

<http://www.aviation-history.com/grumman/f6f.html>

Many US Navy pilots had good cause to refer to the Hellcat as the "Aluminum Tank". With its six .50 caliber Browning M2 machine guns, it could spit out a veritable hail of destruction which no Japanese adversary could hope to survive. After the war, Japanese pilots related their fear and dread each time they were engaged by the Hellcat.

And, on the other side of the coin, the Hellcat could absorb unbelievable punishment and still bring the pilot back to his ship. Pilots tell of "mostly holes where the airplane used to be" and "more air was going through it than around it". One Hellcat had been burning for a hundred miles before landing on its carrier. Top Navy ace, David McCampbell told of watching the piston and connection rod "popping in and out" of the mangled Pratt-Whitney ["Double Wasp"](#) engine as he struggled to fly the pieces of his Hellcat back to the carrier. The Grumman Company itself was often referred to as the "Grumman Iron Works".



In the spring of 1941, the Navy was looking to replace its [F4F "Wildcat"](#) (also manufactured by Grumman) in light of new developments in the field of aeronautics, and the worsening military situation both in Asia and in Europe. On June 30, 1941 the Navy ordered the prototypes XF6F-1 and XF6F-2. They were to have the Wright R-2600-16 engine, producing 1,700 horsepower, on the -1 and

a Wright 2800-16 fitted with a turbo-supercharger on the -2. Immediately after the first flight of the XF6F1 on June 26, 1942, the craft was mysteriously redesignated the "XF6F-3" and the engine was changed to the [Pratt-Whitney 2800-10](#) producing 2,000 horsepower. The reason for the mystery became evident only after the war.

Up until the time of the first flights of the XF6F-1, very little reliable information was available on the Japanese "[Zero](#)" fighter ([Mitsubishi A6M Zero-Sen](#)) except that it was fast, agile and shot down an alarming number of Allied aircraft. As happened on many occasions during WWII, Lady Luck was about to change all that. At the very time of the first flight of the XF6F-1, a curious incident was occurring 2,500 miles (4,023 km) away on a small island known as "Akutan" in the Aleutian chain which would have a devastating effect on the supremacy of the [Mitsubishi A6M Zero-Sen](#).



Dynamic static. The motion of its props causes an "aura" to form around this F6F on the USS YORKTOWN. The rapid change of pressure and drop in temperature create condensation. Rotating with blades, the halo moves aft, giving depth and perspective.

[\(Photo: National Archives and Records Administration\)](#)

A Navy PB4Y, making a routine patrol, happened to pass over tiny Akutan Island and one of the observers aboard happened to notice a dark speck on the tundra below which appeared out of place. The pilot took the "Catalina" down to have a closer look. The speck turned out to be a Japanese aircraft, and even though it was upside down, it was almost immediately identified as a Zero. The radioman sent the coordinates and within hours a Navy recovery team was on the way to investigate. On arrival, the recovery team found the dead pilot, Flight Petty Officer Tadayoshi Koga still hanging in his seat harness. Koga had had engine problems and tried to land the plane on the flat tundra of the small island with the wheels down. The wheels dug in and flipped the [Zero](#) on its back, snapping F.P.O. Koga's neck in the process. The [Zero](#) was almost undamaged, even the engine looked to be in good shape aside from a broken oil line.

