

Phase One

Experience Radio Controlled Flight

A word of caution before we get into Phase One, you need to have this booklet with you any time you are receiving instruction. The instructor needs your training record to review and update with the results from the day. Don't just read through this booklet and put it away. You're tempted to scan through it and then say to yourself, "Yep, that's right...I know that...that's interesting...I'll never do that". Please, before every day of training, review the phase you are in. It can't hurt and will probably make the learning process go faster. Let's get started.

You have been wondering for some time just what it will be like to fly an R/C model. Now you will find out! It is an exhilarating experience and seems almost magical, especially if you have some experience flying U-Control or other types of model airplanes. It's a really cool thing to see the model respond to your commands, even though it's a long way off and not connected to you in any way.

As was mentioned earlier in this manual, the club has two different types of Buddy Boxes available. There are two different types of transmitter technology in our RC systems. One of our units works with HiTec and Futaba radios, and the other works with JR and Airtronics. One of these will work with your radio and you need to use it for all your instruction. Your instructor will show you how to use this system. The instructor holds your transmitter and it's used to transmit the radio signal to the model. The Trainer switch/button on your transmitter allows the instructor to shift the control sticks' operation to the buddy box that you are holding. You can see how much safer it is for him to be able to change/assume control by merely flicking a switch. A small point here is that the radio manufacturers make these radios to be somewhat balanced when the transmitter antenna is extended. When you use the buddy box, the antenna is collapsed and it will seem a bit unbalanced.

This phase is only for one flight and then you're signed off and it's on to the next phase. Before this flight however, your instructor will explain some things to you. You will get a review of some basic aerodynamic principles as well as his expectations for this flight. For this flight, the instructor will make the takeoff and climb the model to a "two or three mistakes" height. He will trim the aircraft for hands-off flight and establish a fairly slow cruise speed. When you are given the control, he will announce: "You have the airplane" or "You've got it" or words to that effect. When he assumes control, the reverse happens: "I've Got It". There is always a positive exchange of control, with never a doubt about who's flying the model. At first, just try to keep the model in Rutherford County. If you are wandering too far away, he will tell you to turn left or right to return to a reasonable position. This left and right business is Your Left and Right. An interesting point is that many newcomers seem to completely forget which is left and right when they get a transmitter in their hands! You will find the model seems really sensitive to control inputs, and you will have difficulty maintaining level turns. The trick here is to maintain the fuselage level using the elevator controls, and to try to maintain a gentle bank angle.

An aircraft reacts differently from a car or boat when turning. There is no need to maintain a turn control constantly during the turn as you would with the steering wheel of a car. If you hold a constant aileron input, the airplane will continue to increase bank all the way to becoming inverted. To enter a turn, simply move the aileron control a small amount, holding it until the desired bank

angle is achieved, and then releasing the input. The bank angle should be as gentle as you can make it. If the model is some distance away, just being able to see the top of the wing is plenty of bank. Have patience, it will get where you want it eventually. When you are in a bank, the amount of effective lift the wing produces is lessened. The only way to maintain a level turn is to increase the angle of attack by pulling back on the elevator a little bit. Remember, just keep the fuselage level with the pitch control. The greater the bank, the more this is noticeable. In steep turns, nearly all of the elevator travel is required to maintain a level turn. Make it easy on yourself and keep the bank gentle. You won't, but don't say we didn't warn you! Another thing a beginner will do in the first thirty seconds of flight is to somehow get the model directly in line with the sun. Try to avoid this if you can. A trick that helps here is to hold the transmitter up and in front of you to act a sunshade. Sunglasses will also help you see the model.

After about ten minutes of this, the instructor will have all he can stand and will retake control and land the airplane. He might let you taxi back to the starting point. Remember, with an aileron equipped airplane, ground steering is with the left stick, so you need to mentally switch gears or you will taxi into someone's ankles with full aileron control while wondering why the plane won't turn!

