

Fighter Tactics in

As war clouds loomed on the horizon prior to the attack on Pearl Harbor in December 1941, the Navy's small fighter community was faced with making the transition from nimble biplanes to heavier, but faster all-metal monoplanes that would dominate air combat in WW II. Paramount to achieving success with the newly arriving F2A *Buffalo* and F4F *Wildcat* was the development of tactics to exploit their effectiveness. Worldwide aeronautical technology delivered several potent adversaries to Axis nations that Navy fighter pilots would have to face. Mitsubishi had produced the superb *Zero* fighter and Messerschmidt the Bf 109, both combat proven by 1941 and flown by skilled pilots. The *Zero* had been introduced over the skies of China and virtually swept away all opposition.

The greater speed of the late generation of monoplane fighters led to eventual adoption of two-ship formations (sections) as the basic building block. German-flown Bf 109s fighting in the Spanish Civil War

transitioned to the two-ship *rotte* and eventually brought the formation to the Battle of Britain where it was also adopted by some of the British squadrons. Navy pilots poured over combat reports from the Battle of Britain where the Royal Air Force (RAF) was evolving combat tactics ranging from squadron-size attacks in line astern to line-abreast tactics. Fighting Two was officially designated to conduct trials with the two-ship formation. Formations also began to open in spacing to account for greater speed and turning radius. Tactics centered around mastery of aerial gunnery from various deflection angles. The standard section called for the leader, invariably the most experienced pilot, to lead the attack with the wingman providing cover. Compared to the Bf 109, the British *Spitfire* enjoyed superiority in turning performance over the Messerschmidt and developed tactics to exploit that fact. Over the Pacific, the situation was reversed with the *Zero* having the better turn performance over allied fighters.

As WW II engulfed the globe, the Japanese *Zero* enjoyed a long period of

virtual absolute superiority over Army Air Forces P-36, P-39, and P-40 fighters in the early days in the Pacific theater. A notable exception was the famed American Volunteer Group (AVG), popularly known as the "Flying Tigers." Although not a part of the Army Air Forces, AVG flew the same P-40 into combat and prevailed as the only notable success against the Japanese in the first six months of the war.

The leader of the AVG, Claire Chennault, had been forced into retirement as a captain partially due to his advocacy of tactical thought, not in concert with the prevailing bomber mentality. Well before Pearl Harbor, Chennault was hired by the Chinese government as an aviation advisor to aid their resistance against the Japanese incursion onto their soil. He flew their fighters and played a primary role in assembling an air defense against the

WW II

By LCdr. Dave Parsons



onslaught of the Japanese. He saw firsthand how the tremendous maneuverability of the Japanese fighters could not be countered by existing western aircraft. He formulated the idea of dissimilar tactics coupled to an early warning network in order to deal with the overwhelming Japanese aerial presence. He saw vindication of his theories as his Flying Tigers ripped into the best of the Japanese attempts to annihilate his tiny fighter force.

The Flying Tigers were repeatedly pitted against the 64th Sentai of the Japanese Army equipped with the nimble *Hayabusa* that was similar to the *Zero* in size and performance. Chennault indoctrinated his group of pilots recruited from the ranks of the Navy, Army Air Forces, and Marine Corps. The idea of dissimilar air combat tactics was unorthodox, but Chennault made believers of his pilots. The tactics worked. Eventually, Chennault was able to compare performance of his P-40s against captured examples of his Japanese opponents.

Claire-Chennault's solution reflected a land-based situation that allowed him to establish an extremely effective early warning net that gave him a significant advantage. Knowing where the Japanese

formations were gave the AVG the ability to husband its scarce fighter force and use it most effectively. Most importantly, it allowed the Flying Tigers enough time to climb to an altitude advantage that was significant tactically. Chennault preached a diving hit-and-run attack that made the most of the P-40's one significant performance advantage over the *Zero* – the dive. This was unorthodox for conventional fighter tactical thinking. RAF pilots stationed at Rangoon alongside the AVG were threatened with court-martial if seen "diving away" from a fight. They stayed in close with their *Hurricanes* and *Buffaloes* and suffered far greater losses than the conventional and successful AVG pilots using dissimilar tactics.

