

Wings Program



Section 1

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Burnaby Lake “Hoods-Up Flyers” Wings Program (Fixed Wing Aircraft)

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Introduction:

Welcome to the Burnaby Lake Flyers Association Wings training program. This program, along with your instructor's help, will teach you the basics of flying radio controlled model aircraft. This program was developed as a compilation of the MAAC Wings Program, the MAAC RC Flight Training Course, and input from the Burnaby Lake Wings Committee. It in no way reduces the quality and level of instruction as presented by MAAC but does make adjustments to be more pertinent to our flying field and membership.

There is nothing in this program that guarantees that you will become a proficient R/C pilot. Nor, are there any expectations on how long it will take to complete this program. Like everything else, your success will depend on your willingness to spend the time to learn and practice.

This program is a series of 12 lessons designed to develop the skills and confidence needed to thoroughly enjoy your new hobby.

Upon completion of these lessons, you will be ready to take your “A” Wings test. This test is designed such that you can demonstrate to the club's satisfaction that you are able to control your plane safely. After passing both the written and practical tests, you will be allowed to fly without an instructor present.

Hopefully, the completion of your “A” Wings is only the beginning of your learning. The balance of the wings program (levels B, C, and D) will serve as an incentive to get out and fly, and increase your skills. Where you go from here is up to you. Good Luck!

Reminder:

You must learn to crawl before walking, and walk before running. For this reason, MAAC strongly recommends that you start your flight instruction on a trainer type aircraft and then evolve to more advanced planes.

A trainer will enable you to learn easier and it will simplify your instructor's role. More importantly, your plane will last you longer with less chance of a serious crash.

Remember, even the jet fighter pilots learn to fly in trainers before advancing to jets. So leave the scale planes until after you learn to fly.

Remember – Safety First, Fun Second

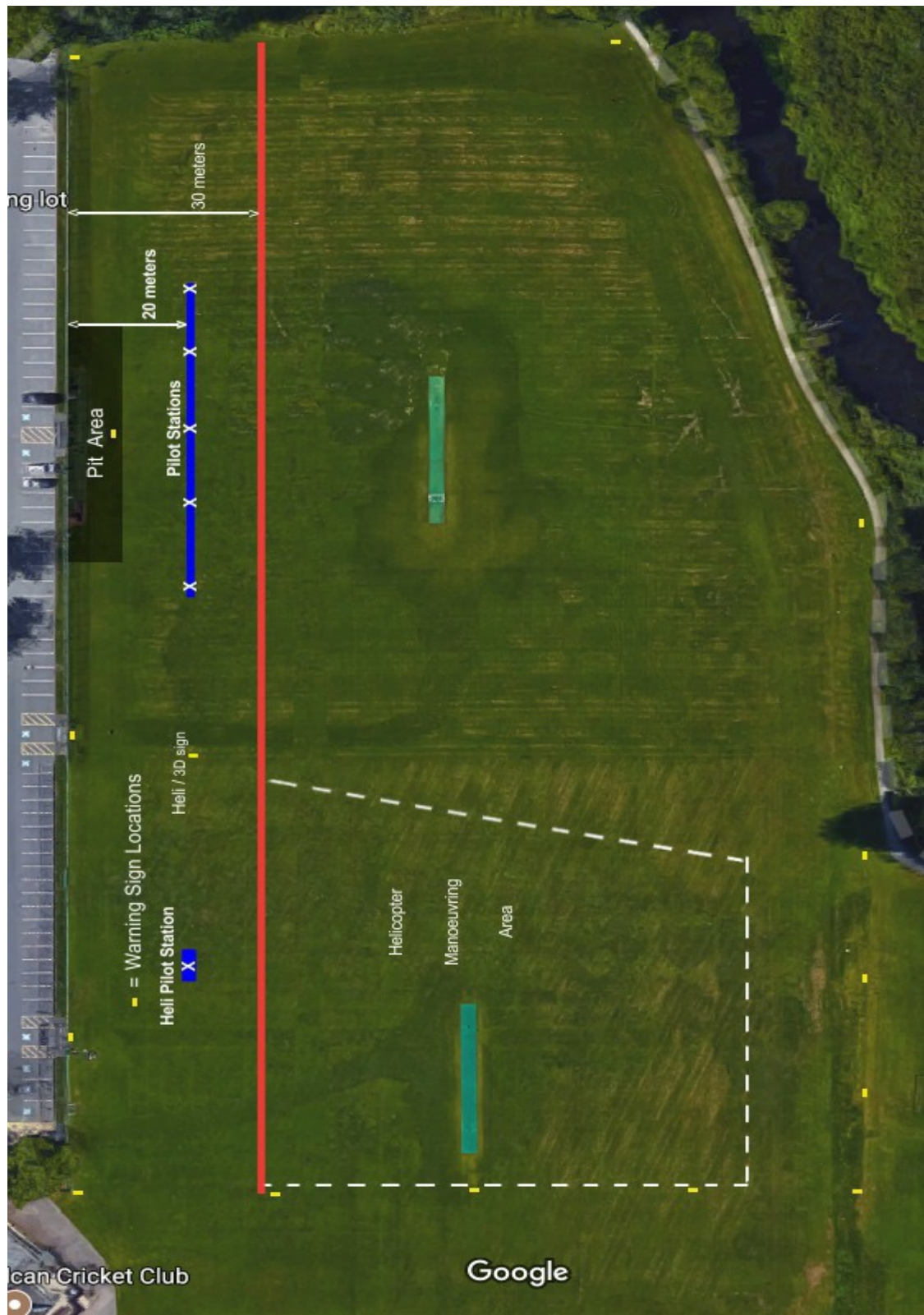
Wings Committee:

Ian Munroe

Brad Parr-Pearson

Dave Scoular

Map



Student Responsibilities:

You are about to embark upon the Primary Flight Training Course of the Burnaby Lake Flyers in conjunction with the Model Aeronautics Association of Canada. This program will enable you to achieve your Burnaby Lake Flyers "A" Wings certificate.

Although you may seek instruction from any club instructor, your primary instructor is:

Name: _____

Phone: _____ E-Mail: _____

Your instructor will work with you and monitor your progress.

Your instructor has met the qualifications of Burnaby Lake Flyers Association. He has accepted the responsibility to teach you to become a responsible and safe pilot who can be proud of his flying abilities and an enjoyable fellow club member. You may seek training assistance from any other club instructor at any time. However you should look to your designated instructor as your primary source of assistance.

If you are an inexperienced rc pilot, you may not take your "A" Wings test until your instructor, or the Chief Instructor has signed below indicating that you have completed the elements of your primary training program and you are ready for your "A" Wings test. You must pass your "A" Wings test before you are allowed to fly at the club field without the supervision of an instructor. Experienced pilots coming from other clubs do not require a signature before taking the "A" level test.

As a student, you have shown the diligence to acquire you first plane, seek out our club, and join this training program. It is your responsibility to apply yourself diligently to learn and practice the material presented in this course. By doing so, you will learn the minimum amount of information and skills to allow you to safely enjoy radio controlled flight.

Each lesson in this course deals with a different aspect of flying a radio controlled model aircraft. Your instructor will explain and demonstrate each element of each lesson. Where applicable he will demonstrate the element in the air, using your aircraft. You will have opportunities to perform each element and receive an evaluation from your instructor. In each lesson, there is a space for a club instructor to "initial" that the material has been reviewed with you. It is important that you keep your training program with you at the flying field and ensure the instructor initials elements after they have been covered. Other club instructors will use the initials and notes to assist you when your primary instructor is absent.

I recommend that _____ take the BLF "A" Wings test.

Instructor (print)

(signature)

date

Lesson 1: Aircraft Familiarization

Purpose:

To teach the student how to properly pre-flight his model.

Objective:

At the completion of the lesson the student should be able to inspect his model and identify any deficiencies that could cause a malfunction or safety hazard. He will be able to power up and power down the model safely.

Elements:

- ☐ Inspection of aircraft structure, center of gravity and longitudinal balance.
- ☐ Inspection of radio installation.
- ☐ Instruction regarding use of membership pin for 2.4 GHz and 72 MHz.
- ☐ Inspection of all linkages and control surfaces including controls for proper throw, direction, and freedom of movement.
- ☐ Discussion and explanation of LiPo batteries and their safe handling.
- ☐ Instructor's demonstration of safe motor and battery handling.
- ☐ Student arms and tests motor.

Evaluation:

Student should be able to perform lesson objectives.

**THIS LESSON SHOULD BE REVIEWED AS NECESSARY AT THE
START OF ALL LESSONS IN THE PRIMARY TRAINING COURSE.**

Instructor's Initials _____ Date _____

Notes: _____

Lesson 2: Radio and Field Procedures

Purpose:

To familiarize the student with all safety aspects associated with model aircraft both on the ground and in the air.

Objective:

At the completion of the lesson the student will be aware of important MAAC and BLF safety rules and field procedures. The student shall also be able to perform a pre-flight session and pre-take-off check list.

Elements:

- ☐ Current MAAC membership card must be shown prior to flying. MAAC insurance is mandatory to fly at our field.
- ☐ Student must have his/her "A" Wings qualification before flying solo.
- ☐ No taxiing in the pit area. Motors must be disarmed when clear of the runway after landing.
- ☐ There will be absolutely **NO FLYING**:
 - a) Over any general area where field workers or equipment are active.
 - b) Behind the flight line no matter how far away from the runway. **Note: the flight line is 10 meters in front of the pilot station line. It is NOT the pilot station line.**
 - c) Over the pilot stations, pits or parking lot.
 - d) Over other sports user groups on any field at any time.
 - e) Over the playground area.

