transmitter
- Land immediately if trims are way-out or aeroplane behaves abnormally
- After test flight, land and adjust trim on aeroplane to re –centre trims on transmitter
- Re-check trims in flight, re-adjust if necessary

1.4.3 TEACH THE STUDENT PILOT TO FLY

Here each Trainer has his own individual idea as how best to teach a Student Pilot, but the basics throughout the world show that the normal is:

- The Student Pilot learning to taxi, as this teaches him to use rudder and throttle.
- Take-off by the Trainer, either using Student Pilot’s transmitter or buddy cable, climb to a reasonable height, throttle back and trim out for straight and level flight.
- Hand over transmitter to Student Pilot who will do an appropriate amount of left and right turns, squares, figure eight’s, etc.
- Landing by Trainer.
- The Student Pilot flying further circuits, at gradually decreasing height above ground.

- The Student Pilot does landing approaches (without actually landing) with instructions/corrections from the Trainer.
- First takeoffs.
- Further flying circuits, practicing approaches and flight over runways.
- The Student Pilot's first landing.
- Practicing takeoffs, landings, flying the solo test pattern, approaches and landings.
- Performing and passing the "solo" test.
- Periodic check-ups.

The following questions should be consistently asked to the Student Pilot:

- What is the frequency of your radio?
- Do you have the correct frequency peg on your radio?
- Have you charged your batteries?
- Have you inspected your aeroplane?
- Have you fuelled up?
- Have you switched on?
- Mind/be careful of the spinning propeller.
- Pull out your aerial.
- Keep away from the pits.
- Get more height.
- Tell the other members your intentions.
- Have you switched off?
- Is your peg back on the Frequency Board?

1.5 PRE-FLIGHT CHECKLIST

This checklist is a general checklist and should be used in part or in whole by all Pilots to check out their aeroplanes before the first flight of the day. This checklist should also be used to inspect a Beginner's or Student Pilot's aeroplane before its first flight. 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. The Student Pilot must practice and become familiar with this checklist.

1.5.1 General Overview of the Aeroplane

Here is the first of the Trainer's duties. It is a prerequisite that any new, untried or repaired aeroplane be properly inspected before its first flight. The check-lists which follow are brief but reasonably comprehensive and, if in the views of the Trainer, the aeroplane is not airworthy or is unsuitable for a Student Pilot, now is the time to say so. It is pointless for a Student Pilot to try to fly an aeroplane which is not airworthy or too advanced for him which he will crash and which will convince him that this hobby is not for him. If the plane fits the above category, it should be grounded until such time as the alterations, modifications or replacement is done to the satisfaction of the Trainer. A written list of the defects, if not fixable at the field, should be given to the Student Pilot by the Trainer. A copy of this same list must be given to the Training Officer with the Student Pilots name, the type of aeroplane, and his reasons for not allowing the plane to be flown clearly documented thereon.

Checks to be done by the Instructor must include the following:

- Explain to the Student Pilot, during the check out of the aeroplane, his observations and his reasons for any adjustments that are made.
- If this check is being done at the field – RESERVE THE TRANSMITTER FREQUENCY BEFORE STARTING THE CHECK. Confirm that the frequency is a legal frequency.

1.5.2 Structure

a. Check wing for warps and structural integrity.
b. Check ailerons attachment, pinned, gap and movement.
c. Check the centre section of the wing for strength, and the wing overall for stiffness.
d. Check that the tail plane is on straight and square.
e. Check that the rudder and vertical fin is on straight and square.
f. Check the method of attaching tail surfaces to fuselage.
g. Check the rudder and elevator hinges (pinned), and the control surface gaps.
h. Check rudder and elevator movements, links and gaps.
i. Check method of mounting engine, fuel tank position and plumbing

j. Check landing gear rigidness, movement and free rolling.

1.5.3 Radio Installation

a. Check servo tray and/or aileron servo attachment.
b. Check battery charge, contacts and position
c. Check exit position of aerial. Does it run back on itself?
d. Servo links fixed, no metal-to-metal contact
e. Foam rubber packaging where necessary.
f. Servo leads okay and plugged in properly.
g. Check linkage to elevator, rudder, ailerons, throttle and nose wheel.
h. Check movement of servos.

