THIS TRAINING GUIDE SHOULD CONTAIN THE FOLLOWING:

Name:_____

LIST OF CLUB EXECUTIVES WITH PHONE NUMBERS

CURRENT CLUB AND M.A.A.C. RULES

M.A.A.C. AND N.R.M.F.C. Inc. ETIQUETTE CODES

STUDENT FLIGHT TRAINING OUTLINE

PREFLIGHT RECOMMENDATIONS

M.A.A.C. WINGS PROGRAMME (MODIFIED FOR THE N.R.M.F.C. USE)

LIST OF WINGS REQUIREMENTS

N.R.M.F.C. Inc. AND M.A.A.C. INFORMATION

M.A.A.C. INSURANCE POLICY OUTLINE (IF AVAILABLE)

INSTRUCTION SCHEDULE
(ALSO FOUND IN SPRING NEWSLETTER)

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IT WILL BE RESPONSIBILITY OF THE STUDENT TO KEEP THIS GUIDE UP TO DATE

THE NIAGARA REGION MODEL FLYING CLUB INC.

EXECUTIVE
Year 2009

PRESIDENT:	Peter Hildebrandt
VICE PRESIDENT:	Mike Bortolin
SECRETARY:	Clint Green
TREASURER:	Roy Rymer
EDITOR:	Burt Brown
BROCK FIELD DIRECTOR:	Brian Wills
FIELD DIRECTOR:	Burt Vanderhulst

CHIEF FLYING INSTRUCTOR:	Mike Bortolin
PUBLIC RELATIONS:	N/A
PAST PRESIDENT:	Tim Koop

MIDDLE ZONE DIRECTOR:	Roy Rymer

* - Club officers.

THE NIAGARA REGION MODEL FLYING CLUB Inc.
Year 2009

The Niagara Region Model Flying Club Inc. is a non-profit organisation whose main interest is to encourage and support the safe flying and instruction of radio controlled model aeroplanes in the Niagara Region.

We as a club, operate and maintain areas in which to fly our aircraft. Our present fields are found on Merritville Road near Brock University and Thorold Townline Rd near the Thorold tunnel. Our club has been in existence for about 40 years and our membership has grown to about 80 members. Our organisation is affiliated with M.A.A.C. - Model Aeronautics Association of Canada, a governing body, which gives us a guideline in which to run our club safely. They also have a "wings" program in which we follow for instructing or beginner pilots.

Our meetings are held the second Monday of the month (Sept. thru June) at the Harbour Fellowship Church, 51 South Service Rd, St. Catharines, at 7:30 p.m. Flying at the field is done anytime but can almost always be seen on Saturdays and Sundays from 10:00 am to about 3:00 p.m.

The members in our club boast a wide variety of aircraft types and sizes. Ranging from small starter aeroplanes on up to larger 1/5, 1/4 and even 1/3 scale models. We even have experienced members who are showing up with helicopters, electric powered aircraft, float planes, giant scale models and even jets!

Members age from 11 years to over 60 years young, to date our youngest student to earn their "wings" has been 13 years old. This may have some bearing on how well our instructors are doing their job, even though they are all volunteers appointed by our club.

If you are thinking of joining, or are a new member, give one of our instructors a call and we will arrange to meet with you at one of the flying fields or at one of our meetings to check out your aeroplane and get it flying. Experienced fliers need only to show our instructors their ability to fly in a safe manner and "wings" will be awarded at that time. Beginners upon joining the club will get a training manual for R/C flying, and instruction can begin. It is also a good idea to join the club before your aeroplane is finished or even started to obtain the most from the club' s experience and knowledge.

To become a member of the Niagara Region Model Flying Club Inc. in good standing, contact one of our executive, or any of our members, and they will assist you in getting started. Even before that, come out to the field and watch us in action were sure you'll be amazed at what goes on.

The Niagara Region Model Flying Club Inc.

For more information see our web site at: www.nrmfc.ca

The Niagara Region Model Flying Club Inc.
Field Rules

Revised: March 20, 2009

1. Radio control flying only is permitted.

2. A club member must accompany guests. A guest is a person who has not been a member of the NRMFC for one year. A maximum of three guest visits per membership year will be permitted. (Invitational fly-ins not included)

3. All fliers must have a valid M.A.A.C. membership. (Or American equivalent)

4. Mufflers are required on all engines over 0.052 cu. in.

5. Channel identification is required on all 72 MHz transmitter antennas.

6. A frequency pin clearly showing the flier's frequency channel and name must be in place on the frequency board whenever a transmitter is turned on. When the transmitter is not in use, the frequency clip must be removed from the frequency board.

7. Frequency pins must only cover the frequency in use, which means that all transmitters must transmit narrow band or 2.4 GHz.

8. No taxiing in the pit area.

9. No flying over the pit, spectator or parking areas.

10. Modellers shall have the current club and M.A.A.C. membership cards available when flying.

11. In consideration of our neighbours, no running of internal combustion engines is permitted before 9:00 am on Monday to Saturday inclusive and not before 9:30 am on Sunday.

12. (a). A NO-FLY ZONE has been designated north of the Brock field so that no flying takes place anywhere over the Brock baseball diamonds and parking area.

(b). No flying over the property north of the Brock field when people are working in the area.

13. A NO-FLY ZONE has been designated over the neighbour's property and horse pasture to the east of the Walker's field.

14. An approved club instructor must check out all new members claiming to have their wings before they will be allowed to fly on their own.

15. Students (without wings) may only fly with an approved club instructor using a buddy box until he/she has met the NRMFC Inc. wings requirements as outlined in the training manual.