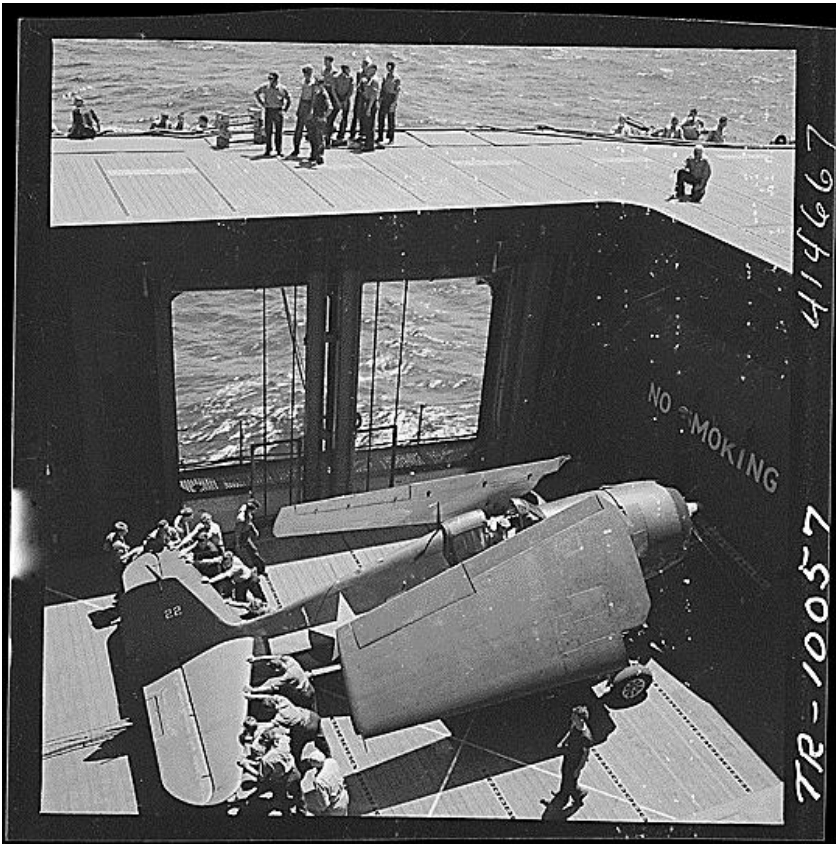
The [Zero](#) was dismantled and shipped directly to the Grumman Aircraft factory in California where it was reassembled and flown. The information gleaned from this fortunate incident put the finishing touches on the Hellcat. It was found the XF6F-1 was marginally slower than the Zero, thus the change from the Wright R-2600 to the [Pratt-Whitney Double Wasp R-2800](#) with an output of 2,000 hp (1,493 kW) for take-off and 1,975 hp (1,474 kW) at 17,000 ft (5,182 m). This engine boosted the Hellcats top speed to 375 mph (604 k/hr), 29 mph (47 k/hr) faster than the Zero. No other unfavorable

differences between the two planes could be found and the Hellcat was deemed ready for production. The finalized version of the XF6F-3 was almost identical to the production F6F-3 and Grumman shifted the assembly line into high gear.



In terms of size, the Hellcat was the second largest single engine fighter of the war, being ever-so-slightly smaller than the [Republic P-47 "Thunderbolt"](#). At first glance, the F6F appeared too big to operate safely from a carrier. But The Grumman Iron Works had a great deal of expertise in building carrier aircraft. The US Navy wanted a much faster plane carrying heavier loads over far greater distances. The only way to achieve all three goals was the obvious way; design a larger aircraft. There was room for a more powerful engine, room for more armament and for extra fuel.

In order to keep the take-off and landing speeds at a reasonable level, Grumman made the wings proportionally larger than most aircraft (including the [Thunderbolt](#)) to reduce wing loading. In fact, the Hellcat had the largest wing area of any single engine fighter of WWII at 334 square feet (31 square meters) as opposed to 300 square feet (27.8 square meters) for the [P-47](#).



Also produced were models with a suffix "N" after the dash number. These were night fighters with an APS-6 radar mounted on the starboard wing near the tip.

The first production batch of dash three's were assigned to VF-9 aboard the carrier Essex. The first combat sorties were flown by VF9 and by VF-5 aboard the Yorktown on August 31, 1943 against Japanese targets on Marcus Island (Minami-tori Island) some 700 miles (1,127 km) southeast of Japan.

The first real test of the F6F-3 against the Zero came a few months later in December when a group of about a hundred Hellcats ripped into a like number of Japanese planes of which half were Zeros. In the ensuing battle, 28 of the Zeros were "splashed" (destroyed and crashed into the water) for a total loss to the Hellcats of 3 planes.



Surrounded by F6F's ordnance, men work on bombs on the hangar deck of the USS Yorktown (CV-10). Officers and men in the background watch a movie.

