

## Legends of Vietnam: Shoulder to Shoulder

*The Grumman A-6 was ugly, but it sure could cook*

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*On the USS Constellation late in 1968, a catapult crewman gives the signal that an A-6 is ready to launch. A centerline D-704 refueling store augmented the four drop tanks beneath the wings. The D-704's propeller, driven by wind in flight, powered a motor that extended and retracted its refueling hose. (Naval Historical Center)*

On a May afternoon in 1972 a flight of four Grumman A-6 Intruders, the lead elements in an air wing strike, flew a hundred feet above North Vietnamese rice paddies west of the Gulf of Tonkin, about 25 miles south of Hanoi. Loaded with Mk 20 Rockeye bomblet canisters, the jets were headed toward Bai Thuong, an enemy airfield. Navy pilot and air group commander Roger Sheets flew the lead Intruder. He and his bombardier/navigator Charlie Carr, a Marine Corps captain, used the aircraft's radar and visual cues to guide them to Bai Thuong. "The A-6 was the all-weather attack aircraft," says Carr. "Monsoon season never affected our operations." But that day was clear; Sheets and Carr were getting a good look at North Vietnam, and any other aircraft sharing that patch of sky could get a good look at them. As the Intruders approached their target, they climbed to 200 feet. From the right seat, Carr spotted enemy MiGs above. They looked like little arrowheads circling watchfully about 1,500 feet up. He threw a switch and informed Sheets that the A-6's three-plus tons of ordnance were now armed.

"We came in underneath this wheel of MiGs," Carr recalls, "maybe 12, 15 of them. We were hoping to catch them on the ground and bomb the hell out of 'em. The airbase was alerted, however."

Sheets kept the A-6 straight and level as they approached the airfield. A few seconds later he thumbed the release on the stick, freed all 12 Mk 20s, and banked the Intruder hard to the left.

Carr remembers seeing one of the MiGs dive toward them. "OK, so now we had a problem," says Carr. "Now the MiG-17 was on our tail."

Compared to the MiG, the A-6 was no sprinter. Carr armed the aircraft's Sidewinder missiles, but there was little chance that Sheets could get into a position to take a shot. Instead, he began to jink, performing quick dodging maneuvers that made it tough for the MiG pilot to keep them in his sights. Sheets intended to drag the MiG toward the coast, hoping to run it out of gas. Carr remembers seeing puffs of smoke from the MiG's 37-mm cannon. That's when an F-4 Phantom appeared like a big brother late to a fight. The F-4 fired a missile, the MiG went down in flames, and Sheets and Carr made it back to the USS Coral Sea.

MiGs were among the reasons that A-6 crews preferred the cover of darkness or nasty weather. Using terrain-following radar, the crews flew low and fast no matter the hour. Because of the complexity of carrier operations, says Carr, only about a quarter of his flights from the Coral Sea were at night. "But missions from land," he says, "were almost all at night."

If darkness suited the A-6, perhaps one reason was that the airplane was no beauty queen. The twin intakes for the Pratt & Whitney J-52 P-8B turbojets swelled amidships, giving the craft a portly look. A bent refueling probe protruded from the top of a large, rounded snout. "The plane wasn't pretty," remembers Carr. "Only Grumman could make a plane that ugly."

The intruder's genesis predates Vietnam. During the Korean War the U.S. Navy lacked an all-weather, carrier-launched strike aircraft. So in March 1957 the service's Bureau of Aeronautics issued a request for proposals, detailing a requirement for a subsonic, two-seat attack bomber. Boeing, Douglas, Vought, Martin, Bell, Lockheed, Grumman, and North American submitted a total of 11 designs.

Interviews with flight crews led designers to focus on crew coordination. "The Navy wanted the side-by-side seating," says Joe Ruggiero, a Grumman engineer who worked on the A-6 from the prototype to the final A-6F, and was later a Northrop Grumman program director for the EA-6B Prowler, the Intruder's electronic warfare variant. "They thought, correctly, that it would enhance the workload in the cockpit. The design team knew it was going to be a bomber, and the radar system requirements did not lend themselves to a pointy nose. The engineers designed a plane that could carry lots of ordnance under the fuselage and wings. What eventually showed up on the drawing boards was the configuration of the A-6 Intruder."