Note: The presence of active field workers could easily require that no flying take place at all, even though we have allotment time.

- ☐ Maximum of five aircraft flying at the same time. When more than 3 pilots are flying at the same time, spotters are required.
- ☐ Flight time is limited to a maximum of 15 minutes per flight if others are waiting to fly.
- ☐ All aircraft shall be flown in a safe manner with consideration to others at the field.
- ☐ Any visitor in pit area must be accompanied by a club member at all times. Children and pets must be kept under control in pit area at all times.
- ☐ No transmitter in the 72 MHz band shall be switched on without the frequency pin (with pilot's name and channel number) first being attached to the frequency board. When the transmitter is turned off, the pin is to be removed from the frequency board by the pilot. 2.4 GHz radio pins will be worn in plain sight by the pilots, either attached to their clothing or on their transmitter to identify the pilot as a member of Burnaby Lake Flyers.
- ☐ No flying on un-allotted (unscheduled) days if other users are present on the field.
- ☐ Pilots shall announce their intention to taxi, take off, or land loudly enough for other pilots to hear. Landing aircraft shall have the "right of way".
- ☐ If a pilot is experiencing problems controlling the aircraft, he is to declare an "emergency" and immediately land as safely as possible. The aircraft is not to be flown again until the cause of the problem is corrected.
- ☐ When in the pit area, aircraft shall generally be placed between the pilots and the flight line to enhance awareness of the potential hazards posed by already flying aircraft.

Lesson 2 /cont

- ☐ When more than one aircraft is in the air, all aircraft will circle in either a left or a right pattern. The direction is determined by the prevailing wind direction or the consensus of the pilots. Generally, if the wind is from the north, take-off is to the north followed by a right turn into a rectangular pattern with right turns. With wind from the south, take-off is to the south followed by a left turn into a left rectangular pattern with left turns.
- ☐ Taxiing towards the pit area behind the pilot stations is strictly prohibited.
- ☐ Safety signs and pilot station flags **must** be in place before flying.
- ☐ Awareness of the Heli/3D sign (see page 47).
- ☐ Turning on a transmitter in the parking lot is not permitted.
- ☐ Pilots must fly from the pilot station line which is normally established by **the placement of a row of flags 20 meters from the fence**. Pilots may stand together to allow better communication between them if they desire.

Check List

Before each flying session:

- ☐ check plane for physical damage, broken clevis's, loose screws, loose props, etc.
- ☐ perform a proper radio range check if transmitter is capable of doing so.
- ☐ check for field workers or members of the public on the field

Before each flight:

- ☐ Frequency pin in correct place and visible
- ☐ Flight battery is fully charged, if possible do a voltage check
- ☐ Transmitter antenna (if applicable) extended
- ☐ Transmitter – On before flight battery is connected. Make sure landing gear switch is in correct position.

Start:

- ☐ If possible arm the aircraft at the pilot station. An aircraft that utilizes a 5-cell lipo battery or larger must be armed and disarmed at a pilot station, not in the pit area.

Pre-Take-Off:

- ☐ Motor – Full power performance OK
- ☐ Controls – Free and correct direction
- ☐ Rate switches – Set
- ☐ Trims and flaps – Set for take-off mode (if applicable)
- ☐ Timer – On
- ☐ Field clear of people and equipment
- ☐ Wind sock – Check wind direction
- ☐ Runway – Clear
- ☐ Announce intention to taxi and direction of take-off

Lesson 2 /cont

Evaluation:

Student should be able to perform lesson objectives.

THIS LESSON SHOULD BE REVIEWED AS NECESSARY AT THE START OF ALL LESSONS IN THE PRIMARY TRAINING COURSE.

Instructor's Initials _____ **Date** _____

[illegible]

Lesson 3: Flight Familiarization

Purpose:

To introduce the student to controlling the model in flight.

Objective:

To allow the student to become familiar with the model's controls and their use in flight.

Elements:

- ☐ On the ground, instructors familiarize the student with the controls (pitch, yaw, and power) and what kind of effect they will have on the aircraft in flight.

The procedures used by the instructor to give the transmitter to the student and take it from him during the flight will be explained. As each instructor has different preferences for the process of exchanging the transmitter or using a “buddy box”, the student should ensure that he/she has reviewed and understands this procedure with each new instructor he/she works with.

- ☐ Instructor flies and lands the student's model to evaluate its performance and airworthiness. This flight determines any changes necessary for control throws and trims. If the instructor can trim the aircraft without landing, control of the aircraft will be passed to the student by either passing the transmitter or switching control through the “buddy box”.
- ☐ With the assistance and direction of the instructor, the student will start the process of becoming familiar with the controls.
- ☐ The student will strive to keep the model in level flight and follow turning instructions given by the instructor.
- ☐ When the student becomes tired or disoriented, pass the transmitter back to the instructor or ask the instructor to take control via the “buddy box”.

Note: It is the student's responsibility to pass the transmitter back to the instructor in time for the instructor to take corrective action to prevent a crash. Concentrate on flying within your ability. If you become disoriented or confused, pass the transmitter back to the instructor.

Evaluation:

The lesson is complete when the instructor has determined that the student is able to determine and execute proper control inputs to achieve a desired change in the model's attitude. Proficiency and accurate control are not critical at this point.

Instructor's Initials _____ **Date** _____

Notes: _____

Lesson 4: Flight Maneuvers

Purpose:

To acquaint the student with the basic flight maneuvers.

Objective:

To teach the student to properly control the model during basic maneuvering.

Elements:

- ☐ Level flight (aileron and elevator)
- ☐ Banked turns (30 degrees)
- ☐ Straight climbs (add power)
- ☐ Climbing turns
- ☐ Gliding (idle power)
- ☐ Disorientation (silhouette and R+L reversal with inbound aircraft)

Note: An explanation of disorientation and the use of trim should precede this lesson. The five maneuvers should be taught in the order listed if possible.

Evaluation:

The lesson is complete when the student can perform the maneuvers without assistance from the instructor. Each maneuver should be done with a reasonable degree of accuracy.

Example: Turns should be fairly smooth and altitude maintained fairly well.

Instructor's Initials _____ Date _____

Notes: _____

Lesson 7: Stalls

Purpose:

To develop the student's understanding of stalls, their cause and avoidance.

Objective:

To teach the student to recognize and recover from stalls.

Elements:

- ☐ Pre-flight discussion of stalls. What causes them and how to recover
- ☐ Stalls can happen to any type of plane and at any speed
- ☐ Practice of stalls by the student with and without power
- ☐ Stalls in turns, (take-off, departure, and landing stalls)

Note: Take-off and departure stalls are almost impossible to set up with most trainers but do occur in more advanced models. Therefore, it is recommended that, at a safe altitude, power be reduced to about 1/3 throttle, and a steep climbing turn entered. The stall entry will look similar to a spin entry with the model rolling towards the high wing. In a descending turn, (eg. landing approach) a stalling plane will usually roll towards the LOWER wing. During this lesson it should be emphasized to the student that a stall can occur at any airspeed and is a function of angle of attack and air speed over the wing.

Evaluation:

The lesson is complete when the student understands the cause of stalls and has demonstrated the lesson elements and proper recovery.

Instructor's Initials _____ Date _____

Notes: _____

Lesson 8: Take-off

Purpose:

To teach the student how to make a normal take-off.

Objective:

To teach the student how to control the model during take-off.

Elements:

- ☐ Discussion of the effects of torque during take-off and initial climb
- ☐ Use of rudder
- ☐ Use of throttle
- ☐ Use of elevator
- ☐ Student makes a normal take-off **INTO** the wind.

Evaluation:

The lesson is complete when the student has successfully taken off and established a normal climb with adequate airspeed. He/she must also demonstrate adequate directional control during take-off.

Instructor's Initials _____ **Date** _____

[illegible]

Lesson 9: Approaches and Landing

Purpose:

To prepare the student for his/her first landing.

Objective:

To develop the student's ability to visualize and perform a stable and controlled approach and landing.

Elements:

- ☐ Review of Lesson 5. (Slow Flight and Gliding)
- ☐ Discussion of proper landing techniques, including establishing glide path, flare, use of elevator to bleed off speed before touchdown.
- ☐ Practice Go Arouns. Student flies a rectangular pattern as in Lesson 6 but at a lower altitude, reduces power and establishes an appropriate glide on the approach leg and continues the approach until over the end of the runway, at which point he/she is to add **FULL** power and go around. The minimum altitude at the end of the maneuver should be no less than 4 meters.
- ☐ As the student becomes comfortable with the maneuver, the minimum altitude should be lowered until the instructor is confident the model will glide to the runway with the power off. (idle)
- ☐ Landing. At this point the instructor will tell the student to continue the approach and land. Remember to flare rather than just glide into the ground and if necessary, hold off after flare to reduce speed so you don't damage the landing gear or bounce on touchdown.

Evaluation:

The lesson is complete and the student can advance to supervised solo flight after the student has successfully landed the model several times and is comfortable with the maneuver.

Instructor's Initials _____ Date _____

Notes: _____

Lesson 10: Solo Flight

Purpose:

Confidence building exercise.

Objective:

The student is to perform a solo flight demonstrating the knowledge and skill objectives of the previous nine lessons to the instructor.

Elements:

- ☐ Pre-flight discussion to answer questions and resolve any problems that concern the student about the lesson
- ☐ Student performs a flight, under the instructor's supervision, starting with a thorough pre-flight and ending with the transmitter turned off
- ☐ Instructor monitors student's performance, but assists only when necessary

Evaluation:

The lesson is complete and the student signed off for the solo flight ONLY after he/she has demonstrated a practical knowledge of all course objectives AND has observed all safety and field operating rules, and has successfully flown his model unassisted.

