

FLIGHT PROFICIENCY PROGRAM

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Evaluation sheets

THE FLIGHT PROFICIENCY PROGRAM

I originally thought of this program as a way to force myself to stop 'boring holes in the sky' every time I was out flying. I wanted something that forced me to understand my aircraft and helped me to learn new manoeuvres. I also wanted my progress (if any) charted, and I wanted all this done without the rigors imposed by a competition practice regime. Hence The Flight Proficiency Program. Since the work had to be done in any case, it was a simple procedure to get it organized and packaged for general distribution. If you think of useful additions or changes, feel free to make them, and pass them on!

The Flight Proficiency Program is a "self-study" program that is designed to help a flier, who already has his Wings, to continue to improve his flying ability. The program allows the flyer not only to improve as he moves through the program, but also to automatically record his progress. It gives him goals to aim for, and can usefully organize his flying sessions, if he so desires. There is no pressure to be at a certain level by a certain date, and no pressure to learn manoeuvres in any certain order. The individual flyer will benefit from this program in direct proportion to what he puts into it. If a flyer (or group of flyers) want to treat the program as a competition - they are free to do so. However, the program is designed as a long-term learning experience, possibly spanning many flying seasons.

The FPP consists of sets of Tasks, each set comprising a Level. There are five Levels and ten Tasks per Level. Each task has a maximum value of 10 points, and a flyer's accumulated point total categorizes him as flying at a certain level. However, tasks may be attempted at any level at any time; for example, a flyer who has 175 points, and is a Level 2 flyer, may actually be attempting tasks at Levels 3, 4 & 5, (as well as maybe having to "catch up" some tasks from Levels 1 and 2).

To move through the program, start at Level 1, decide whether you know how to do the tasks at that level, and practice them till you feel confident enough to do them for evaluation. If you feel that there are tasks that you don't know how to do, find out how to do them! Get advice from a reliable senior flyer, and then practice and practice! Once you are ready to have a task evaluated, pick a senior flyer to be your evaluator and have a go at it.

The Flyer Classifications are:

LEVEL 1	-	1	to	100	points
LEVEL 2	-	101	to	200	"
LEVEL 3	-	201	to	300	"
LEVEL 4	-	301	to	400	"
LEVEL 5	-	401	to	500	"

Over 500 points and you can call yourself anything you like!!

Andy Sulkowski

FOR THE FLYER

One of the aims of the program was to make it as aircraft independent as possible. While an underpowered Kadet will have limitations at the higher levels, it should not matter whether you fly a Phoenix, a Sportster, a Piper Cub or a Skybolt. This problem is addressed in two ways. One, there are the optional tasks which may be substituted at any level. If you feel that your plane cannot perform a certain task you can simply substitute one that is within that aircraft's flight spectrum. Two, you should discuss your plane's capabilities with whoever is evaluating your performance for a particular task. One thing to keep in mind - as you progress in your flying abilities, you will more than likely move up in the type of aircraft you are flying. This program was designed to be started after the Wings program is finished - so most people will be starting this program with their second plane, usually a sport flyer of some kind. This kind of plane should be capable of almost all the tasks, with the possible exception of some of the vertical manoeuvres. However, if you change from one plane to another plane that has a radically different flight spectrum, you may want to consider starting a different score sheet or redoing some of the tasks (and making note of that fact). This shouldn't be necessary except in extreme cases.

There are descriptions for all of the tasks in both the Pattern and Scale rule books from MAAC. These would be your starting point, and these descriptions are distributed with the program. However, while you may be flying a plane that is capable of doing a certain task, it may not be capable of doing that task with the perfection required in pattern competition. The problem then becomes one that is familiar to scale flyers, you must convince the person who is evaluating your task that you are doing it to the best ability of the aircraft that you are flying. This puts a lot of onus on the person doing the evaluation. He may even want to try the task himself to familiarize himself with your plane. It would be ideal to reduce the variables in evaluation as much as possible - choosing a senior flyer as your evaluator and staying with this person as much as possible would be advantageous.

One of the things you are striving for is consistency. It doesn't do much good if you try a task only once, even if you do well at it that once. If you do well at it several tries in a row, on different days and under different conditions, then you might be able to say that you can do that task well. Even if this is the case - try again after a few months - your score should be the same or better. You want to be in a position where nothing that your aircraft does surprises you. Once you have complete control of the basics, then you can put together more complex tasks by building on those basics. It's no good to be able to do a snap roll well if that is the only thing you can do. By the same token, it's no good to learn a pattern routine if the slightest deviation from that routine gets you into trouble. You want to reach the stage where someone else can take your plane, get it into some near-impossible situation, then hand you the transmitter and walk away, and you have to recover. You want to be able to do this with your best plane, not just your beat-up trainer!