16. Members will also adhere to the M.A.A.C. safety code. (found at www.maac.ca)

The Model Aeronautics Association of Canada Safety Code

All Categories

When operating any model including, but not limited to, model aircraft, model rocket, model watercraft, model vehicle or other model of a similar nature (collectively referred to as a "Model"), MAAC members shall adhere to the following:

1. I shall not operate a Model in competition or in the presence of spectators until it has been proven airworthy and/or safely operational by a previous successful test.

2. I shall review, understand and abide by the MAAC Safety Code, the specific rules of my special interest category and the safety rules of the flying or other site I use, all as may be amended or modified from time to time. For greater certainty, I understand that where the specific rules or a specific interest category contain easements, enhancements or other like variances from the MAAC Safety Code, such easements, enhancements or other like variances form part of the MAAC Safety Code for all activities of that special interest category, and I shall review, understand and abide by the same;

3. I shall not operate a Model in a careless, reckless and/or dangerous manner or in a manner, at a place and/or in conditions that may pose an unreasonable risk of harm, damage, injury or death to a person or persons and/or property;

4. I shall not operate a Model while under the influence of alcohol or judgment impairing drugs;

5. I shall not operate a Model carrying, or with the intent to activate, Pyrotechnic and/or explosive devices;

6. I shall not launch projectiles from the ground with the intent of damaging or destroying a model aircraft or in a manner that may pose an unreasonable risk of damage or destruction to a model aircraft;

7. I shall not operate a Model over a maximum weight of 35 kilograms including fuel & all liquids;

8. I shall not operate any model aircraft including but not limited to, model rockets, model helicopters or other models of a similar nature ("Model Aircraft"), at a man-carrying piloted aircraft air show;

9. I shall not operate any Model Aircraft at any event that specifically invites the general public to attend without an approved sanction from M.A.A.C. or the appropriate governing body for the country in which the event is being flown;

10. I shall comply with any directives, policies, rules, regulations or information of any nature that may be posted by MAAC from time to time on its website.

Radio Control

1. I will complete a successful radio equipment ground range check before the first flight of the day.
2. I will not fly my model aircraft in the presence of spectators until I become a qualified flyer, unless assisted by an experienced R/C Pilot.
3. I will perform my initial turn after take off away from the pit, spectator and parking areas.
4. I will not perform flight of any sort, including aerobatic maneuvers, or landing approaches, over a pit, spectator or parking areas.
5. I will not fly on the pilot station side of the Flight-line (see figure 1).
6. I will not knowingly operate an R/C system within 4km of a pre-existing R/C aircraft club flying site without a frequency sharing agreement with that club.
7. I will not deliberately fly an aircraft without visual contact. (ie. the aircraft must be kept within "line of sight" of the R/C Pilot).
8. That all powered R/C aircraft, equipped with fail-safe function have it programmed so that the throttle is set to idle. The other controls can be set as the pilot sees fit.

Flight Line – Is a line in any direction that maintains all minimum distances (see fig. 1)

R/C Field Operations

All pilots must be current MAAC or AMA members.
1. R/C Pilot's (**shall)** yield "right of way" of their model aircraft to man carrying piloted aircraft with no exceptions. (**When man-carrying piloted aircraft are in the proximity of model flying operations, launching of models shall cease immediately, and in - flight models shall be landed if feasible or steered well away from the flight path of the full sized aircraft).**
2. Pyrotechnic and explosive devices (**shall**) not be carried or activated by model aircraft.
3. There **(shall**) be no more than five (5) aircraft airborne at any one time at a field unless, operating under rules of a specific discipline (ex. R/C Combat, **and all climb and glide categories**),
4. As a minimum, transmitter frequencies (**shall**) be controlled utilizing a MAAC Frequency Board and pilot frequency pins.
5. MAAC chartered clubs (**shall**) use a wings program to train R/C Pilots.
6. R/C Pilot Instructors :
a. **Shall** be highly capable individuals who can provide adequate training.
b. **Shall** consistently demonstrate safety by example and attitude.
7. R/C Pilots **shall** announce any intention to take-off, land or move onto the active runway.
8. 2.4 GHz and 27 MHz Radio systems are permitted when used in accordance with manufacturers recommendations and Industry Canada regulations.

9. The permitted transmitter frequencies for R/C aircraft operation are:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
	MHZ		MHZ		MHZ		MHZ
B1	53.100*	11	72.010	28	72.350	45	72.690
B2	53.200*	12	72.030	29	72.370	46	72.710
B3	53.300*	13	72.050	30	72.390	47	72.730
B4	53.400*	14	72.070	31	72.410	48	72.750
B5	53.500*	15	72.090	32	72.430	49	72.770
B6	53.600*	16	72.110	33	72.450	50	72.790
B7	53.700*	17	72.130	34	72.470	51	72.810
B8	53.800*	18	72.150	35	72.490	52	72.830
0	50.800*	19	72.170	36	72.510	53	72.850
1	50.820*	20	72.190	37	72.530	54	72.870
2	50.840*	21	72.210	38	72.550	55	72.890
3	50.860*	22	72.230	39	72.570	56	72.910
4	50.880*	23	72.250	40	72.590	57	72.930
5	50.900*	24	72.270	41	72.610	58	72.950
6	50.920*	25	72.290	42	72.630	59	72.970
7	50.940*	26	72.310	43	72.650	60	72.990
8	50.960*	27	72.330	44	72.670		

*** A valid Amateur Radio Operators License is required to own and operate equipment on the 50 and 53 MHz frequencies. Transmitters shall be used in accordance with Canadian Government regulations.**

