

# R/C Sportflyer

## July, 2003

Next Meeting at Stamm Field – Thursday, July 3 @ 7:00 p.m.

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Send newsletter information and items for sale or wanted to the newsletter editor. He's almost always home after 9:00 PM or call his work number, 913-624-2570, it has a recorder, or send via Internet.

**Club Web Site:** [www.rcsportflyers.com](http://www.rcsportflyers.com)

### Minutes of June 5, 2003 Meeting

We had 17 members and 4 visitors at the May meeting. The visitors were Lon Haney, Lowell Thomas, Les Boll and Mike Boll. Lowell and Lon have been around the club for some time.

The minutes of the last meeting and treasurer's report were approved.

**Safety:** Cliff Miller advised everyone to not fly too close to the safety fence, we need to keep an eye on the distance. Runway passes should be made between the center of the runway and the tall grass on the far side. Also, the safety fence has some holes that need repair.

**Combat:** John Carnal reported that there hasn't been any combat lately, but there will be some at the fun-fly so bring combat planes.

**Website:** Scott Goergen - Gerard has passed website duties over to Scott. The website is currently going through a revision and should be released in the next few weeks with a new layout.

**Training:** Dennis reported that training is getting off to a slow start this year with only a few students so far, but should pick up in the next month.

**Formation:** Dennis reported, "No damage, no mid-air, no practices." It's slow right now but should be picking up after the fun-fly.

**Parks:** Bernie Drummond said that the discussion is still around the Jackson County Park Affiliate Program. He reported problems with our trees and JD said the Parks should be able to do something.

**Field Maintenance:** Bob Armstrong has raised the field entrance pads and cleaned up all the pilot blocks, the field looks great. Fertilizer needs to be put down very soon. Cliff Albright donated supplies to fix the fence. The lawn mower trailer needs a new floor, which should cost about \$50. Saturday, June 14<sup>th</sup> was set as the day to put down fertilizer.

**A Motion** was made by Mike Krass for \$100 from the mower fund be allocated to fix the trailer. Seconded by John Urton and passed with none opposed.

**RCSF Open Fun-Fly:** Dave reminded all of the fun-fly on June 7<sup>th</sup>. All is coming together great with no major snags. The \$10 entrance fee can no longer be called a "fee." We can accept club "donations" but can not charge people to fly at a public field. The Parks department will not let us make money on public land. A Sportster 20 is up for purchase if the club wishes to buy it for the raffle prize.

**A Motion** was made and passed to buy the Sportster 20 for the fun-fly for \$100, with none opposed

**Jackson County Parks Affiliate Program:** The draft agreement that was in the previous newsletter was discussed. Many club members had concerns about all R/C clubs being represented by a single person. At the next meeting we should consider selecting a representative for our club. The topic was pretty short lived. There are more meetings that have to take place and the agreement is still in the draft form. Once the parks decide what they want to do and how they want it to work the club can make a more informed decision.

**Raffle:** The digital multi-meter was won by Mike Krogh. The airplane stand was won by Dennis Tschirhart.

**Show and Tell:** None

Many thanks to Scott Goergen for taking meeting notes for me on short notice - Walt Calkins.

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Treasurer's Report – Mike Krogh has been spending quite a bit of time traveling and hasn't been able to get a treasurer's report put together for the newsletter. However, the initial look and the financials from the fun-fly looks like we came out money ahead this year. If Mike is in town for the next meeting I'm sure he will be able to give us an update. So far there have been no sightings of him leaving the country with a large sack of money over his shoulder. Or, for that matter, a small sack of money, either. - Walt

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#### Calendar of Events – Models

- July 3** RCSF Club Meeting - Stamm Field  
**July 5** RCSF Club Fun-Fly  
**August 7** RCSF Club Meeting - Stamm Field  
**August 9** RCSF Club Fun-Fly  
**Sept 6** 49<sup>th</sup> Jumbo Fly-In  
**Sept 5-7** Ozark mountain Jets Rally, Sullivan, MO Regional Airport. Steve Collins, ph: 636-493-2681  
www.ozarkmountainjets.com  
**Sept 13** KCRC Warbird Fly-In  
**Sept 27** RCSF Club BBQ  
**Jan 17, 2004** KCRC Swap-N-Shop