Thousands of miles from the Flying Tigers, another tactics theoretician – Lieutenant Commander Jimmy Thach, commanding officer of Fighting Three (VF-3) – was disturbed when he read the Fleet Air Tactical Unit Bulletin of 22 September 1941. The attack on Pearl Harbor was only months away and, like Chennault, Thach reasoned that it was inevitable he would have to face Japanese pilots in combat. He was searching for any information on Japanese fighter pilots and their tactics and aircraft. The bulletin confirmed what initial reports coming out of China in late 1940 had said concerning the performance of the still-mysterious Japanese

Zero fighter. It was obvious that it was only a matter of time before his F4F *Wildcats* would have to take on this clearly superior fighter. Since taking command, he had molded his squadron into crack shots and superior airmen. Yet, he realized that even if the *Zero's* performance was half as dramatic as the reports said, his F4F *Wildcats* would be at a severe disadvantage no matter how good his pilots were. Conventional tactics wouldn't be able to counter the speed, climb, and turning performance of the *Zero*. He set out to devise a tactic to counter the aerodynamic performance superiority of the *Zero*.

Following each day of flying, he worked night after night on his kitchen table using matchsticks to simulate the opposing fighter formations, experimenting with various tactics to counter the *Zero*. He eventually devised a weaving tactic, but needed to move the idea from the kitchen table into the air. In order to properly test his theories in the air, he needed a dissimilar opponent that would simulate the relative differences of performance between the *Wildcat* and the *Zero*. As no

After the loss of Lexington during the Battle of Coral Sea, fighter complements were increased to 27 fighters, recognizing the need to protect the carrier and strike aircraft.





A Zero is the victim of the Thach Weave in this painting titled "Thach's Weave of Destruction," by AT1 Greg Robinson of VFA-15 onboard Theodore Roosevelt (CVN 71).

slower *Wildcats* making a firing run every 20 to 30 seconds. Thach was able to deploy into the weave before the attacks began and lost the number four *Wildcat* as he led his division into a hard right turn trying to spoil the attack. The *Zero* pulled up passing in front of Thach, who let loose with a snap shot as the *Zero* flashed past. It burst into flames.

Now, Thach had three *Wildcats* left. His wingman was familiar with the weave, but the remaining pilot was a new arrival from VF-42 and knew nothing about it. Even worse, his radio was out so Thach led the three ships in a line-astern formation, weaving to throw off the relentless attacks of the *Zeros*. He then directed his wingman to take an abeam position as if he were leading a section and commence the weave.

aircraft in the United States had performance even close to the *Zero*, he came up with a simple innovation to achieve the desired result as he later recalled in *The Pacific War Remembered*: "We [had] practice this, but who's going to be the *Zeros*? How are we going to find airplanes of that sort, that fast and with that high a performance? ... I told Lt(jg) Edward "Butch" O'Hare to take four aircraft and use full power. I would take four and put a little mark on the throttle quadrant and never advance it more than halfway. That gave him at least a superior performance, maybe double, maybe not, but somewhat better."

O'Hare was a recent addition to VF-3, but had rapidly proved himself to be a crack pilot graduating to the "shakedown" team of experienced flyers who were charged with training fledgling pilots. His division put the weaving tactic to the test, but was frustrated by the coordinated defense of weaving *Wildcats*. Thach set out to refine the tactic and instruct the rest of VF-3. He named his tactic the Beam Defense Maneuver.

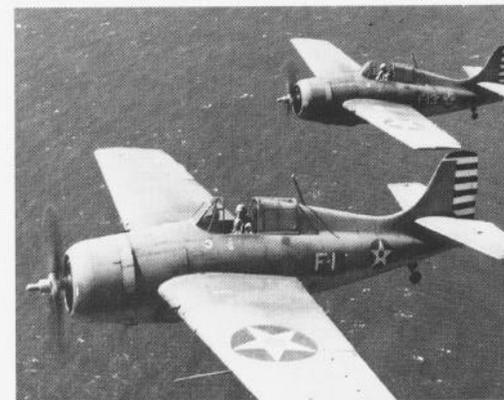
Deploying to the Pacific, Thach missed out on the Battle of the Coral Sea, sitting out the battle at NAS Kaneohe on the island of Oahu. His outfit, VF-3, had been stripped of pilots to augment other squadrons. He was now in the curious position of having a tactic, but with novice

pilots that needed schooling in the basics of gunnery before they could advance to the weave. The Battle of Midway lay ahead in the not-too-distant future. He was faced with the daunting task of taking brand-new ensigns into combat with scant time to train them in aerial gunnery let alone his new tactic. He conducted a rigorous training program out of the base at Kaneohe and was able to instruct at least some of the pilots he would lead at Midway in the "weave." Thach had the satisfaction of seeing his tactic work in the Battle of Midway. His improvised, in-house, dissimilar air combat had been crucial in validating his tactic and undoubtedly saved the lives of at least several junior pilots. It was a big edge for the *Wildcat* pilots. (During Vietnam, A-1 *Skyraider* pilots used a version of the Thach Weave in 1965 when they were jumped by a NVAF MiG-17. They shot it down.)