1.5.4 Assembly

a. Check if covering of total aeroplane okay.
b. Check wing incidence.
c. Check tail plane incidence.
d. Check thrust line of motor.
e. Check all control surfaces are aligned with flying surfaces, i.e. elevator, rudder and aileron.
f. Check position of Centre of Gravity.
g. Method of attaching wing to fuselage.
h. Wing square on fuselage.

1.5.5 Engine Checks

a. Propeller, correct size, fixed properly?
b. Glow Plug correct, tight and glowing?
c. Carburetor mounted and set correctly
d. Fuel correct and filled
e. Silencer fixed correctly
f. Start engine and check settings, foam in fuel lines and throttle trim.
g. Check the engine setting in nose high attitude

1.5.6 Range Checks

a. Check operating range with transmitter aerial collapsed and engine running (40 – 50 passes)

NOTE

Explain adjustments to the Student Pilot and let him observe, learn and participate with the necessary checks and adjustments and range check.

2.0 REQUIREMENTS FOR DIFFIRENT PROFICIENCIES

Note: It is important to note that a proficiency test is to confirm if the pilot has control over his/her aeroplane in different maneuvers and not to the accuracy of flying the maneuvers.

2.1 "SOLO" TEST

From the attached "Solo Proficiency Test Score Sheet" it can be seen that the flying maneuvers required are basic. This is intentional, the reason for this test is to demonstrate to the two Judges that you, the Beginner or Student Pilot, have enough knowledge of the club procedures and experience to fly, without a Trainer present, when there are other members flying and that you will not create a liability or danger to those present, including spectators and their possessions at the flying field.

The first two items, Oral (general and safety) and Pre -flight, will require some homework from the pilot. These solo tests will be arranged and conducted in a formal manner, with the correctly qualified persons present at the tests, and the duly signed test papers will by approved by the Club Training Officer before being placed on file. As this test has only recently been introduced, WRF have brought in a Clause whereby members who have been flying regularly for more than one year, and who in the views of the Club Committee are adequately experienced, will automatically be awarded this qualification.

2.2 TYPICAL QUESTIONS TO BE ASKED FOR SOLO BADGES

Answers to all these questions will have been covered by your Trainer during your "learning to fly period" or should be common knowledge.

1. Which areas are you not allowed to fly over and why?
2. How do you set about checking your motor if it does not want to start?
3. How long does your receiver battery last in a day and how do you know it is ok for another flight?
4. What is your procedure when you arrive at the club?
5. Why is it dangerous to lean over the motor to adjust the needle valve when the motor is at full throttle?
6. Why do the Club Safety Rules state that you should not taxi your aeroplane in the pit area?
7. Why is it essential that you secure the frequency spot and have your peg with you before switching on your transmitter?
8. What would you do if on take-off, just after becoming airborne, your aeroplane turned towards the pit/spectator area?
9. If there are Pilots standing, say three (3) meters from and halfway down the runway and you needed the full runway for take-off, what would you do?
10. If you are going to land and see someone on the runway trying to retrieve an aeroplane, what would you do?
11. If you were lined up ready for take-off and during your final check you notice a servo glitch, what would you do?
12. What would you do if you saw
    12.1. That the tail plane was loose
    12.2. That the aeroplane is vibrating badly
    12.3. That the wing is skew
    12.4. That the undercarriage is skew or loose
    12.5. That some covering is loose
13. What would you do if you heard
    13.1. Someone yelling "DEADSTICK"
    13.2. Someone yelling "LANDING"
14. If you are the most senior person at the field and the safety officer is not present, what would you do?
15. If you see a child running in the pit area, what would you do?
16. If you see a child with a transmitter, what would you do?
17. If you are the safety officer for the day, what would you do:
    17.1. If someone is ignoring the safety rules?
    17.2. If after a verbal warning they still persist in ignoring the rules?
18. What do you do if you want to fly and your frequency peg is not on the board?
19. What would you do if after waiting patiently for your frequency spot, the peg is not replaced?
20. What would you do if someone has taken a peg from the board but he is no longer at the field?
21. What would you do if your motor stalls on the threshold/runway prior to take-off and other Pilots are waiting to take -off?
22. What would you do if you are about to fly and when you switch on your transmitter the meter shows red or under 9 volts?
23. How do you know the state and condition of your flight and transmitter battery packs?
24. What would you do if it starts to rain whilst you are flying?
25. What would you do if there is lightning whilst you are flying?
26. What would you do if you notice a full-size aeroplane or helicopter is flying lower than you are?
27. What would you do if you notice a glider, old-timer aeroplane or beginner flying aimlessly?
28. What would you do if you are flying and the cell phone on you rings?
29. What would you do if you feel ill or faint while you are flying?
30. What would you do if you lose sight of your aeroplane in the sky?
31. What would you do if the throttle on your aeroplane sticks at full throttle whilst flying?
32. Why does an aeroplane pull to the left on take-off?
33. Why do most models have down thrust?
34. Why do most models have right thrust?
35. What precautions should be taken when landing downwind?