Instructor's Initials _____ **Date** _____

[illegible]

Lesson 11: Emergency Procedures

Purpose:

To prepare the student for the unexpected.

Objective:

To acquaint the student with safe procedures to be used in emergencies.

Elements:

- ☐ Declaring an “Emergency”
- ☐ Discussion of possible in-flight problems and how to deal with them. Generally do not try to limp around the entire circuit but instead, turn toward the field and land right away. Pay special attention to how the ESC is programmed to handle Low Voltage Cutoff. Some will throttle down, some pulse the throttle, and some will shut the motor completely off. Some ECS’s are briefly re-settable by throttling down and back up. What does your plane do?
- ☐ Unusual attitude training (optional): a) loops; b) rolls
- ☐ Student performs dead stick landing
- ☐ Cross wind take-off and landings

Evaluation:

The elements of this lesson are only suggestions and there is no minimum performance requirement. The objective is to provide the student with the insights that will assist in safely dealing with the unexpected. Experience will teach him/her the rest.

Instructor's Initials _____ **Date** _____

[illegible]

Flying Proficiency Levels:

There are four flying proficiency levels, as indicated below.

“A” - Basic control

“B” - Intermediate control

“C” - Intermediate advanced

“D” - Advanced

“A” Level Basic Control

- ☐ Take-off unassisted
- ☐ Maintain straight and level flight parallel to the runway
- ☐ Perform both an easy flat figure 8 and a hard flat figure 8.
- ☐ Fly both a left rectangular approach and a right rectangular approach.
- ☐ Low altitude go around
- ☐ Land unassisted

“B” Level Intermediate Control

- ☐ Take-off
- ☐ Straight flight out and back
- ☐ Procedure turn
- ☐ Two overlapping inside loops
- ☐ One horizontal roll
- ☐ Fly a rectangular approach
- ☐ Land

“C” Level Intermediate Advanced Control

- ☐ Take-off
- ☐ Stall turn
- ☐ Two consecutive horizontal turns
- ☐ Immelman turn
- ☐ Cuban 8
- ☐ Straight inverted flight
- ☐ One outside loop
- ☐ Land

“D” Level Advanced Control

- ☐ Take-off
- ☐ Stall turn with ½ roll
- ☐ Three horizontal rolls
- ☐ Three reverse outside loops
- ☐ Horizontal figure 8
- ☐ Four point roll
- ☐ Three turn spin
- ☐ Land

General Rules and Conditions:

1. A qualified instructor is an active member of BLF, of any wings level, who has demonstrated acceptable flying skills, adherence to safety, adherence to club rules and regulations, and has been approved by the club executive to be an instructor. Qualified instructors of the club may be appointed by the club executive, as examiners for the purpose of granting Wings levels. The executive may also authorize qualified members of other clubs to be examiners for testing Burnaby Lake Flyers members.
2. To qualify as an examiner, the instructor must have at least their “B” level wings.
3. A “B” level examiner can only test pilots for their “A” level wings. A “C” level examiner can test pilots for their “A” or “B” level wings. 2 Cs, C+Exec, or 2 Execs can test a “C” or a “D” Level.
4. A “D” level examiner can test pilots for all levels including “D”.
5. Only one examiner is required for testing “A” or “B” levels. However, the examiner cannot be the pilot's main instructor.
6. Examinations may be taken at any time, however before a new pilot can test for their “A” level wings, they must have their club instructor sign page five of this document. Experienced pilots who have joined our club do not require a signature before testing as they will not have a main instructor.
7. All maneuvers will be judged out of 10 points. A minimum of 6 points for each maneuver and 60% for each flight is required for a passing grade. Two successive flights must be made and both of them must be successful.
Note: due to the uncooperative nature of the wind, successive take-offs and landings are not required to be in different directions.
8. Judging for “A” levels will be softer than for the other levels. This is to account for trainer type aircraft and pilot nerves.
9. Candidates may if they wish, have an assistant to aid in the pit area and call the maneuvers out during the flight test. Alternatively, the examiner may ask the candidate to perform the specified maneuvers.

PILOTS INSTRUCTIONS

1. The pilot must stay within the designated pilot area for all maneuvers.
2. The pilot or their aid must call the maneuvers prior to execution if the examiner is not requesting them.
3. At no time should the aircraft fly behind the flight line.
4. The aircraft must perform all maneuvers and/or procedures parallel to, but beyond the designated runway.
5. Candidates will maintain a reasonable height and range with their aircraft while being judged.

GENERAL DOWNGRADES ON TESTS

A general downgrading of the total score will be made due to the following:

- 5 points for each time the aircraft crosses the flight line.
- 1 points for each time a maneuver is not clearly called.
- 5 points for flying too far away.
- 10 points for loss of control of aircraft.
- NOTE: See description of maneuvers for individual downgrading.

“A” Level Wings Test

Check off the correct answer to the following True or False questions

No.		T	F
1	The frequency board is only used when more than 3 flyers are present.		
2	An aircraft that utilizes a 5-cell lipo battery or larger must be armed and disarmed at a pilot station, not in the pit area.		
3	Flying is not permitted over the pits except on final approach.		
4	Pilots shall announce their intent to take-off or land.		
5	The only time aircraft are allowed to be flown over the pits is during fun fly events.		
6	In other than calm conditions, the takeoff must always be into the wind.		
7	Taxiing into the pits is not permitted.		
8	Always check the level of your transmitter battery before each flight.		
9	MAAC insurance is absolutely necessary when flying at our field.		
10	Children and dogs must be under control at all times in the pits.		
11	The correct procedure is to power on the plane first, then turn on the transmitter.		
12	The correct procedure is to de-power the plane, then turn off the transmitter.		
13	Warning signs must be set out before flying even if no one else is around.		
14	Right or Left patterns are determined by wind direction or pilot consensus.		
15	Special precautions must be taken with LiPo batteries to prevent fire.		

Student's Name: _____

Date: _____

Examiner: _____

Maneuver	1st	2nd
1. Take-off		
2. Straight Flight Out		
3. Flat Figure 8 (both ways)		
4. Rectangular Approach (left and right)		
5. Low Altitude Go Around		
6. Land		
Subtotal:		
Less General Downgrades:		
Total:		

Pass / Fail Examiner's Signature: _____

Wings Program



Section 2

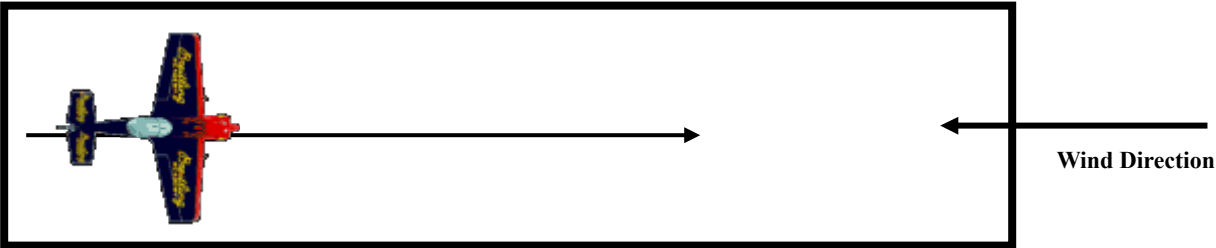
Take-off:

From a dead stop, model travels straight down the center of the runway. Model lifts off and climbs out straight with wings level. maneuver complete two meters off the ground.

Downgrades: 1 point for "A" wing, 2 points "B" wing, 3 points for "C" wing, and 4 points for "D" wing for each infraction

- Take-off not straight.
- Lift-off is not smooth.
- Climb-out too steep or erratic.
- Model pulls left or right during climb.

Diagram



Top View



Side View

Wings Level	A	B	C	D
Applies to:	X	X	X	X

Straight Flight

Straight Flight Out

The model will attain altitude and must be flown parallel to the runway in an absolutely straight and level path into the wind for three to five seconds. The maneuver must be centered directly in front of the candidate.

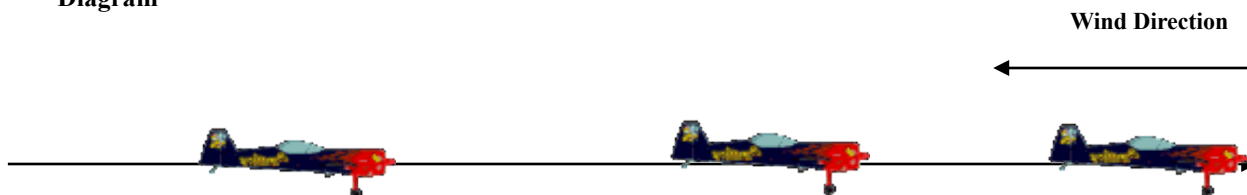
Straight Flight back

The model flies straight and level on the same line and altitude as the Straight Flight Out and finished in front of the candidate.

Downgrades: 1 point for "A" wing, 2 points for "B" wing for each infraction

- Model makes change in altitude during straight and level flight.
- Model deviates left or right.
- Maneuver not held for at least three seconds.
- Maneuver not centered in front of candidate.