The various tasks at the various levels are shown on the scoresheets at the end of this booklet. You may want to make duplicate copies of these (several each). The booklet also contains sections that group the tasks by type of manoeuvre, and a general description and diagram of what the manoeuvres in each task should look like. I don't set out to show you what the control inputs are for each manoeuvre - not only should you find that out for yourself, but different weather conditions will require slightly different control inputs. So - read the overall rules, make sure you know how the program works, and go to it!

Notes

The flyer should be discussing with you the task he is about to attempt, and making you aware of any limitations he feels his plane may have. Make sure you are in agreement before the session starts! You may want to try the task yourself (on his aircraft) to familiarize yourself with its flying characteristics. Remember that you are trying to evaluate the performance based the aircraft's limitations (if any). Not an easy job, but if some understanding is reached before the session starts, then there will be fewer problems when it comes time to write down the marks. That is not to say that everyone will always agree with your evaluation - just keep in mind you are instructing as well as evaluating, and be sure you have good reasons for giving the marks you give.

Notes

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SOME GENERAL RULES

- You may try any task at any level. It is best, however, if you proceed through the program in an organized manner.
- A task is not complete, and cannot receive points, until all repetitions of the required manoeuver are at least attempted. In other words, if a task requires two repetitions, and you only attempt one, you get zero, not half marks.
- If a task requires repetitions of a particular manoeuver, those repetitions must be done on successive passes, except if the manoeuver requires an up- or downwind entry. These may then be done on successive upwind or downwind passes. However, ALL Level Flight and Rolling manoeuver repetitions must be done on successive passes.
- For the landing / take-off tasks, the plane may not be touched after initial take-off and until the task is complete (ie. you may not restart the engine or help the plane out of the weeds, after a landing!)
- You may substitute tasks at any level from the Optional or Additional Task category. The task should be of approximately the same difficulty as the one you are replacing. If you are replacing a task with one that is not on the list, you may do so with the evaluator's approval. Once you get approval, a description of that task should be documented in the notes, so that it may be repeated and evaluated the same each time the task is attempted.
- You may also attempt tasks from the Optional or Additional Task category at any time to get "bonus" points to add to your total. Note that this is the only way to get more than 500 points.
- EVERY score should be recorded, even if it is lower than the previous one for that task. Your total is the total of all the most recent scores.
- Manoeuvres must be centered before the flyer, at a reasonable altitude, and at a reasonable distance from the flight line. Method of turnaround is up to the flyer. Manoeuvres should be entered from straight and level flight, and entries and exits should have the same heading and altitude (unless otherwise stated).

Landing / takeoff

- Landings and takeoffs (in same flight).
- Landings in marked area 150 ft. long and width of flying field.
- Landings in marked area 100 ft. long by 50 ft. wide.
- Touch and go's, landing in an area 100 ft. long by 50 ft. wide.
- Spot landings in an area 50 ft. long by 25 ft. wide.
- Sideslip landings

Level Flight

- Straight flight left -> right and then right -> left
- Inverted straight flight left -> right and then right -> left
- Straight flight left -> right and then right -> left at half throttle
- Straight flight left -> right and then right -> left below 10 feet alt.
- Procedure turn
- Procedure Turn inverted
- Square or rectangular circuit of field inverted
- Level figure eight
- Level figure eight - inverted
- Knife edge flight

Rolling manoeuvres

- Single roll
- Three consecutive rolls
- Three consecutive rolls inverted
- Slow roll
- Snap roll
- Four point roll
- Eight point roll
- Vertical (downward) four point roll
- Two rolls in opposite directions
- Two rolls in opposite directions inverted
- Two snap rolls in opposite directions
- Barrel roll
- Cobra Roll

Looping manoeuvres

- Inside loop
- Three inside loops
- Immelman
- Double Immelman
- Split "S"
- Outside loop
- Inverted outside loop
- Three outside loops
- Cuban eight
- Cuban eight inverted
- Avalanche
- Horizontal eight
- Horizontal eight inverted
- Vertical eight
- Triangle rolling loop
- Square Horizontal eight

Stalls & spins

- Spin - any number of turns from stall
- Spin - three turns
- Inverted spin - three turns
- Stall turn
- Figure "M"
- Whipstall or tailslide

Misc.