Phase Two

Oval Patterns

In Phase One, you were introduced to the concept of making level turns. During this phase, we will continue with this while at the same time introducing the idea of placing the model in a desired position over the ground. We are going to begin controlling where it goes! This phase of training is really the foundation on which all of your training is built. The Oval Pattern is like a race track pattern flown over the ground with the straight legs aligned with the runway. One leg should be near the centerline of the runway and the other placed away from you at a comfortable distance. Your instructor will again make the takeoff and climb to the previous altitude. With the model trimmed for a slow cruise, he will demonstrate the pattern. You will fly past the end of the runway for 200-300 feet and then make a 180 degree turn to fly in the opposite direction. Remember, try to make this turn level and with a gentle bank angle. As you approach a similar position off the opposite end of the runway, make another 180 degree turn to return to the starting point. This pattern should be practiced in both left and right hand turns. If you are noticing a subtle change in altitude and want to correct back to where you began, you need to adjust the throttle a bit. If you are getting too high, come back on the throttle two or three "Clicks" and have patience. The model will slowly lose altitude. When you are once again where you want to be, reset the throttle two or three clicks. Power adjustments are the main control for altitude changes. In all likelihood, you haven't maintained altitude during the turns and are getting too low. Simply add some power until you are once again where you want to be, and then reset the power to where it was. It may feel uncomfortable using the left stick, but try to get in the habit of holding your thumb or fingers on both sticks all the time. It's human nature to avoid adding another control when you're having more than enough trouble with just the right stick. That's understandable, but I've seen times when I threatened to super glue a student's finger to the left stick. Now is the time to incorporate the throttle control. As the ad says, "You can pay me now, or you can pay me later."

Another issue that comes into play during this phase is the effect of wind on a model. If you think of the wind that's present just as you would a mass of water flowing down stream in a river, it would be the same. Your model is carried by the wind just as a leaf is carried along in the current. Your model always flies at a given speed depending on how it's trimmed. If that speed is 40 mph, and the wind is blowing at 10 mph, the speed over the ground will be different. If you are going against (into) the wind the ground speed (speed over the ground) (shadow speed) is $40 - 10$ or 30 mph. If you are going downwind (with) the wind, the speed will be $40 + 10$ or 50 mph or nearly twice the ground speed as in the other direction. Consequently, the time spent on one leg will differ considerably from the other. Another way the wind affects the model is when the wind is coming from the side of the flight path. Back to the river example. If you want to steer a boat across a river that has a bit of current running, you don't just point the bow toward the dock on the other side. If you do, you will end up down-stream somewhere. You must angle your direction against the current in order to travel straight across. Using the same situation, when the wind is from an angle to the direction of flight, the airplane must be "crabbed" into the wind to maintain the desired track across the ground. In a strong crosswind situation, you might have a heading of north while tracking northeast. Have you ever noticed a contrail overhead, only to see it appear to move to one side after some time lapse? Same thing. There is no set rule for compensating for wind drift, but in time you will learn to recognize the track over the ground that the model has and will adjust for it. The ability to recognize the corrections necessary becomes as second nature as steering the boat against the

current. You don't have to think about it, you just do it. Flying in a cross wind will be like this as well, you don't even notice it, you just do it. There are two different terms used in aviation, heading and track. The heading is the direction the plane is pointed, and the track is the direction that its' shadow on the ground is moving. If this is still a bit fuzzy, have your instructor explain it some more. If it's a windy day, he will fly directly overhead going in different directions to make it clearer. Also, you will really notice a difference in ground speed on windy days.

The pattern will probably start out in the same direction as other flyers are using for takeoffs and landings, i.e., left hand or right hand. If you practice in one direction only, you will start to get a certain comfort level with it, only to realize some frustration when you switch to the other direction. This is normal, but must be overcome. Conditions at our field will require a left pattern one day and a right hand the next. It's human nature to turn left easier than right. Our motor skills seem to dictate this. If you don't believe me, ask yourself which direction race tracks go. In full size aerobatic instruction, if you ask a student to perform an aileron roll, 10 bucks says he'll roll to the left. For our purposes though, human factors also indicates that it is easier to land when moving right to left. So it becomes a bit of a trade off.

Expect to spend several flights (days) practicing oval patterns before moving to the next phase. The common mistakes are; not making level turns, over banking, not compensating for wind drift and not maintaining altitude. Although you do not need to be able to do these ovals perfectly, you need a certain minimum skill level before advancing. This is probably the most challenging phase to master, especially when you need to have the ability to make these patterns with left and right hand turns.

