

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.

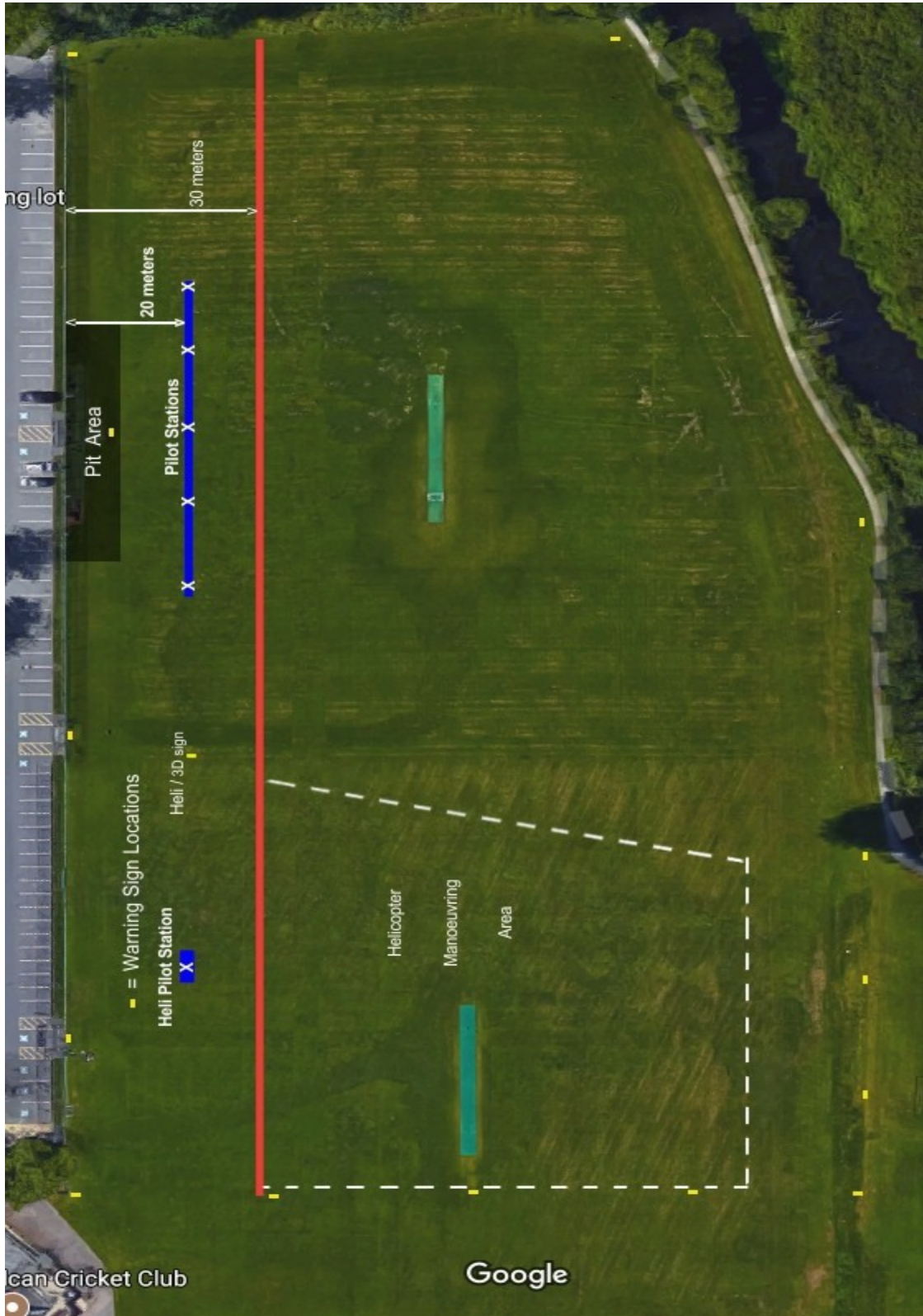
Remember, even the jet fighter pilots learn to fly in trainers before advancing to jets. So leave the scale planes until after you learn to fly.

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 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 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: _____

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 rolls
- 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.
6. Candidates will have two chances to complete all required flight maneuvers to the satisfaction of the examiner. If a candidate fails to complete ALL elements of the test within two attempts then testing is done for that day and the candidate must wait to attempt the exam on another day.



Burnaby Lake Flyers Association

Standard Operating Procedures

1. Perimeter warning signs must be set up before any flying takes place
2. Follow a preflight checklist to verify your aircraft is ready to fly. (see appendix A)
3. Prior to installing the flight battery in your aircraft, check the battery voltage level to verify it is fully charged and all cells are balanced.
4. Check the battery level indicator on the transmitter to verify the transmitter has enough power for the flight.
5. Turn on the transmitter before installing the flight battery.
6. After installing the flight battery, verify that all control surfaces are moving in the correct direction.
7. Do a proper range check.
8. If busy, line up planes on the taxiway to establish flying order.
9. Taxiing to the runway can be done from anywhere on the taxiway or from the pilot station but not from the pit area.
10. Aircraft other than helicopters should always take off into the wind if possible. Pilots must announce the direction of takeoff. Eg: "taking off to the right"
11. When more than one aircraft are in the air, establish a pattern direction for all aircraft to follow. Pattern direction is usually determined by wind direction but can be changed by pilot consensus.
12. Set a timer for each flight to allow you to know when to land before running out of battery.
13. Aircraft other than helicopters should land into the wind if possible. Pilots must announce the direction they are landing from. Eg: "Landing from the left"
14. Once on the ground, clear the runway as soon as possible. Taxiing back to the pilot station or the taxiway is allowed. Aircraft must not cross the pilot line while under power.
15. After the flight, remove the flight battery before turning off the transmitter.
16. Log your flight details.