10. R/C flying demonstrations (**shall**) only be done by qualified pilots (as determined by club). The MAAC Safety Code (**shall**) be followed during demonstrations.
11. Aircraft should be operated in areas of the sky where any results from an accident are minimized.
12. All non-flying activities (**shall**) be in an area 30 metres or more from the flight-line. This includes, but is not limited to, spectator and parking areas as well as supervised play areas.
13. A Flight-line will be established seven (7) metres in front of pilot stations.
14. R/C Pilots (**shall**) control their model aircraft from marked Pilot Stations. Take off and landing may be done from the runway if the intention is announced to the other R/C Pilots.
15. Spectators and visitors are permitted in the Pit and Pilot Station areas only under direct supervision of a R/C Pilot.
16. A fence or barrier (eg 1 metre high snow fence) shall be used at Club Affiliate Member registered fields for land operations of powered models where aircraft greater than 1 kilogram in weight are flown. The purpose of the fence/barrier being to protect person(s) at pilot station(s) from being struck by errant aircraft operating on or near the ground (eg. Taxiing, landing, takeoff).
17. At Club Affiliate Member registered fields for land operations of powered models where aircraft greater than 1 kilogram in weight are flown, the pit area shall be a minimum of ten (10) metres from the flight-line. A fence or barrier shall be utilized to prevent errant aircraft from entering the pit area. A single fence/barrier may be used to protect both the pilot station(s) and pit area or separate barriers may be used. Where the pits are more than thirteen (13) metres from the flight line, fence protection of the pits is not mandated.

18. **At club affiliated member registered fields where safety fences are "not" permitted eg. Sod farms, parks and float fly sites. The distance between the flight line and the pilot stations shall be increased to at least 10 metres. The distance between the flight line and the pit area shall be increased to at least 13 metres. All nonflying activities shall be 40 metres behind the flight line. This includes but is not limited to spectator and parking areas as well as supervised play areas.**
19. R/C Pilots are responsible for the airworthiness of the model aircraft they fly. R/C Pilots following a club or MAAC wings program will ask a club instructor to inspect their aircraft for airworthiness.

4.3 R/C Club Responsibilities
Club responsibilities will include but are not limited to the following:
1. A wings program is used to train R/C Pilots.
2. Discipline (if necessary) of R/C Pilots that refuse to follow MAAC Safety Code.
3. Establishing guidelines/procedures for visiting R/C Pilots.
4. Determining which club members are qualified demonstration R/C Pilots.
5. Establishing a field layout that conforms to the MAAC Safety Code.
6. Clearly marking Pilot stations (**for specific disciplines**).
7. Having clearly defined boundaries for the pit area.
8. No flying is permitted while field maintenance is going on in the Flight Zone.

6.1 Electric Aircraft Operation

When operating any Electric powered model aircraft MAAC members will adhere to the following:

1. It is recommended that all aircraft be properly fused between the motor and the first connector when using a battery eliminator circuit (BEC) system. Units that have separate power to the radio may prefer to fuse between the battery and the controller. Speed controllers that offer thermal shutdowns (TOP) may still benefit from being fused.
2. It is recommended that the models power batteries be disconnected during transportation, or disarming switch/system used and/or remove the propeller from the motor.
3. It is recommended that while working, adjusting, installing or demonstrating the model and its operation, that the modeller remain aware of power of the system and remove, if need be, the propeller. **Note: An electromechanical glitch can cause a temporary burst of power to the prop and cause bodily damage**.
4. It is recommended that modellers educate themselves about the properties and power of rechargeable batteries. Be aware of the potential for fire or explosion from shorted cells, or from the over charging of battery packs or charging hot, recently used packs.

5. It is recommended that used, useless Ni-cad batteries be disposed of by returning them to the factory or the retailer for recycling/disposal. Be aware that Nickel Cadmium is a toxic substance and direct contact must be avoided.
6. It is recommended that when using a charging system that takes its power directly from a 12v car battery, that the modeller be aware of the potential for explosion of battery gases. To be safe wear safety glasses or avert eyes and face when connecting leads. Prepare your own course of action in the case of an emergency. Always fly with a buddy for safety, never fly alone.
7. It is recommended that before turning a system on (TX) or pressing/switching an arming mechanism (ESC/RX) that the modeller double-checks that the transmitter throttle stick is in the **OFF** position.
8. When a landed model is being retrieved by a second person, it is wise to inform that person of the correct method of carrying and/or switching the model off.
9. Follow all other safety rules pertaining to the use and operation of radio control models as published in the MAAC safety code. Follow all local club safety rules. Make yourself aware of all local safety rules when visiting a new field.

6.2 Battery Safety Precautions

Because of recent technology releases in battery types, it's become necessary to address the situation of safety, charging, care and storage of your cells. Each cell type is different and must be handled in an appropriate manner. Failure to follow these guidelines could result in damage to your cells, person or property. All cells are rated in mAh or milliamperes. The capacity a cell is referred to as "C" and should be a term all electric power flight enthusiasts are familiar with. The oldest type of cells that we use is Nickel Cadmium or NiCad. The more recent Nickel Metal
Hydride or NiMH have considerably more duration/less weight at any given cell size. The newest cells that we use are Lithium Polymer/Ion. It is these cells that are the cause for the greatest concern, both in use and charging.
The below recommendations are for your safety and should be strictly adhered to by everyone. For each type of battery chemistry, insure that you ALWAYS connect the charger to the source battery first and that you disconnect the pack from the charger PRIOR to disconnecting the charger. Failure to do so could result in damage to your charger!
1. All batteries should be stored in a non-conductive container and away from all metal objects that could allow a cell to short out. A good recommendation is a "Rubbermaid" type container made of heavy duty plastic with a snap on lid.
2. It is recommended that all batteries be handled with care; all types are sources of high energy density and should be treated as such. Check all packs on a regular basis with emphasis on the connectors and cells. Packs with damaged heat shrink or connectors

that look to be in poor condition should be repaired or replaced. Heat shrink or connectors are inexpensive, cheap insurance against damage. They are available from most hobby shops that deal with electric flight.
3. It is recommended when charging batteries that neither the cells nor the charger be placed directly on your vehicle, but rather on a non-conductive surface (cutting boards work well).
4. Never charge batteries in your vehicle (either passenger compartment or trunk). This is a very dangerous practice.
5. Never immerse or expose your charger to water. This could invariably damage sensitive electric components inside.
6. When removing your battery from your charger, disconnect the battery pack from the charger first, then charger from the source battery second. This stops any damage from occurring to your charger.
7. NiCad's should never be charged higher than 2 X "C", i.e. if a pack has a capacity of 2000 mAh the maximum charge rate should not exceed 4 amps.
8. NiMh's should never be charged higher than 1 X "C". i.e. if a pack has a capacity of 2000 mAh the maximum charge should not exceed 2 amps.
9. Cells damaged in a crash should be disposed of in a safe and responsible matter, once any shorts that may have occurred are remedied.