This is probably a good time to talk about fatigue, mental fatigue. There are few things we do in life that require more concentration than flying an R/C model. Add to the fact that we no longer have perfect vision, and the hand-eye coordination thing gets uglier. It has been my experience that the average (I know, who wants to be called 'average') student has an attention span of about three flights. This equates to about 1 hour of flight time, and is typical of a lesson when learning to fly a real airplane. And trust me, learning to fly a real airplane is not as demanding. Bottom line is, don't expect to make much progress beyond the third flight. To push yourself is really to start sliding backwards. When you start messing up due to fatigue, you think it's your fault and you tend to get a negative attitude towards it all. Do three and quit. I have known many new flyers that after soloing go flying in the morning and then wonder why all of a sudden they feel like they need a nap in the middle of the afternoon. Mental fatigue is the culprit.

Phase Three

Rectangle Pattern

Now that you are comfortable flying an oval pattern, both left and right, we will move on one more step. The Rectangle Pattern is a simple modification to the oval, and is also the same thing as a Traffic Pattern. Again at a three mistake altitude, your instructor will demonstrate the pattern. Now is when you will use the names for all four legs in the traffic pattern; upwind, crosswind, downwind, base leg, and back to final/upwind. The big difference with the rectangle pattern is that instead of making a 180 degree turn at each end, we will now make two 90 degree turns. Beginning on the upwind leg, proceed about 200 feet beyond the end of the runway and make a SHALLOW turn of 90 degrees away from you. You are now on the crosswind leg. Hold this heading for 5 – 8 seconds and follow with another 90 degree turn in the same direction. You are now on the downwind leg. Fly this leg until you are about 200 feet beyond the runway in the opposite direction. Now start another GENTLE turn of 90 degrees. This puts you on the base leg. Here's where it gets tricky. Plan a turn of 90 degrees from the base leg, so that you roll out aligned with the runway center line. We mentioned earlier that flying RC takes a lot of concentration. Another weird thing about humans is that when we concentrate a lot, our peripheral vision goes in the toilet. At first, you won't have a clue where the runway center line is! It helps to have a visual reference on the ground to assist you with this. The Fire Department building, Flag Pole, Third Telephone Pole, Flock of Buzzards, etc. helps a lot. Stand beside someone who's flying and notice where he is making his turns. This helps, too.

You will find that when you are flying with a crosswind present, you might not have much time on the base leg before you need to turn toward the final approach. The wind could be blowing you toward the runway to the point that you have only enough time to make a 180 degree turn. The way to fix this is to make the crosswind leg longer. Put the plane further away on the downwind leg. You must give yourself enough time on the base leg to plan your turn to final. Remember the Stabilized Approach definition. The initial problems a student has, is that he turns too soon and is angled to the runway, or he overshoots the final. At first, you need at least 5 seconds on base to be able to judge when to make the turn to final. The big problem with having a final approach that isn't lined up with the runway is that if you allow this bad habit to continue as you begin landing training, you will soon find your self trying to flare out for the landing and making a turn to stay on the runway at the same time. Talk about mental overload!! You will not progress in this phase of training until you can plan and execute your turn from base leg to final and have the airplane aligned with the center of the runway. During the later phases of the rectangle pattern, your instructor will be letting you maintain a lower altitude than in the beginning.

In case you haven't noticed, aren't you doing a much better job at maintaining level turns? Isn't it a lot easier than when you first started doing ovals? You're learning!

Now comes the fun part. Throttle control. I hope by now you have forced yourself to keep your thumb on the throttle stick all the time. You are now going to get your moneys' worth from the throttle servo.

With the model established on final, your instructor will ask you to reduce the power a "few clicks". When you do this, the model will start to descend toward the runway. It will be much too high to