- Top Hat
- Top Hat inverted
- Lazy eight
- Chandelle
- Falling leaf

TASKS - DESCRIPTIONS & DIAGRAMS

These descriptions are taken mainly from the MAAC Pattern and Scale Rule books. You may wish to consult these books for further information. Generally, the descriptions apply to the inverted manoeuvres as well; the aircraft is simply in an inverted position during entry and exit or throughout the manoeuvre.

TAKEOFF / LANDING

1. The plane may be carried to the take-off position but may not be touched after the initial take-off (see Overall Rules)
 2. The measured landing areas should be centered in front of the flyer, except in the case of touch and go's, when the area may be downwind of the flyer. Markers are available (hopefully) at the impounds.
 3. When landings are made in a measured area, it is OK for the plane to leave the area during its rollout. If it bounces out of the area, points should be deducted.
 4. Pacing off the measured landing area is accurate enough a measurement.
- * Landing: The plane flares smoothly to touch the ground within the landing area with no bouncing or changes in heading and rolls to a stop.
- * Takeoff: The plane must stand still on the ground with the engine running, without being held, and then take off. The takeoff run should be straight, the plane lift gently from the ground and climb at a gradual angle.
- * Touch-and Go: This is combination of the landing and takeoff, and the criteria for those apply to the touch-and-go. The plane should not come to a rest after landing, however, and make a smooth transition from landing to take-off.
- * Side Slip Landing: The plane establishes a descent similar to a regular landing approach. The aircraft then slips to the right or left during descent, and finishes by recovery to straight flight just prior to touchdown. The side slip is not just a banking turn, but the aircraft is pitched to the left or right of the flight path.

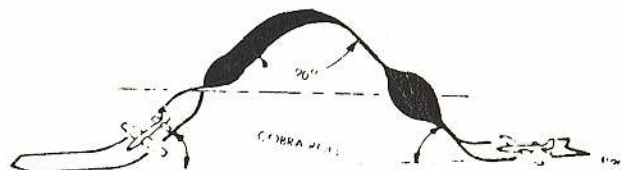
LEVEL FLIGHT

1. The Straight Flight left to right should be on the same line and altitude as the Straight flight right to left, and done on successive passes. Half-throttle means half of what the aircraft normally flies at.
- * Straight Flight: The plane starts flying in a straight line and continues for three to five seconds. The aircraft's altitude should not change, and the wings should remain level throughout the manoeuvre.
- * Procedure Turn: The aircraft makes a 90 degree turn in the direction away from the flight line and then a 270 degree turn in the opposite direction back to the original flight path. All turns should be level, and the entry and exit points should coincide.
- * Rectangular Circuit: Starts with straight flight past flyer, then flies three to five seconds straight flight, makes a 90 degree turn, flies three to five seconds straight flight, 90 degree turn, etc, until a rectangle or square is formed. Opposite legs of the circuit must be of equal length, there should be no change of altitude during the circuit, and the turns should be 90 degrees and smooth.

- * Level Figure Eight: Starts with a 90 degree turn away from flight line, followed by immediate 360 turn in opposite direction, followed by another 360 degree turn in opposite direction. Turns must be at constant altitude and both loops of the eight should be the same size. The flyer may exit the manoeuvre and do subsequent repetitions on subsequent passes.
- * Knife Edge Flight: Aircraft rolls 90 degrees and continues in this attitude for five seconds, then rolls back to upright. There should be no loss of altitude and the wings should be straight up and down. The flight path should be straight.

ROLLS

1. Generally only the higher performance aircraft will be able to perform a true FAI axial roll. Depending on the aircraft there will be some deviation from the central axis of rotation. This should be taken into account.
 2. All rolls should be entered and exited with wings parallel to the ground.
- * Consecutive Rolls: The aircraft rolls at a uniform rate through the required number of revolutions. Flight path should be straight and there should be no change in altitude.
 - * Slow Rolls: A single roll must be spaced over five seconds. Roll rate should be uniform.
 - * Point Rolls: Same as a regular roll, but the aircraft hesitates at each 'point' of exactly 45 or 90 degree rotation as is appropriate.
 - * Barrel Roll: The aircraft spirals horizontally about the horizontal axis established at entry. The position of the wings should be in keeping with the plane's position along the roll. Exit should be at the same altitude and heading as entry.
 - * Snap Rolls: The aircraft should snap roll rapidly with a nose high attitude. If it simply rolls about its horizontal axis it is not a snap roll.
 - * Cobra Roll: The plane pulls up to a 45 degree angle, half rolls to inverted, does a 1/4 loop, half rolls to upright, and recovers in level flight. The angles should be accurate, and the heading should not change during the rolls and loop.
 - * Downward Point Rolls: same as point rolls, except aircraft executes the manoeuvre while in vertical (downward) flight.