[\(Photo: National Archives and Records Administration\)](#)

The engagement which put a final seal of approval on the Hellcat took place over the Philippine Sea on June 19/20, 1944. This incident was officially called the "Battle of the Philippine Sea". To the pilots who fought, it will always be known as "The Great Marianas Turkey Shoot". It began in the early morning of the nineteenth with a few skirmishes over the island of Guam while Admiral Jisaburo Ozawa, commanding the Japanese Mobile Fleet of nine fast carriers plus assorted battleships, cruisers and destroyers attempted to find the US Fast Carrier Task Force of the 5th Fleet, commanded by Vice Admiral Mark Mitscher. Ozawa had nine carriers and 450 planes to Mitschers 15 carriers and 900 aircraft. By 10:00 am on the 19th, the adversaries had located each other and the Turkey Shoot was about to reach its peak. Admiral Ozawa launched about 70 aircraft of various types including 28 Zeros plus a number of fighter-bombers and torpedo planes. When they were still 150 miles away they were picked up on radar. Admiral Mitscher turned his carriers into the wind for launch. These seventy Japanese aircraft were swarmed by hundreds of Hellcats from the Carrier Task Force. Only 24 of the Japanese craft survived. Of the 24, a single fighter-bomber managed to inflict casualties and slight damage to the battleship South Dakota. Ozawa sent a second wave of aircraft toward the 5th Fleet and another debacle ensued; ninety-eight of 128 aircraft were splashed before reaching the ships. He launched two more strikes with similar results. In all, Ozawa lost almost 350 aircraft the first day of the battle (virtually all were downed by Hellcats), while accomplishing almost nothing. The US carriers lost 30 planes.



Pilots leaning across F6F on board the USS Lexington (CV-16) after shooting down 17 out of 20 Japanese planes heading for Tarawa. L - R: Ens. William J. Seyfferle; Ltjg. Alfred L. Frendberg; Lcdr. Paul D. Buie; Ens. John W. Bartol; Ltjg. Dean D. Whitmore; Ltjg. Francis M. Fleming; Ltjg. Eugene R. Hanks; Ens. E.J. Rucinski; Ltjg. R.G. Johnson and Ltjg. Sven Rolfsen.
 (Photo: [National Archives and Records Administration](#))

In addition to the aircraft destroyed, Ozawa lost the carriers Taiho (the newest and largest of Japan's carriers, thought to be unsinkable) and the veteran carrier Shokaku. During the early evening of the 19th, Ozawa began withdrawing from the battle but was pursued by Mitscher all that night and all the next day, further decimating Ozawa's carrier aircraft. After the Turkey Shoot, the Japanese could no longer establish or maintain air superiority over their naval objectives due to their loss of carrier aircraft and experienced pilots. Their vaunted [A6M "Zero"](#) was no longer invincible. They had gained a great respect for "The Grumman Iron Works" and its F6F "Hellcat"!

| Specifications: | |
|------------------------------|-----------------------|
| Grumman F6F-5 Hellcat | |
| Dimensions: | |
| Wing span: | 42 ft 10 in (13.05 m) |
| Length: | 33 ft 10 in (10.31 m) |
| Height: | 14 ft 5 in (4.39 m) |
| Wing Area: | 334 sq ft (31 sq m) |
| Weights: | |
| Empty: | 9,060 lbs (4,110 kg) |

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| Normal Gross: | 12,598 lbs (5,714 kg) |
| Maximum Gross: | 15,413 lbs (6,991 kg) |
| Performance: | |
| Maximum Speed: | 380 mph (612 km/hr) @ 23,400 ft (7,132 m) |
| Cruising Speed: | 200 mph (322 km/hr) |
| Landing Speed: | 88 mph (142 km/hr) |
| Service Ceiling: | 37,300 ft (11,369 m) |
| Combat Range: | 945 mi (1,521 km) |
| Maximum Range: | 1,530 mi (2,462 km) |
| Powerplant: | |
| Pratt-Whitney R-2800-10W "Double Wasp" Air Cooled Radial 2,000 hp (1,492 Kw) Take-Off - 1,975 hp (1,473.9 Kw) @ 16,900 ft (5,151 m) | |
| Armament: | |
| Six .50 caliber (12.7 mm) Browning M-2 machine guns with 2,400 rounds mounted in the wings. Later models could substitute two 20 mm guns for the two inboard .50 calibers. | |