#### Calendar of Events – Full Scale

**Jun 27-Jul 1B-17** *Aluminum Overcast* at Lee's Summit Airport, rides a low-low price of \$395.  
<http://www.b17.org/schedule.html>

- July 17-19** Heart of America CAF Open House, New Century Airport  
**July 29- Aug 4** Oshkosh! 100<sup>th</sup> anniversary of Wright brothers flight  
**Aug 27-Sep 1** Antique Aircraft National Fly-In, Blakesburg, IA  
**Sept 11** Recreation of the 1932 Ford National Air Tours - Includes planned stop in Kansas City, (tentative date).  
More information to come as it's available. (www.NationalAirTour.org)

#### Aviation on TV

- Dec 17** Documentary of the Wright brothers  
**Fall '03** (date not finalized) Documentary of the Red Baron, WW I ace Manfred von Richthofen
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More humor from AVflash, Vol. 3, Issue 35; Monday, September 1, 1997

JAL PAX FIT TO BE TIED: The normally staid Japanese -- in this case Japan Airlines -- have adopted a policy many other carriers around the world may soon copy. JAL has given its flight attendants permission to tie up unruly passengers aboard their flights. The carrier's new policy comes on the heels of some 15 cases of violence by passengers on its planes thus far this year alone, with 40 in all of 1996 up from 15 total in 1995.

THESE TWO PROBABLY SHOULDN'T FLY JAL: It's stressful being an air traffic controller, even more so at a major terminal like New York's La Guardia. That may be the only defense for two controllers who engaged in a fist-fight in La Guardia's tower cab Thursday, apparently involving a racial slur. AVweb was unable to learn whether either participant tried to bite the ear of the other.

CAL DC-10 LOSES NUMBER THREE: A Continental Airlines DC-10 reportedly experienced an engine failure over central Brazil Thursday night, but safely landed at Brasilia. There were no injuries among the more than 200 passengers aboard. What makes this newsworthy you may ask? According to sources, the event occurred as the cabin movie screens were displaying a map showing the plane's position and altitude, vividly illustrating the ensuing loss of 7,000 feet of altitude and a 180 degree turn, much to the consternation of distressed passengers. It was nearly 30 minutes before the pilot advised passengers what was happening.

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This is the rest of the article on combat tactics that I started last month. As I mentioned last month, it is written for simulators but, based on my zero knowledge of combat, it looks like it is fairly applicable to the real thing (either full scale or model). - Walt.

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From <http://www.njahof.org/jager/tactics.html>

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### **Air Combat Tactics (continued)**

#### **The Defensive Spiral**

This maneuver is basically a barrel roll while heading straight down. The defensive spiral is employed in an extreme emergency to attempt to lose a pursuing attacker.

Begin the defensive spiral by abruptly diving or split-s (try to surprise your attacker with the suddenness of this move) and then proceed in the same manner as with the barrel roll except that you must back off on the throttle and maybe even apply a touch of flaps to prevent the aircraft from suffering from compressibility. Watch your opponent in your rear view mirror and pull your aircraft out of the dive as soon as you catch your attacker out of position to follow you. Of course, you must be keenly aware of your altitude so that you don't wait too long to begin your recovery. This is a very risky maneuver but if you're taking fire or are about to it's probably worth the risk.

As you pull out of the spiral your air speed will be high, try to take advantage of this energy and extend away from your attacker or climb back up to gain an advantage.

#### **The Skid**

A skid (sometimes called a "slip") is a lateral slide to the left or right with very little loss of altitude or change in air speed. It is commonly used to foil the aim of an attacker who is parked on your "six" and getting ready to fire upon you. When performed correctly, your plane will bank slightly and slip laterally out of your attacker's line of fire giving you an opportunity to perform another evasive BFM.