Burnaby Lake Flyers Association

Emergency Operating Procedures

Loss of Transmitter Signal:

1. Program a desired Failsafe command anytime you have to bind a transmitter to the aircraft. The Failsafe command activates if the aircraft loses the transmitter signal and stays active until the transmitter signal is restored. The aircraft will not respond to transmitter inputs while Failsafe is active.
2. Periodically test the Failsafe while the aircraft is on the ground to insure the Failsafe is functioning as expected. Eg: throttle cuts off, slight rudder input to make the aircraft circle as it descends. Ailerons and elevator are centered.

Low Voltage Cutoff:

1. If low voltage cutoff is activated, the motor will pulse and start beeping continuously. Control surfaces will still respond to transmitter input so immediately declare your intent to land and head for any open area of our field for a dead stick landing.

Crash Involving Property Damage or Personal Injury:

1. Do not discuss or admit to responsibility as this could compromise insurance liability.
2. Arrange for immediate medical attention if required.
3. A club instructor or executive committee member, if on site, should take control. If no instructor or executive committee member is on site, then try to contact one as soon as possible. This will be the contact person for the adjuster and will be responsible for the gathering of information.
4. Notify John Deadman, MAAC Zone H director. 604-354-2736.
5. If an injury involving a member of the public occurs after MAAC business hours, contact Crawford & Co. adjusters immediately at 1-888-224-5677.
6. Take photographs of where the incident happened, injuries and/or damage done.
7. Remove any potential hazards from the scene, after being photographed. All components of the aircraft that caused the damage and the transmitter must be kept for the adjuster's inspection. Do not throw away or repair anything.
8. Obtain contact information of injured party or party who sustained the property damage. Name, Address, Phone, copy of their statement of events.
9. An executive committee member must fill out an Executive Incident Report Form. (copies are in the folder in the shed)
10. Obtain contact information of all witnesses.

11. Pilot involved in the incident must fill out the Incident Report Form. (copies are in the folder in the shed)
12. A \$500 deductible is payable to MAAC by the member/MAAC Club involved in the incident. MAAC club portion is \$250 and the member pays the other \$250. The MAAC Club is responsible for paying the entire \$500 to MAAC by cheque as quickly as possible and the member pays his portion to the club.

Appendix A

Sample Preflight Checklist

Internal (Before attaching wing)

1. Check that servo mount, servos, and servo arms are secure.
2. Check that pushrods are secure.
3. Check that receiver and ESC are secure.
4. Check for loose wires that could foul servo arms.

Wing

1. Check for breaks, warps, cracks, etc.
2. Check aileron and flap pushrods, clevises, and hinges.

Motor

1. Check motor mount, motor, prop, prop nut or spinner.
2. Check nose steering mechanism (if equipped).
3. Check that cowl is secure.

Tail

1. Check vertical fin and rudder hinges, pushrods, and clevises.
2. Check horizontal stabilizer and elevator hinges, pushrods, and clevises.
3. Check all surfaces for breaks, warps, cracks, etc.

Range Test / Flight Control Check

1. Check correct model is selected in transmitter.
2. Check that flight controls move in correct direction.
3. If buddy boxing, repeat step 2 with slave transmitter.

“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		

Pass / Fail Examiner's Signature: _____

Wings Program



Section 2

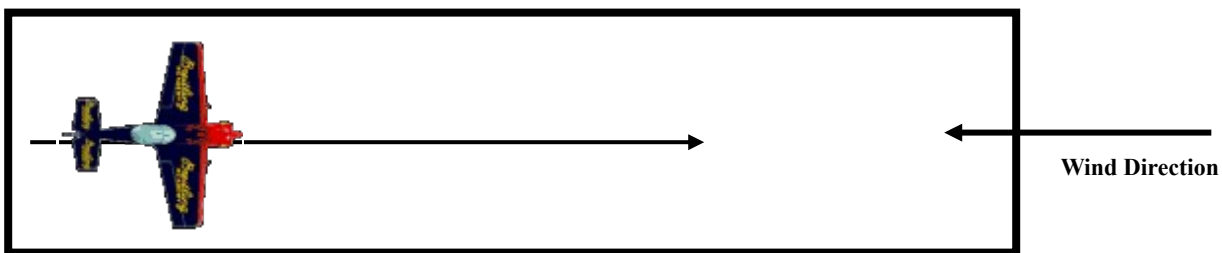
Take-off:

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

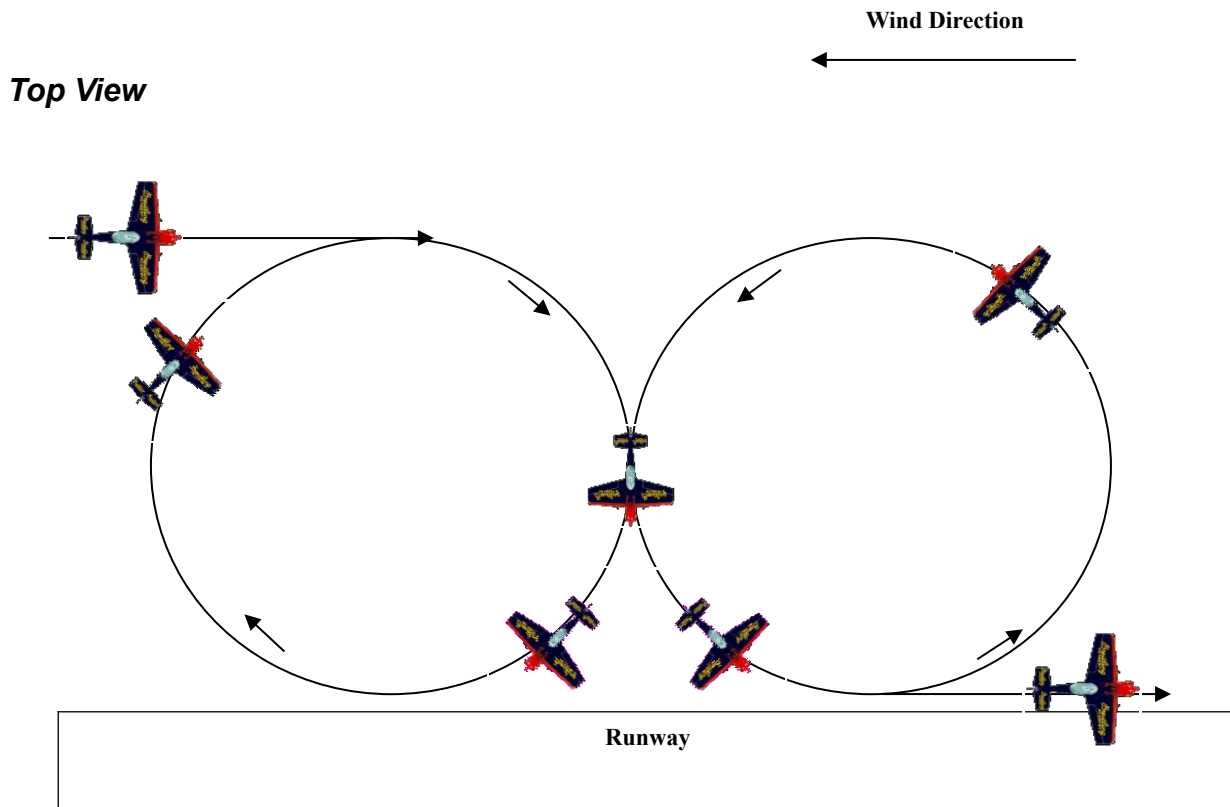
Applies to: X X

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.



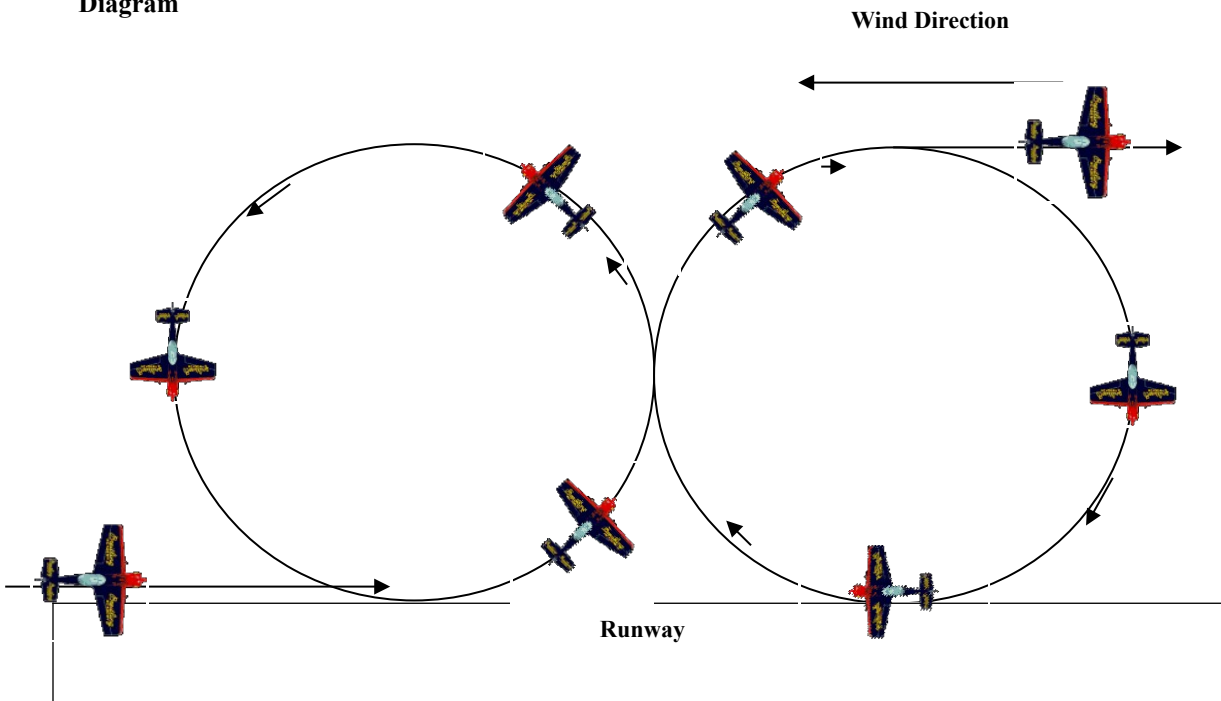
Flat Figure Eight (Hard Way)