6.3 Use of Lithium Polymer/Ion Cells

Guidelines for the use of lithium polymer/ion cells. Warning: Failure to follow these guidelines could result in; Loss of property, injury, or death due to fire or explosion. A class 'C' fire extinguisher should be nearby whenever you are charging lithium polymer cells. The MAAC electric committee strongly recommends that these cells only be used by experienced modelers.
1. Only use a battery charger specifically designed for Lithium Polymer/Ion cells. These cells have different characteristics and voltage than NiCad or NiMH type batteries and can easily be damaged by improper charging with the wrong equipment. Examples of these Lithium Polymer types of charger include:
• Schulze multi-purpose charger
• Orbit multi-purpose charger
• Great Planes Triton multi-purpose charger
• Kokam 1-4 cell charger
• Plantraco LPD-400
• Apache 1-2 or 1-4 cell charger
• BEL 2-3 cell Lithium-Ion/Polymer charger
• AstroFlight Model 109
2. Insure that you know the amount of discharge that your particular brand of cell is capable of handling safely. Each manufacturer/retailer should include a set of specifications for this when you purchase your cells. This factor is referred to as "C" or

the capacity of the cell. For instance the original Kokam type Lithium Polymer cell was capable of sustaining a discharge rate of 2 “C”, so a 1020 mAh cell would be capable of putting out just over 2 amps of usable power.
3. Never charge at more than 1 X “C” regardless of pack size, configuration or discharge rate.
4. On chargers with choices for multiple settings, it is extremely important to ensure that the correct settings for your battery pack are chosen. These settings could include choices in cell chemistry (i.e. NiCad, NiMH or Li Poly), the number of cells and charge rate. Most expensive multiple-choice chargers should be returned to the manufacturer periodically (according to what the manufacturer recommends) for calibration and upgrades.
5. Never leave your Lithium Polymer/Ion batteries to charge UNATTENDED.
6. It is recommended to only charge Lithium Polymer/Ion cells in a fire proof container (a Pyrex bowl with lid or an ammunition box with lid are good examples) and away from any combustible materials. Make sure that you have a good Class 3 multi-purpose fire extinguisher nearby when charging Lithium Polymer/Ion cells.
7. In the event that Lithium Polymer/Ion cells are damaged in a crash, overheated or punctured, ensure that they are safely away from any combustible matter and left until any danger has passed.
8. Do not discharge at over the manufacturer’s specified rate. Each cell should have its own nominal and maximum discharge ratings clearly marked on the pack, and on the individual product pages
9. Do not discharge lower than 3.0 volts per cell (2.7vdc under load).
10. Do not charge to more than 4.2 volts per cell.
11. Do not continue to use any cell that has increased in size (commonly referred to as “ballooning”). Cells with a bloated appearance have been damaged and pose a fire hazard. Dispose of as per disposal method below.
12. Do not assemble into packs cells of unknown capacity. Doing so will cause cell imbalance, and eventually a cell failure (and possibly a fire) could result.
13. Never use Lithium Polymer/Ion cells in any appliance they aren’t designed for. This includes re-using cells from packs that have become damaged.
14. Do not store your packs where children or pets may get to them. Lithium has a sweet smell, which children or animals could think of them as candy. Lithium is toxic and death could occur if ingested.

6.4 Lithium Polymer Battery Disposal Procedure

If you are at all unsure of the correct procedure for the absolute discharge and neutralization of Lithium Polymer cell types, take them to a “Hazardous Waste Disposal” facility for disposal. Lithium Ion cells should always be taken to a “Hazardous Waste” disposal facility for disposal.
Discharge pack down to 2.5 volts per cell, regardless of pack configuration or number of

cells. Find a container large enough to submerse the pack in completely. Fill the container with water and saturate with salt, that is, add enough salt until the salt can no longer dissolve.
Carefully pierce the envelope (case material) of the cells but insure that you don’t short it out accidentally by doing so, to allow the salt water to saturate the cells internally.
Submerse the discharged pack for 24 hours, and then check each cell in the pack for voltage. Cell voltage should read zero volts at this point. You can safely discard the pack into the trash at this point without danger.

Visit www.maac.ca to view the complete MAAC Safety Code

M.A.A.C. AND N.R.M.F.C. Inc. ETIQUETTE CODES

The Field Etiquette is intended to outline those matters that are expected of all modellers/pilots as common courtesy and for every ones safety.

