

Strategy & Tactics: **Leyte Gulf**

ACM (Air Combat Maneuvering)

by Steven J. Freitas

"Only the spirit of attack borne in a brave heart will bring success to any fighter aircraft, no matter how highly developed it may be."

Lt. General Adolph Galland, Luftwaffe

104 Air Victories, WW-II

Air combat tactics were born the first day on which two fighter aircraft of opposing sides took to the air and clashed in mortal conflict. Successful ACM, air combat tactics' educated result, has been developed and refined over the past seventy years, and despite the steady strides in military aviation technology, its lessons, goals and techniques remain similar to this day. Good ACM is no secret, and if we computer jockeys have found any mystification enshrouding this discipline, it is our undoing in the air.

Although this column will be concerned with ACM as it applies specifically to Leyte Gulf, the fundamentals can be applied to any other air combat simulation in which the rules of aerial flight are sufficiently realistic (as in, when the stick goes back, the plane goes up!) This particular edition will focus on the more sterile attack where you have the luxury of picking out an aircraft in advance at radar range and closing with him at your chosen speed, altitude and heading. However, the range will still get close, the guns will blaze, and good ACM will carry the day for the winner.

Above all else, ACM requires practice. By becoming increasingly familiar with and comfortable in your aircraft, you will be able to spend more time observing enemy tactics, capabilities and patterns. And if you haven't noticed it yet, being quick on the keyboard is of vital importance. Keyboard acuity as a subject may only occupy a few lines in this article, but you underestimate its value at your peril.

"Great pilots are made not born.... A man may possess good eyesight, sensitive hands, and perfect coordination, but the end product is only fashioned by steady coaching, much practice, and experience."

Air Vice-Marshal J.E. "Johnnie" Johnson, RAF

38 Air Victories, WW-II. Leading RAF Ace in Europe.

Hellcats, unlike simulations that lean toward more contemporary aircraft that employ missile weapons, provides us with an environment where the air fighting is always up-close and personal, in-your-face, knock-down, drag-out, gunnery exercises at the expense of aircraft, gun barrels or both. As such, keeping visual sight of the enemy at all times in an engagement is of paramount importance. An unknown fighter pilot once noted, "You can't fight what you can't see."

This applies not only at close range, but also when the enemy is still at the 15 mile mark on your radar. (Have you become adept at hitting the tab key furiously in the middle of an air engagement? Get used to it; it's your own private air traffic control, and your lifeline in a chaotic furball of a dogfight.) When the enemy is beyond visual range and you plan to engage him with canopy-ventilating intent, then is the time to plan for the opening stages of the attack. If it is possible, use the [E]nemy View key to gauge the enemy's aircraft type, airspeed, heading and, above all, altitude. And when you use the view key, make certain that the aircraft you're viewing is indeed the one you're approaching with intent to engage. Nothing's more surprising than to get a view of a Zero at 140 kts making a wonderful target and then to get jumped by a Ki-84 doing 300 kts!

"The rule of all air combat is to see the opponent first. Like the hunter who stalks his prey and maneuvers himself unnoticed into the most favorable position for the kill, the fighter in the opening of a dogfight must detect the opponent as early as possible in order to attain a superior position for the attack."

Lt. General Adolph Galland

When approaching a single enemy aircraft, after having gauged his altitude through the View key, move your throttle to 100 percent (if it isn't there already) and try to position your aircraft 500 feet below the Jerry (another term for the enemy). This provides the important benefit of silhouetting your target against the sky rather than the sea or land. Watch your radar carefully to note whether the bogey is drifting left or right, and adjust carefully with rudder, as rolling the aircraft robs it of speed. At this point, you should be approaching the

enemy in an excellent position to carry out a successful attack. You'll have good speed (a valuable commodity once you begin turning in the dogfight), you'll know approximately when the target will come within range, and you'll know approximately where he will appear. The stage is set for a successful intercept.

As the bogey comes nearer to you, look down to the land or sea, attempting to find the bogey's shadow. The shadow will be visible long before the actual aircraft, so use this to make fine corrections in your course. As the target moves into visible range, you have two options. The first would be to simply center the target up in the crosshairs, wait until it is within range, then let fly with the .50 cal's. If the enemy has not noticed you and is not tracking you directly, that is the preferable solution. However, if he is indeed tracking you and wishes to add you to his long list of kills, making a nose-to-nose intercept with guns blazing is a good way to forcibly contract rapid lead poisoning. Above all, your own curtain of machine gun fire is no shield.

You can check to see if the enemy is tracking you specifically by switching into his view and looking for your own blue silhouette (against the land or sea if you're holding proper altitude.) If he's centered on it and is at audibly full throttle, be prepared to use a different tactic.

