F4U-2's from VF(N)-101 are being spotted for launch from the USS Enterprise. The lead Corsair carried the #13 and was BuNo 02632. January 1944 (Photo by National Archives via Jim Sullivan)
Hunched in the cockpit of an F4U-2 Corsair in the darkest, blackest night he could remember, Second Lieutenant Frank Lang peered at the 6-inch scope in the center of his instrument panel and saw nothing significant to break up the green–yellow line inscribing a circle around the dial.

He wondered if he would surprise himself by becoming airsick. He continued his letdown. Hidden in blackness below was the air station at Cherry Point, North Carolina (also known as Cunningham Field), and 9,000 feet of pavement on Runway 32L. Moments earlier, Lang had heard a transmission from the ground controller: “One of our guys is down.” Someone else came up on VHF and asked, “Anybody know what happened to Lieutenant Gilfillan?” Lang had to change frequencies and heard nothing more about the other pilot as he descended through the night.
Cool in the cockpit

On happier days, Frank Lang enjoyed telling friends that he’d cheated, in manner of speaking. Long before he climbed into the cockpit of the unique F4U-2 Corsair night fighter — the version of the gull-winged fighter that served in the smallest numbers and is least known — Lang had more hours in his logbook than most Marines and most of the men he would confront in combat.

Born in 1918 in New Rochelle, New York, Lang worked for United Aircraft before the United States entered the war. “I had my private pilot’s license while I was working for Chance Vought, a division of United, the maker of the Corsair,” said Lang. “Getting into the Corsair as a Marine pilot, especially the little-known F4U-2 version, was the fulfillment of a dream.”

In fact, “little known” is putting it generously. The F4U-2 was almost completely unknown, even during the war. It was the first Corsair equipped with radar and Americans were only beginning to learn what that meant.

“Before the war, when night arrived, you put your planes in the hangar,” said Lang. “The invention of radar changed all that.”

The term “radar” was initially an abbreviation (what would be called an acronym today) for “radio detection and ranging.” In 1922, A. Hoyt Taylor and Leo C. Young at the Navy’s Aircraft Radio Laboratory in Washington, D.C., were experimenting with radio transmissions between their station and a receiver located across the Anacostia River. During the test, a passing river steamer interrupted their signal. This suggested that radio waves might be used to detect the passage of a ship at night or in fog.

In 1936, R. C. Guthrie and R. M. Page of the Naval Research Laboratory in Washington tested a radar unit that could detect an aircraft 25 miles away. In 1940, the Navy and the Sperry Company developed an air-to-air radar unit that could be carried by a fighter.

Just after Pearl Harbor, the Naval Aircraft Factory in Philadelphia, began fitting 34 birdcage-cockpit F4U-1 Corsairs with an APS-4 radar using an 18-inch parabolic antenna, inside a housing on the leading edge of the right wing of each aircraft. The cockpit radarscope, 6 inches around, was located in the center of the instrument panel with the gyro horizon, altimeter, directional gyro and needle ball all clustered around the scope. “The panel was arranged so that at all times you could scan your attitude and altitude indicators,” Lang said. “That was much needed when flying blind.” Because of the radar pod, the planes’ armament was reduced from six wing .50-caliber machine guns to five. Lang’s Marine squadron received 18 of the newly redesignated F4U-2s and the Navy got the rest. The Navy used them to equip its night-fighter squadrons, VF (N)-75 and VF (N)-76. The F4U-2 was the first U.S. single-engine fighter to be equipped specifically for night-fighter duties.

Because the Navy designation system prescribed an “N” suffix for a night fighter, the F4U-2 should have been designated F4U-2N — but it wasn’t.

Lang and the F4U-2 evolved simultaneously. Like nearly all Marines who became aviators early in the war, Lang started by enlisting in the Navy, in Boston. He went to Pensacola, Florida, for flight training. “That was a piece of cake for me because I was already working on a commercial pilot’s rating by then,” Lang said. “I came out of
The F4U-2 was almost completely unknown, even during the war. It was the first corsair courtesy of the Robert F. Dorr. The F4U-2 night fighter. (Photo: F-4B Phantom II. Lang was in the cockpit. He went to Pensacola, Florida, for flight training. In 1940, the Navy and the Sperry Company developed an air-to-air radar unit that could detect an aircraft 25 miles away. In 1922, A. Hoyt Vaughan “really whipped our squadron into shape,” said Lang. “He was a real leader who rarely needed to use his powerful personality. He supervised every aspect of our preparations to go to the Pacific with our F4U-2s.” It was not easy.

**The second skipper**

Major Everett H. Vaughan became commander of VMF (N)-532 in spring 1943 and became a guiding force in developing tactics and methods for taking advantage of the superb performance of the radar-equipped Corsair. Vaughan had been an airline pilot at the time of Pearl Harbor and had thousands of hours in his logbook.