1. All R/C Pilots/modelers **shall** respect the safety codes.
2. R/C Pilots/modelers will restrict their use of the operating frequency when others are waiting.
3. R/C Pilots/modelers **shall** ensure that the operation of their model does not interfere with the enjoyment of the hobby/sport by others. These would include but are not limited to loud aircraft, unnecessary running of model engines in pit area, slipstream (propwash).
4. R/C Pilots/modelers are responsible for their guests or visitors including children and pets.
5. R/C Pilots/modelers **shall** be considerate when sharing the sky with other R/C Pilots/modelers by operating their aircraft in a way not to interfere with others.
6. If R/C Pilots/modelers fly their model aircraft within ten (10) Km of the centre of an airport, notice of operations will be given to the airport authority and/or tower. A spotter **shall** be used to avoid having models fly in the proximity of full size aircraft.
7. Safety practices are required in the pit area. MAAC members will adhere to the following:

(a) Metal propellers **shall** not be used. Pure nylon propellers (does not include the glass filled type) will not be used on engines of .40 cubic inch or larger. Repaired or damaged propellers will not be used.
(b) Pilots **shall** ensure that no one is standing in line with the propeller arc of operating engines.
(c) Aircraft will not be taxied in the pit area.
(d) When running model engines the model **shall** be placed to minimize the effects of slipstream (propwash).

(e) Slipstream effects from running engines can be dangerous to all affected and models should be positioned to minimize these effects.
(f) Smoking is prohibited in the pit area.
(g) Propellers will be secured in accordance with the engine and propeller manufacturer's recommendations.
(h) R/C Pilots are responsible for ensuring their spotter/helper is properly briefed regarding the carrying, testing, adjusting and general handling of the model aircraft.

This M.A.A.C. wings programme is arranged by the Niagara Region Model Flying Club Inc. executive and instructors, for the use of the Niagara Region Model Flying Club Inc.

The executive has decided that a Buddy Box system will be mandatory for the instruction of new students.

It was discussed that in case of an accident the instructor would retain the responsibility, but the club would be responsible for the member's deductible, needed for an insurance claim, as long as the instructor or student was not negligent according to club and M.A.A.C. rules and the incident occurred during a training flight.

Also it was agreed the instructor would take the responsibility if he/she test flies an aircraft that belongs to someone who is "not" a member of M.A.A.C. if he/she agrees.

An instructor may if he/she chooses designate someone else who he/she feels is competent, to help instruct another student. It should be recognised that the instructor may still be responsible for both the helper and student in the eyes of M.A.A.C..

For pilots to become instructors, the candidate must exhibit skills in flying a training type R/C aircraft, very capable of performing "dead stick landings", show reasonable skill in flying aerobatics and have a compatible personality. Then 2 instructors may recommend the candidate to the executive whereby they will decide whether he/she should become an instructor.

It was decided that the instructors are recommended to use the Training Guide as a guide, thereby ensuring that all the important topics in the programme are taught or at least demonstrated to the student. It is not necessary for the student and instructor to follow the guide exactly.

New members claiming to be pilots should be given a Training Guide and may be required to show their flying ability to an instructor (requirements for students to obtain their pilot wings, outlined later in this guide), before he/she may be allowed to fly. - According to M.A.A.C. the club is responsible for ensuring pilots are able to fly safely.

If there are any questions regarding the Training guide please contact the N.R.M.F.C. Inc. executive.

Arranged by Peter Hildebrandt 04/30/92, 06/25/93, 02/22/94, 12/07/95, 02/09/98, 05/13/99, 03/13/2000, 03/01/2001.

STUDENT FLIGHT TRAINING PROGRAMME

The Niagara Region Model Flying Club Inc. will try to provide a minimum of 2 instructors 3 times a week for the months of May, June, July & August. (18 weeks total)
- Instruction dates are Monday, Wednesday, and Friday nights, weather conditions permitting. (reasonable winds & no rain)
- Students are to call the instructor if the weather looks questionable. The instructor will decide if instruction can take place.
- There may be no student flying on Weekends, due to events and the greater amount of aircraft traffic at the field, and/or no instructors wishing to be "on duty".
- Students wishing to fly on weekends may come out and ask for help.
- Flying time will be 15 minutes per student, in order of arrival, as many times as conditions allow.

- If after the programme, the student has not yet received his or her wings, but is close, he may approach the executive in which case a volunteer instructor may be assigned if available. Students are encouraged to join the club and instruction programme early to take full advantage.

- If a student signs up for the programme which is already in progress, the club is not obligated to provide 18 weeks of instruction from his/her starting date. The programme only runs for the months of May June, July, and August IF conditions apply.

- Students are strongly advised to have their aeroplanes in good flying condition on instruction nights. An instructor does not have the extra time to set up and/or work on a students plane, due to the limited time available at the field. It is also not fair to the other students waiting for instruction in the air.

- An instructor who cannot make his evening due to unforeseen circumstances **will**:
    (a) Find a replacement instructor
    (b) Not call the CFI to do it for them

- Instructors who have fulfilled their two week instruction programme are not obligated for any further training that season.
    - If an instructor wishes to instruct after his/her two week commitment, he/she may book extra weeks on the instruction schedule where we are short on instructors.

This training programme has been designed to provide a basic standard of flight instruction and safety. We believe that consistency in the manoeuvres being taught and attaining a high level of flying skill, while at the same time keeping interest high, is of prime importance.

Our hobby/sport is not a different situation as far as learning environments is concerned.

We have requirements for learning motor skills that begin usually at Level Zero, and proceeds through various levels of competence, while gaining the ability to operate a new piece of machinery. Notice the use of the word "Level". The ultimate result of any training effort must be devoted to a final level of competence in the skill being taught. In our cause, it is not only the solo flight of our R/C model, but flying consistently, safely and with complete confidence. Attaining the final skill level is not a single, unique, giant leap which can be taught singularly, but rather it is the fitting together of an associated series of intermediate attainable skill levels, each of increasing difficulty.

This programme is divided into 5 flight levels following the initial pre-flight approval.