Diagram



Side View

Wings Level A B C D

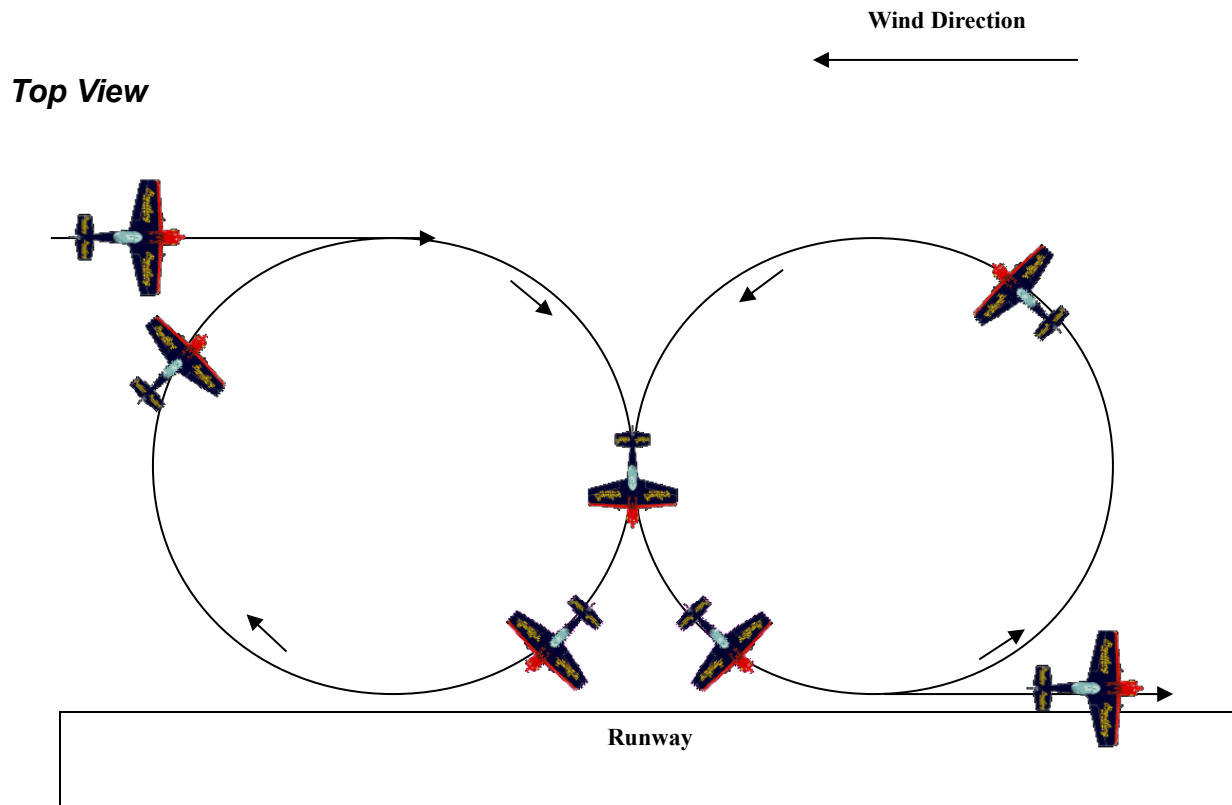
Applies to: X X

Flat Figure Eight (Easy Way)

The model will attain altitude and must be flown parallel to the runway to a point at the center-line of the candidate. Model then makes a ninety degree turn in a direction **toward** the candidate, levels its wings, and then makes a 360 degree flat turn to the right or left. When the model returns to its original heading towards the flight line, it makes a second 360 degree flat turn in the opposite direction to the first 360 degree turn. The maneuver is complete when the model levels its wings after the second 360 degree turn. By starting the first ninety degree turn toward the candidate, the candidate can turn his body and transmitter to align with the direction of the plane to avoid disorientation. This makes the figure eight easier to fly.

Downgrades: 1 point for "A" wing for each infraction

- First turn not exactly 90 degrees.
- 360 degree turns not circular in shape.
- Model makes changes in altitude during 360 degree turns.
- Model does not finish the first and second 360 degree turns at the original start point of the maneuver.



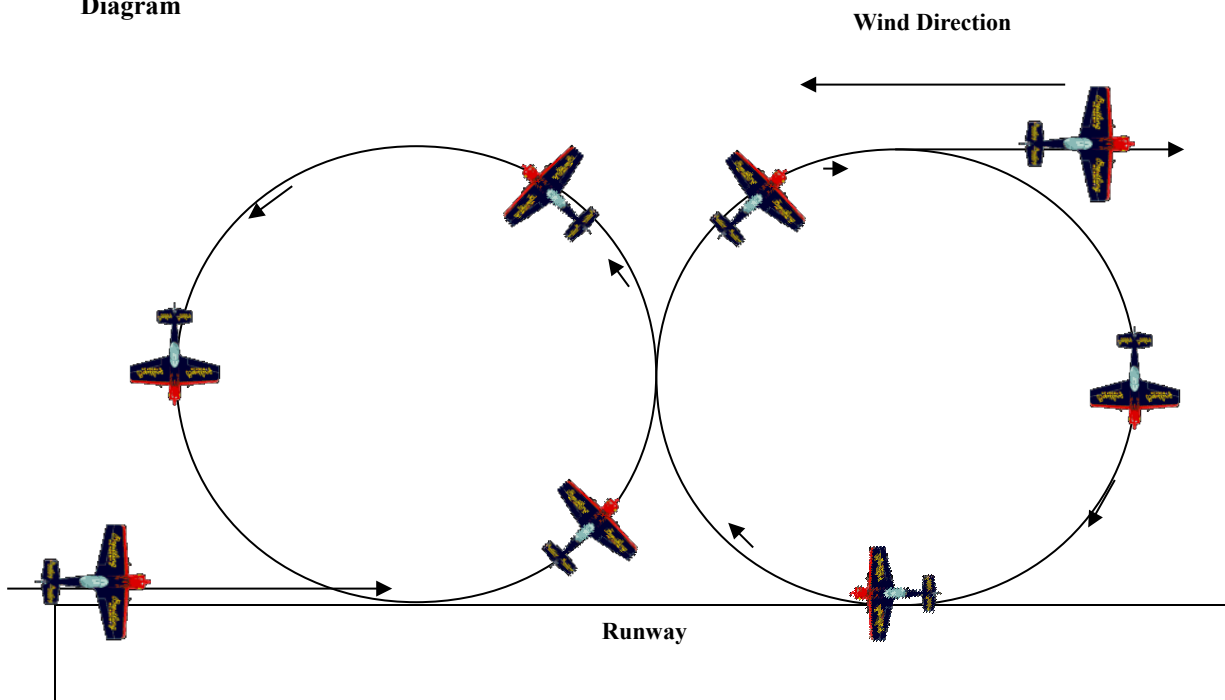
Flat Figure Eight (Hard Way)

The model will attain altitude and must be flown parallel to the runway to a point at the center-line of the candidate. Model then makes a ninety degree turn in a direction **away from** the candidate, levels its wings, and then makes a 360 degree flat turn to the right or left. When the model returns to its original heading away from the flight line, it makes a second 360 degree flat turn in the opposite direction to the first 360 degree turn. The maneuver is complete when the model levels its wings after the second 360 degree turn. By starting the first ninety degree turn away from the candidate, it is not possible for the candidate to turn his body and transmitter to align with the plane all the way around the pattern. This makes it much harder to fly this maneuver.

Downgrades: 1 point for "A" wing for each infraction

- First turn not exactly 90 degrees.
- 360 degree turns not circular in shape.
- Model makes changes in altitude during 360 degree turns.
- Model does not finish the first and second 360 degree turns at the original start point of the maneuver.

Diagram



Top View

Wings Level A B C D

Applies to: X

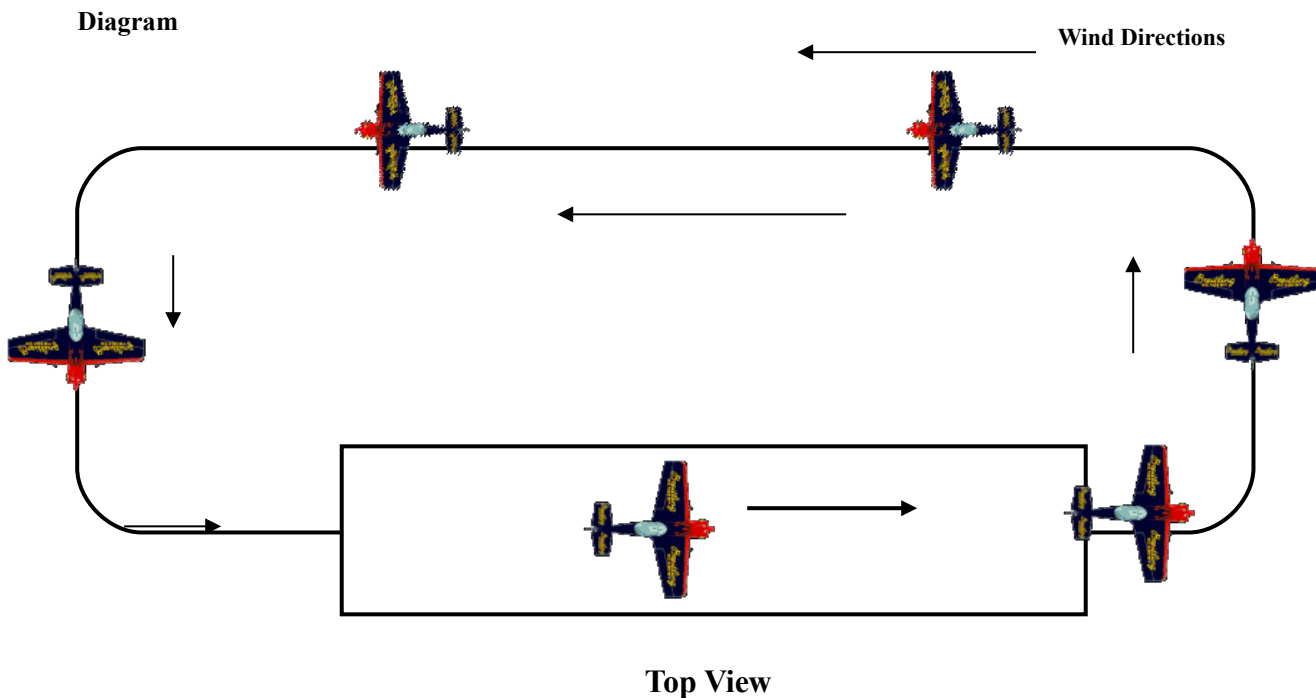
Rectangular Approach

The maneuver begins with the model flying straight and level into the wind parallel to the runway. At the far end of the runway, the model turns 90 degrees away from the flight line for the first cross-wind leg. The model makes a second 90 degree turn into the down-wind leg. The model makes a third 90 degree turn into the second cross-wind leg. The model makes a fourth 90 degree turn into the wind and continues on a descending flight towards the touchdown at the start of the landing strip.