land, but it will be coming down, never the less. When the model is somewhere near to being directly in front, the instructor will tell you to advance the power back up again. The model will start to climb. Reset the power when the model reaches the approximate altitude where you were flying originally. As you acquire experience in these patterns, you will begin to be aware of a certain sound your engine is making at the slower speeds. I call this power setting "pattern power". With the experience you now have, you will be able to sense this setting and will use your ears to set this power as you need. If you don't get the power set perfectly, just remember that subtle altitude changes are done with power. If it's trying to climb a bit, set just a little less power. You will notice that when your instructor first tells you to reduce the power, the model will not be as responsive to the controls. This is because there is much less airflow over the control surfaces. That's normal. It's because the propeller is turning slower and providing less thrust (wind). Let your instructor call out when he wants you to reduce the throttle and when to put it back up again. After a few of these patterns, he will probably tell you to bring the throttle all the way back to idle. The plane will now establish a true glide. A point to ponder; some models will transition to a perfect glide, while others drop the nose excessively. Your instructor will help you with this, but at the worst you might have to correct the nose up just a tad. Once the proper pitch attitude has been set, they all maintain a good, hands-off glide angle. The pitch attitude on final should be slightly nose-down. On many trainers, just set the top of the fuselage level and you're there. In all cases, the model should never be pitched up above level, horizontal flight. Flying the model while gliding toward the runway is a piece of cake. The controls are soft, and you don't have to worry about pitch. Let the airplane do its' thing and just thread the needle with the center line using ailerons. Tiny corrections are all you need.

As you gain proficiency with these patterns and with power control, the instructor will begin calling for "idle" further out. Maybe even when you are still on base leg. You will be continuously getting lower when he tells you to "go-around". At first, when you advance the power, you will be going to setting somewhere near the middle of the throttle travel, and somewhat above "pattern power". At this point, we need only to see a stabilized climb. When the model has climbed back to the pattern altitude, again reset the power as required.

As the altitude at the go-around point gets lower, you should strive to set more power for the climb-out. When you set takeoff power (full throttle) the model changes from a docile glider to a fire breathing tiger. The controls become sensitive, the airplane wants to pitch up a lot, and you feel like you are starting all over again. It is important that you show the model who's boss, especially during these go-arounds. Your goal is to fly the airplane STRAIGHT AHEAD, with a STABLE CLIMB. Don't let it turn and don't let it go orbital. Just maintain the runway heading and a positive, gentle climb out. This is easier said than done, but after about twenty of these roller coaster go-arounds, you will be getting the idea.

Is it possible that you will mess up on some of these patterns and approaches? You bet! And here comes the most valuable lesson you can learn flying RC: The importance of making a go-around when things start to curdle on you. Once that approach is no longer stable...GO-AROUND!! Believe me, you will get plenty of these. At first, you're probably having a brain dump and the instructor will call out "go-around!" If he says it, don't whine and make excuses, just do it. If you don't, he'll take control away from you and do it himself! Later you will make some serious points with him if you say something like, "I don't like this, and I'm going around". Statements like this show that you are thinking and evaluating what the airplane is doing. It also shows some necessary

safety awareness. How do you make a go-around? Simple. Just level the wings, and then push the throttle up. When you hear the engine respond to the throttle command, raise the nose to establish a climb. If it looks like you are going to over-fly the pit area, we would all appreciate a little “courtesy” turn. (Otherwise, we might start throwing things at you!) (Or calling you nasty names) (Or suggesting you take up photography)

Once you are getting pretty good at making full power go-arounds, it might be a good idea to sneak a peak at the takeoff training in the next phase. Your instructor might just start you with these any time the go-around is working consistently.

This phase is completed when you can maintain a level traffic pattern, both left hand and right hand. You are planning your turn from base to final so that minimum corrections are necessary to maintain center line alignment. You will have mastered the technique for maintaining a good glide, and will be comfortable climbing out with full power. And most important, go-arounds have become second nature.

The worst is now behind you! The rest is easy. It’s time to start having fun!

Phase Four

Takeoff and Landing

When you mastered the Rectangle Pattern, you were also preparing yourself for this phase. Let's take one maneuver at a time.

Takeoff: A takeoff can be described as two maneuvers in one. The first is going down the runway like a bat out of h*ll, the second is rotating the nose up and climbing out straight ahead. Does the second part sound familiar? It should, its part of the go-around maneuver you mastered in phase three. All we need to do to make a takeoff is to master the "going down the runway" part. This is actually an easy thing to do now that you have some comfort flying RC. To assist you in the first takeoff or two, the instructor will walk with you onto the runway. With the model placed at your feet and pointed straight down the runway, just slowly advance the power up to the stops. Maintain directional control with the LEFT stick, remembering that previous turns were all made with the right stick. Ailerons won't help you one bit with ground steering! Steer the model on the center line as best you can. When the instructor prompts you ("I say, 'Rotate'") simply bring the elevator stick back a bit and the thing will fly. Now remember what you did during those go-arounds and you're all set. Don't forget to switch mental gears to the right stick for turn control once you are in the air. A gouge could be that "When I move the right stick back to rotate, I know I must also use the right stick for turn control" or "I start the takeoff with my brains in my left thumb and switch them to the right thumb when I rotate." Note: we will revisit brain switching later during landings.