Level 1: is devoted to pre-flight and post-flight procedures including airworthiness, engine starting and tuning, radio, range checking, use of the controls and first flight check by the instructor. NOTE: the student will be an observer during the first test flight by the instructor, or until the aircraft is satisfactorily trimmed for flight.
Level 2: gets the student into the air and concentrates on straight and level flight, shallow turns and racetrack patterns.
Level 3: sharpens the student skills of Level II manoeuvres, steepens the medium-bank turns and two aerobatic manoeuvres.
Level 4: adds the take-off, stall recovery at altitude and a traffic pattern and approach no-touch-down.
Level 5: deals with the practise of crosswind and forced landing patterns.

The choice of aircraft for the beginner is most important. The high wing tricycle gear design, such as a Falcon 56, SIG Kadet, or Midwest Aerostar are most desirable. There are other suitable aircraft for training purposes and the student should feel free to discuss this with any qualified member.

Prior to showing up at the field to begin flight training, the student should present his/her aircraft for the initial pre-flight check to any qualified club member or instructor for an airworthiness check.
Please understand the instructor is a volunteer and will not be responsible if an accident should occur to your aircraft.

Pre-flight Recommendations

Batteries:

-Both transmitter, buddy box and receiver batteries should be fully charged before any flying session

- This means at least 16 hours (or as otherwise stated in the radio manual) to begin a

day of flying, from dead batteries

- If you only fly once or twice and are able to fly again the next day, the equipment should be put back onto charge, but not for 16 hours. They should be "peaked" meaning, put back onto charge until the batteries read the highest voltage before starting to drop back down. (this may be only a few hours)
- It is also recommended the batteries be run down to 1.1 volt/cell (4.4 volts for receiver packs, and 8.8 volts for transmitter packs) about once a month to keep batteries working through out their full capacities.
- Do not operate your transmitter for prolonged periods of time with the antennae off or down (except for range testing) otherwise the internal electronics can be damaged.

Frequency Control:

- The N.R.M.F.C. Inc uses a frequency board and pin method of controlling radio frequencies.
- BEFORE ANY 72Mhz TRANSMITTER IS TURNED ON, A PIN SHOWING THE FREQUENCY OR CHANNEL NUMBERS AND NAME OF THE OWNER IS PLACED ONTO THE BOARD AT THE APPROPRIATE SPOT. NO OVERLAPPING OF PINS!
- Failure to do this can cause someone else on the same channel to loose control of their aircraft possibly destroying the aircraft and causing other personal damage or injuries
- Unofficially, if such and accident should occur it is up to the person who turned on their transmitter causing the accident to be responsible for replacing the damaged aircraft.
- The frequency pins should be neat, readable, weather proof and have the channel number and name of the owner on it. The required size is 1-13/16" high and 3" wide, thereby covering your channel and one on either side.
- Normal procedures for flying would be to have your aircraft fuelled with all equipment ready to start, then go to the frequency board with your pin and if your channel spot is clear, place your pin onto the board. Good practice is to glance at the flight line double checking that no one is on your frequency, (looking at frequency flags on their antennas) turn on your transmitter and then watch for any aircraft which seems to be out of control. Once everything appears OK, turn on your receiver and perform your range check.
- When you are finished flying and the aircraft is back, turn off the receiver, then the transmitter and GO AND REMOVE YOU PIN FROM THE FREQUENCY BOARD! So someone else can fly.
- If you are using a 2.4Ghz radio, a frequency pin, showing your name should be placed on the 2.4 Ghz section of the frequency board.

DISCUSSION LEVEL 1:

Although the student does not fly at this level, it is probably the most important level. It is at this level the student will learn and understand club and M.A.A.C. rules, review club and M.A.A.C. etiquette, learn how to properly pre-flight and post-flight check his/her aircraft and radio, and watch the instructor test fly the aircraft, trim it for stable flight and if the situation allows, hand the controls over to the student for a short flight. The aircraft then should be landed, checked out and retrimmed ready for flight. Good habits start at this level !

DISCUSSION LEVEL 2:

This is the first level in which the student will fly and it is important that the student feels some real success. Hence, the demands of Level II skills are reasonable. There are really only two manoeuvres required in Level II -straight flight and level shallow turns. These two manoeuvres are combined to form the Figure 8 and Oval racetrack patterns. The emphasis from the instructor in the early phases of Level II should not stress the accuracy of the manoeuvre, but rather the stress should be on recognising changes in aircraft attitude and initiating early corrections. Smoothness and deliberate change is the key. The student should be kept from just "flying around". Instead, the instructor should direct the student's flight path and begin to speak of ground-track control in preparation for take-off and landing. As skill in straight and level flight and turns increases, the two should be joined to create the Oval Race Track flight patterns and Figure 8's with 45 degree intersections. Accuracy may now be stressed and the initial introduction made of ground track with these manoeuvres. The Oval racetrack is the early beginnings of a landing pattern and this emphasis on ground track will pay off later.

DISCUSSION LEVEL 3:

Level III is meant primarily as a growing experience. Previous manoeuvres are practised and difficulty is increased by moving to a 30-degree bank angle in turns. The student should concentrate on building self-confidence to allow the student to recover from difficult situations without interference. The classic "hairy situation" can easily result, requiring judgement on the part of the instructor as to when to "take over". The inclusion of the procedure turn in this level allows the student to perform another combination manoeuvre requiring straight flight, level turns and turn reversals. When practising manoeuvres at 30-degree bank and with the procedure turn, special emphasis should now begin on ground track as affected by wind drift. Just "flying around" doing these manoeuvres doesn't do the job. Flying is a sport of self-discipline and that discipline developed now will pay off in the landing pattern. Work hard here - student and instructor.

The aircraft you save may be your own.

Two acrobatic manoeuvres have been included. The loop allows an appreciation of the effectiveness of pitch control at different airspeeds and also the sense of orientation when in other than level or near level flight. In the split-S the beginning of a loop followed by a partial roll requires concurrent control of pitch and roll in unusual attitudes, which ends in the completion of a loop with the aircraft upright and in a direction 180 degrees from the original flight track. In the case of these two acrobatic manoeuvres, no real proficiency beyond "just doing it" is really required. An intersecting exercise is to require the student to recover to straight and level flight from various impromptu places in the two confidence manoeuvres. This will strengthen orientation and control usage. In the other manoeuvres real proficiency should be realised.