The first three legs are to be held at a constant altitude. The descent will commence after the fourth 90 degree turn has been executed. The maneuver is complete when the aircraft descends to 4 meters off of the ground.

Downgrades: 1 point for "A" wing, 2 points for "B" wing for each infraction

- The 90 degree turns are not smooth and precise.
- Turns are more or less than 90 degrees.
- Model deviates from heading on the straight part of any leg.
- Model changes altitude on the straight part of the first three legs.



Wings Level A B C D

Applies to: X X

Landing

The maneuver starts when the aircraft descends to two meters above the ground. The model flares smoothly, holds off the ground briefly before touching down and rolls to a stop with no bouncing or changes in heading.

Downgrades: 1 point for “A” wing, 2 points for “B” wing, 2 points for “C” wing , 4 points for “D” wing for each infraction

- Wings not level.
- Model changes heading.
- Model impacts the ground due to lack of flare.
- Model bounces after touchdown.
- Model ends up on its back - automatic 0 points for maneuver.
- Any undercarriage leg collapse or retract on landing - 0 points for maneuver.

Diagram



Side View

Wings Level	A	B	C	D
Applies to:	X	X	X	X

Procedure Turn

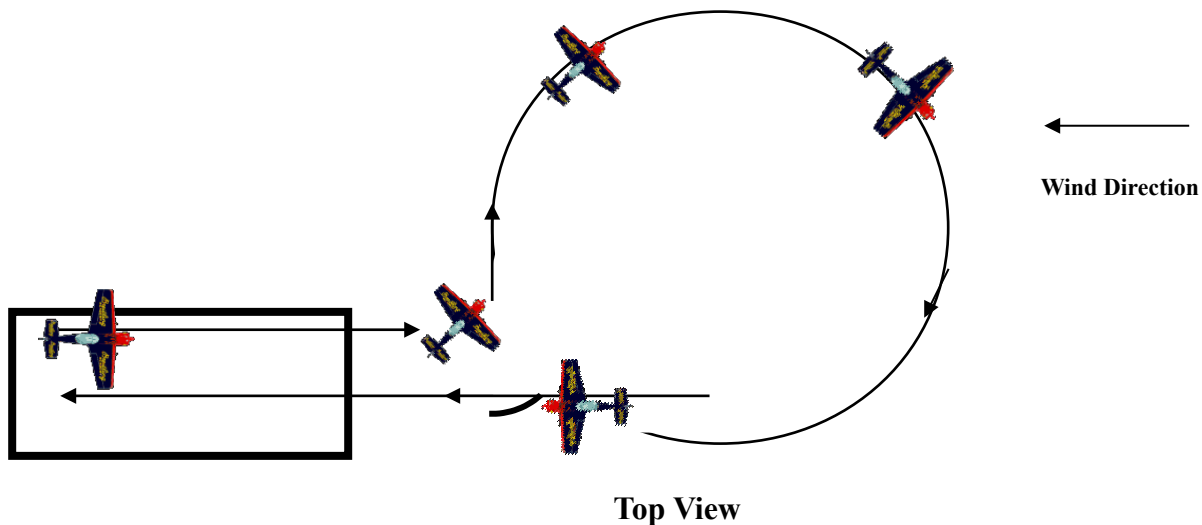
After the Straight Flight Out, model makes a 90 degree turn away from the flight line followed by a 270 degree turn in the opposite direction back to the reverse flight path of the Straight Flight Out.

Note: In real world flying, many procedure turns use a 45 degree initial turn rather than a 90 degree turn. We will accept either.

Downgrades: 2 points for “B” wing for each infraction

- First turn not exactly 90 degrees or 45 degrees.
- Opposite turn not exactly 270 degrees.
- Changes in altitude during turn.
- Turns not smooth and circular.
- Does not head back over exact outgoing path.

Diagram



Wings Level A B C D

Applies to: X

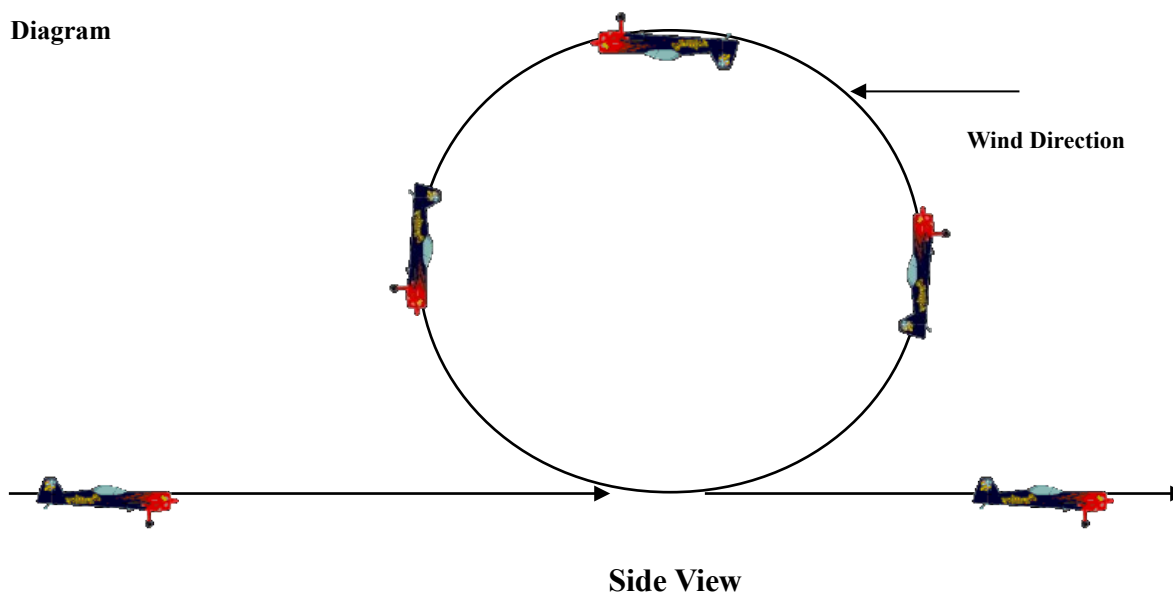
Two Inside Loops

Model pulls up and executes two consecutive loops. Both loops should be round and superimposed.

Downgrades: 2 points for “B” wing for each infraction

- Loops not round.
- Loops not superimposed.
- Wings not level during loops.
- Changes in heading during loops.

Diagram



Wings Level A B C D

Applies to: X

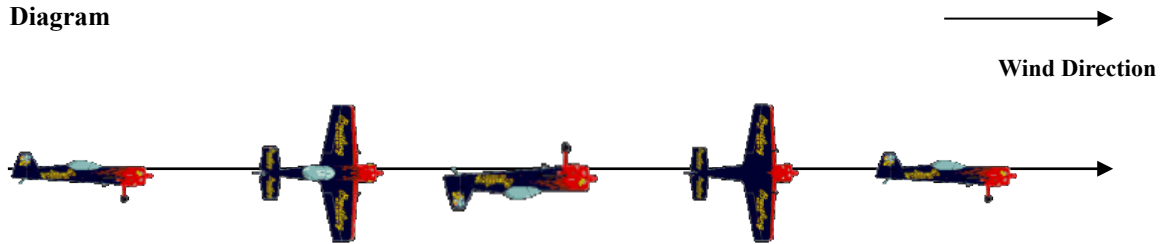
One Horizontal Roll

Model rolls through 360 degrees on a straight and level path.

Downgrades: 2 points for “B” wing for each infraction

- Model varies in altitude.
- Model not level on entry and exit.
- Roll not 360 degrees.
- Model changes heading.
- Roll rate not constant

Diagram



SIDE VIEW

Wings Level A B C D

Applies to: X

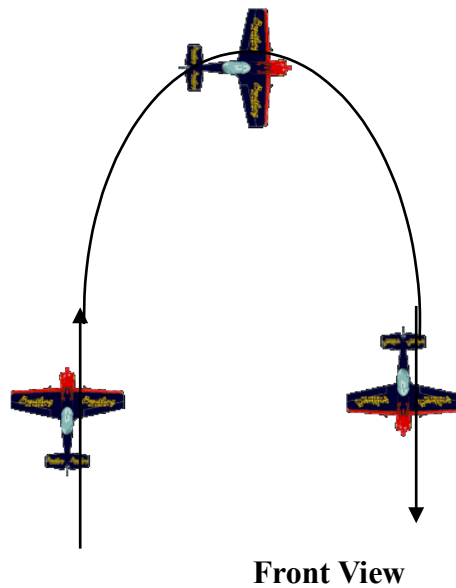
Stall Turn

Model pulls up into a vertical attitude, executes a 180 degree stall turn in either direction, then recovers in level flight.