LOOPS

1. Although the flyer should be striving to perform round loops, these are not within the capabilities of all aircraft. If the a/c cannot perform a round loop, all loops should be of similar shape. Power limitations may require some a/c to enter a shallow dive before attempting a looping manoeuvre.
- * Loops: All consecutive loops should be superimposed. There should be no variation in airspeed throughout the loop, and no deviation to left or right during the manoeuvre.

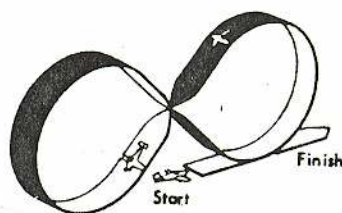
* Immelman: The aircraft pulls up into a half inside loop, then half rolls to the upright and continues in straight flight.

* Double Immelman: The aircraft performs an Immelman turn, continues straight for two seconds, performs a half outside loop followed by a half roll to upright. Both the inside and outside half loops should be of the same shape and size.

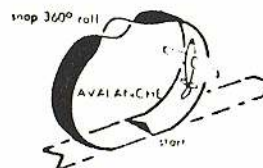


* Split "S": The plane climbs to altitude at a 45 degree angle, does a half roll to inverted, does an inverted half inside loop, and continues in straight flight. Altitude at the start of the 45 degree climb should be the same as the exit altitude. There should be no change in heading.

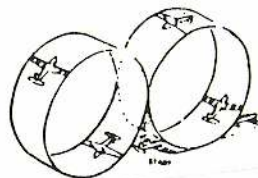
* Cuban Eight: The a/c pulls up and performs 3/4 of an inside loop, when at 45 degrees inverted, the a/c does a half roll, followed by another 3/4 inside loop, and again when 45 degrees inverted does a half roll and recovers to level flight.



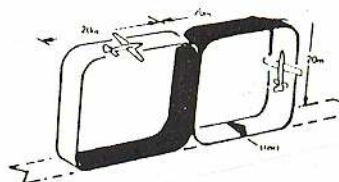
* Avalanche: The plane does half an inside loop, performs an inverted snap roll, and continues with the second half of the inside loop.



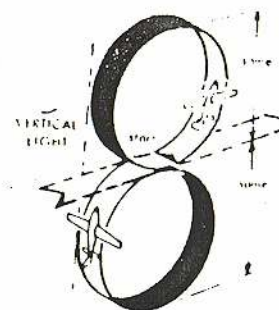
* Horizontal Eight: Plane does 3/4 of an inside loop to a vertical position, then does a complete outside loop to a vertical position, and recovers by doing a 1/4 inside loop.



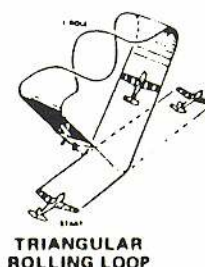
* Square Horizontal Eight: The a/c begins a square inside loop, at the bottom of the third leg performs a complete square outside loop. The corners of the loop should be sharp, and the legs straight.



* Vertical Eight: The a/c does a complete inside loop, at the bottom of the loop enters a complete outside loop directly below the the inside loop.

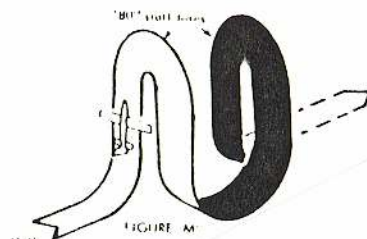
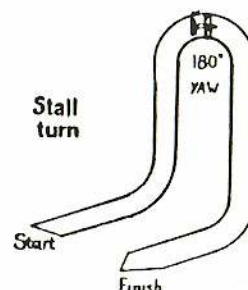


- * **Triangle Rolling Loop:** The plane pulls up into a 45 degree climb for approx. one second, pulls through 135 degrees to inverted, does a complete roll, pushes through 135 degrees and dives for approx. one second, recovering to level flight at the same point the manoeuvre started. Both vertical legs of the triangle should be the same length.