3.0 <u>THE BRONZE, SILVER, GOLD AND INSTRUCTORS PROFICIENCY TESTS</u>

Requirement for the WRF Bronze, Silver, Gold and Instructors Merit are as follows:

a. The Proficiency tests for Bronze, Silver and Gold may be undertaken on any organised Wings Day of the Club.
b. The Proficiency tests for Bronze and Silver proficiencies will be preferably be done by two Instructors, but may be conducted by at least one WRF Instructor and one member with a Gold merit.
c. The test for Gold proficiency will be done by two WRF Instructors.
d. Instructors Proficiency Tests will be judged by two WRF Instructors, one of whom will be an Instructor for at least two years.
e. No Pilot may take an Instructors proficiency test without having first passed the Gold proficiency test.

3.1 SCORE SHEETS

The score sheets are designed to score both rounds of whichever test the Pilot has taken, and are scored by both Judges. These tests will be arranged and conducted in a formal manner, with the appropriately approved persons present at the tests. The test papers will be submitted to the Secretary to be kept on record.

The scoring for the proficiency tests will be per maneuver out of 10. It is pointed out that the purpose of these tests is to determine the Proficiency of the Pilot rather than the accuracy of flying the maneuvers. It is also emphasized that the landing approach pattern is probably the most important aspect of the proficiency tests and therefore competent approaches from both base legs are essential to the attainment of proficiency merit. The preflight check is a pass or fail and the final score is unaffected by this item. The divisor used is the number of maneuvers undertaken and scored. Obviously, a fail in the preflight check is a test fail. The final score is the average of the four sub-totals. (2 Instructors x 2 flights) for a pass on a merit to be achieved, the average score must equal to or exceed the passing percentage required and no maneuver may score less than the minimum required for that merit.

3.2 Test Failure

In any of the proficiency tests a score less than the minimum specified for the test is a failure for the whole test and the test must be repeated in total. So a fail in one maneuver in the first round means that there is no point in flying the second round of that test as you have failed.

3.3 Repeat Test

Two attempts at the same proficiency badge will be allowed on the same day provided time permits. The second attempt will however only be done once all attending pilots have completed their tests and ample time is available.

3.4 Time before a Retest

If a Pilot has failed both attempts at a proficiency level, he will have to wait and practice for one month before a retest will be allowed. The complete test will be redone, and no cognizance will be taken of previous attempts.

3.5 Level of Entry

A Pilot may do his first test at any level up to Gold, a pass at any level of proficiency automatically qualifies the Pilot for the levels below.

3.6 Proficiency Badges

The cost of any badge will be determined by the Committee. Replacement costs will be for the account of the pilot.

3.7 Time Out

Should a Pilot, for some valid reason, such as a dead stick, require to land, he shall be entitled to, and shall in no way be penalized provided he requests time out and then proceeds to land in a controlled manner on the runway in use. After the problem has been rectified, he will resume his test at the point it was interrupted.

3.8 Time between Attempts

A Pilot will, if he so requests, or if circumstances rule, be given a break between attempts. The length of this break will be at the discretion of the Instructors.