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

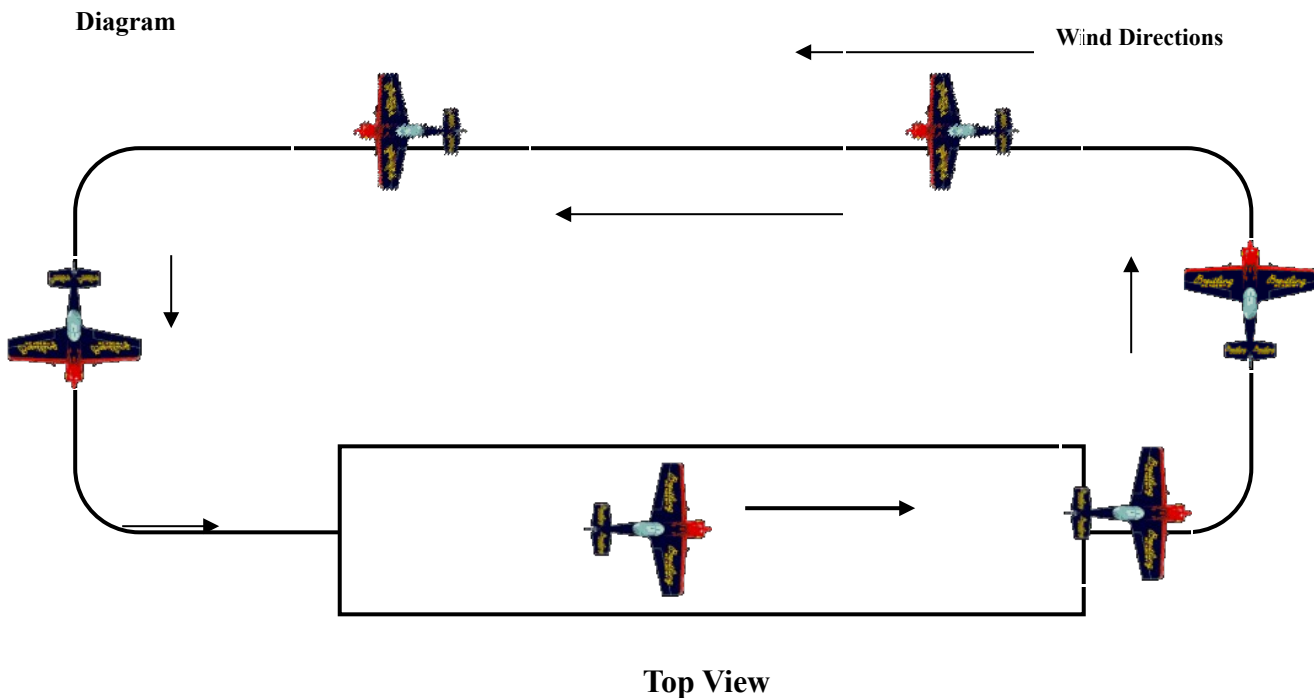
Rectangular Approach

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

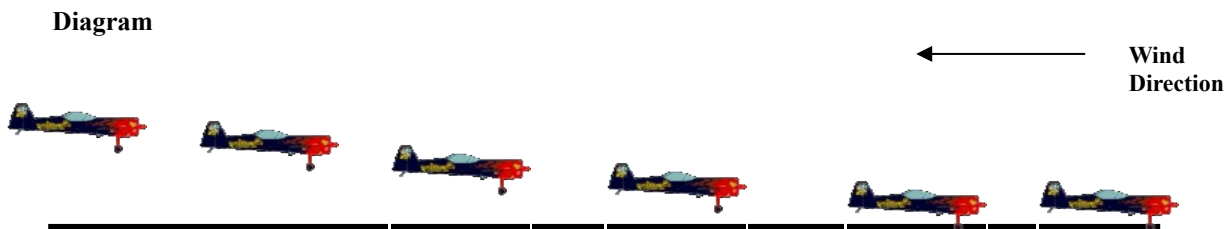
Applies to: X X

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.



Side View

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

Procedure Turn

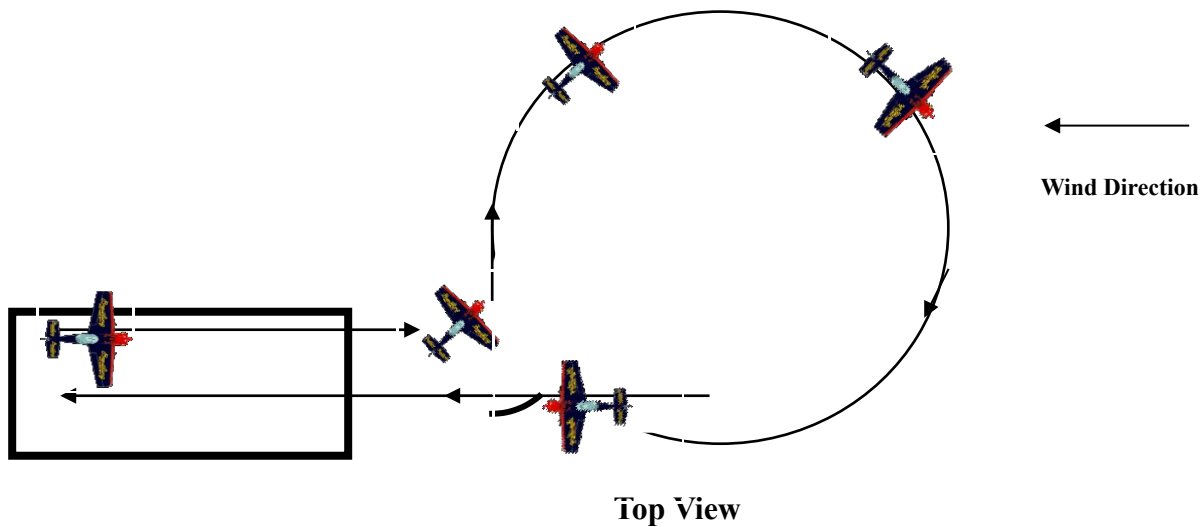
After the Straight Flight Out, model makes a 90 degree turn away from the flight line followed by a 270 degree turn in the opposite direction back to the reverse flight path of the Straight Flight Out.