What happens if things don't go as planned during a takeoff! In flight, if things went sour, we knew to make a go-around. On the ground a similar mind-set is called for, that being an ABORT. Some full sized guys call them aborts and some call them rejected takeoffs. Either is the same. If it curdles, bring the power back to idle and steer it straight ahead, (or better yet, away from the other flyers). Your instructor is still on the buddy box with you and he will take over with the abort if necessary. For the sake of your training, I hope you encounter a couple of these on your own and learn to make the safe response. A great lesson learned early!

Before we leave the subject of takeoffs, this is important. Never try to force a plane into the air. Just give it a little "up" and it will fly when it wants to. Forcing it to takeoff usually ends with a re-kitted model. Go back and read the definition for Tip Stall. Also, a technique that helps a lot during crosswind takeoffs is to hold some (30 – 50%) aileron into the wind. The reason for this is that the upwind wing will be creating more lift at takeoff, and will cause the plane to roll toward the downwind side. A little aileron will prevent this.

Landing: Where the rubber meets the road, literally. Here is where the stabilized approach pays off in spades. You have learned to bring the model down the center of the runway at a nice gliding airspeed. All that is needed is to give it a smooth introduction to Mother Earth.

The way we accomplish this is through what is called the "Flare" maneuver, or "Flaring Out." When doing this maneuver, we simply level the airplane out at a height that is about waist high. Some models might require a little more height, maybe chest high. As we work ourselves through this maneuver, let's assume the model is gliding at 40 mph. When we 'break the glide' at waist height, the model will start to decelerate. After traveling about 50 feet, it will begin to slow down to

35 mph. Here it will tell itself "Hey, I'm supposed to be going 40! The stability we read about earlier kicks in and the nose drops to try to regain 40 mph. Don't let it!! Add some more up elevator to stop this descent. Notice I said to 'add more elevator'. During this maneuver, you almost never relax any of the up elevator that you have already applied. Now we have forced the model to fly at 35 mph. In about 20 feet, the same thing happens again and the model tries to descend. Again, don't let it! We started the flare at waist height, and twice the model has tried to descend. Realistically speaking, we are no longer at waist height, but now are about 1-2 feet above the ground. As the model continues to slow, you continue to add up elevator. Note too, the more the model slows during the flare, the faster it decelerates. Toward the end of the flare, it is almost one continuous aft movement of the stick. Ideally, just as you run out of elevator travel, the model touches down on the main wheels, followed by the nose gear. You just made your first landing. Yeah!! Don't forget to switch your brain back to the left stick. Again, aileron won't help a bit with ground steering.

Let's think about some design features that are part of your trainer. First of all, 10 to 1 it has tricycle gear, i.e., two main wheels and a nose wheel. The main gear is behind the CG, (balance point), and when the model touches down, it will tip forward. When this happens, guess what happened to the angle of attack that was producing lift! It drops to a point that the wing is no longer flying. Isn't that cool! If you have a tail-dragger instead, it is even more important to have the model in a stalled, three point attitude at touch down. With a tail dragger, the gear is ahead of the CG and at touchdown it causes the tail to come down. If the tail doesn't touch at about the same time as the mains, the pitch up produces lift and it becomes a bounced landing. We could talk for hours about tail wheel aircraft; there is more than meets the eye. Just be glad your trainer has tri-gear. Some day you will own a tail dragger. When you do, this technique will cause you to automatically make three-point landings. This is desirable.

This all sound simple enough, and on a good day it is. What can go wrong? Two things. Sometime during the flare, you put in too much up elevator and the model starts to climb. If it is just a slight amount, accept it and just wait. Sooner or later it will again level out and you can continue with the flare. But if it really zooms back up, what do you do? If you don't have the answer to that, take up photography! How much is too much! Your call, but remember to err on the side of safety. If you make the right decision, you just burn a little more fuel. If you made the wrong one instead, you have repair work to do during the week. When we start to learn landings, things can go wrong really fast. Another human characteristic is that at times like these, we just mentally lock-up. We're overloaded. Now is certainly the time to have that instructor with his trusty buddy box!