3.9 Pilot's Briefing

A compulsory Pilot's briefing will be held at the beginning of the test session. The Judges will host this session. All Pilots doing tests will be properly briefed as to what is required of them. At this time the candidates must clear up any queries they have on the tests to be performed or the maneuvers required.

3.10 Debriefing

If time permits, a debriefing will be held by the Judges and the results of the Proficiency tests made available.

4.0 Proficiency Test Maneuvers

4.1 Preflight Check

This will be done on the aeroplane before any flight testing takes place and is to be a complete safety and airworthiness check. It must be demonstrated to the Judges judging the test.

4.2 Takeoff into the wind

The takeoff will be judged on model control, particularly use of rudder, use of throttle, length of run and angle of ascent. Where a tail dragger is used for the test, a reasonable amount of swing on initial acceleration should be tolerated. The takeoff should start from a standstill and is complete when the model has performed a 90° turn away from the Pilot.

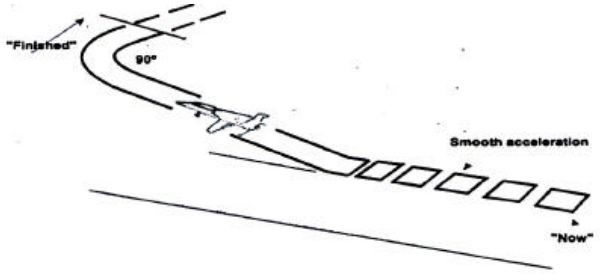

Figure 1: Take off

4.3 Straight and level flight

This maneuver should be done into wind for five seconds at an altitude of between 20 and 30 meters.

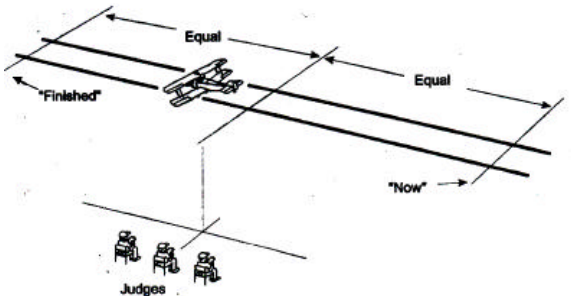

Figure 2: Straight and level flight

4.4 Two "figures of eight"

One maneuver into the wind, the other downwind where the longitudinal axis shall be parallel to the runway of takeoff. Altitude will be maintained within reasonable limits and consistency of the figure of eight will be judged, taking into account any wind strength. Altitude should be between 20 and 30 meters. The model approaches in straight and level flight, performs a quarter circle turn away from the Pilot, followed by a 360deg. turn in the opposite direction. This is then followed by a 270deg. turn in the original direction. The maneuver is complete after the model has passed the Pilot in straight and level flight in the direction of the original entry into the maneuver.

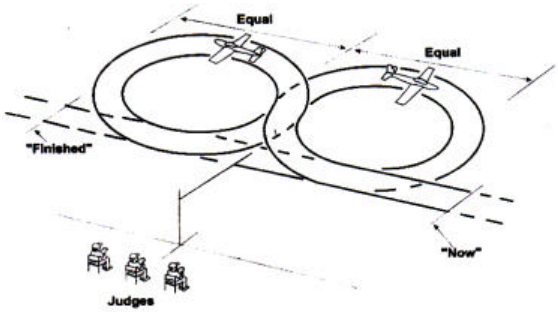

Figure 3: Figure-of-eight

4.5 Approaches from both sides and both bases

The Pilot will demonstrate to the satisfaction of the Instructors that he can make a satisfactory approach to within 3 meters of the runway centre from either direction and from both left and right base legs, on both attempts for the test. The sketch below will clarify how the approaches should be made to prevent the Pilot flying above or behind the club house. The criteria to pass in this test are whether the Pilot could land the aeroplane safely from any direction of approach.