Vaughan “really whipped our squadron into shape,” said Lang. “He was a real leader who rarely needed to use his powerful personality. He supervised every aspect of our preparations to go to the Pacific with our F4U-2s.” It was not easy. As another Marine, Captain Tommy Tomlinson, put it, “The first Corsairs really were not safe airplanes. The wing would stall near the tip. The mechanics kept taping a carved block of wood out there to make that thing stall evenly. That airplane absolutely would not recover from an inverted spin. One of the astounding things that happened during the war was how rapidly they improved the Corsair, how the engineers kept modifying the bird, with incremental changes that improved the plane at every stage.”

Lang’s squadron began combat at Tarawa on January 13, 1944. A month later, the squadron moved up Roi-Namur in Kwajalein atoll, the Marshall Islands, where night intruder flights by Japanese bombers were a pesky and persistent problem. “That’s where we got our first kill.”

“The night of that battle, radar was the key. We were controlled by a ground radar that had about a 250-mile range and could pick up these bombers coming from Truk, which was south and west of us. On the F4U-2 itself, we had that APS-4 radome hanging in front of the right wing. In the cockpit, the radar scope had three settings on it. One was five miles, one was 25 miles, and one was 75 miles. So you would pick up your target and as you got closer you would bring him closer on the scope. Later on, we had a tech rep from the company that made the radar, Hershel Hammond: He modified the scope so we could see the target at one mile. That made it real easy to see the target and bring him in.”

One of Lang’s fellow F4U-2 pilots, Howard “Howie” Bollman, wrote in an unpublished family memoir:

“I was getting ready to hit the sack when the command car driver came to pick up Lang. He told me that there was to be an alert so I rode toexplain.
## Specifications

**Vought F4U-2 Corsair**

**Type:** Single-seat fighter, modified for night-fighter duty

**Powerplant:** One 2,000 horsepower (1,492 kW) Pratt & Whitney R-2800-8 Double Wasp 18-cylinder radial engine driving a 13 foot, 4 inch (4.06 m) three-bladed Hamilton Standard propeller

**Performance:**
- Maximum speed: 381 mph (671 km/h) at 19,900 feet (6,005 m); 316 mph (509 km/h) at sea level;
- Initial climb rate: 2,890 feet (881 m) per minute;
- Service ceiling: 36,900 feet (11,247 m);
- Range: 1,015 miles (1,633 km)

**Weights:**
- Empty: 8,982 pounds (4,074 kg);
- Loaded weight: 14,000 pounds (6,350 kg)

**Dimensions:**
- Wingspan: 41 feet (12.49 m);
- Length: 33 feet, 4 inches (10.16 m);
- Height: 16 feet, 1 inch (4.9 m);
- Wing area: 314 square feet (29.17 sq. m)

**Armament:**
- Five .50-cal. (12.7 mm) Browning M2 machine guns in wing;
- The usual armament of six guns was reduced to accommodate APS-4 radar with 18-inch parabolic antenna on right wing; other models of the Corsair had six machine guns or four 20mm cannons

**Crew:** One (pilot)

**First Flight:**
- May 29, 1940 (XF4U-1);
- June 25, 1942 (F4U-1);
- Circa January 1, 1943 (F4U-2)

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F4U-2s from VF(N)-101 are being spotted for launch from the USS Enterprise. The “Big E” detachment was aboard from January to June 1944. (Photo courtesy of National Archives via Jim Sullivan)

I ran out and scrambled into an F4U-2 [at 45 minutes past midnight] just in time to hear Lieutenant [Joel T.] Bonner announce that he was ready to jump. I tested my guns immediately after takeoff. All were okay.

“I was vectored 270 degrees to Angels 20. When I had reached 20 miles from base, I orbited once in my climb and reached Angels 20 immediately. As soon as I reported ‘level,’ I was given a customer, ‘Vector 260.’ Approximately a minute later, I picked up a contact at three and one-half miles ahead. It soon became obvious that we were on opposite courses and at about two miles I commenced a hard starboard, 180-degree turn, informing controllers of my action. I turned a bit past 180 degrees to 100 degrees to get back on my original track and immediately picked up the bogey at two and a half miles, azimuth 30 left above. I turned astern of the target on course 080 degrees.”

Bollman continued: “I informed controllers I still had contact. They left me because they had two more fighters to watch. I closed rapidly to half a mile while climbing to the target’s Angels 22. At a half mile I slowed to the speed of the target to plan my attack. There was a white cloud base below and I had no desire to be seen against it. The moon was between two o’clock and 15-20 degrees elevation and me. I played with the idea of getting above the target so as to see him against the clouds, but was afraid he might be lost under a wing or nose of my plane so I decided to come in at his altitude and 5 or 10 degrees on the down-moon side of the target.”

“...the line with Lang, intending to help out on the ground. As we arrived at the flightline, Lieutenant Spatz took off [at 25 minutes past midnight] and Lang took off shortly afterward.

“I stood by the phone as First Lieutenant Edward A. Sovik, the duty officer, was busy elsewhere. About this time the sirens sounded. The phone rang requesting another fighter.
The F4U-2 pioneered night fighting for the Corsair, but the F4U-SNL, such as this one restored and operated by the Collings Foundation, perfected the role in Korea. (Photo by Paul Bowen)
The Japanese knew we were there. The presence of our night fighters was clearly a deterrent to them.