Start the maneuver by dipping one wing and applying opposite rudder. The aircraft will skid in the direction of the dipped wing. The entire move should last only about one or two seconds and should be immediately followed by another move such as a break turn or barrel roll. Like in the defensive spiral, the secret to the skid is surprise. You want to dip the wing and skid in the flicker of an eye so the attacker is caught off guard. Take advantage of his surprise and be out of Dodge before he can recover.

#### **The Jink**

It could be argued that the jink is more of an ACM than a BFM because it does not introduce any new move but since it consists of a single basic maneuver, I decided to include it here in the BFM section. Basically, a jink is any unexpected sudden move designed to get your plane out of the line of fire of a pursuing attacker. For example, an attacker is rapidly closing on your tail when just at the last minute you break turn out of his line of fire causing him to overshoot. Frequently a defender will perform several jinks in rapid succession. He might break turn suddenly, wait two seconds then jerk his stick back to cause his plane to rare upward quickly then after another second roll 180 degrees. After each move, the defender will check the position of his attacker to see if his jinks are having any effect. The secret of the jink is to be completely unpredictable. The more unpredictable the more successful is the jink.

### **Offensive Maneuvers**

#### **The Dive (Boom)**

The dive (sometimes called the boom) is used when attacking an opponent who is at a lower altitude. This maneuver exchanges altitude for speed and requires precise gunnery because the attacker typically has but a second or two of firing opportunity.

The dive is accomplished by applying forward pressure on the stick and perhaps a backing off on the throttle and/or a touch of flaps to control speed to prevent compression. The dive is frequently followed by a zoom to attempt to regain some of the altitude sacrificed during the diving maneuver.

#### **The Zoom**

The zoom is a simple maneuver in which the pilot exchanges air speed for altitude. A common mistake that rookies make is to climb at too steep of an angle in which they burn off too much speed and fail to gain the kind of altitude they would like. The best zoom climb rate is about 4000 feet per second.

The zoom climb consists of gently pulling back on the stick achieving around 4000 ft/sec until just above stall speed (the stall horn begins to go off) and then leveling off at the top of the climb. Make sure you have sufficient air speed before zooming. Flaps are sometimes used to gain altitude faster but this will bleed off air speed much quicker and the attained altitude will be less. The zoom is normally performed while the opponent is still some distance away or following a dive maneuver.

#### **The Coordinated Turn**

The coordinated turn is a turn in which air speed and altitude are perfectly preserved. Unlike a break turn which bleeds air speed badly, the properly executed coordinated turn will neither lose air speed or altitude.

The coordinated turn is accomplished using a careful coordination between ailerons and rudder. The pilot gently applies back and side pressure on the stick while at the same time applying just enough rudder in the same direction as the side pressure to "balance" all the forces so that the plane gently makes a turn without lose of air speed or altitude. The pilot who is proficient at this maneuver is one who has practiced it enough to know just how much control needs to be applied to each of the planes control surfaces to maintain the plane's energy.

#### **The Chandelle**

The chandelle is a zoom climb combined with a coordinated turn. The idea is to trade air speed for altitude and at the same time reverse the aircraft's heading. The properly executed chandelle will gain the highest possible altitude in the least amount of time while at the same time reversing the heading leaving the aircraft traveling 180 degrees from the original heading at a significantly higher altitude. The disadvantage of this maneuver is that the aircraft is very near stall speed at the maneuver's completion.

The execution of the chandelle consists basically of the techniques employed for the coordinated turn with a little more back pressure on the stick so that the plane will be gaining altitude throughout the turn. The pilot performing the chandelle is careful not to apply so much back pressure so as to lose too much air speed that will cause a stall during the climb. A poorly executed chandelle can easily result in a loss of energy without accomplishing anything more than a heading change.

#### **The Immelmann**

Sometimes called a Half Loop, the Immelmann, named after the WW1 German ace Max Immelmann, consists of a zoom climb followed by a half barrel roll at the top of the loop. It's purpose is to gain maximum altitude and at the same time reverse heading. This maneuver is commonly mistaken for a defensive maneuver to evade an enemy from attacking the six position. This is very dangerous because any upward movement with an attacker behind will move the defender's aircraft right through the attacker's forward quarter presenting an excellent deflection shot opportunity. Any maneuver which involves upward movement should rarely be considered a defensive move

Begin this maneuver with plenty of initial velocity. Pull back on the stick and proceed to climb just like a Zoom except don't level off, just keep on coming over the top. At the top of the loop, your aircraft, should be completely inverted. Apply side pressure to the stick and roll the aircraft over till it is fully upright. At the completion of the maneuver the aircraft should be back in level flight at a higher altitude and 180 degrees from its original heading. The Immelmann is commonly used for setting up an attack.