Downgrades: 3 points for “C” wing for each infraction

- Model not vertical before and after stall turn.
- Stall turn not exactly 180 degrees.

Diagram



Wings Level A B C D

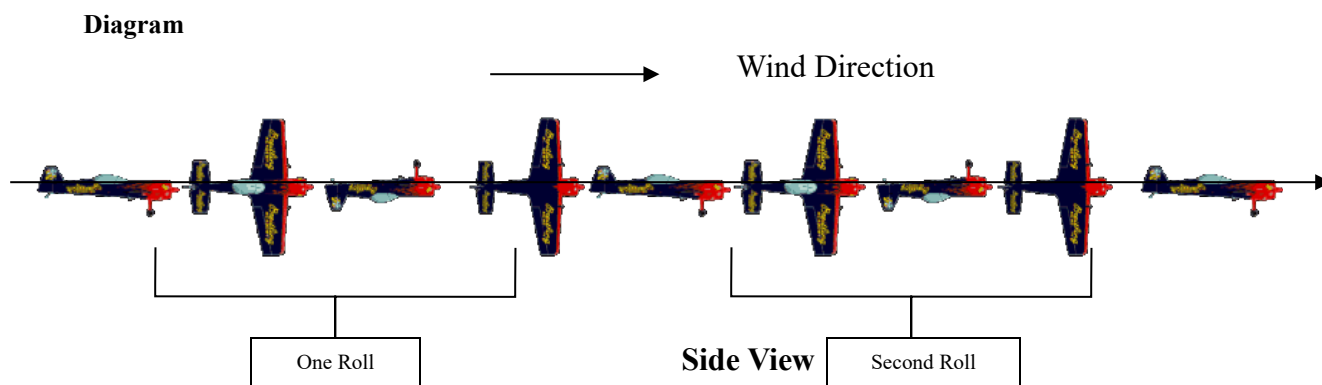
Applies to: X

Two Horizontal Rolls

Model rolls at a uniform rate through two complete revolutions in either direction.

Downgrades: 3 points for “C” wing for each infraction

- Changes in heading during rolls.
- Changes in altitude during rolls.
- Roll rate not constant.
- Model does not do exactly two rolls.



Wings Level A B C D

Applies to: X

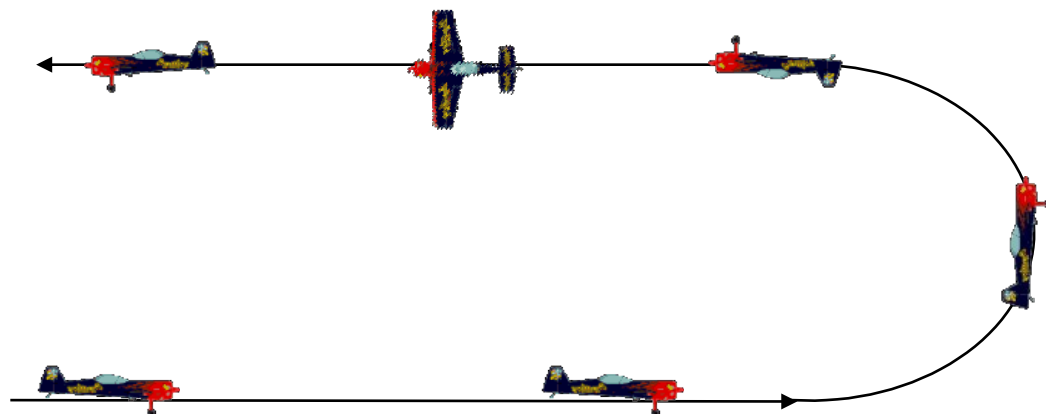
Immelman Turn

Model pulls up and completes 1/2 loop then immediately performs 1/2 roll to recover in level flight at a higher altitude than entry.

Downgrades: 3 points for “C” wing for each infraction

- Change in heading during 1/2 loop or 1/2 roll.
- 1/2 roll not immediately after 1/2 loop.

Diagram



Side View

Wings Level A B C D

Applies to: X

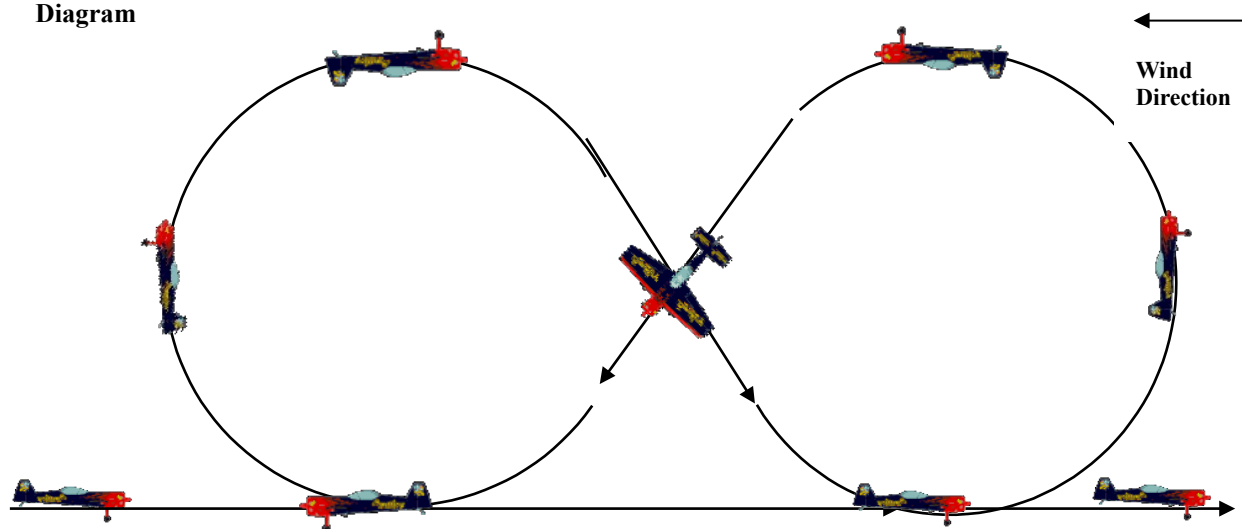
Cuban Eight

Model pulls up and executes an inside loop to a point where it is inverted on a 45 degree down line. Model then performs 1/2 roll followed by an identical 1/2 loop to a 45 degree down-line. Model performs second 1/2 roll to upright and completes first loop to level flight.

Downgrades: 3 points for “C” wing for each infraction

- Loops not round and the same size.
- Model not 45 degrees at time of commencement of 1/2 rolls.
- Changes in heading in loops or rolls.
- Crossover rolls do not occur at the same point.

Diagram



Side View

Wings Level A B C D

Applies to: X

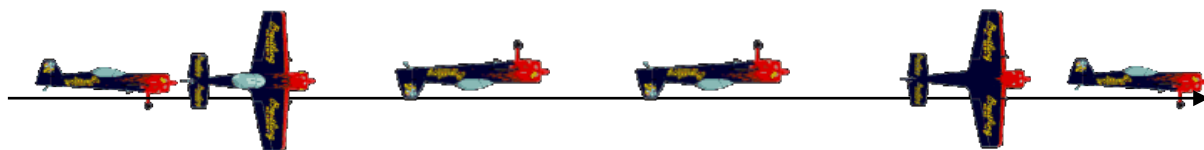
Straight Inverted Flight

Model half rolls to inverted and flies straight and level inverted for a minimum of four seconds, then one half rolls back to level flight.

Downgrades: 3 points for “C” wing for each infraction

- 1/2 rolls not level.
- Inverted flight not straight and level.
- Changes in heading during rolls and inverted flight.
- Inverted flight not four seconds.

Diagram



Side View

Wings Level A B C D

Applies to: X

One Outside Loop

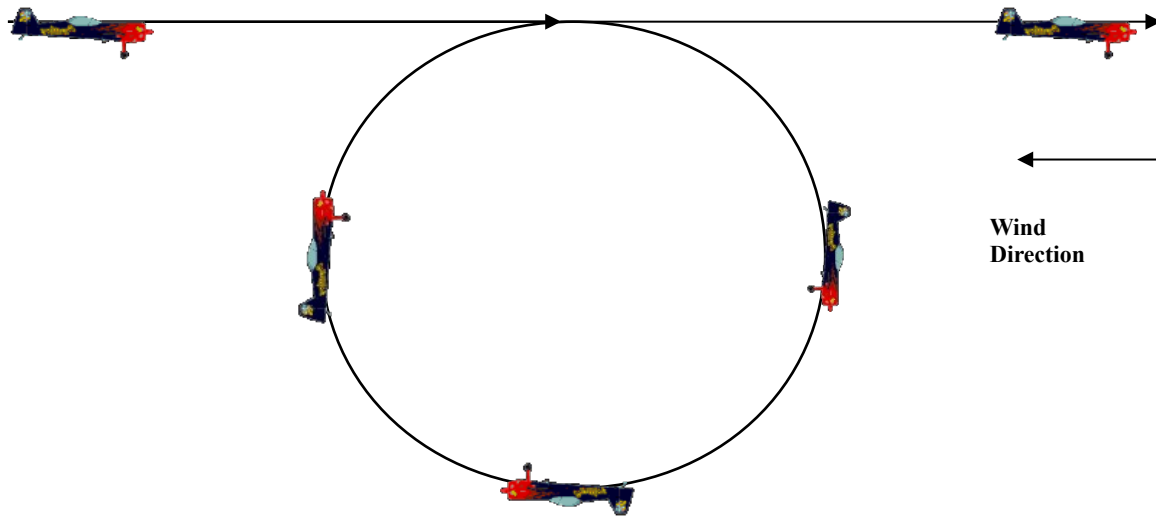
Model pushes over and executes one outside loop.