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

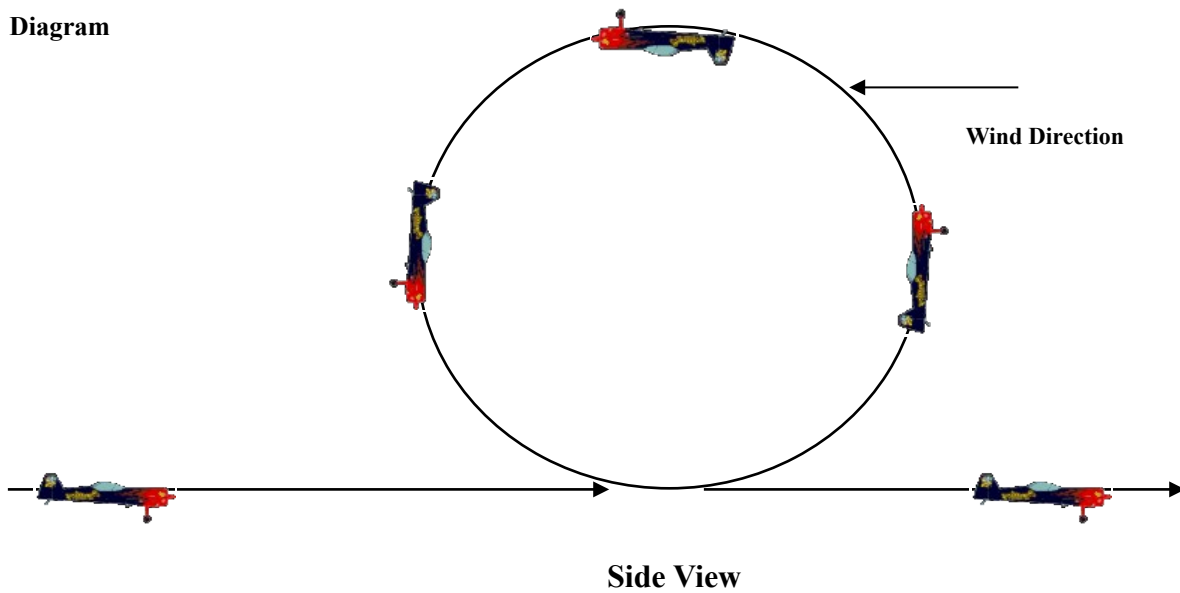
Two Inside Loops

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

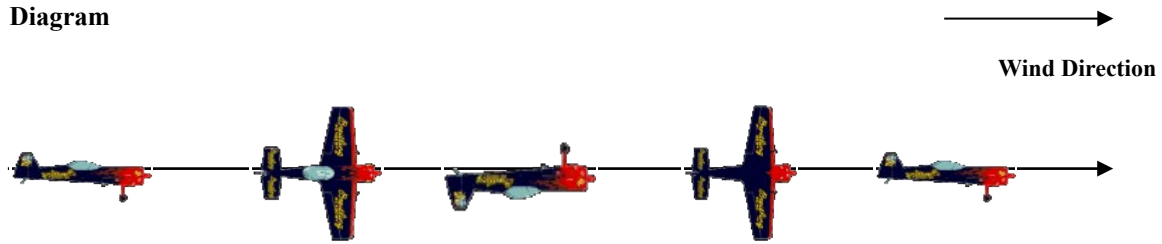
One Horizontal Roll

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

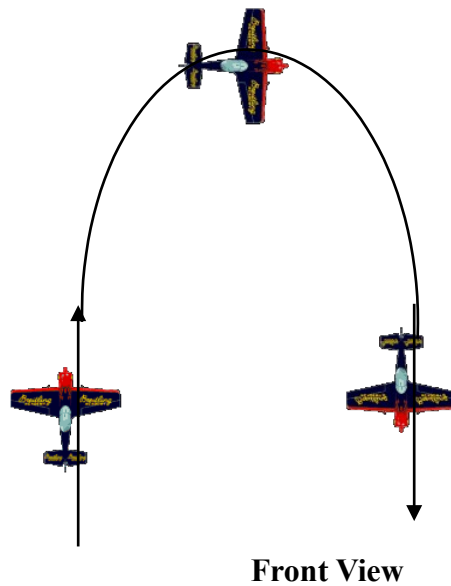
Stall Turn

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