#### **The Split-S**

The Split-S is the exact inverse of the Immelmann in that the half loop is down rather than up. This maneuver combines a half-roll and dive to increase speed. It is commonly used for quickly reversing direction and increasing speed. The cost paid for such a move is a dramatic lose in altitude. Due to the nature of the diving maneuver, make sure you have enough altitude to spare prior to performing this move.

Start this maneuver by rolling your aircraft to one side till you are inverted. While reducing throttle, pull back on the stick and enter into an inverted dive. Continue to apply back pressure on your stick until you are back in level flight. As soon you are back on level flight, increase throttle again. Because the Split-S gains speed very quickly, take care not to increase velocity too fast or you may end up compressing. This maneuver is also commonly mistaken for a defensive maneuver. This is only partly true. If performed with an enemy behind you, who is low on energy, following you through the maneuver just solved his problem for him. This can be especially deadly with an enemy that can turn tighter than you. The Split-S maneuver is more commonly used for setting up an attack on an enemy that is low and traveling in the opposite direction. If performed correctly, it can set you up on your opponent's tail very quickly.

#### **The High Yo-Yo**

The High Yo-Yo (first perfected by the well-know Chinese fighter pilot Yo-Yo Noritake) is a maneuver designed to prevent overshoots and to gain a lead on a tighter turning defender. Basically the High Yo-Yo employs the vertical dimension to cut down the turn radius so as to effectively perform a tighter turn than could be performed with a simple Break Turn.

An attacker will use the High Yo-Yo when pursuing a defender who has entered into a hard Break Turn and is pulling out of the attacker's forward quarter causing the attacker to overshoot and ultimately end up on the defensive. As soon as the attacker realizes he is not going to be able to pull lead he quickly levels out and pulls his plane up into the vertical. He continues to apply back pressure on the stick until the aircraft begins to "fall over backwards" and into the path of the defender. During this climb, the attacker will fix his lift vector (an imaginary line shooting straight out the top of the pilot's helmet) right on and eventually just ahead of the defender. As gravity pulls his plane over into the flight path of the defender, the attacker will gently roll his aircraft over and fall in behind the defender for a tracking shot opportunity.

#### **The Low Yo-Yo**

The Low Yo-Yo is used by an attacker at co-altitude with a faster moving defender and when the attacker's air speed is too low to pull up into a climb. In this case, the attacker will combine the Break Turn with a Dive to increase air speed and allow the attacker to effectively cut across the arc path of the defender allowing him to come up under the defender for a deflection shot opportunity. This is a risky maneuver in that if the attacker misses the opportunity for a good shot he is left with a very low air speed and is at a lower altitude than his opponent.

The attacker usually begins the Low Yo-Yo out of a Break Turn. Side pressure is applied to the stick to cause the aircraft to enter a slight dive while still maintaining the Break Turn. As the plane continues to fall it will begin to level out and "short cut" the arc of the path of the defender. With precise timing, the attacker will have enough energy to pull back up and meet the defender coming around the arc and gain a deflection shot opportunity. The attacker will most likely need to employ some flaps to make up for the loss of altitude and to allow him to climb back up to his former altitude. The attacker will be moving very slowly at the end of this maneuver making him extremely vulnerable to attack from other opponents or the defender if the shot is missed.

### **The Wing Over**

The Wing Over is used mostly when attacking ground targets or very slow moving targets. Originally named the Immelmann Maneuver (during WW1, the modern day Immelmann was called simply a "Half Loop"), the Wing Over consists of a Zoom climb and a flat 180 degree turn at the top of the climb so that the aircraft will dive back down much like a pendulum.

