In the great Pacific sea battles of World War II, the F6F Hellcat made a big difference.

Cat Against the

By Rebecca Grant

Sun

Photo via Warren Thompson

An F6F prepares to launch from USS* Yorktown *in August 1943, shortly after Hellcats began reaching the fleet in large numbers.

At dawn on Oct. 24, 1944, US Navy Cmdr. David McCampbell, along with his wingman, Lt. Roy W. Rushing, took off from the carrier *Essex*. Just 22 miles away and closing fast was a force of some 60 Japanese fighters and dive-bombers. They had launched from Philippine bases to attack the American carrier task force.

McCampbell hadn't been on the flying schedule for that morning, but he was the air wing commander so he went into action anyway. He sent five other patrolling fighters to intercept the bombers while he and Rushing attacked the incoming fighters.

Within mere minutes, McCampbell shot down nine Japanese airplanes. Rushing had bagged six more. This was at the start of action in the famous Battle of Leyte Gulf. It remains a feat that is unmatched in the annals of US Navy fighter aviation and ranks among the great fighter actions anywhere.

McCampbell was a stellar pilot (he became the top Navy ace of all time and recipient of the Medal of Honor), yet there was more to that story than the pilots. The fighter that McCampbell and Rushing flew turned out to be America's greatest acemaker: the Grumman F6F Hellcat.

Hellcat pilots logged 5,156 aerial victories, and 305 of them became aces. The US Army Air Forces partisans could counter with a similar claim for the P-51 Mustang—like the Hellcat, a late entrant in the second World War. The Mustang flew a good 50 mph faster than the Hellcat and outdid it in ceiling and range. The Mustang shot down 4,950 enemies in the air and destroyed more than 4,000 more on the ground, along with 230 V-1 vengeance weapons. Some 275 Mustang pilots became aces. (See "Airpower Classics," April 2006, p. 96, and December 2006, p. 88.)

King of the Pacific

However, while the Mustang was the dominant fighter in Europe, there is no doubt the Hellcat dominated the Pacific. It was the Hellcat that beat back the Japanese Zero, defended US Navy warships, and gave the lethal American dive-bombers and torpedo aircraft their path to sink Japanese carriers and ships of the line.

The tale of the Hellcat isn't just a hardware story, though. It's about a winning change in tactics. The fighter arrived just in time to unleash the offensive power of the Navy's carrier task forces. The 1944 success of McCampbell and Rushing could hardly have been anticipated even two years earlier.

When the war began, naval aviation was in a tough spot. America's fleet entered World War II with substandard aircraft, junior aviation leadership, and a bureaucracy that still favored the battleship over mobile airpower. Carrier concepts were slow to mature.

Ever since the mid-1920s, the Navy leadership had been toying with aircraft carrier operational concepts during regular fleet exercises. However, a 1937 exercise persisted with old school methods and tied aircraft carriers to providing cover for landing forces. In this exercise, the carriers were promptly "sunk" by enemy forces. It was not until 1939 that a carrier demonstrated underway refueling, critical to extending the ship's operational reach.

In aircraft, the Navy was in even worse shape. Knowledge about valuable techniques such as dive-bombing emerged from Navy interwar experiments. However, plans for a potent aircraft arm lagged far behind. Historian Clark G. Reynolds has noted that the Navy's Bureau of Aeronautics was "woefully unprepared" to handle wartime production and training. As late as 1941, the carrier *Ranger* put to sea for wargames with a deckload of biplanes.

When the Navy entered World War II after Japan's attack on Pearl Harbor, its top air superiority fighter was the Grumman F4F Wildcat. The Wildcat, joked one pilot, was "a little beer bottle of a plane with a battery of .50-caliber guns in its tiny wings." With a 1,200 horsepower engine, its speed topped out at 318 mph, compared to the 331 mph of its adversary, the Mitsubishi A6M Zero. (See "Airpower Classics: A6M Zero," p. 96.) The Wildcat also had a range of just 770 miles—barely a third of the 1,950-mile range of the Zero.

The year 1942 rudely pointed up the fact that, against Japan's first team, the Wildcat was not up to snuff. This became only too apparent in the Battle

DOD photo

A Hellcat zooms past US troops. Larger, faster, and more heavily armed than the F4F Wildcat, the Hellcat put new punch in carrier aviation.

of Midway, a struggle in which three US carriers launched decisive attacks on June 4, 1942 on an unsuspecting Japanese fleet. US Navy torpedo airplanes became separated and attacked alone. Only eight of the 29 Devastators returned, but they drew the Japanese Zeros down toward sea level, leaving other US Navy dive-bombers a clear field to sink three Japanese carriers. The F4Fs turned out to be practically nonfactors in the fight.