Grumman won the design competition and signed the contract early in 1958. Two years later the prototype rolled out and the insults rolled in. "The pointy end was on the wrong end," says Carr. Some called it a "flying drumstick." "Well, it was a really ugly plane when you first looked at it," says retired Rear Admiral Rupe Owens, who has flown every version of the A-6. "But when it went to work flying in combat, the tadpole-looking plane became a thing of beauty." John Vosilla, a Northrop Grumman spokesman, bristles at the put-downs. "When we look at a project at Grumman, we're looking at engineering, not works of art," he says.

"To me and my team," says Ruggiero, "it was a beautiful airplane."

Both Charlie Carr and Rupe Owens liked the Intruder's side-by-side seating. So did the Marine Corps' Bruce Byrum (now a retired general), another Vietnam veteran who, like Carr and Owens, logged more than 3,000 hours as an A-6 pilot.

"There was a lot the bombardier/navigator could do to help," says Byrum. "He wasn't just a passenger along for the ride to operate the weapons system." A good bombardier/navigator, he says, monitored the radio, rate of descent, airspeed, power settings, and attitude, as well as the aircraft's place in the landing pattern as crews returned to the ship. "He had as much to do with the pilot's success as the pilot," Byrum adds.

Carol Reardon, a military historian at Pennsylvania State University and author of *Launch the Intruders*, an account of a Vietnam-era A-6 squadron called the Sunday Punchers, finds that the crew concept was critical to the Intruder's success in Vietnam, where it flew 35,000 combat sorties. "Pilots and B/Ns [bombardier/navigators] had to learn to trust each other's skills," she writes. "Repeatedly, instructors reminded them that the A-6 required two minds functioning in synch with each other. Both members of an A-6 crew got the same award for the same mission. Both suffered the consequences of an error. The A-6 community could afford no loners."

The crews say that the two-abreast arrangement enhanced interaction. "With two guys sitting side by side, you could communicate with hand gestures, if need be," says Owens. "You could simply look at the other guy and nod."

Good communication was important in dodging surface-to-air missiles (SAMs). Intruder pilots relied on their own skills at low-altitude flying, the eyes of their bombardier/navigators, and the power of their Pratt & Whitney engines.

"You could outfly the SAMs with the A-6," says Owens. "What you did was make hard turns. At their intercept speed of about Mach 3, the SAMs couldn't turn with the A-6, especially at low level." Owens remembers approaching a target when points of light far ahead came at his airplane, streaming long, bright tails of flame, five in all. "We managed to out-turn them all, but I remember the sound of those five rocket motors from the SAMs as they went by. It got loud. Real loud."

SAMs harassed many A-6s, and took their toll—of the 69 Intruders lost to combat in Southeast Asia, 36 were claimed by anti-aircraft fire, 10 by SAMs, and only two by MiGs.

The intruder earned a reputation as a dependable attacker that could drop bombs in pitch darkness in any weather on both stationary and moving targets. Its reliability was due mainly to a new bomb release tool, the Digital Integrated Attack and Navigation Equipment system, or DIANE. Coupled to an analog computer, the system could take into account any angle of climb or dive, speed, G force, and wind and calculate when to drop a payload accurately. DIANE's Vertical Display Indicator gave the pilot a representation of terrain, sky, and horizon, as well as heading, radar altitude, vertical speed, and angle of attack. The aircraft's terrain-hugging capability was key to low-altitude missions. When Intruders were striking some targets, A-7 Corsairs and F-4 Phantoms flew along in formation and released their ordnance when directed by the A-6 crews using DIANE.

The Intruder also carried an Airborne Moving Target Indicator, a unique doppler radar that gathered returns from moving ground objects. And ground-based acoustic and seismic sensors, air-dropped along supply trails, provided another method for A-6 crews, with the help of ground controllers, to find targets moving on such routes as the Ho Chi Minh Trail. "Sometimes at night," says Byrum, "enemy anti-aircraft fire used colored tracer rounds fired aimlessly into the night sky when aircraft were detected flying in the area, to warn all vehicles on the road that we were there." Intruders generally dropped Rockeye cluster bombs first, which pierced vehicles' gas tanks or weapons caches and set off secondary fires. These provided visual aim points for a second pass, in which crews would drop Mk 82s. In the absence of secondary fires, they would head off for preassigned secondary targets.

The Intruder absorbed lots of punches. On one daylight mission, North Vietnamese 23-mm anti-aircraft fire damaged an A-6 in Byrum's squadron. The crew diverted to Da Nang. Byrum flew close to look them over and escort them to the airfield.