The Wing Over is accomplished by first entering into a Zoom climb and just before stall, full rudder is applied to yaw the aircraft around 180 degrees where it will slowly begin to pick up speed again and head back in the direction from which it came. No aileron is used at all to accomplish the turn at the top of the climb making it a very tricky maneuver and one that must be practiced repetitively to master.

### **Energy Management**

While dog fighting, **energy** is everything! During an engagement, you must constantly be evaluating your own energy while at the same time observing the energy of your opponent. Every move you make must be an effort to gain an energy advantage. Knowledge of your own aircraft as well as that of your opponent's is of the utmost importance. During a fight, both opponents will trade airspeed for altitude or altitude for airspeed potentially many times in an effort to gain an energy advantage. The good pilot will choose maneuvers that will complement the aircraft he is flying while trying to force his opponent to revert to a maneuver that depletes his energy resulting in a disadvantage for him. Upon engagement, make every effort to gain an energy advantage over your opponent. Once this is achieved, go on the offensive and stay on the offensive! Many pilots will make a quick move which will give them a distinct energy advantage. But then, while basking in their pride and not continuing to press the offensive, they lose that advantage as quickly as they obtained it. The lesson here is to realize things happen at lightening speed and once an advantage is gained, it must be maintained by continuing to aggressively pursue the bogey. You must become familiar enough with your aircraft that you can perform 5-8 successive split second maneuvers which play to your aircraft's strengths while forcing your opponent to make moves that play to his weaknesses. All this needs to be so second nature that you are thinking about the next set of maneuvers or even the set after that.

Let's assume we are cruising along at 250 Kts at 7000' in our FW-190 and we catch a glimpse of a Spitfire diving out of the sun toward our three o'clock position. OK, first we assess the situation. Of course, in reality this assessment must take place before even a single tick of the second hand or you're flying career will end in just a couple more ticks. At this instant our opponent has the energy advantage and is on the offensive. Our first maneuver must be one that complements the strengths of our aircraft and at the same time causes our opponent to do something his aircraft is not very good at. One of the FW-190's greatest strengths in CFS is its dive speed. This characteristic is also a weakness for the Spitfire. In addition to that, the Spitfire is seriously under armored as compared to the FW. We also know that because the Spitfire has a significantly lesser wing loading than does the FW, he will want to engage us in a turning battle. We must not try to turn with him! Since he is coming out of the sun, if we could counter in such a way as to get him to turn into the sun we could gain the sun advantage. After this quick assessment, we roll right into a vertical dive. This accomplishes four important things. First, it puts some separation between us and the bandit. Second, since he is attacking our three o'clock position, a roll to the right will shorten his window of opportunity and hopefully will cause him to over fly us. Third, this right roll gets us moving in the opposite direction he is flying in which will cause him to make a hard turn costing him air speed. Since we have entered into a dive, we are trading altitude for airspeed and this is what the FW does quite well. Finally, we will be moving in a direction that will cause our bandit to have to turn into the general direction of the sun. Assuming the Spit turns and dives with us, he will slowly but surely begin to lose the advantage because the FW will very quickly gain airspeed at a much greater rate than the Spit does resulting in a significant separation. At this point, the FW gains a slight advantage and more importantly has bought us some options. If the Spit reacted quickly and turned without losing much airspeed (therefore the separation is minimal) our best option might be to continue to dive and finally extend away and avoid the battle altogether. If our maneuver sufficiently surprised our opponent, we may find that we now have good

separation and significantly greater airspeed thus significant energy advantage. If this is the case, we are now ready to take the offensive. We might execute one or two sudden rolling jinks. If this causes our bandit to react and make a turn, we could then pull up hard (watch those G's) into the sun and trade all our airspeed for altitude. Since our airspeed is much greater than our opponent's combined with the reaction turn our opponent has made, we find ourselves above him with the sun at our back. We now have a new scenario featuring us with an altitude advantage, the sun at our back and the opportunity to boom our opponent before he is able to regain his energy. If he does recover and turns on you, don't turn with him or you will surely lose. Simply keep on diving extending away and Immelmann or Chandelle back up to altitude to start a new scenario. An important thing to keep in mind is not to try to make something out of nothing. If you don't have a distinct advantage, keep maneuvering until you do or extend away and escape.