Midway—although a great victory—was also a wake-up call about air superiority. Three senior Navy aviators—Edward H. "Butch" O'Hare, John S. "Jimmy" Thach, and James H. Flatley Jr.—later met with President Roosevelt and told him the Navy needed a fighter more powerful than the Wildcat, something that could "get upstairs faster."

Marine Corps and Navy pilots flying over Guadalcanal a few months later had to agree. It took exceptional pilot performance to win the day in a Wildcat.

Toward a Better 'Cat

Ever since 1938, Grumman engineers also had been thinking about ways to improve the Wildcat. A new 14-cylinder, 2,600 horsepower Wright engine promised to increase take-off power by one-third. The best option, though, was production of a new fighter. Although Grumman engineers sketched a prototype design, they shelved it temporarily to concentrate on producing more Wildcats to meet large Navy orders. In 1940, though, the company had a Hellcat prototype ready. A year later, the Navy awarded a contract. The XF6F-1 first flew just weeks after Midway.

Then the fortunes of war intervened. During the Battle of Midway, a Japanese pilot participating in the diversionary attacks on the Aleutians landed belly-up on an island. While the impact killed the pilot, it barely damaged his airplane.

Flight tests of the intact Zero confirmed what already was known by those who had fought against it: The Zero was fast, agile, and unbeatable in low-altitude climb. Mitsubishi achieved all this with an engine generating a mere 1,000 horsepower. The catch, though, was that the design sacrificed weight and thus protection for both pilot and aircraft. The conclusion was that a fast and more rugged US fighter could take on even the nimble Zero and its highly experienced Japanese pilots.

Analysis of the captured Zero sealed the decision to give the Hellcat a new engine. Here the Navy lucked out. The Pratt & Whitney R-2800 Double Wasp was an air-cooled engine with 2,000 horsepower. Hellcat engineers had their eye on it, but the engine was already slated to equip the Republic P-47 Thunderbolt and the Chance-Vought F4U Corsair. Luckily for carrier pilots, both the Thunderbolt and the Corsair were behind schedule. That freed up Double Wasp engines for the Hellcat.

Grumman made a test flight with the new engine on July 30. Just three months later, the first production F6F-3 Hellcat rolled off the assembly line. Production soon rose to 500 aircraft per month, and more than 12,200 of the airplanes would be produced.

By the spring of 1943, Hellcats were in service on Navy carriers such as the new Essex-class *Yorktown.* Unlike the Zero, the Hellcat was fortified with 200

DOD photo

The Hellcat made more aces and accounted for more air-to-air kills than any type of American aircraft in World War II. Here, pilots of USS* Lexington *celebrate a November 1943 aerial victory near Tarawa.

DOD photo

Catapult officer Lt. Walter Chewning scrambles to the aid of Ensign Byron Johnson in this stricken F6F. That pilots could walk away from disasters such as this was a testament to the Hellcat's ruggedness and safety features.

pounds of armor plating around the cockpit. The windscreen was made of bullet-proof Plexiglas, and more armor protected vital engine components. The Hellcat was also powerfully armed. Each wing had three .50-caliber machine guns capable of firing 1,000 rounds per minute. Later Hellcat variants upped firepower with 20 mm cannon in place of two .50s. Hellcats also carried high-speed rockets later in the war.

Perfect Fit

The new engine turned out to be a perfect fit. The Hellcat's top speed of around 380 mph outpaced the Zero at optimum altitude. The Hellcat's 37,000-foot service ceiling also translated into an operational altitude edge. Above 10,000 feet, the F6F climbed as quickly as the lighter Zero. It was faster in a dive. Hellcats routinely flew strike missions up to 300 miles combat radius and could conduct search missions out to 400 miles away from their carriers.

The Hellcat arrived just in time to help the US carriers grab a bigger piece of the action. Basic strategy in 1942 was to stop the Japanese advance. The plan succeeded but left the Navy reeling. Epic sea battles around Guadalcanal between August and October claimed the carriers *Wasp* and *Hornet* and damaged *Enterprise* and *Saratoga* on multiple occasions.

Most of 1943 went by before the tide began to turn. Japan withdrew from Guadalcanal in February. USAAF's Gen. George C. Kenney in March 1943 dispatched land-based aircraft to destroy an enemy convoy sent to reinforce Japanese forces in New Guinea, winning the so-called Battle of the Bismarck Sea. Then, in April, P-38s intercepted and killed Adm. Isoroku Yamamoto, the mastermind of the Pearl Harbor attack. (See "Magic and Lightning," March 2006, p. 62.)