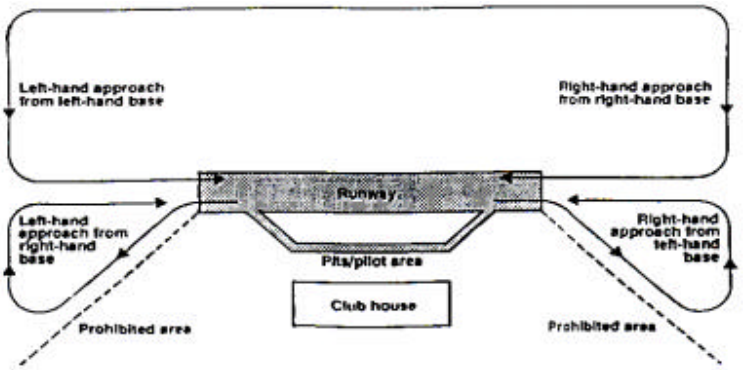

Figure 4: Landing approach layout

4.6 The Landing

The landing should be straight on the relative runway, and the touchdown within the first one third of the runway length. A small bounce, particularly with a tail dragger will be tolerated.

4.7 One inside Loop

From straight flight, parallel to the runway of takeoff, the model pulls up into a circular loop and resumes straight and level flight on the same heading as the entry. The throttle may be reduced at the top of the loop as appropriate to the type of aeroplane and opened when normal flight is resumed.

4.8 Slow Pass Into Wind

Straight and level flight at about 4 meters above ground, throttle back to a safe low speed and do a low pass into wind parallel to runway in use.

4.9 One Roll

The maneuver starts from straight and level flight, flown into wind parallel to runway of takeoff. The aeroplane will roll axially (unless otherwise stated) to left or right until the roll is completed with the wings level and the model is on the same heading and at the same altitude as at the entry.

4.10 Spiral Decent

This is not a flat spin. The motor must always be below the tail. The suggested method for performing a spiral descent is to obtain sufficient height from level flight, throttle back the motor and apply some up elevator until the aeroplane stalls. Now apply rudder and if required, some aileron, allow some 2 – 3 turns. Recover to level flight.

4.11 Consecutive Rolls

Start from straight and level flight, flown into wind parallel to runway of takeoff. The plane will roll axially (unless otherwise stated) to left or right until rolls are completed. The recovery should be at the same heading and altitude as entry. Slight changes in altitude depending on aircraft type will be acceptable.

4.12 Emergency Landing

For this maneuver the Pilot will be told to cut throttle and land at any time during the flight. An idling motor will be acceptable, and the Pilot will safely land on the runway. The use of the throttle or landing off the runway scores zero.

4.13 Outside Loop

Obtain sufficient height flying parallel to the runway of takeoff. From straight and level flight, close the throttle and give down elevator to dive down into a circular loop. Open the throttle at about the 4 o'clock position pushing back up to entry altitude to complete the loop. The maneuver may also be done in the opposite direction, flying parallel to the runway, turning inverted and applying down elevator to climb into a circular loop. The throttle may be cut in the 12 o'clock position for the dive. The maneuver is completed when the plane is turned upright at the bottom of the loop.

4.14 Cross Wind Landing

As per normal landing, but rudder and/or aileron should be applied to keep the aeroplane flying on a track down the runway before touching down.

4.15 Landing Pattern

The landing pattern should be of the rectangular approach type and should demonstrate the ability to control rate of descent and throttle setting. The final approach and touchdown must be smooth and demonstrate a consistent rate of descent and speed. All landings shall be on the runway. Acceptance will be at the discretion of the Instructors and their decision shall be final.

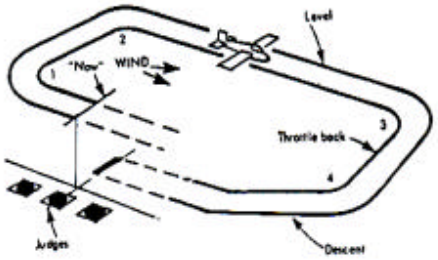

Figure 5: Landing pattern

4.16 Recovery from unusual altitudes.

One of the Judges will, while the prospective pilot is under test, with his hands off the transmitter, place the aircraft in an unusual flight altitude on two separate occasions during the flight and the pilot under test will demonstrate his ability to recover from the unusual altitude, the first reaction being to close the throttle. This may be dependent on the circumstances at the time. The maneuver will be completed once straight and level flight is established.