The high-speed taxi can easily be overlooked as a minor effort; just the opposite is true. There are really two identifiable parts to an aircraft take-off; the take-off roll and the rotation/climb-out. If the take-off roll is not executed cleanly, the rotation will be affected in a negative manner. Building proficiency in the take-off roll will permit the student to concentrate on the rotation in Level IV.

DISCUSSION LEVEL 4:

In Level IV, we finally use the aircraft control gained in earlier levels to zero-in on the real issue of flying, take-off and landing. During this level, significant energy should be directed towards developing precise flying both in ground track and attitude correction. Good take-offs are the result of precise control during the take-off ground roll and transition to flight. Good landings are the result of good ground track and aircraft attitude control whether a beginner or a "hot dog".

If Level III instruction was successful in the high-speed taxi and previous work on pitch control was well learned, then adding a little up elevator at the right point during high-speed (full throttle) taxi, results in a take- off. The instructor should emphasise the straight-ahead shallow climb with about 15 to 30-degree climb-out angle. Allow the student to have gained good aircraft control prior to starting a turnout. It is recommended that a review of procedure turns and Figure-Eights follow the take-offs should be accomplished during each training session.

In the case of stalls, our miniature aircraft are not designed for their stall characteristics like the full-size machines are, but they do stall, often with disastrous results - especially when landing. One can discuss stalls and recoveries forever, but for our purposes, there are two situations, which should be discussed and practised: 1) Straight-ahead stall and 2) accelerated turning stall. Both of these occur in the landing pattern and can destroy an aircraft and a new (or experienced) pilot, In the first stall, the condition usually occurs while trying to stretch a final approach. Typically the nose will drop or the aircraft will roll off or snap. At very low altitudes, the recovery of lowering the nose, rolling level, and applying power will not work, so the trick is to avoid the nose-up, power-back situation. But elsewhere in the landing pattern, the corrective action is

foolproof.

The second stall, the accelerated turning stall, is the killer during the final turn and usually is seen as a snap- roll into the ground. Low air speed is again the culprit, but the stall is aggravated by : 1) an angle of bank which requires more lift on the wings to support the aircraft and, 2) an attempt to tighten up the turn due to overshooting final approach - just like stretching final, too much up-elevator for the airspeed. Recovery is executed by simultaneously rolling wings level, lowering the nose, and adding power. Since during landings you are near the ground, it is better not to get into a stall than to rely on low-altitude loss recoveries.

Practising stalls at altitude will make the student aware of the conditions causing the stall, the reaction of their particular aircraft, and the use of the recovery methods to minimise altitude loss. Next we are going to slow the machine down and practice a little slow-flight. This manoeuvre should be done at less than 1/2 throttle, and level flight should be maintained. The student should be shown the high rate of turn possible at low airspeed and shallow banks. Steep turns are a "no-no" in slow flight. Remember the stalls. Also notice the sloppiness of the controls at lower airspeeds. All these characteristics relate directly to the landing pattern and good slow-flight skills will be of significant value.

The final piece of the Level is the landing pattern. Learning is optimised by practising a standard manoeuvre. Therefore, the landing pattern used is a rectangular pattern that allows the student to see the same picture each time. It may not look like your pattern, but it works. It is time consuming, but worth it. Entering on initial approach, power is reduced on the turn to down-wind so as to be in slow-flight on down-wind. A power-off glide is started during the descending base and continues in the turn to final. Power is added on final to maintain flying speed. A "go-around" is to be executed after arriving wings level at the end of the runway ready to touch down. Ground track should then proceed back to initial approach for another go at it. (No touchdown is to be attempted!)

The instructor should emphasise smooth control, ground track, and consistency. A friendly reminder of the stall-recovery procedure will also instil caution during slow flight and turns. There are usually local landmarks and checkpoints, which the instructor can point out, and which are of significant benefit in establishing a consistent pattern.

DISCUSSION LEVEL 5:

Well, this is it. All the marbles are on the line - or rather the runway. The quality of the previous four levels of training should really pay off now if the effort was sincerely devoted to smooth control, ground track accuracy, and self-discipline. From being wings level over the end of the runway, it should be relatively easy to assume a slightly nose-high attitude and settle to the runway. No, it is not. Because there is still pitch, roll, and heading to care for, and the student still needs practice, those first few landings are going to be traumatic, so let's take them easy. Start the first few lessons by just reviewing Level IV landing patterns and the land once to a complete stop. Turn around, take off, and do it again.

As skill increases you can begin touch-and-go landings with complete traffic

patterns and then, when skill allows, proceed from take-off directly onto the down-wind leg. As usual the emphasis should still be on increased skill which leads to the matter of forced landings this is probably the one thing that we never teach but which causes the loss of a lot of aircraft. Again, a little practised can really pay off.

Start up high, cut the throttle and practice gliding to a landing on the runway. Gradually, reduce the altitude and introduce unexpected trouble for the student by calling a "forced landing" at unexpected moments. Not only will it probably save a few aircraft, but also you will find that the quality of the landings improves.

Finally, if possible, try to get in some crosswind landings, ground track practice will really pay off.

GOOD LUCK
FROM THE NIAGARA REGION MODEL FLYING CLUB INC.
INSTRUCTORS

Version #3.11 Dec. 12, 1995. Arranged By Peter Hildebrandt

TASK DESCRIPTIONS AND MEASUREMENT CRITERIA FROM THE M.A.A.C. RULE BOOK

LEVEL 1: The student should present his approved aircraft to the instructor at the field ready for flight instruction as follows:

1. The student will learn and demonstrate correct range check procedures for his/her radio, per manufacturer's recommendations, and use of the controls.