The Navy had launched nine new carriers and dispatched them to the Pacific. Equally important, the Navy changed tactics and grouped several aircraft carriers together into what became known as the fast carrier task forces. These task forces typically featured a dozen big-deck and escort carriers and sometimes more. Each big-deck carrier was equipped with up to 54 Hellcats.

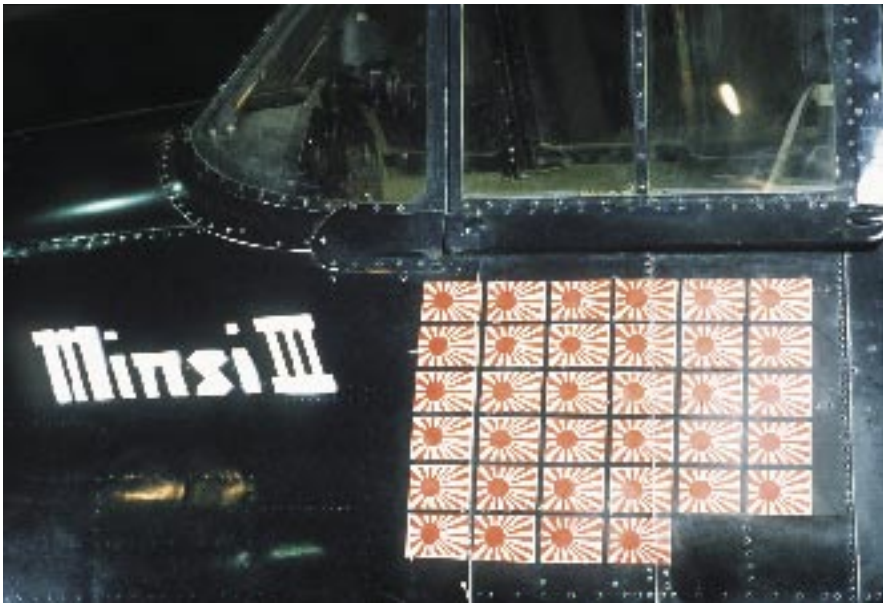
The Hellcats leaped to the forefront of the biggest sea battles of the war. This new phase of the Pacific conflict opened on Nov. 5, 1943 when US Navy Adm. William F. "Bull" Halsey Jr. launched a massed attack on Rabaul. On Nov. 20, Halsey's carriers covered the Tarawa landings, and the drive through the Pacific toward Japan was on.

The edge was shifting to the Hellcats, for two reasons. First, the average US naval aviator now had greater training and combat experience than his Japanese counterpart. Navy pilots, according to historian Reynolds, "encountered increasingly inferior enemy pilots and aircraft."

Second, the Hellcat's resilience often made a life-or-death difference in combat. In a February 1944 attack on the Japanese stronghold of Truk, Lt. Eugene A. Valencia escaped attacking Zeros then turned for a head-on run against them that brought down three fighters. Good gunnery counted, but the Hellcat's armor and speed made such feats possible even for new pilots.

Turkey Shoot

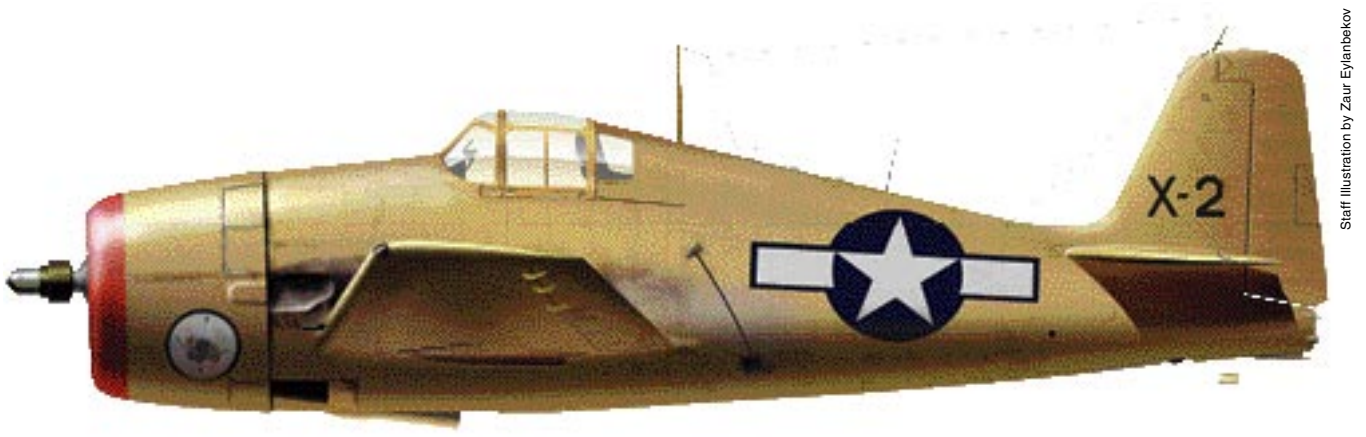
The virtues of the Hellcat were on full display at the Battle of the Philippine Sea in June 1944, better known as