4.17 Fast low pass downwind.

The downwind pass must be straight and level at about 4 meters above the ground and parallel to the runway in use at a throttle setting in excess of half throttle.

PROFICIENCY TEST SHEET
SOLO LEVEL

STUDENT PILOT NAME:…… DATE OF TEST:……..

	First Flight		Second Flight	
Description of Maneuver	Instructor 1	Instructor 2	Instructor 1	Instructor 2
Oral Test – eight questions regarding flying / safety				
Pre-flight Check & Frequency Control – to club rules				
Take-off into Wind – controlled				
Left Hand Circuit – end of circuit parallel to runway				
Right Hand Circuit – end of circuit parallel to runway				
Two consecutive Horizontal Eights – cross-over at center				
Simulated "Dead stick" Landing – engine on at idle speed				
Landing into the wind				

JUDGE 1:

SIGNED: …… DATE ……..

JUDGE 2:

SIGNED: …… DATE ……..

PASS/FAIL

Judge's Comments:

……

……

……

……

Certificate Issued: **YES / NO**

Signature of Student Pilot:……

PROFICIENCY TEST SHEET
BRONZE LEVEL

Student Pilot Name: …… **DATE:** ……

	First Flight		Second Flight	
Description of Maneuver	Instructor 1	Instructor 2	Instructor 1	Instructor 2
Preflight Check				
Take-off into Wind – controlled				
Straight and Level flight for 5 seconds				
Two Horizontal Figure Eights				
One Inside Loop				
Slow Low Pass into Wind				
Left Hand Landing approach from Right Hand Base				
Right Hand Landing approach from Left Hand Base				
Left Hand Landing approach from Left Hand Base				
Right Hand Landing approach from Right Hand Base				
Landing into Wind				
Minimum Score per Maneuver	**3**	**3**	**3**	**3**
SCORE SUB TOTALS				
TOTAL SCORE FOR EACH FLIGHT				
OVERALL FLIGHT PERCENTAGE				
AVERAGE % OF BOTH FLIGHTS				
PASSING PERCENTAGE IS	**50%**			
N.B. If less than the minimum score is achieved for any maneuver, the flight attempt will be deemed a failure				
ORAL TEST	**PASS**		**FAIL**	

JUDGE 1:

SIGNED: …… DATE ……..

JUDGE 2:

SIGNED: …… DATE ……..

Judge's Comments:

……

……

……..

Signature of Student Pilot: ……

PROFICIENCY TEST SHEET
SILVER LEVEL

Student Pilot Name: …… **DATE:** ……

	First Flight		Second Flight	
Description of Maneuver	Instructor 1	Instructor 2	Instructor 1	Instructor 2
Preflight Check				
Take-off into Wind – controlled				
Straight and Level flight for 5 seconds				
Two Horizontal Figure Eights				
Two Inside Loop				
One Roll				
Slow Low Pass into Wind				
Left Hand Landing approach from Right Hand Base				
Right Hand Landing approach from Left Hand Base				
Left Hand Landing approach from Left Hand Base				
Right Hand Landing approach from Right Hand Base				
Landing into Wind				
Minimum Score per Maneuver	**4**	**4**	**4**	**4**
SCORE SUB TOTALS				
TOTAL SCORE FOR EACH FLIGHT				
OVERALL FLIGHT PERCENTAGE				
AVERAGE % OF BOTH FLIGHTS				
PASSING PERCENTAGE IS	**60%**			
N.B. If less than the minimum score is achieved for any maneuver, the flight attempt will be deemed a failure				
ORAL TEST	**PASS**		**FAIL**	

JUDGE 1:

SIGNED: …… DATE ……..

JUDGE 2:

SIGNED: …… DATE ……..

Judge's Comments:

……

……..