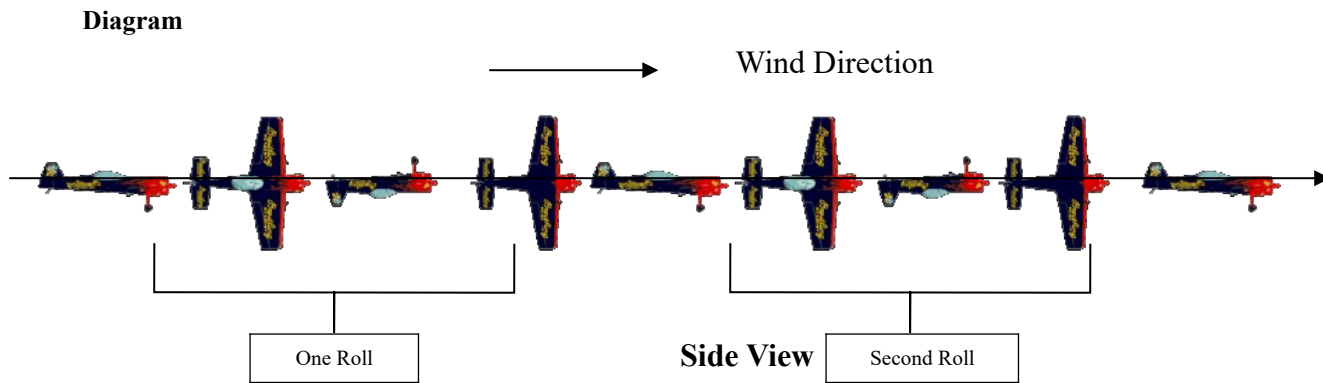
Applies to: X

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

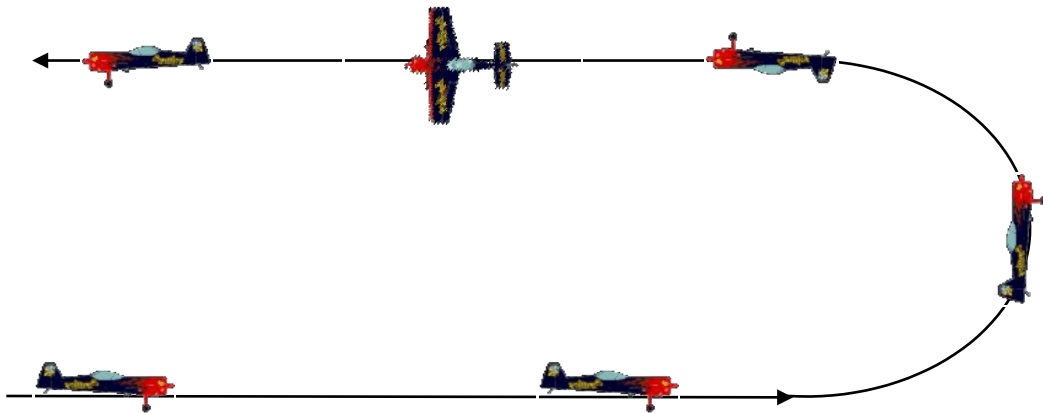
Immelman Turn

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

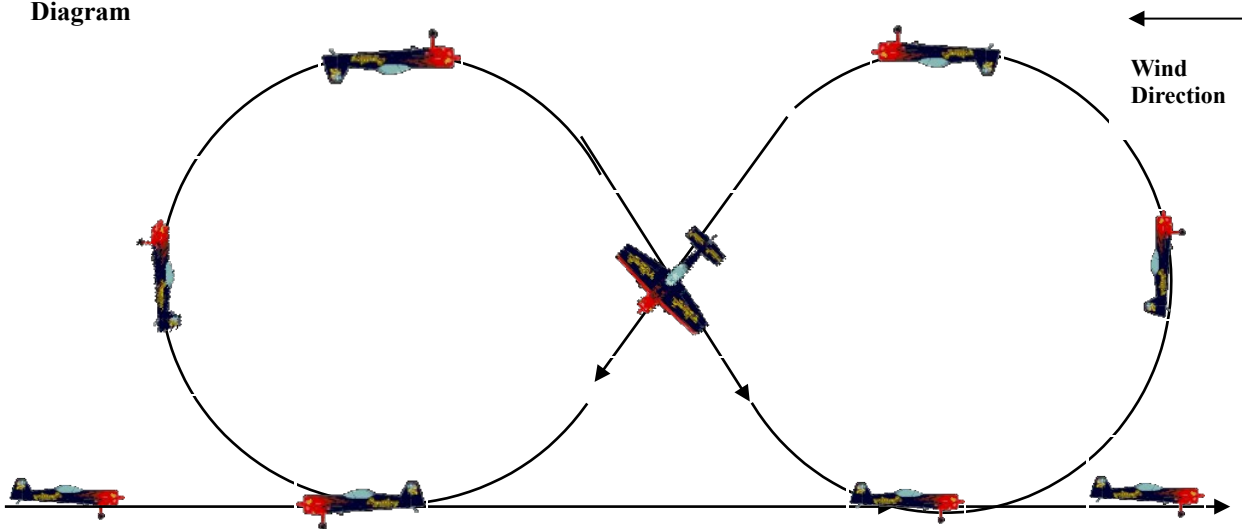
Cuban Eight

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

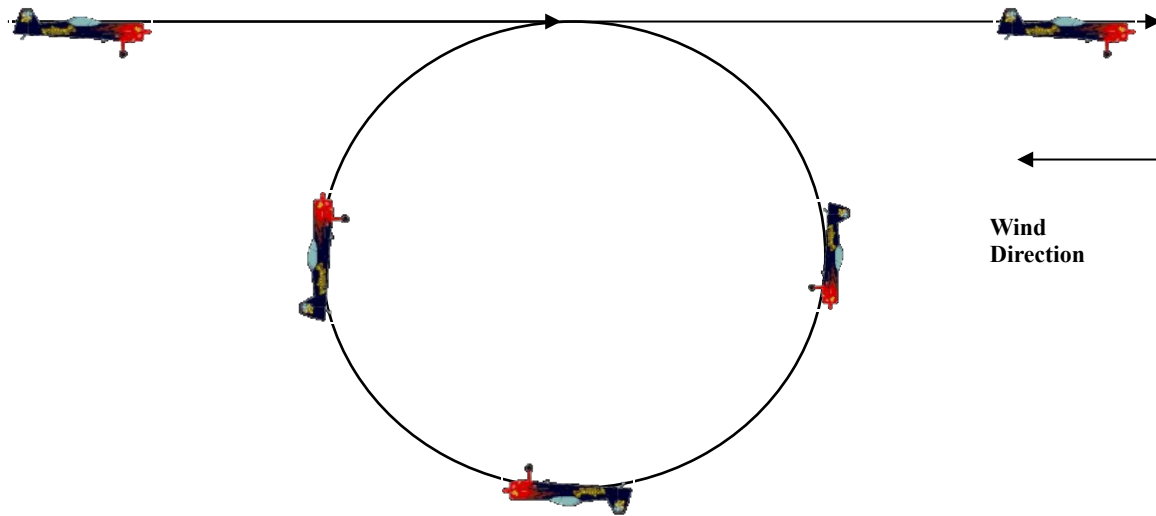
Model pushes over and executes one outside loop.