"It was hard to believe that the aircraft was still flying," he says. The A-6 had taken a direct hit to the leading edge of the right wing near its root. The pilot, in the left side of the cockpit, couldn't see the damage. His bombardier/navigator could, though, and had apparently decided to say little about it, probably hoping to delay an ejection over enemy territory. "The hole in the wing was about the diameter of a 50-gallon drum," says Byrum. "You could see the landing gear up inside the now-visible wheel well." Miraculously, no fuel or hydraulic fluid sprayed out, so Byrum and his navigator refrained from reporting the damage to the pilot. No sense in unnerving him.

Byrum followed the stricken Intruder to touchdown. By the time he taxied up, the pilot of the damaged A-6 had shut down and climbed out. Coming around to the starboard side of his airplane, he was stunned by what he saw. "His first reaction was to knock the bombardier/navigator to the ground. Obviously, he wasn't happy," Byrum recalls. "We didn't bother to open our cockpit. Although we couldn't hear what he was yelling, he was just as

upset with us. I don't know what he would have done differently. He surely did not want to eject."

"They didn't call it the 'Grumman Iron Works' for nothing," says Ruggiero. "Look at the Wildcat and the Hellcat. We built planes that would take the fight to the enemy and bring back safely the youngsters [who] flew them."

Back on the ship, 'round-the-clock, all-weather ops made one day meld into the next for A-6 crews. They often flew two missions per day—one attack and one as refuelers for the rest of a carrier's air wing. There was little free time. "If they weren't flying their combat mission," says Reardon, "they were planning it or debriefing it—and that took several hours in itself."

The crews did have moments of relaxation. "Movies were very popular," says Reardon, "if they were not very new—and not always G-rated." When the films began to grow old, the crew ran them backward for kicks, making up their own dialogue—"like kids used to do with old Japanese monster movies," she says. Carr recalls wearing out the 1971 shark documentary *Blue Water, White Death*. "We sat and watched it I don't know how many times. By the end of that cruise we'd seen every damned shark in the world."

For some squadrons, says Reardon, the transit from the States involved a little below-the-radar, late-night drinking to dull the anxiety of what lay ahead. Once active air ops began, though, they refrained. "They saved the craziness for their times between [periods when the carrier was on combat station], when they went ashore in the Philippines," Reardon says, "or some exotic location such as Singapore or Hong Kong." Carr doesn't recall any drinking on the transit. "Doesn't mean it didn't happen," he says. "I just didn't see it. We did operations planning. We had targets, and we had to plan 'em. And we flew." He does remember a stop in Hawaii. "We pulled into Pearl [Harbor] and raised holy hell for a couple days." And when they got orders to come off the line for the last time and head home, he remembers that, magically, beer and spirits appeared.

The navy retired the A-6 on February 28, 1997, after 693 had rolled off Grumman's assembly line. By then it had inspired a shoulder-to-shoulder camaraderie. The Intruder Association, which Owens chairs, carries that torch, gathering pilots and bombardier/navigators to share stories and rekindle friendships.

"The Navy and the Marine Corps finally got a plane that could unite the services," says Carr. "You'd never get those guys together, except for their common love of the A-6." He would receive 10 Distinguished Flying Crosses and a Silver Star, and flew in Operation Desert Storm. Carr retired a full colonel in August 1994.

The Intruder's precision strike role was briefly handled by the F-14 Tomcat. The other multi-crew tactical aircraft of today—the F-15E Strike Eagle and the F/A-18F Super Hornet—are, like the Tomcat, tandem seaters, with the weapons systems officer behind, not beside, the pilot. Their fundamental design rule is to be streamlined. These aircraft are expected to do it all: attack, dogfight, recon, electronic warfare. The F/A-18 is a tanker too. They sport broad

wings for maneuverability, but they're packed with the tools for ground attack. They're designed to fight their way in, deliver their payloads, and fight their way out.

The A-6's shoulder-to-shoulder cockpit is now a quaint curiosity in the pantheon of aerospace engineering. Another shoulder-to-shoulder workhorse was the General Dynamics F-111, which was retired in 1996. Grumman's electronic warfare version, the EF-111A, was retired in 1998. That leaves the EA-6B Prowler. Though the Marine Corps may fly the Prowler into the next decade, the Navy plans to fully convert to the tandem-seat EA-18G Growler by 2012.

Ruggiero reflects warmly on his airplane. "We didn't have to be supersonic," he says. "Our plane was a good truck and didn't have to be pointy. We had to deliver weapons to the target in all kinds of weather."

Reardon remembers a bombardier/navigator who offered a suggestion for her book's cover that he thought would perfectly suit the airplane and its mission. "He said, 'You should make the cover pitch black, black as the darkest night, and make it sopping wet.' "

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