The other thing to think about is wind drift during the flare and touchdown. Since we almost always have a cross wind at our field, this is something you will certainly have to deal with. Understand first of all, the model will increase its drift angle as it slows during the flare. This is something that affects every airplane, large or small. The simple way to deal with it is to just maintain the track down the runway. If (when) the wind starts to drift you off center, lower the wing with aileron. Just keep 'turning' the model to keep it centered on the runway. The result will be that the up-wind wing will be lower at touch down. When the main gear touches down there will be a castering effect that will automatically point the airplane down the runway. Again, consider it a blessing that you have a tri-gear model. With a tail dragger, the tendency is to swing the model even further off center. That also is due to the gear being ahead of the CG. A technique that few modelers have perfected, but is worthy of mention, is the Forward Slip. This is a full sized aircraft maneuver that is used during

crosswind landings. If you can someday learn how to do it, you're a better man than I am. But I'm trying. It's the Old Dog-New Tricks syndrome I guess. For what it's worth, I can do it easily in a full size airplane. Here's how. Just as you start the flare, use rudder to push the nose straight down the runway and at the same time lower the wing into the wind enough to prevent any side-ways motion. The result will be that you touch down on the upwind wheel first, with the nose pointing straight down the runway. All the time that you are decelerating during the flare, you are increasing the control inputs to maintain centerline orientation. If we all had good sense, we would be trying to learn this instead of trying to make an airplane hover like a helicopter.

Since there is a little space left of this page, it might be a good idea to mention Touch and Goes. Sometimes called Slams and Scrams. (if you're a navy pilot) (notice I didn't capitalize navy). Touch and Goes are a great way to maximize your training. Once you have learned takeoffs and landings, they are a piece of cake to do. I will suggest that you make the decision to do a touch and go some time during the pattern and not a spur of the moment thing at landing. More important, if the landing isn't what you want, it's far better just to make a full stop than trying to salvage the situation. Plan ahead, make the landing and then quickly ask yourself, "Do I still want to"? Just remember that we switch brain thumbs twice while going about 40 mph when we do one of these. Nuff said!

Phase Five

After Solo

Now that you have learned about takeoffs and landings and are about to get kicked out of the nest, there are a couple of other exercises that will lower your modeling expenses in the future.

Trim: Up till now your model has always been in trim. All of your control inputs were from a spring loaded neutral position. That will not always be the case. Later when you buy more airplanes, (and you will) you might be tempted to make the first flights yourself. If the model is a step up in complexity, it's not a bad idea to get an experienced flyer to test it for you. If nothing more, just to help you trim it out. However, the day will come when some clown comes up and says, "I just bought this model at the flea market. It was a really great deal and I wonder if you could tell me how it flies". The way this usually plays out is that when you look at it, the wing is about as straight as a pretzel. Even worse, you don't have a clue where the CG should be. Never the less, you're about to get an advanced course in trimming a model airplane. The following techniques will help you with any trimming that you have to do in the future. The instructor will reach over and move one of the trim levers to the stop. Immediately the airplane turns into a monster. The thing to remember is that there is no out of trim condition he can give you that cannot be overcome with the sticks. It's just not possible. Rule number one – fly the airplane. This will seem awkward because you are accustomed to having the airplane in trim and not having to hold a constant stick displacement to keep it right side up. Fly the airplane!! Then, ask yourself, "What is wrong"? If the thing is trying to climb like a home sick angle, tell yourself that it's trying to climb! "How do I fix this?" With some down trim, stupid! "Where is the trim lever? I haven't had to use it before!!" I know it's somewhere near the right stick and I think it's on the left side of the gimbal. Feel for it. "I can't find it!" Here is where this exercise will help you in the future. First of all, don't let the airplane head for Wilson County. Keep it front and center. Then, if you can't locate the proper trim lever, hold the transmitter up in line with the model and look for it. Once you have found it, it is a simple matter to get it in trim. It might take two or three attempts to get it where you want it, but it will happen. Fly the airplane, figure out the problem, then locate the proper trim lever and fix it. A graduate course in this is when your instructor (he's the guy you never bought a coke for) moves all three levers to the limits. With the procedure you just learned, you will be able to handle it.