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

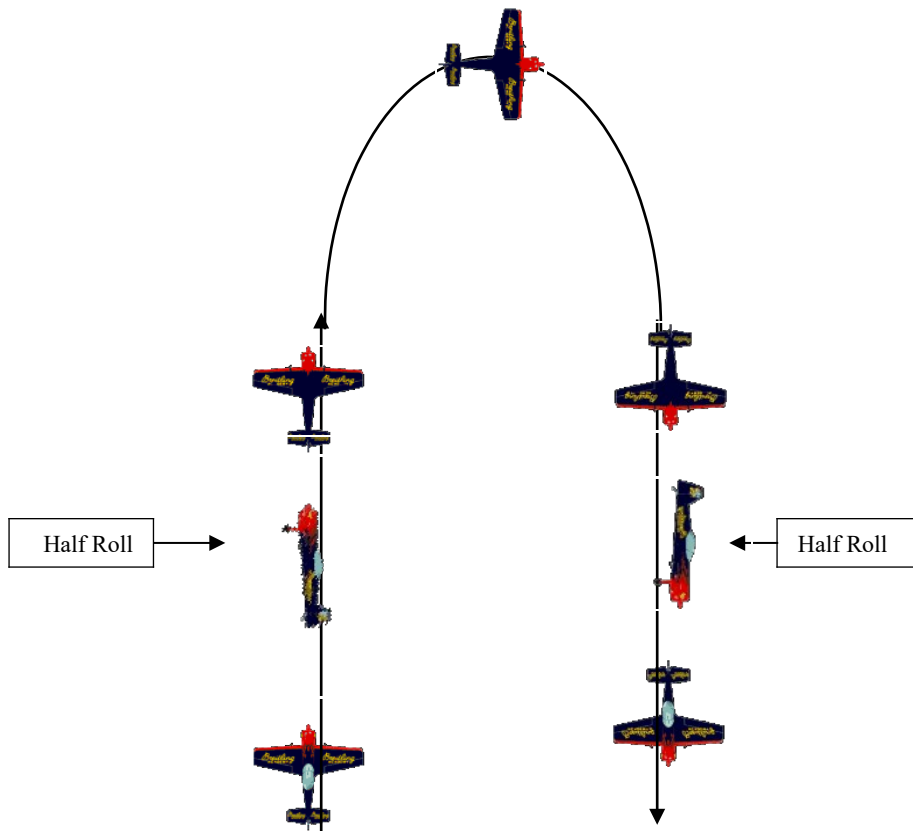
Stall Turn with 1/2 Rolls

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



Front View

Wings Level A B C D

Applies to: X

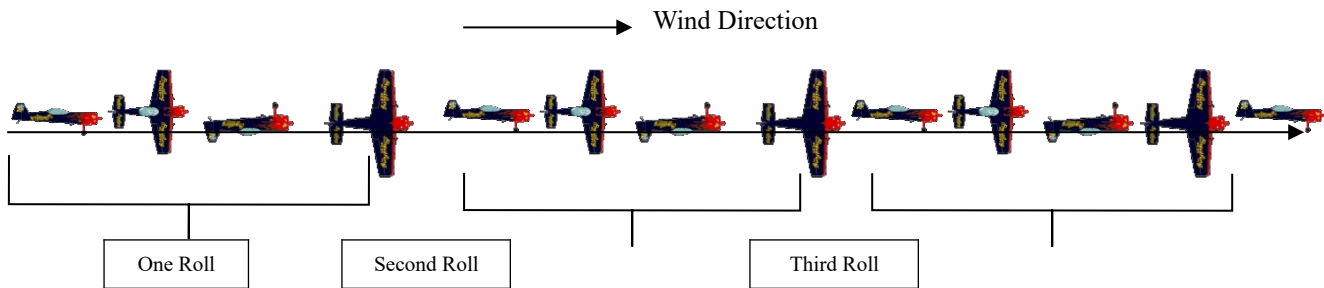
Three Horizontal Rolls

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

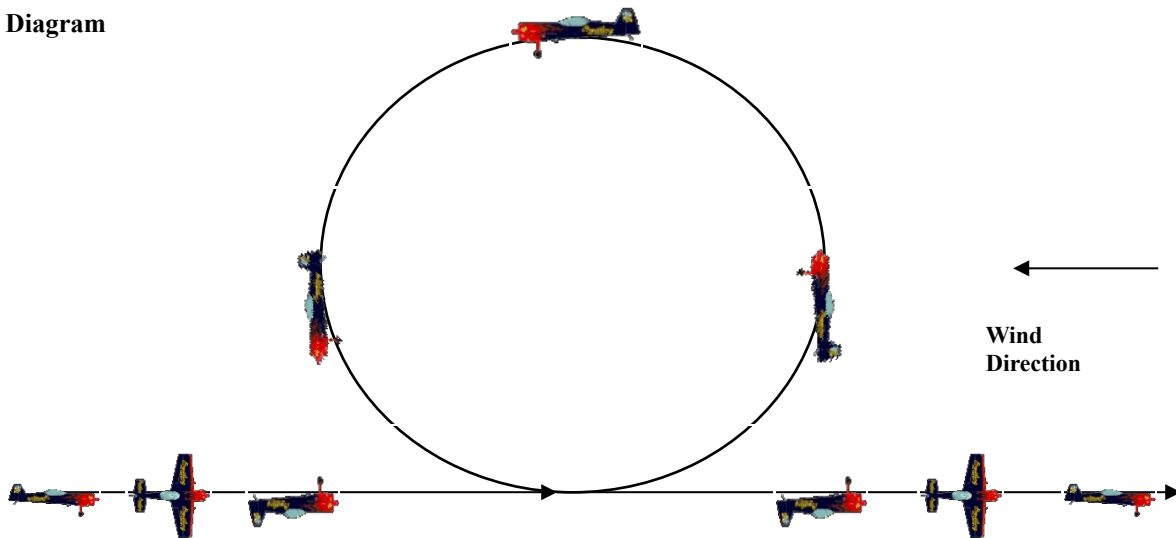
Three Reverse Outside Loops

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

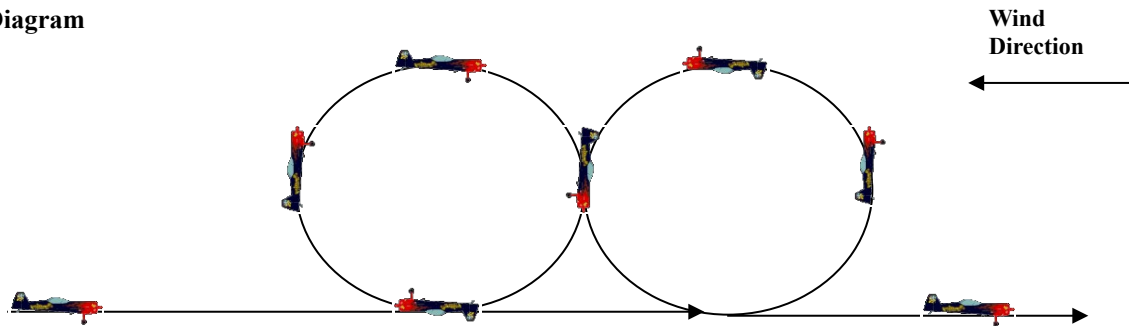
Horizontal Eight

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

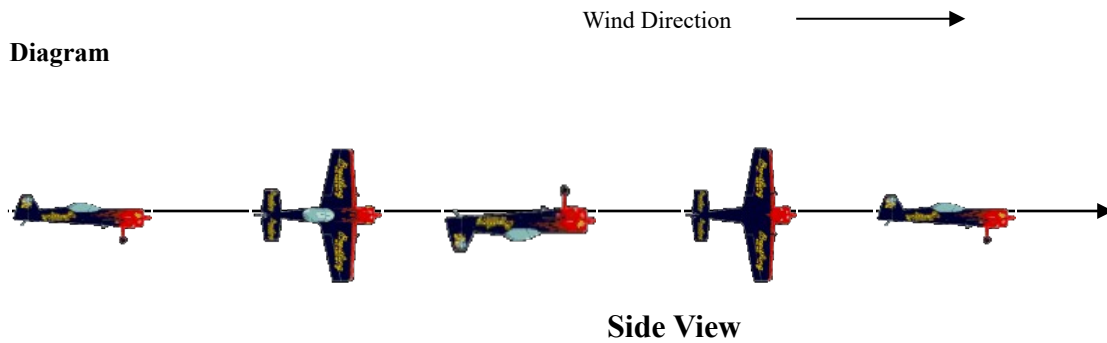
Applies to: X

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