After checking his gun switches, Bollman added speed and crept up on the target. At 300 yards, he looked up and saw the target exactly where the target was supposed to be — a twin-engined “Betty” bomber.

Bollman increased speed and closed rapidly. He opened fire 150 feet astern and 15 feet below, aiming for the bomber’s right wing root.

Bollman expected to see his own tracers but did not. They were supposed to have been loaded but weren’t. He wondered if his bullets were going astray. His burst lasted only two or three seconds and at first nothing seemed to be happening. “And then,” said Bollman, “his starboard engine began smoking. I transferred my aim to the port side and after another two-second burst I observed flame and smoke on his port engine.

Bollman’s target was now in a 15-degree nose-down attitude. “I nearly rammed him,” Bollman said. “Employing what might be termed an outside snap roll to avoid him, I pulled around to one side and above to observe the ‘Betty.’ From this position, it appeared the flame had blown out so I gave him another burst from 20 degrees above and astern at 100 yards.”

The Japanese bomber broke into two pieces of equal size, both of which plummeted to earth in flames. Bollman made note of the time. It was 1:10 a.m., or 20 minutes after takeoff.

Lang didn’t get a Betty the way Bollman did. That night, “I was flying around and my radar was picking up fake returns, which we called ‘gizmos,’ caused by pieces of aluminum, or chaff, that the Japanese dropped from their aircraft as a decoy to confuse us.”

Nor did a pal of Lang’s, Pete Bonner, score a kill. Bonner, who later became Assistant Secretary of the Navy, “was way too close to his ‘Betty’ when he opened fire. The tail gunner in the ‘Betty’ saw him and shot out Bonner’s engine” — that big old R-2800 engine, the most reliable radial of the war, unwittingly served as armor plate for the
pilot — “and although Bonner wasn’t hurt, he had to bail out.

“We spent a day looking for him. But it wasn’t until a day and a half later that a PBJ Mitchell medium bomber” — the Marines’ version of the B-25 — spotted Pete in the water. He was a man of light complexion and had no cover to protect him from the sun. After two days in that raft, he had blisters all over his body when a destroyer rescued him. We thought we were going to lose him until our doc did some miraculous things. We later made modifications to the life raft based on his experience.

“That night, while Bonner was bailing out, we lost a pilot, Don Spatz. The controller gave Don two vectors and then forgotten what vector he’d given him. I was the last to be in contact with Don. I was up at about 30,000 feet and could hear him clearly. His engine gave out. He needed to bail out. I tried to tell Don to bail out but he wouldn’t. He went in with his airplane.”

**Evolving conflict**

As the war progressed, Lang’s unique night-fighter squadron moved up to Saipan in the Marianas Islands. “We flew out of two fields on Saipan. The original field was the short field that they later modified for the B-29 Superfortress. We soon moved to another airfield on the island and flew from there.

“At this point in the war, we saw less and less activity. The Japanese knew we were there. The presence of our night fighters was clearly a deterrent to them. I know we deterred them from operating effectively at night because the moment we were pulled out, they came out in swarms. After our departure, they had to put Army Air Corps P-61 Black Widows in there to fight them at night. The P-61 wasn’t available when we were doing our night work.

In July 1944, we flew from Saipan down to Guam to cover the invasion there so the fleet could have night fighter coverage. The carriers in the fleet didn’t want to work their crews both day and night. So for the night missions, we took off from Saipan, flew down to Guam, spent about an hour and a half providing coverage over the fleet, and then flew back to Saipan. This was one time when we really got a sense for the sheer magnitude of a Pacific island invasion. On a moonlit night, we could see vast numbers of our warships and troop ships at sea. On rare occasion, we could glimpse flashes from shooting. There was no doubt that our side was advancing across the Pacific and moving closer to Japan.

Lang never scored an air-to-air victory in the rare F4U-2 night fighter but he never lost his love for the gull-winged fighter built by the company (named for Chance Milton Vought, who died in 1930) or for its dependable engine. As Lang frequently pointed out, the Corsair’s unusual wing shape resulted from the choice of engine. The large diameter of the propeller (13 feet, 4 inches on the F4U-2 model) meant the plane would have stalky landing gear and would not be readily suitable for carrier operations. There were 12,571 Corsairs in all by the time production ended in 1953. In the Pacific, the Corsair was credited with 2,140 aerial victories against the Japanese with only 189 air-to-air losses. Corsairs flew 64,051 combat sorties.

Major General Frank C. Lang (September 13, 1918-December 23, 2008) logged cockpit time in everything from the Brewster F2A Buffalo to the McDonnell F-4J Phantom II. In combat in three wars, he said he never came close to being airsick in a cockpit after his difficult F4U-2 letdown at Cherry Point. The author met Lang at Iwakuni, Japan in August 1974 when Lang presided over withdrawal of the last Marine Corps units from Southeast Asia. By then, Frank Lang was still little recognized outside his own military service branch but was of the best known of U. S. Marine Corps aviators. ✩