Thach didn't have to wait very long to test his tactic in combat. VF-3 flew from *Yorktown* escorting the SBD dive and TBD torpedo bombers against the cream of Japanese carrier aviation. The torpedo bombers became separated and were utterly decimated on their own by the defending *Zeros*. Thach's *Wildcats* were at 5,500 feet when they were attacked by 15 to 20 *Zeros*. The *Zeros* lined up and conducted sequential attacks on the



LCdr. John S. "Jimmy" Thach, VF-3 CO and originator of the Beam Defense Maneuver, or "Thach Weave." This tactic enabled Navy pilots flying F4F *Wildcats* to counter the superior performance of the Japanese *Zero*.



LCdr. Jimmy Thach and Lt. Butch O'Hare at the controls of VF-3 F4F-3 *Wildcats* F-1 and F-13, respectively. Thach and O'Hare were able to "shakedown" the Thach Weave before they entered combat.

One of the *Zeros*, seeing an apparent breakup of the formation, made a pass on Ensign Dibbs and latched onto his tail. Dibbs radioed Thach, "Skipper, there's a *Zero* on my tail! Get him off!" Dibbs made a hard port turn into Thach in accordance with the Beam Defense Tactic as Thach made a corresponding starboard turn towards Dibbs. They passed close aboard with the *Zero* still in hot pursuit, unaware of the trap lying ahead. Thach was now approaching the *Zero* head on from the preferred position of being slightly below his target's flight path, giving him a favorable firing position. Thach commenced firing and his .50-caliber slugs tore into the nose of the *Zero* causing the engine to ignite into flames. The *Zero* flew away into the water. Thach and Dibbs continued to weave forcing the *Zeros* to break off their attacks. Thach's new wingman, Ensign Macomber, flew wing on Thach wondering what Dibbs was up to and becoming highly irritated at Dibbs for breaking formation. It wasn't until return to the carrier that he found out he had been part of the combat test of the weave.

The *Zero* pilots continued their relent-

less attacks responding to the weave only occasionally by aborting their firing passes when the weave initiated. When a second *Zero* attempted to chase Dibbs through the turn, Thach raked its fuselage with .50-caliber fire resulting in Thach's third claim for the day. Thach's other section escorting TBD torpedo bombers was also beset by *Zeros* and forced to fight defensively all the way to the Japanese fleet. Although unable to set up the weave, they did manage to score two kills and two probables. Thach's tactic had proven itself in the face of overwhelming odds. The word quickly spread and other units adopted the tactic. In recognition of his role in devising it, the Beam Defense Position was referred to as the "Thach Weave." Although the ultimate solution was the

fielding of the F4U *Corsair* and the F6F *Hellcat*, both aircraft were still in development and would not be available until the summer of 1943. Until then, the *Wildcat* would have to be the front-line fighter facing the *Zero*.

The early carrier battles highlighted the need for a greater complement of fighters both to protect the carrier from Japanese aerial attack and escort Navy strikers. Carrier fighter complements were initially upped to 27 and then 36 *Wildcats* to provide greater numbers to deal with the *Zero*, but the Thach Weave would be their greatest asset in dealing with the *Zero*. Thach was recognized for his achievement with the Distinguished Service Medal, a lofty award befitting his significant contribution which undoubtedly



Tom Blackburn's famed Fighting 17 established an outstanding combat record using tactics developed off Hampton Roads, Va., in aggressive training.

had saved many aircraft and would continue to do so.

In late summer 1942, Marines went ashore at Guadalcanal beginning an epic struggle for that island and the whole of the Solomon Islands chain. The Japanese vigorously resisted this intrusion into their territory by launching air attacks from their fortress at Rabaul. Marines flying *Wildcats* from the barebones Henderson Field on Guadalcanal also adopted the Thach Weave. The Japanese *Zero* pilots flying out of Rabaul were initially confounded by the tactic and the *Wildcat's* tactic of hit-and-run attacks. Tadashi Nakajima was Japan's leading ace and commander of the Lae-based *Zero* unit recalled to Rabaul to deal with the allied presence in the Solomons. One of his pilots was Saburo Sakai whose score was already approaching 60 and was destined to be Japan's number two ace of the war and leading surviving ace. Both pilots were absolute masters of their aircraft and aerial combat. Sakai relates their reaction to the Thach Weave when they encountered Guadalcanal *Wildcats* using it: "For the first time Nakajima encountered what was to become a famous double-team maneuver on the part of the enemy. Two *Wildcats* jumped on the commander's plane. He had no trouble in getting on the tail of an enemy fighter, but never had a chance to fire before the Grumman's teammate roared at him from the side. Nakajima was raging when he got back to Rabaul; he had been forced to dive and run for safety."