……

Signature of Student Pilot:……

PROFICIENCY TEST SHEET
GOLD LEVEL

Student Pilot Name:…… **DATE:……**

	First Flight		Second Flight	
Description of Maneuver	Instructor 1	Instructor 2	Instructor 1	Instructor 2
Preflight Check				
Take-off into Wind – controlled				
Straight and Level flight for 5 seconds				
Two Horizontal Figure Eights				
Two Inside Loops				
Spiral Decent (not a spin)				
Two Consecutive Rolls				
One Inverted Figure Eights				
Slow Low Pass into Wind				
Fast Low Pass Down Wind				
Emergency Landing (called anytime)				
Left Hand Landing approach from Right Hand Base				
Right Hand Landing approach from Left Hand Base				
Left Hand Landing approach from Left Hand Base				
Right Hand Landing approach from Right Hand Base				
Landing into Wind				
Minimum Score per Maneuver	**4**	**4**	**4**	**4**
SCORE SUB TOTALS				
TOTAL SCORE FOR EACH FLIGHT				
OVERALL FLIGHT PERCENTAGE				
AVERAGE % OF BOTH FLIGHTS				
PASSING PERCENTAGE IS	**60%**			
N.B. If less than the minimum score is achieved for any maneuver, the flight attempt will be deemed a failure				
ORAL TEST	**PASS**		**FAIL**	

JUDGE 1:

SIGNED: …… DATE ……..

JUDGE 2:

SIGNED: …… DATE ……..

Judge's Comments:

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Signature of Student Pilot:……

PROFICIENCY TEST SHEET
INSTRUCTORS LEVEL

Student Pilot Name: …… **DATE:** ……

	First Flight		Second Flight	
Description of Maneuver	Instructor 1	Instructor 2	Instructor 1	Instructor 2
Preflight Check				
Take Off into Wind				
Take-off Cross Wind				
Straight and Level flight for 5 seconds				
Two Horizontal Figure Eights				
Two Outside Loops				
Spiral Decent (not a spin)				
Two Consecutive Rolls				
Two Inverted Figure Eights				
Unusual Attitude Recovery (one)				
Unusual Attitude Recovery (two)				
Slow Low Pass into Wind				
Fast Low Pass Down Wind				
Emergency Landing (called anytime)				
Left Hand Landing approach from Right Hand Base				
Right Hand Landing approach from Left Hand Base				
Left Hand Landing approach from Left Hand Base				
Right Hand Landing approach from Right Hand Base				
Landing into Wind				
Landing Cross Wind				
Minimum Score per Maneuver	**5**	**5**	**5**	**5**
SCORE SUB TOTALS				
TOTAL SCORE FOR EACH FLIGHT				
OVERALL FLIGHT PERCENTAGE				
AVERAGE % OF BOTH FLIGHTS				
PASSING PERCENTAGE IS	**60%**			
N.B. If less than the minimum score is achieved for any maneuver, the flight attempt will be deemed a failure				
ORAL TEST	**PASS**		**FAIL**	

JUDGE 1:

SIGNED: …… DATE ……..

JUDGE 2:

SIGNED: …… DATE ……..

Judge's Comments:

……

……

Signature of Student Pilot: ……

PROGRESS MILESTONE LOG OF SOLO STUDENT PILOTS

Student Pilot name: ……. Type of Aeroplane: ……..

Item	Flying	Ground	Date	Signature
1	Explain Frequency Control System, Control Functions, Movement of Sticks, Flying Criteria to Student Pilot	Demonstrate Frequency Peg System. Explain Basic Safety Rules, and Flying Rules		
2	Aeroplane checked out, trims ok, flies ok	Airworthiness checklist OK		
3	Airworthiness checklist ok Student Pilot can ground taxi, do left and right hand circles and figure eight's at altitude	Club Safety, field and Flying Rules known by Student Pilot		
4	Student Pilot can do left and right hand circles and figure eight's at low altitude, as well as trim our aircraft and do landing approaches	Safety Procedures know and practiced by Student Pilot		
5	Student Pilot can do landings including dead stick landings	Safety and flying rules and procedures known		
6	Student Pilot can do takeoffs	Basic aerodynamics known		
7	Student Pilot ready for solo test	Has satisfied the Trainer on knowledge of Safety, Club Rules and Basic Aerodynamics		

Trainer's Signature: _____ Date: _____

Training Officer Signature:_____ Date: _____