When you sight the Jerry visibly, wait a few seconds, then feed in enough rudder to move your nose approximately 30 degrees to the left or right of the bogey. This will usually prevent the bad guy from obtaining a good gun tracking solution on you. If you're courageous and know the controls well, be prepared at the last moment before the merge to roll your aircraft hard in the oncoming path of the bogey, drop the flaps, haul back hard "into" the bogey (e.g. toward him) and fire your guns as the crosshairs swing across the target. Timing is critical to prevent a mid-air collision with plane or lead, as is rudder control to provide accuracy. Otherwise, content yourself with the knowledge that you've escaped the merge with nary a scratch.

Regardless, the next priority is to turn around and bring your guns to bear in the most decisive way. As mentioned earlier, the prerequisite to turning toward an opponent is to know where he is. However, in the frenzied aftermath of a stressful merge, this is not always easy. When you do see the enemy, the question becomes one of turning technique.

"Turn to kill, not to engage."

Commander William P. "Willie" Driscoll, USNR

5 Air Victories as F-4 Radar Intercept Officer, Vietnam

[Angles versus Energy](#)

When you decide to fight with your aircraft, you must use its strengths to most efficiently rob the enemy of the strengths of his aircraft. When maneuvering, two essential ratios need to be considered: thrust/weight ratio and wing-loading ratio.

Thrust/weight ratio (T/W) is the ratio derived by comparing the aircraft's forward thrust abilities against the aircraft's weight. An aircraft whose thrust exceeds its operating weight will be able to accelerate straight up. In Hellcats, we don't have that luxury. However, the Hellcat does have a powerful engine, and it is, compared to the enemies presented in Leyte Gulf, an unparalleled climbing machine. While the Ki-84's aerodynamics may make it slightly better suited to high speed travel on a flat plane, climbing with a Ki-84 will illustrate the Hellcat's superiority in the T/W. T/W is directly related to energy level. When you're out of energy (speed and inertia), you're out of luck.

Wing-loading ratio is the ratio derived by comparing the aircraft's flying weight against the square wing area footage. An aircraft with lower wing loading (less weight per square foot of wing) will be generally more agile, more suited to changing directions quickly. We have an excellent advantage here against the Zeros, as you have probably seen for yourself; turning with a Zero (rolling on your side and pulling back) is a good way to nail one. However, the turning advantage against a Ki-84 is far slimmer.

The key in efficient air combat is to exploit your strengths and force the enemy into utilizing his weak sides. Ki-84s are better angle than energy aircraft. Dropping your flaps, rolling on your side, and pulling back will cost you much time and speed to catch one. However, noting that Ki-84s turn (angle) better than they zoom upward (energy), the obvious answer is to fight vertically! In other words, make him climb after you instead of turning on his side toward you. The more steeply you climb, the more the Ki-84 strains.

"Any angles you give the bogey on the first pass will haunt you for the rest of the fight."

Lieutenant Jim "Huck" Harris, USN

Now, just as you pass the Ki-84 during the initial intercept, roll level, drop the flaps and pull back hard. While you're pulling back, hit the up view key repeatedly and visually reacquire the Ki-84. Keep pulling back until you're looking at the Ki-84 over your instrument panel. Now, look at where you are: with an altitude advantage, plenty of speed, and most importantly, with the tail of the Ki-84 pointing towards you.

Now, take him out. He will roll and scissor, dive and climb. Do whatever you have to stay where you are. Cut your throttle if you're coming up on him too quickly. Drop your gear if necessary; it makes a good airbrake. It's better to give him distance than get too close; the Hellcat's machine guns are far better suited to shots at 300 yds than right in your face. At that distance, burst fire; continuous firing tends to waste rounds, discourages precision and accuracy, and for purposes of the way Hellcats performs hit detection, works better from a program perspective.

Get in and experiment; remember, if the Ki-84 wants to turn, make him climb after you. If you'll climb straight up, close to a Ki-84, having started with closely related speed levels, you'll fly by him with more than 100 kts airspeed just as he stalls and topples over. Hit your

flaps and scream right down on his slow, unmaneuverable, helpless hide! This wonderful advantage can be applied anytime in a dogfight.

“The winner (of an air battle) may have been determined by the amount of time, energy, thought and training an individual has previously accomplished in an effort to increase his ability as a fighter pilot.”

Commander Randy “Duke” Cunningham, USN

5 Victories, Vietnam Conflict

So practice, practice, practice, and experiment with angles and energy. In the next column, we'll concentrate more specifically on real-world applications of angles and energy inside Leyte Gulf.

Note: **Quotes and pertinent information were gathered primarily from Robert Shaw's definitive air combat tome, “Fighter Combat: Tactics and Maneuvering,” published by the Naval Institute Press. His book serves as a reminder to me that I'll never invent anything new in the world of ACM. :->**