MARCS FLIGHT PROFICIENCY PROGRAM

MARCS established the Flight Proficiency Program designed to help beginners to learn to fly quickly. The program also allows pilots to advance their flying abilities as they gain more experience. Each level is a progression from the previous level and can be practiced at the members own speed and time.

Included are descriptions of the basic pilots maneuvers that the student must fly during the Pilots Test. There are seven (7) easy maneuvers to learn in order to take the test and become a MARCS pilot, and fly without an instructor. The detailed explanations on the following pages explain what the student needs to know to perform these seven maneuvers. In the future these descriptions will be expanded to cover the advanced and expert tests, as well the helicopter tests.

At the field, the instructor will demonstrate each maneuver with the plane. He will also show the no-fly boundaries, and point out other safety areas and procedures. The students complete attention is needed. It is surprising how little control it takes to fly the plane and also how fast the plane can get into trouble if you get complacent. It is easy to get disorientated while flying the plane. Remember, every pilot be it full size or model has to go through a learning period before he/she can become a good pilot.

In all of the test flights, the examiners should be looking at the students ability to control the plane, and to perform a recognizable maneuver. The perfection of the maneuver is not considered, but it should be recognizable as the particular maneuver directed to fly.

Prior to taking any of the tests, take time to review the test to be taken, and the maneuvers required. The student should be familiar with the AMA rules and safety codes, as well as the maneuver explanation in this manual. Practice each maneuver several times before the test. Do not ask the examiner how to fly the maneuver or waste their time to practice. BE READY.

The Advanced and Expert tests require a plane capable of pattern type maneuvering. The Glider test should be done with a Glider, or at least an “Old Timer” plane that can glide well. A 1/2A category test is included for students that do not want to build a larger plane.

BASIC PILOT TEST MANEUVERS

Instructors/examiners should request that other pilots stand down during the test so that the student does not think about other airplanes. After take-off, take one or two passes over the area to check trims and adjust the power. All flight maneuvers will commence with the plane flying in straight and level flight. Most maneuvers began with the plane heading upwind. Exceptions may be the Rectangle Right and Left maneuvers which are positioned starting over the runway, and the first turn is always away from the pit area.

Emergencies such as engine out should be handled first, and the test restarted as soon as the problem is corrected. If the test is not completed, and the students has to return on another day, the entire test will to be flown again.

1. TAXI TO AN UNASSISTED TAKEOFF

- The instructor is looking for safety.

- Avoiding obstructions, using the appropriate taxiway, watching for other aircraft traffic while entering the runway, and use of the pilot station.
- The plane should be positioned facing upwind, and execute a smooth take-off.
- Maneuver is complete when the plane is about five (5) feet high, or clears the field.
- The plane may be carried out to the take off starting point on the runway due to windy conditions, or for some smaller electrics that cannot taxi adequately.

2. PROCEDURE TURN

- Maneuver starts as the plane crosses the downwind runway boundary on a straight and level heading.
- Fly to the upwind end of the runway and make a 90 degree turn away from the runway/pit area.
- The wings level, and straight flight out for a few seconds depending on any crosswind.
- Make a smooth 270 degree turn in the opposite direction to bring the plane back on the centerline of the runway heading downwind.
- Continue straight and level flight downwind over the centerline of the runway to the opposite boundary.

3. ONE INSIDE LOOP

- Position the plane over the far side of the runway heading upwind.
- As the plane passes the center point of the runway (or the student) execute one inside loop.
- Try to make the loop round and not leaning to far off-vertical.
- The loop should be without jerky control inputs and about the same entry and exit altitude.

4. RECTANGLE RIGHT

- Position the plane over the far side of the runway in straight and level flight (upwind or downwind as required) to make the first turn away from the pit area .
- Make the first 90 degree right turn away from the pit area.
- Level the wings and fly straight out from (away) the runway.
- Continue straight flight for several seconds depending on the winds and to allow time to stabilize straight and level flight.

- Execute the second 90 degree right turn and level out to position the plane heading in the opposite direction from the start out. Again straight and level for at least five (5) seconds.
- The third 90 degree right turn will turn the plane to head directly towards the pit area.
- Level the wings and allowing for wind fly straight and level again for a short time.
- Begin the fourth 90 degree turn so that the plane returns to the original path over the far side of the runway
- DO NOT FLY INTO THE NO-FLY ZONES!

Turns should be smooth and 90 degree with a definite level flight between turns. Flight should be at the same altitude throughout. Use the straight flight portion of the maneuvers to adjust for the wind.

5. **RECTANGLE LEFT**
   - Same as the Rectangle Right except using left turns.