Downgrades: 3 points for “C” wing for each infraction

- Loop not round.
- Wings not level during loop.
- Changes in heading.

Diagram

Side View



Wings Level A B C D

Applies to: X

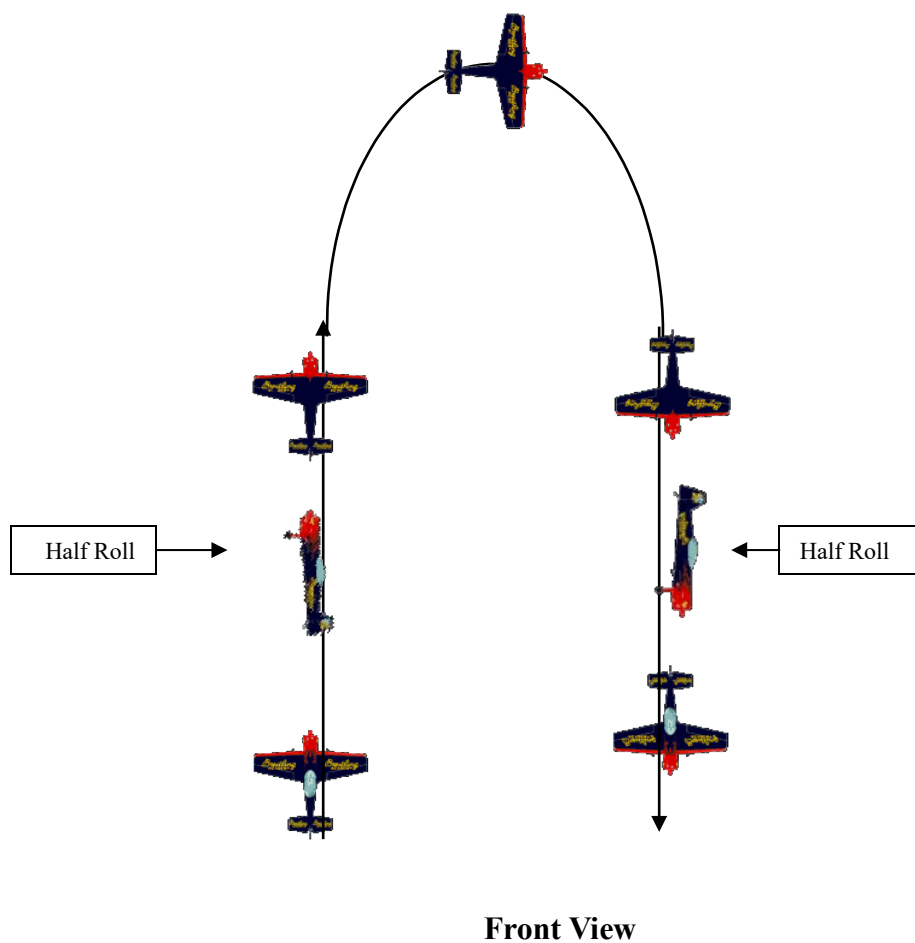
Stall Turn with 1/2 Rolls

Model pulls up into a vertical attitude, performs a 1/2 roll, executes a 180 degree stall turn (left or right) performs another 1/2 roll then pulls up to exit in level flight.

Downgrades: 4 points for “D” wing for each infraction

- Model not vertical at start and finish of rolls and stall turn.
- Entry and exit levels are not at the same altitude
- Stall turn and 1/2 rolls not exactly 180 degrees.

Diagram



Wings Level A B C D

Applies to: X

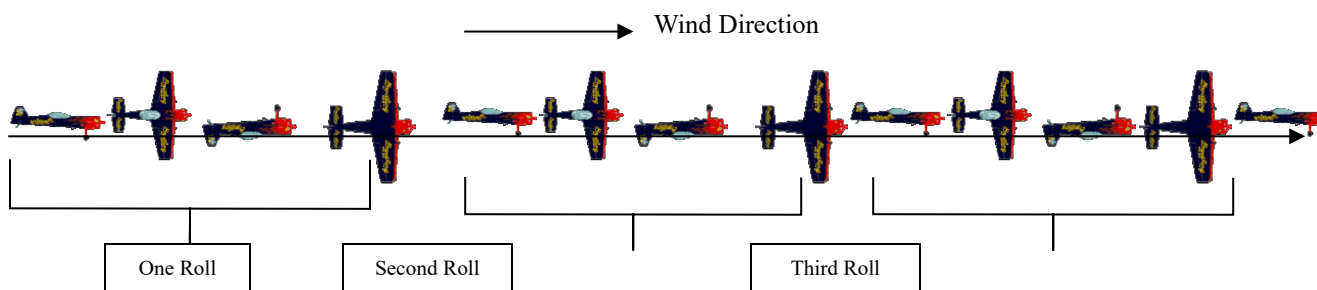
Three Horizontal Rolls

Model rolls at a uniform rate through three complete revolutions in either direction.

Downgrades: 4 points for “D” wing for each infraction

- Changes in heading during rolls.
- Changes in altitude during rolls.
- Roll rate not constant.
- Model does not do exactly three rolls.

Diagram



Side View

Wings Level A B C D

Applies to: X

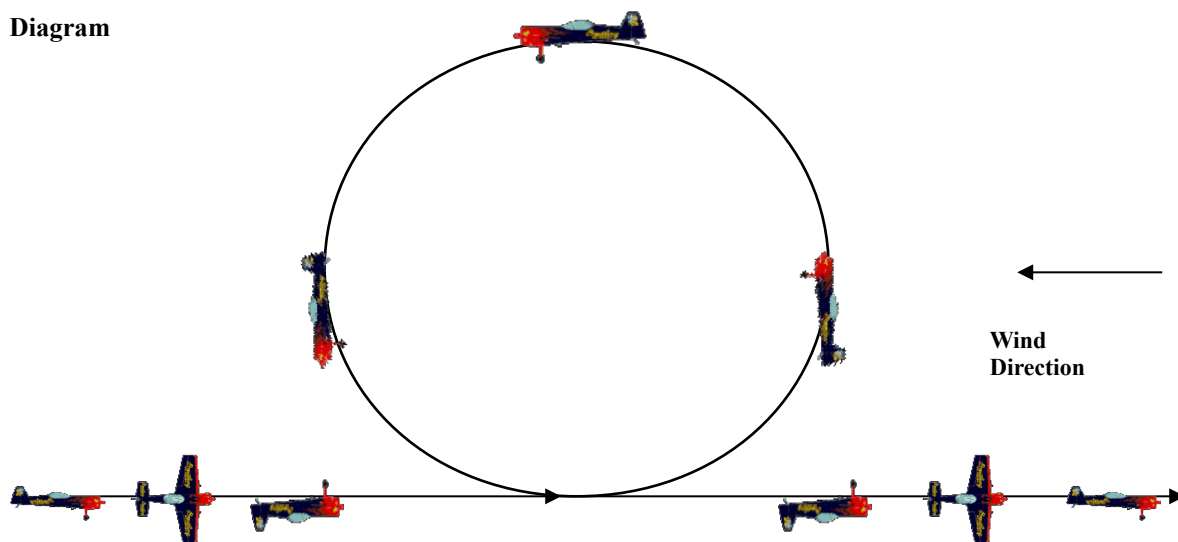
Three Reverse Outside Loops

Model half rolls to inverted, pauses for approximately one second, pushes up to execute three consecutive outside loops, pauses for approximately one second then half rolls to level flight.

Downgrades: 4 points for “D” wing for each infraction

- Loops not round.
- Loops not superimposed.
- Changes in heading during loops and rolls.
- Wings not level during loops.
- Model does not pause for one second before and after loops.

Diagram



Side View

Wings Level A B C D

Applies to: X

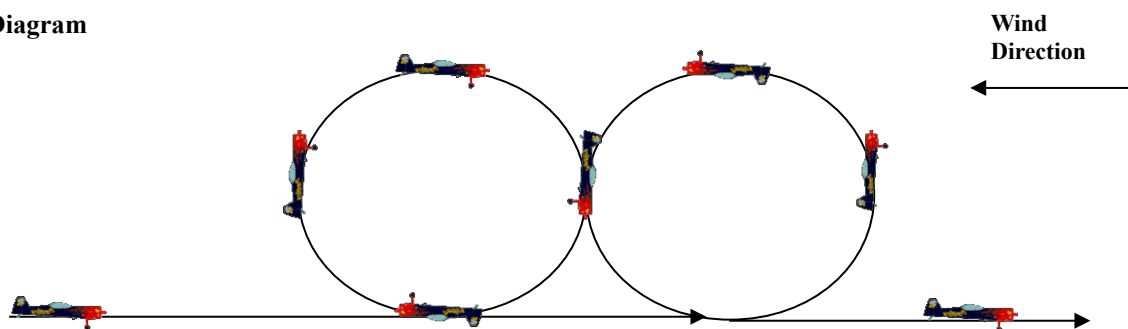
Horizontal Eight

Model pulls up and completes 3/4 of an inside loop to a vertical position then does a complete outside loop to a vertical position again then recovers by completing a 1/4 inside loop.