### **Situational Awareness**

Simply stated, **situational awareness** is knowing exactly where you are with respect to (a) geography, (b) altitude, (c) other friendly and bandit aircraft, (d) attack or escape strategies in addition to understanding your own energy situation as well as the energy situation of all other aircraft in your vicinity. The tricky part about SA is that it is constantly changing. The good pilot is forever evaluating the situation looking for escape routes, where his friendlies are and most importantly where his enemies are. He knows at all times who has the energy advantage and who does not. Good SA is developed by (a) the discipline of constantly scanning every angle of the sky (especially your six) so that you know exactly where other aircraft are and where they are heading, (b) good communication with other friendly aircraft so that all friendlies function in close teamwork, (c) a "second nature" understanding of energy management so that you know immediately who has the advantage, and (d) enough practice and experience so that you move instinctively without hesitation. As stated in the **Energy Management** section, you should always be thinking several situations ahead so that you know what is going to happen before it happens. This kind of awareness comes only from practice and experience.

### **Turn and Burn (Angles) vs. Boom and Zoom (Energy) Fighting**

A dog fighting tactic can be roughly divided into two basic types. **Turn & Burn** (known as **Angles**) fighting is a tactic in which a fighter tries to gain a position advantage on his enemy by out-turning him. Energy is always an important consideration in any fight but the T&B fighter relies more on his ability to turn than he does on his energy. A **Boom & Zoom** (or **Energy**) fighter on the other hand is constantly building an energy advantage (**zoom**) and then converting that energy to a snapshot (**boom**) opportunity.

### **Turn and Burn Fighting**

The tactic a fighter chooses depends to a large degree on the type of aircraft the pilot is flying and the type of aircraft of his enemy. The classic T&B aircraft is one with a light wing loading and a less than superior dive capability. Relatively low powered aircraft often find an advantage by employing a T&B style of dog fighting. Otherwise outdated fighters have been able to extend their effective life spans by utilizing this particular tactic. Biplanes such as those from WWI are primary examples of T&B fighters. The Hurricane and Spitfire are also aircraft which exhibit superior turning capability because of their relative light wing loading. None of these aircraft however are particularly known for their diving speed. The T&B pilot will rely heavily on his aircraft's ability to turn inside his enemy so as to slip onto his six to obtain a good close-in opportunity. The pilot of a good T&B fighter will try to lure his higher wing loaded counterpart into a turn fight. If his opponent complies, the T&B pilot will allow his enemy to chase him into a turn until he eventually is able to turn inside the less capable aircraft and setup for a high percentage kill. During the early stages of the war in the Pacific, the Zero enjoyed an almost mythical reputation against the heavily armored and very high wing loaded U.S. warbirds because of its incredible turning capability. In fact, U.S. pilots were forbidden from turning with the Zero as it always resulted in disaster for the Zero's opponent. That superior turning of the Zero however did not come without cost. The Zero was virtually unprotected against even the lightest of armament. Once this weakness was realized, Allied forces begin to enjoy a higher degree of success. A bad habit many T&B pilots develop is their tendency to rely entirely on the T&B tactic and forget about energy management. To illustrate, two similar aircraft utilizing T&B tactics to an extreme could result in both aircraft attempting to turn inside one another and continuing to chase one another around in a circle. Such a stalemate has been called a "Lufbery" named after the WWI American ace, Raoul Lufbery who was believed to have developed this tactic. The Lufbery is not considered to be a very effective tactic in modern (WW2) combat. In fact, many inexperienced fighters tend to fall into the Lufbery habit which more often than not results in loss of their life.