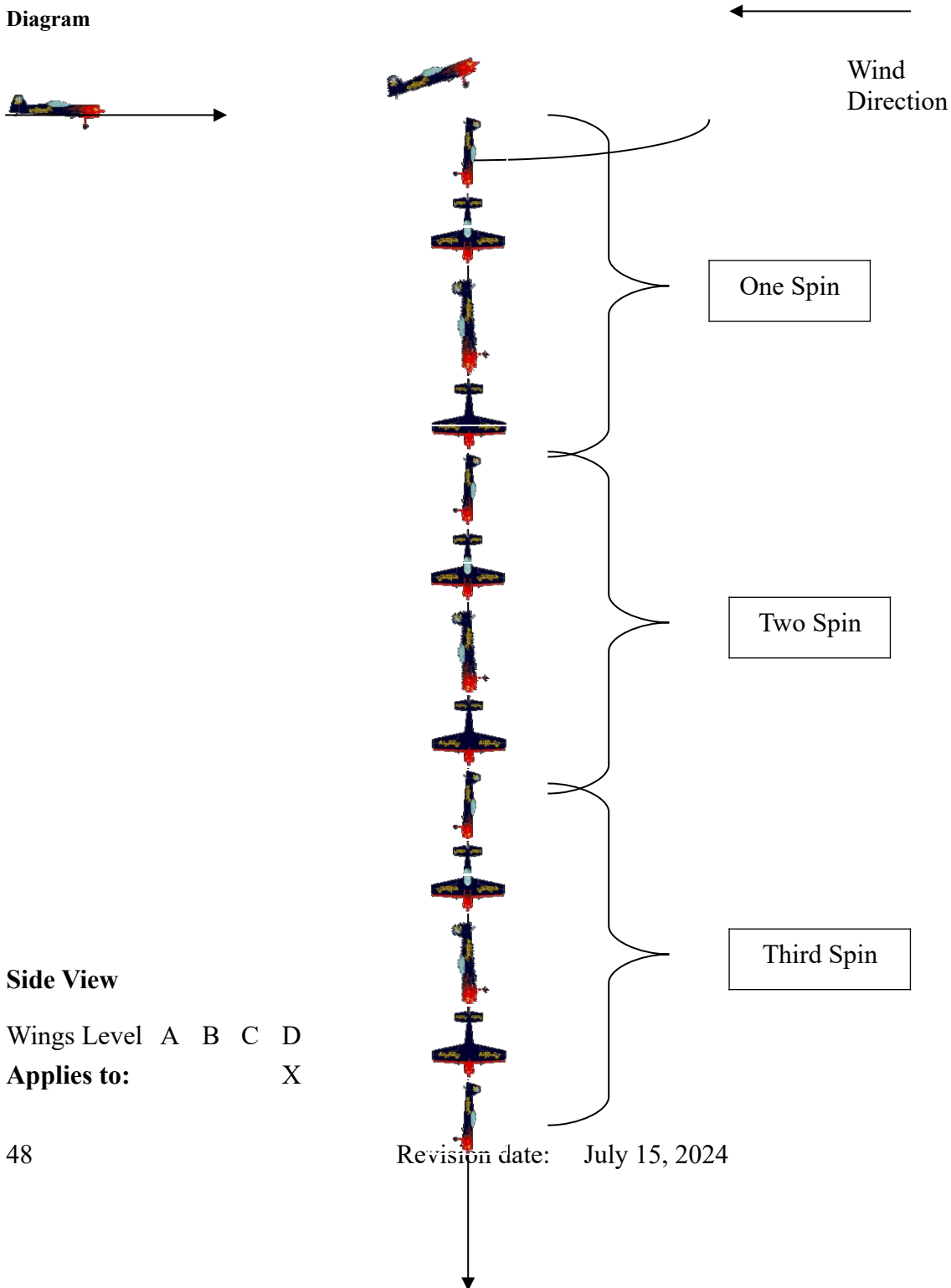
Three Turn Spin

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	1st	2nd
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		
Pass or Fail:		

Examiner's Signature: _____

“C” Wings - Intermediate Advanced

Name: _____ Date: _____

Examiner: _____

Maneuver	1st	2nd
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		
Pass or Fail:		

Examiner's Signature: _____

“D” Wings - Advanced

Name: _____ Date: _____

Examiner: _____

Maneuver	1st	2nd
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		
Pass or Fail:		

Examiner's Signature: _____

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.