Dead Stick: Here is something that happens to all of us, even the guys that fly electric powered models. Sooner or later, the engine takes a vacation. What do you do? Your friendly instructor will just reach over and move the throttle to idle and tell you "Dead Stick". You will be really surprised at how well you will handle this problem. One of the pluses of making all those approaches is that you have developed a feel for how the model descends when it's gliding. This is more of a confidence maneuver than anything. The only thing that takes some thought is when you are not in a position to make a normal gliding approach. If you are too low, consider making a down wind landing, or if that's not an option, just turn into the wind and fly the airplane down to the ground. If you are off the runway, pick the softest spot and hit it! Hold the model off as much as you can so that you land at the slowest possible speed. Any time that you're too low, just remember that there is no such thing as stretching a glide. The glide angle that you use when making approaches is the best you're going to see. Holding the nose up won't make it glide further, only slower and ultimately steeper. If you are too high, consider making a 360 degree turn. If that isn't an option, then make some S-Turns to loose altitude. We are fortunate with the field we have, there is plenty of

room and most dead sticks will be survivable. Some practice helps. During your training, your instructor will help you with this, but that doesn't mean you can't give yourself some practice when you are first out on your own. You will find that if (when) you are faced with a real dead stick landing, the fact that the prop has stopped rotation will result in less drag than when the motor is at idle. It will seem to glide flatter and use less altitude while descending toward the runway. This is normally good news. It's far better to go off the end of the runway at 20 mph than hitting the weeds at 50!

Check Flight

Once you and your instructor agree that you are ready, one of the following are contacted to schedule your Check Flight:

- Any MPRCF approved Flight Instructor (other than your current instructor)
- Any current MPRCF Officer or Board Member

Successful completion of the Check Flight permits you open and unsupervised flying at the MPRCF field. Keep in mind that the Check Flight is not intended to be a precision pattern contest. We are simply looking for you to show you can control your plane through the fundamentals of flight. So...practice, practice, practice.

The following are what you will be evaluated for on the Check Flight:

PREFLIGHT

1. Check for understanding of MPRCF Safety and Flight Rules.
2. Check for understanding of AMA Safety Code.
3. Check for understanding of MPRCF frequency control system.
4. Set-up and check aircraft, engine and radio (including range check) correctly prior to flight.

FLIGHT

1. **TAXI** – Straight, at moderate speed. Not toward the flight line.
2. **TAKE-OFF** – To the left and right (wind permitting), straight down the runway.
3. **CLIMB** – Straight, smooth, moderate angle of climb.
4. **FIRST TURN** – Start after the flight line ends, at safe altitude. May climb during this turn.
5. **PATTERN** – One left-hand and one right-hand pattern. A rectangular and/or racetrack pattern may be used. Maintain approximately constant altitude including during turns. Straight down the runway. Turns may be either 90 degrees or 180 degrees.
6. **KEEP WITHIN THE FIELD BOUNDARIES.**
7. **LANDING** – Smooth approach. Straight down the runway. Land approximately in front of the pilot. Note: This is not intended to be any kind of “spot” landing. If the pilot chooses, he may “go-around” twice, however, the go-around must be done while maintaining good control. Come to a complete stop. The plane may be carried to the pit area and the engine restarted if necessary.
8. **FORCED LANDING** – Fly the pattern until “cut power” is announced (one to three minutes after take-off). Cut the throttle to idle power throughout the forced landing. Same criteria as normal landing but touchdown must be comfortably within the runway. No go-around. Engine may be restarted if necessary.
9. **TAXI BACK** – Straight, at moderate speed. Do not taxi into the pit area. Stop engine. Do not use your hand on the spinner or throw a rag into the prop to stop the engine. Carry the plane into the pit area.
10. **TO COMPLETE THE FLIGHT** – Turn off the receiver and transmitter.

Post Graduate Flying

Now you are on your own. You just got released and you want to get some practice. Where might some problems lie?