### **Boom and Zoom Fighting**

The B&Z fighter relies primarily on gaining an energy advantage over his enemy. Beginning from a higher altitude than the bogey, the B&Z fighter will enter into a dive developing maximum airspeed. He will then use this excess airspeed to attack (boom) the bogey and obtain a snapshot opportunity. Before the enemy can retaliate, the attacker will pull hard into a climb (zoom) and convert his airspeed back into altitude thus maintaining his energy advantage. A good B&Z pilot must be more patient than the T&B fighter. The T&B attacker will work his way into a position where he can slide "into the saddle" and line up for a sustained firing opportunity on his enemy's six o'clock position. The B&Z attacker will typically

only possess a second or two to get off a shot before he must zoom out. Good marksmanship and lethal gunnery combine with a high powered aircraft capable of developing good diving speed and the power to climb out make up the ingredients of a classic B&Z aircraft. WWII examples of primarily B&Z aircraft are the P47 Thunderbolt, P38 Lightning, and FW 190. These aircraft possess excellent diving speed, tremendous horse power, and deadly fire power. Just as with the T&B fighter, the B&Z pilot must not rely entirely on the energy tactic. This is especially important when you have inflicted a significant hit on your bogey. Rather than continuing to boom and zoom, it may be that your opponent's capability to turn has been seriously lessened so that you can maneuver into position for a typical T&B kill. As with any kind of warfare, aggressiveness is the key to B&Z fighting and the tactician must always seek to take the offensive. Depending on the type of aircraft and the situation, a combination of T&B and B&Z tactics can give a fighter a significant advantage. Knowledge of the characteristics of his own aircraft and the other aircraft around him provide the pilot with proper style of fighting he should employ.

### Flight Dynamics Accuracy, CFS versus Actual Aircraft

Comparisons versus accounts made by the following pilots and their qualifications

Textual - Capt. Eric Roberts, RAF – Test pilot of captured AIXs equipment, 1943-47 author, *Wings of the Luftwaffe*

Interview - Maj. General Frank Gerard, USAF, 36 P-51 Missions, 8 confirmed kills.

Interview - Oblt. Hans Zwiller, JG51, 1943-45

Hawker Hurricane	CFS Hurricane vastly superior in performance to actual a/c
Spitfire Mk I	CFS roll rate is poor compared to actual a/c, climb rate poor
Spitfire Mk IX	CFS model lacks horsepower, better turning than actual
P-51	CFS model too quirky, stalls too easily,
P-47	CFS model lacks roll rate and dive rate
Me109E	CFS model lacks turn rate, control response is weak
Me109G	Climb rate is below average, roll rate is poor
Fw-190	Roll rate is poor, low altitude performance lacks.

The overall flight dynamics of the CFS aircraft are, at best, mediocre. To see the Hawker Hurricane as being the aircraft of choice in multiplayer games says it all. The most accurate representations of flight models appear to be the Bf-109E and Spitfire Mk I. The most appalling model in the lot overall is the Fw-190, who's actual entry into WW2 caused the RAF to rush the Mk IX Spitfire into development. A Fw-190 in the hands of an average pilot was an equal match for the Spit IX and in the hands of an 'Experten', equal to the P-51 in a dogfight. Not so in CFS, where the Fw-190 is modeled after a brick with wings.

Learn to use whichever aircraft suits your flying style. Each aircraft has its distinct advantages and disadvantages. Learn how to use them.

About the compiler/author, questions or comments:

Jeff Herne aka JG2\_Freiejager, is an author, WW2 historian, and the Director of the New Jersey Aviation Hall of Fame & Museum, located just outside New York City. A published author, he is a member of the NJ Department of Transportation Aviation Historical Subcommittee, the Company of Military Historians at West Point, 8<sup>th</sup> Air Force Association, Army Air Force Historical Society, Tin Can Sailors, Atlantic Coast Chapter of WW1 Aero Historians, and Honorary Member of the Korean War Veterans of America and USS Cushing (DD-797) Association . In addition, he holds memberships in the Nautical Research Guild, and Ship Model Society of Northern New Jersey. He has lectured and exhibited at West Point, the USS Intrepid, International Plastic Modeler Society National and Regional Conventions, and Nautical Research Guild National Convention. He flies a vintage 1947 USAF L-17B Navion and homebuilt RV-6. In addition, he is the co-founder of the WW2 44th Recon Troop Reenactment Group. Additional hobbies include skiing (professionally at one point), model making, and writing.

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