6. **STALL TURN**
   - Position the plane heading upwind over the far side of the runway flying straight and level.
   - Pull the plane into a vertical climb and reduce power to one-third or less.
   - As the plane slows to a stop going straight up slam the rudder stick to full left or right and hold as the plane turns around its wingtip until it is headed straight back down.
   - Release the rudder input and allow the plane to regain speed apply power and make a smooth recovery with elevator input to straight and level flight in the opposite direction and at about the same altitude that you started the maneuver.
   - Practice this maneuver several times some planes may make this turn better to the right. Most planes perform this better if a burst of power is applied at the same time as the rudder input is applied. This helps force the tail around cleaner.
   - Reduce the power as soon as the turn is complete. Entry and exit should be on about the same line but on opposite headings and at the same entry altitude.

7. **LANDING**
   - Start by positioning the plane heading downwind past the far side of the runway at about 50 to 75 feet high.
   - Pull the power back as required to start a smooth descent let the plane assume a normal glide.
   - Make smooth turns to return the plane back to the runway heading upwind and on centerline .
   - Adjust the turns as required trying to avoid making steep turns (more than 60 degree bank) .
   - Adjust the power to bring the plane across the runway boundary at about 10 to 15 feet high.
   - At this point reduce power to a full idle keep the wings level and heading down the runway.
   - Flare smoothly, or at least until the fuselage appears level or slightly nose-up hold this until the plane settles to the ground.
   - Let the plane roll out and stop. Rollovers after landing due to the grass/small wheels on some planes are OK.
   - Keep the heading straight with rudder as required.

Strive to keep all turns, the descent, and flair as smooth as possible. Do not drive the plane into the ground. Engine should remain running throughout unless the engine stopped while in the air. Taxi back toward the pit area stopping in a runway exit. Taxi back should be smooth wind permitting. The plane may be carried off the runway if the wind would risk turning over.

GLIDER TEST

This is a condensed version of the Basic Pilots Test, but requires a Glider to perform. Normal powered planes gas or electric are not permitted unless the power is strictly used to obtain the initial launch altitude.

½ A PILOTS TEST

A modified version of the Basic Pilots Test restricted to engines .075c i.d. or less or equivalent electric powered planes.

FLIGHT MANEUVERS REQUIRED

- A hand launch may be used in place of a Roll On Ground takeoff, if the pilot elects.
- If the pilot elects to R.O.G. the plane will be carried to the runway, taxing is not required.
- The Procedure Turn, Rectangle Left and Right, are required maneuvers. See the Basic Pilots Test for the explanation of each maneuver.

Exceptions: The pilot may accomplish the maneuvers in a smaller space, i.e. inside the runway boundaries if desired.

- **The Loop and Stall Turn** are optional extra maneuvers.
- **Landings** will normally be “Dead Stick” but should be into the wind and on the runway after a smooth flair; no nose first one point arrivals.
- Rollovers after landing due to the grass/small wheels “OK”.
- Taxi back not required. For more info refer to the AMA rules book.
- **DO NOT ask the examiners how to do these maneuvers during the test.**

MARCS FLIGHT PROFICIENCY PROGRAM

PILOTS NAME:_____ **SIGNATURE:**_____

EXAMINER #1_____ **EXAMINER #2**_____

DATE:_____ Note: **Completed form routed to**:

☐ Treasurer ☐ President ☐ Web Master ☐ Newsletter Editor

PILOTS TEST

	PASS/FAIL
1. TAXI AND TAKE OFF	____/____
2. PROCEDURE TURN	____/____
3. ONE INSIDE LOOP	____/____
4. RECTANGLE LEFT	____/____
5. RECTANGLE RIGHT	____/____
6. STALL TURN	____/____
7. LANDING	____/____

½ A PILOTS TEST and/or GLIDER PILOTS

NOTE: INDICATE WHICH TEST IS BEING OBSERVED BY ENTERING THE TYPE TEST.

TYPE TEST:_____ **PASS/FAIL**

1. HAND LAUNCH OR R.O.G.	____/____
2. PROCEDURE TURN	____/____
(½ A REQUIRED – GLIDER OPTIONAL0	
3. RECTANGLE LEFT	____/____
4. RECTANGLE RIGHT	____/____
5. LANDING	____/____

OTHER OPTIONAL MANEUVERS:

6. ONE INSIDE LOOP	____/____
7. STALL TURN	____/____

ADVANCED PILOTS TEST

	PASS/FAIL
1. TAXI AND TAKE OFF	____/____
2. THREE INSIDE LOOPS	____/____
3. TWO CONSECUTIVE ROLLS	____/____
4. IMMELMAN TURN	____/____
5. SPLIT "S"	____/____
6. CUBAN "8"	____/____
7. THREE OUTSIDE LOOPS	____/____
8. RECTANGLE APPROACH	____/____
9. LANDING	____/____

EXPERT PILOTS TEST

	PASS/FAIL
1. TAXI AND TAKE OFF	____/____
2. FIGURE "M", NO ROLLS	____/____
3. FOUR POINT ROLL	____/____
4. THREE TURN SPIN	____/____
5. ONE SLOW ROLL	____/____
6. AVALANCHE, UPRIGHT	____/____
7. VERTICAL "8"	____/____
8. TOP HAT WITH ½ ROLLS	____/____
9. RETANGLE APPROACH AND LANDING	____/____