The Aleutian Prize

While Thach was validating his tactic at Midway and Chennault's shark-mouthed P-

40s were decimating the Japanese, another significant event occurred. Concurrent with the attack on Midway, a Japanese task force attacked the Aleutian Islands. A *Zero* had been found virtually intact in 1942 on Akutan Island (part of the Aleutian Island chain). Its pilot had tried to make an emergency landing on a bog after suffering battle damage during the June 4, 1942, attack on Dutch Harbor. He apparently mistook the soft bog for a hard surface and tried to land with the landing gear down.

A VP-41 PBV *Catalina* spotted the *Zero* on July 10, 1942, lying on its back. An intensive salvage effort requiring three expeditions to the remote site was able to retrieve the *Zero* and it eventually made its way to Naval Air Station, San Diego, Calif., where it was restored to flying condition. By late September, it was involved in a series of flight tests and comparisons against the latest U.S. fighters. Instead of using matchsticks or surrogates, an actual *Zero* was then available to develop tactics for each allied aircraft. The *Zero* began to lose some of its mystique. Although still deadly, the advent of powerful new fighters like the F4U *Corsair* and F6F *Hellcat* gave Navy pilots some performance margin against the *Zero* with superior speed.

First Adversary Pilot

After the testing establishment had finished its evaluation, some farsighted and ambitious Navy fighter pilots succeeded in getting the *Zero* released for use in San Diego against fleet units. One of the pilots was Rear Admiral Bill Leonard (then a lieutenant) who was fighter training officer with Commander Fleet Air, West Coast. His boss at the time was the famed James Flatley who, along with Leonard, had fought the *Zero* in the early months of the war in F4F *Wildcats*. They knew firsthand the *Zero's* phenomenal maneuverability. Both pilots also knew its weaknesses, and the best way to survive and win an engagement: allow pilots to train against the real thing. They argued convincingly to secure the *Zero* (the existence of which was still a closely held secret) to use against fleet units in ad-

vanced stages of training just prior to deployment.

Principally, the *Zero* was flown as an "adversary" aircraft against the F6F and F4U to show the pilots "how it smelled in the air." It was also made available to squadron COs and senior pilots to fly themselves in order to acquaint them with the *Zero's* remarkable maneuverability. Reports were one thing, but there was nothing like seeing the real thing in living color. Leonard had seen the *Zero* firsthand while flying a F4F *Wildcat* during both the battles of the Coral Sea and Midway and could attest to its maneuverability, especially at low speeds.

Leonard flew the *Zero* primarily against air wings in their advanced stages of training just prior to deployment to the Pacific combat zone. He also demonstrated it against patrol squadrons. Unfortunately, the *Zero* was later lost in a taxiing accident when a SB2C *Helldiver* didn't see the small fighter and chewed it into scrap with its propeller. A more up-to-date *Zero* was subsequently found as the Pacific offensive began capturing island real estate littered with abandoned aircraft during the island-hopping campaign. This has remained the first documented example of the use of an adversary aircraft in a training role. The program was remarkably visionary and it presaged much of what we do today.

As Leonard demonstrated, the best way to be ready for an opponent is to be able to train against his aircraft, especially if the performance is radically different from your own. This is what the F4F *Wildcat* pilots faced and it is to their credit that they did as well as they did when they first encountered the *Zero*. Of course, in war or peacetime, it is not always possible to obtain flying examples of your potential opponents. The *Zero* based at North Island was only one airplane, not quite enough to train the multitude of fighter pilots under instruction during WW II. Lt. "Boogie" Hoffman was one the pilots assigned to do initial comparative testing of the salvaged *Zero* and returned to Pacific combat with VF-31 where he shared his experiences. No other formal dissimilar training existed, but there were opportunities for plenty of informal encounters.

Back in the days of WW II, anything in the air was fair game. And if nothing could be found airborne, a pilot merely had to head for a neighboring field (preferably



The vaunted *Zero* never lost its deadly "acrobatic" superiority over Allied aircraft, but tactics such as the Thach Weave allowed Navy pilots to prevail until high-performance fighters like the *Hellcat* and *Corsair* were introduced in 1943.



Edward Steichen

The key to success in air combat was superior aircraft, well-trained pilots, and tactics. Here, VF-16 readies for air combat in late 1943 in the Gilbert's area.

belonging to a sister service) and "beat it up" until an adversary took up the challenge.