Downgrades: 4 points for “D” wing for each infraction

- Loops not round.
- Model not vertical at cross-over points.
- Changes in heading during loops.
- Loops not the same diameter.
- Loops not at same altitude.
- Model does not cross over at same point.

Diagram



Side View

Wings Level A B C D

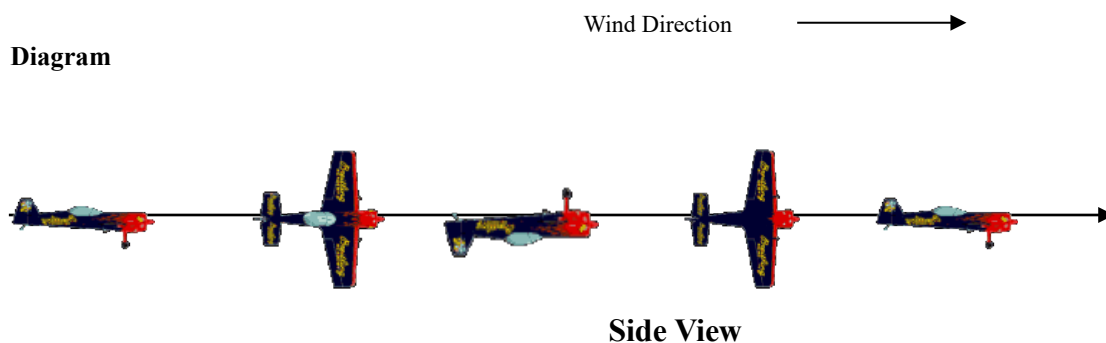
Applies to: X

Four Point Roll

Model rolls through 360 degrees, hesitation at each 90 degree point. At each hesitation wings are either 90 or 180 degrees to the horizon.

Downgrades: 4 points for “D” wing for each infraction

- 1/4 rolls are more or less than 90 degrees.
- Model does not hesitate at each 1/4 roll point.
- Roll rate not constant.
- Changes in altitude.



Wings Level A B C D

Applies to: X

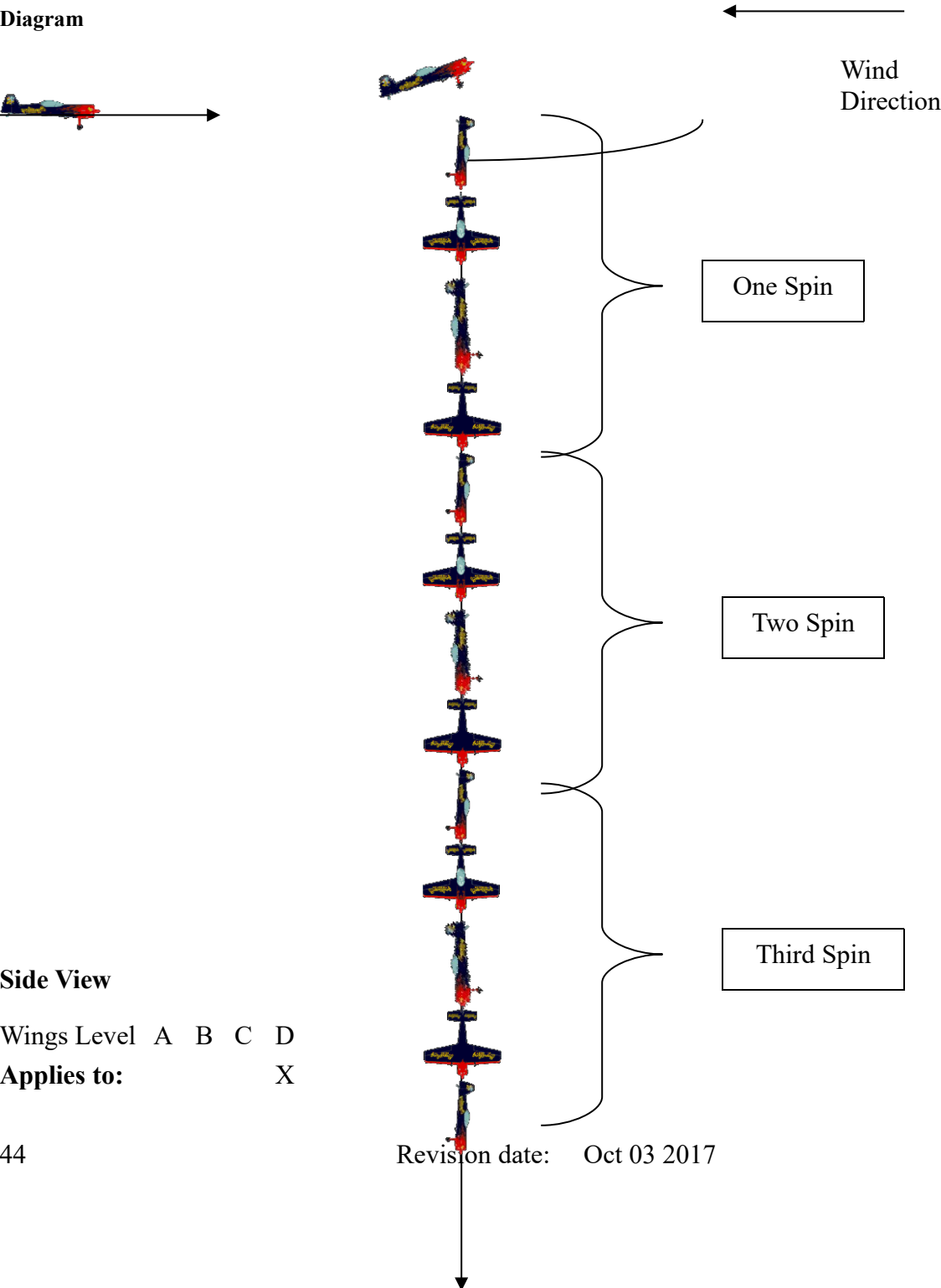
Three Turn Spin

The model establishes a heading, power is reduced, the model is held in a slightly nose high attitude until it stalls and commences to spin. The model will autorotate through three complete turns and recover on the same heading but at a lower altitude.

Downgrades: 4 points for “D” wing for each infraction

- Entry not level.
- Does not make three turns. Two or less, and four or more score zero.
- Does not finish on same heading.
- Wings not level during recovery.
- Spiral dive scores zero on maneuver.

Diagram



Side View

Wings Level	A	B	C	D
Applies to:				X

“B” Wings - Intermediate

Name: _____ Date: _____

Examiner: _____

Maneuver	1 st	2 nd
1. Take Off		
2. Straight Flight Out		
3. Procedure Turn		
4. Straight Flight Back		
5. Two Inside Loops		
6. One Horizontal Roll		
7. Rectangular Approach		
8. Land		
Subtotal:		
Less General Downgrades		
Total		

= _____ / 100 = _____ %

“C” Wings - Intermediate Advanced

Name: _____ Date: _____

Examiner: _____

Maneuver	1 st	2 nd
1. Take Off		
2. Stall Turn		
3. Two Horizontal Rolls		
4. Immelman Turn		
5. Cuban Eight		
6. Straight Inverted Flight		
7. One Outside Loop		
8. Land		
Subtotal:		
Less General Downgrades		
Total		

= _____ / 100 = _____ %

“D” Wings - Advanced

Name: _____ Date: _____

Examiner: _____

Maneuver	1 st	2 nd
1. Take Off		
2. Stall Turn with Half Rolls		
3. Three Horizontal Rolls		
4. 3 Reverse Outside Loops		
5. Horizontal Eight		
6. Four Point Roll		
7. Three Turn Spin		
8. Land		
Subtotal:		
Less General Downgrades		
Total		

= _____ / 100 = _____ %

Notes On Simultaneous Aircraft and Helicopter Operations

Helicopters and other allowed hovering aircraft are an operational challenge for aircraft clubs. Since helicopter pilots spend a lot of time learning to hover, and later test hovering/tailoring their heli settings, this can block off the main runway for other aircraft. Some clubs have the space for a separate hover area outside of the aircraft operating area. Burnaby Lake Flyers (BLF) does not have extra space.

To accommodate heli extended hovering, BLF has a document called the Blades Program describing heli operational procedures. This is the helicopter analogue to the Wings Program.

To provide a quick summary, if a helicopter pilot is going to do extended hovering, they should ask around the pits and flight line if they can “split the field for heli operations”. After deploying a special sign, and all aircraft pilots flying have heard the news, the southern third of our field is dedicated to heli flying. The special sign has two modes: Circuits and Heli/3D. This sign is put on the field one gate south of our main gate. For when aircraft (and helis) are flying full circuits, the sign is set so it says “Circuits” on both sides.

If the field is split, the sign is flipped so that both sides says “Heli/3D”. The latter means that aircraft can NOT use the southern third of our area. And helis can extended hover in the southern third, or do severe 3D aerobatics there. Normal aircraft operations can continue in the northern 2/3rds, or so-called “3D” aircraft can be flown there hovering nose up on the prop, etc.

Heli pilots should only split the field for approximately two flights before flipping the sign back, thus allowing large aircraft to again do full length low passes and landings.

Helis are allowed to fly in the full circuit area, with aircraft, with special consideration. Before a heli pilot flies in the full circuit area, he should ask around if it is ok for him to use the circuit. Most of the time aircraft will stay on the ground while the heli flies in the full circuit area. This is because aircraft pilots want to watch, or are nervous. Heli pilots can take off and land almost at their feet. This is very noisy and intimidating to aircraft pilots at nearby pilot stations. Thus when simultaneous aircraft and helis are to operate in the full circuit, heli pilots should use the most southern pilot station, and take-off/land 10 meters south-east of that southern pilot station.