Flight Conditions: First of all, pick your conditions. If it's really windy, it might be better to wait for a better day. If you're flying in strong winds, always keep the model up-wind from yourself. I can't emphasize enough how easy it is to get the model so far down wind that you can't be sure what it's doing. Remember, the ground speed is probably twice the speed you saw when flying upwind. This is even worse when the lighting is poor, i.e., overcast or late in the day. Here's what happens. You have let the model get a long way from you to the point that color perception is lost. The model is only a silhouette. Too late, you realize that you aren't sure where the model is pointed, but you think it's coming toward you in a descending left turn. You would think that you have a 50-50 chance of being right. Wrong. 10-1 it's going away in a right turn. The only thing that was right was that it was descending. Suddenly you are back in a mentally over-loaded condition. Trust me, you seldom recover from this situation. I can tell you some heart breaking stories about this phenomenon. The best you can hope for is that it crashes some where in the landfill and not into a house. If it's windy or getting dark, go home!

Aerobatics: The only point here is that when you start into aerobatic flying, there is a tendency to start banging the sticks and not necessarily thinking about what you are doing. More specifically not thinking where the airplane is. Picture this, you're all over the sky and having a ball. Suddenly you decide that now is a great time to do an Australian Snatch- Back. That's fine, except you are somewhere over Mount Trashmore and, in the process of impressing yourself, you become disoriented with the plane coming towards you inverted. You would swear that you were rolling to the right, but guess what! Try to discipline yourself to always do aerobatics at a front and center location, and always decide before hand what you are going to do next. Again, we could tell you some stories.

Test Flights: There's not much here except to reiterate what has appeared many times in various magazines. You have a brand new model and are eager to see how it flies. Some things to think about would be; As soon as you are airborne and have reset the trims to what is comfortable, it is a good time to see how the beast stalls. Set yourself up at a comfortably high altitude and in front and center. Slow the airplane until it stalls. It is important to notice how much back stick (up elevator) you had when the stall broke. This is a good indication of how it will behave when it comes time to land. The amount of elevator needed to stall is just another airspeed indicator. A cookie here is that when you are about a wing span equivalent altitude, the model will be influenced by ground effect (ground cushion) and will stall at a slower speed than at altitude. As soon as you are comfortable with the handling qualities, set it up for a landing. Make a complete inspection of everything you can to make sure nothing has come loose and that the structure is still intact.

Well, that's it! We're all finished and I hope you have enjoyed this as much as I have. But with our hobby, there is always another challenge on the horizon. I can only say this, I've told you everything I know and you're still not very smart! Have fun and teach a kid to fly.

MIDDLE POINT RC FLYERS (MPCRF)

SAFETY AND FLIGHT RULES

1. A valid AMA license or MPCRF membership card is required in order to fly.
2. Frequency Control Board use is mandatory at all times. Flyers are expected to maintain proper rotation when sharing frequencies with other pilots. If there is a conflict with channel use, only the pilot flying should have their card on the frequency board.
3. Transmitters **WILL NOT** be turned on unless your channel is currently not in use, and you have placed your AMA or MPCRF card over your channel number on the Frequency Control Board. Violators of this rule are financially responsible for any damages that result.
4. The pit area is restricted to AMA members and their guests. Pilots are responsible for the safety and behavior of their guests when in the pit area.
5. No powered taxiing into the pit area.
6. All pilots must fly from behind the Pilot's Station safety fence. Exceptions are allowed for flight instruction and for activities in the grass runway area.
7. All flights will originate from the runway, including hand launches, with takeoff and landing direction determined by reference to the windsock.
8. All air traffic below seventy-five (75) feet altitude must follow the prevailing traffic pattern direction.
9. Landing aircraft have the right-of-way, dead stick landings have priority.
10. All two-stroke powered aircraft must be equipped with a functional muffler system. All aircraft are limited to sound levels of 90 db or less, when measured at nine (9) feet.
11. No alcoholic beverages are allowed on-site, and no pilot may fly within eight (8) hours after consuming alcoholic beverages.
12. Each member is responsible for their own trash removal. If you brought it, take it home with you!
13. Absolutely no flying permitted over Jefferson Pike or the Allied Waste Ind. buildings.
14. No flying is permitted over the pit area or behind the zero line.
15. It is the responsibility of all club members to enforce these rules. The Board of Directors is charged with the responsibility to administer discipline in cases where warranted.

BY FLYING AT THIS SITE I AGREE TO HOLD ALLIED WASTE INDUSTRIES AND THE MIDDLE POINT SANITARY LANDFILL HARMLESS FROM ANY AND ALL CLAIMS RESULTING FROM MODEL AVIATION OPERATIONS AT THIS FACILITY.