DOD photo

Cmdr. David McCampbell scored 34 aerial victories in the Hellcat, the most of any Navy ace. This Hellcat, painted with his kill markings, is on display at the National Museum of Naval Aviation at NAS Pensacola, Fla.

After the war, Hellcats took on some strange missions. This yellow F6F-3K Hellcat served as a test drone controller for nuclear weapons tests.



Staff Illustration by Zaur Eylanbekov

"The Great Marianas Turkey Shoot." Adm. Marc A. Mitscher dispatched 80 Hellcats to knock out Japanese aircraft on Guam. Japan launched two waves of fighters—about 200 airplanes—from carriers. Within minutes, 140 Hellcats had entered the fray. When the battle was over, US aviators had shot down 373 Japanese aircraft while losing only 23 of their own to enemy action. The next day, Hellcats struck four Japanese carriers and sank one.

Night fighter work became a Hellcat specialty. Ultimately, about 1,500 F6Fs became dedicated night fighters. They did everything from providing night air defense to tracking strays to keeping tabs on the location of Japanese ships.

Another job for the Hellcats was to suppress and destroy land-based Japanese Navy aircraft. The Hellcats did more than strafe. The F6F could also carry two 1,000-pound bombs and high-velocity rockets mounted under the wing.

Successful as the Hellcat was, the Battle of Leyte Gulf in October 1944 shot a dose of caution through the Navy high command. Four separate sea battles saw fierce engagements with the Japanese fleet. The US won, but three escort carriers were sunk. Looking ahead, admirals wondered if they'd have enough punch for the upcoming drive to Japan itself.

For a fix, the Navy turned to master aerial tactician, Jimmy Thach, who decided to rely more than ever on Hellcats. He constructed a multilayered stratagem called the "big blue blanket." As carrier task forces closed in on Japan, they would maintain defensive Hellcat patrols up to 60 miles out from the carriers. Other Hellcats would keep up constant, disruptive attacks on Japanese airfields. As one group attacked, another formed up for attack, and a third prepared to launch.

The Navy tested the big blue blanket in late 1944 during action in the Philippines. Then the service doubled the number of embarked fighter squadrons, adding F6F-5 Hellcats armed with bombs and rockets, and bringing F4U Corsair squadrons aboard carriers en masse.

In spring 1945, kamikaze attacks reached a peak around Iwo Jima and Okinawa. The suicidal air attacks did not sink any big-deck US carriers, but they caused extensive damage and loss of life and sank smaller ships. Kamikaze attacks caused fires and damage that took some big decks out of action.

Kamikaze Killer

Off of Okinawa on April 17, 1945, four Hellcats from *Yorktown* countered with a remarkable feat. The Hellcat pilots, perched at about 25,000 feet, spotted a formation of about 40 Japanese light bombers and Zeros closing on the carrier task force. One two-airplane Hellcat section dove and attacked while the other section covered them. Then, the aircraft sections reversed course. This "mowing machine" maneuver broke the kamikaze formation, leading to 17 confirmed kills. The Navy repeated this tactic many times.

Beyond question, the Hellcat was the right fighter at the right time for the Navy's Pacific drive. It seized control of the air and proved versatile enough to balance the game of offense and defense to maximize the strike power of the fast carriers.

The short glorious life of the Hellcat ended soon after the war. Not even fielded until 1943, the F6F was obsolete five years later. The postwar Grumman F8F Bearcat took over in the Navy until early jet aircraft made their air wing debut.

To be sure, Hellcat pilots had the good fortune to be operating in a target-rich environment during the summer and fall of 1944 and then in 1945. US Navy carriers were challenging not only the remains of Japan's Pacific carrier fleet, but hordes of land-based naval aircraft were also being taken out.

None of that changed the fact that the Hellcat was the most successful Navy fighter of World War II and first in the hearts of its pilots. It chewed up Japan's airpower at the crucial point of the war and played a key role in beating back a metastasizing kamikaze threat.

Valencia, returning in his shot-up but airworthy Hellcat after his harrowing February 1944 mission over Truk, summed up the thoughts of many pilots about Hellcats: "If they could cook, I'd marry one." ■

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