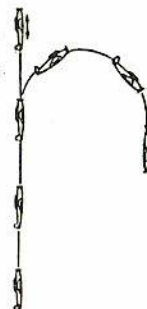


STALLS AND SPINS

1. During a true spin, airspeed does not increase appreciably. A spiral dive is indicated by its smoothness and increasing airspeed.
- * **Spins:** The aircraft establishes a heading, power is reduced and the plane held in a slightly nose high attitude until it stalls and commences to spin. The plane should autorotate through the required number of revolutions and then recover on the same heading but at a different altitude.
 - * **Stall Turn:** Aircraft starts in straight and level flight and pulls up into vertical, gradually reducing power. Just before stalling, the a/c is kicked into a 180 degree yaw turn (left or right) in the same vertical plane as the climb. The descent is in the same vertical plane as the climb, and the turn should be done within two wingspans. The a/c pulls out to level flight at the same altitude as entry to the manoeuvre.
 - * **Figure "M":** Aircraft performs a Stall Turn, then does half an outside loop and performs another stall turn in the opposite direction as the first. The second stall turn should be to the same altitude as the first.



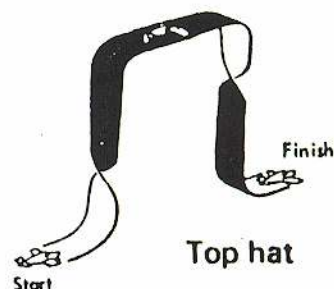
- * **Whipstall:** The a/c goes into a vertical climb as for the stall turn, and power is reduced until the plane slides back tail first, then pitches forward and down. The a/c continues in a vertical dive to the same altitude as entry and recovers to level flight. When viewed from behind, the manoeuvre should trace a straight vertical line.



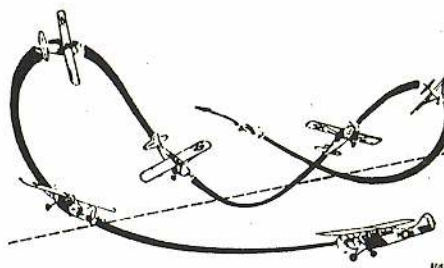
MISCELLANEOUS (and not as simple as they sound!)

1. Any "written in" tasks should be documented in this section. Give a brief description and a diagram, if necessary, so that the task can be evaluated the same way at all times.

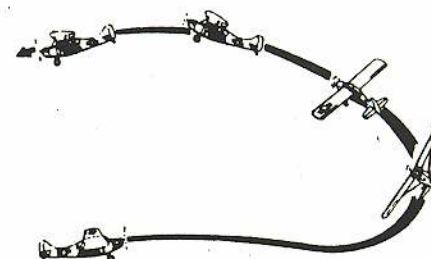
- * Top Hat: The a/c pulls up into a vertical climb, does a half roll, pulls over the top to inverted flight for the same distance as the vertical leg, pushes to vertical downward, executes another half roll and recovers to level flight. The manoeuvre should be symmetrical, all rolls the same length, and the vertical and horizontal legs the same length.



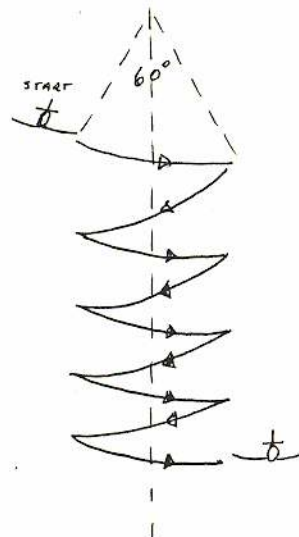
- * Lazy Eight : The Lazy Eight consists of two 180 degree semi-stall turns in opposite directions. The two turning manoeuvres should be symmetrical and smooth throughout.



- * Chandelle: The Chandelle is a climbing 180 degree turn. The rate of bank increases from the start of the turn, reaches a max. angle halfway through the turn and then reduces till the a/c is straight and level but on a reverse heading and at a higher altitude.



- * Falling Leaf: This manoeuvre is essentially a continuously alternating series of left and right side slips, executed almost at the stall. To illustrate it, imagine a head-on view of the aircraft hanging from a string and swinging through an arc of about 60 degrees, like a pendulum. The speed towards you would be the absolute minimum necessary to prevent a complete stall, and the aircraft would be descending steadily in a series of sideways sweeps. The action is very similar to that of a large flat leaf falling from a tree, hence the name. The aim is to achieve an even, rhythmic swing, a steady descent and the minimum forward speed. The manoeuvre is always executed into the wind, and the attitude of the aircraft will be level to slightly nose up.



NOTES

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ATTEMPTS

LEVEL 5

OPTIONAL or ADDITIONAL

[illegible]

Summary and Totals

Level 1 totals: _____

Level 2 totals: _____

Level 3 totals: _____

Level 4 totals: _____

Level 5 totals: _____

Option totals: _____

Overall points _____ Flying at Level _____