If the skies around the local base were bare, then some units took active measures to ensure opponents would show. Commander Tom Blackburn, commanding officer of the fledgling *Jolly Rogers* (VF-17), was working his squadron up in the isolated outer banks of North Carolina at Manteo and when he deemed his pilots ready, he sent out the following dispatch to all the squadrons in the Hampton Roads area: "Combat air patrol will be airborne over Manteo from 0800 until 1200 each weekday. Visitors welcome." Blackburn got the visitors he wanted in the form of fighters, dive-bombers, torpedo bombers, and even some patrol types. He got what he wanted, commenting, "I have a vivid mental picture of a section of dive-bombers pulling out of their attack on the treetops at 300-plus knots with *Corsairs*, wingtips skyward, making 90-degree deflection attacks at their level.

"We were busy. We never had more fun or better training."

Blackburn's remarks are particularly on the mark on both counts. Although air combat can be very debilitating, the contest between two aircraft is considered by most to be fun, at least in training. An old adage goes, "If you're not having fun, you're doing something wrong." Of course, from a different perspective, a pitched battle at low level over a town doesn't conjure up fun.

Blackburn's squadron had been previously based at NAS Norfolk, Va., right under the noses of numerous flag officers. When Ensign "Ike" Kepford had a dogfight with an Army Air Forces P-51 which descended below 500 feet over the citizenry

of Norfolk, Blackburn got to have a one-way conversation with Vice Admiral Bellinger, Commander Air Force, Atlantic Fleet, about the antics of his "hellions." Both parties were more than happy about the move to Manteo. Fun aside, this type of training is, as Blackburn suggests, good training. Beating up rival service's airfields and jumping their aircraft had a direct corollary with combat operations in the Pacific. The pilots flying out of Guadalcanal had to be ready to engage *Zeros* at any time. The landing pattern wasn't safe, nor was the takeoff roll. There is sound reason behind the Navy's carrier break in which aircraft maintain combat speeds until over the field, at which time the aircraft goes into a "break" turn minimizing the time at slow speeds before landing, in case a marauding *Zero* should happen to show.

Throughout the vast aerial battlefields of WW II, the tactics that proved success-

ful were those evolved from the dissimilar air combat arena, although the term dissimilar was still decades away from being institutionalized. Whether pilots realized it or not, the informal bouncing of friendly aircraft provided the dissimilar opponents needed to hone air-to-air combat skills. In every theater, opponents placed high priority on capture of opposing aircraft for exploitation and comparative tests from which dissimilar tactics were devised. Both Allied and Axis air forces developed specialized units to provide dissimilar air combat training after capturing sufficient examples of their opponent's aircraft. In the postwar standdown, the utility of such units did not lead to formalized dissimilar air combat training, although informal bouncing remained as popular as ever. ■

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50 Years Ago – WW II

8 Jul: *Casablanca* (ACV 55), first of her class and first escort carrier designed and built as such, was placed in commission at Astoria, Ore., Capt. S. W. Callaway commanding.

15 Jul: New designations for carriers were established which limited the previous broadly applied CV symbol to *Saratoga*, *Enterprise*, and carriers of the *Essex* class, and added CVB (Aircraft Carriers, Large) for the 45,000-ton class being built and CVL (Aircraft Carriers, Small) for the 10,000-ton class built on light cruiser hulls. The same directive reclassified escort carriers as combatant ships and changed their symbol from ACV to CVE.

18 Jul: The airship K-74, while on night patrol off the Florida coast, attacked a surfaced U-boat and in the gun duel which followed was hit and brought down – the only airship lost to enemy action in WW II. The submarine *U-134* was damaged enough to force her return to base, and after surviving two other attacks on the way, was finally sunk by British bombers in the Bay of Biscay.

22 Jul: Since there had been no operational need for arresting gear and related equipment for landing over the bow of aircraft carriers, the Vice Chief of Naval Operations approved its removal.

18 Aug: To give Naval Aviation authority commensurate with its WW II responsibility, the Secretary of the Navy established the Office of the Deputy Chief of Naval Operations (Air), charging it with "the preparation, readiness and logistic support of the naval aeronautic operating forces." By other orders issued the same day, five divisions were transferred from the Bureau of Aeronautics to form the nucleus of the new office and VAdm. J. S. McCain took command as the first DCNO (Air).

29 Aug: The formation of combat units for the employment of assault drone aircraft began within the Training Task Force Command as the first of three Special Task Air Groups was established. The component squadrons, designated VK, began establishment on 23 October.