Instructor:	Date Completed:

2. The student will learn and demonstrate how to start and tune the engine to assure full power at all flight attitudes and check for reliable idle.

Instructor:	Date Completed:

3. The instructor should flight-check the aircraft for airworthiness and be certain student is aware of all club and M.A.A.C. safety codes and rules.

Instructor:	Date Completed:

4. The student will learn post-flight check and clean up.

Instructor:	Date Completed:

LEVEL 2: **During this level the student should complete all pre-flight checks. He should start the engine and tune it, check radio and flight controls and slow-taxi to the end of the runway prepared for take-off. The instructor should do all take-offs and landings during this level and assist the student when necessary.**

1. The student will learn and demonstrate the ability to control the aircraft in straight and level flight with some input from the instructor as to the attitude and altitude control. Ground track should be roughly parallel to runway.

Instructor:	Date Completed:

2. The student will learn and demonstrate a 15 degree banked turn with some input from the instructor as to altitude and bank-angle control.

Instructor:	Date Completed:

3. The student will learn and demonstrate the ability to control the aircraft in a figure 8 pattern. This manoeuvre should be executed in such a manner so that the turns are made away from the pit area.

Instructor:	Date Completed:

4. The student will learn and demonstrate an Oval racetrack Flight, clockwise and counter clockwise, with flight parallel to runway.

Instructor:	Date Completed:

5. The student will learn and demonstrate the ability to slow-taxi his aircraft.

Instructor:	Date Completed:

LEVEL 3: **During this level, the student should complete all pre-flight checks. He should start the engine and tune it, check radio and flight controls and slow-taxi to the end of the runway prepared for take-off. The instructor should do all take-offs and landings during this level and assist the student when necessary.**

1. The student will increase the angle of bank to 30 degrees for turns, Oval Racetrack and Figure 8 patterns. Further, the Figure 8 will be done as 2 full circles intersecting directly in front of the student. The student should demonstrate the ability to do these manoeuvres on a consistent ground track, despite wind drift and without instructor correction.

Instructor:	Date Completed:

2. The student will learn and demonstrate the procedure turn manoeuvre, both clockwise and counter-clockwise with emphasis on consistent ground track.

Instructor:	Date Completed:

3. The student will learn and demonstrate the loop and split-S manoeuvre.

Instructor:	Date Completed:

4. The student will learn and demonstrate the ability to control the aircraft during high-speed taxi on runway, 1/3 to 1/2 throttle. No weaving should be observed.

Instructor:	Date Completed:

LEVEL 4: **During this level the student should complete all pre-flight checks and should start and tune the engine, check radio and flight controls and slow-taxi to the end of the runway prepared for take-off.**

1. The student will learn and demonstrate proficiency in take-off, showing the ability to maintain runway heading with 15 to 30 degree climb-out angle until a safe altitude is reached.

Instructor:	Date Completed:

2. The student will learn and demonstrate proficiency in slow-flight using 1/3 to 1/2 throttle, and observe the behaviour of the aircraft in a near stall condition. Turns will be 15 degrees maximum bank, while maintaining altitude.

Instructor:	Date Completed:

3. The student will learn and demonstrate proficiency in executing and recovering from straight ahead and turning stalls in slow flight.

Instructor:	Date Completed:

4. The student will learn and demonstrate proficiency in the landing pattern. 15-degree maximum bank will be used. Aircraft must arrive over the end of the runway on the runway heading, with wings level, to complete the manoeuvre.

Instructor	Date Completed:

LEVEL 5: **During this level the student should complete all pre-flight checks and should start and tune the engine, check radio and flight controls and slow-taxi to the end of the runway prepared for take-off.**

1. The student will learn and demonstrate the ability to land the aircraft and bring to a full stop on the runway prepared for take-off.

Instructor:	Date Completed:

2. The student will learn and demonstrate the ability to land the aircraft on the runway from an unexpected forced landing from altitudes as low as the normal traffic pattern.

Instructor:	Date Completed:

3. The student will practice crosswind landings, if possible.

Instructor:	Date Completed:

FINAL LESSON (Lessons 1 to 5 have now been completed)

Instructor #1: Instructor #2:	Date Completed:

Notify Chief Flying Instructor of obtaining wings!

Wings will be presented at the next club meeting, for now this is your **temporary wings permit**. Please have this sheet with you if you plan to fly for verification. *HAVE FUN & FLY SAFELY from: All the Instructors of the Niagara Region Model Flying Club Inc.*

Niagara Region Model Flying Club Inc. & M.A.A.C. "Pilot Wings" requirements;

THE STUDENT MUST:

* be a member in good standing (member of N.R.M.F.C. and M.A.A.C.),

* understand and obey all M.A.A.C. & N.R.M.F.C. rules,

* demonstrate proper frequency control and range check procedures,

* demonstrate safe starting and run-up with an understanding of engine settings,

* demonstrate a controlled take-off with a 15-30 degree climb-out straight into the wind,

* make the first turn AWAY from the flight line,

* trim the aircraft for level flight (cruise),

* demonstrate the circuit pattern, left and right (maintaining altitude),

* demonstrate the figure-8 pattern, left and right (maintaining altitude),

* demonstrate a controlled approach for landing,

* land on the flying field-taxi the aircraft to the flight line (if applicable), shut off the engine, aircraft and radio, preferably in that order,

* remove the transmitter frequency pin from the frequency board.

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IT IS RECOMMENDED THAT IF A STUDENT FAILS TO DEMONSTRATE THE ABOVE PROPERLY, FURTHER TIME IS NEEDED BEFORE PILOT WINGS SHOULD BE PRESENTED.