

THE DAY I SHOT MYSELF DOWN

by Pete Purvis



"Hey, I'd like you to meet the guy who shot himself down." Quite often, that's how my friends have introduced me. This unique honor belongs to me and another Grumman test pilot, Tommy Attridge, who did it in an F-11F-1 fighter that he flew into a hail of 20mm rounds he had just fired during a supersonic gunnery test. Several years later, as a test pilot for Grumman Aerospace flying out of Point Mugu, California, I found a more modern way to do this using a Sparrow missile and the no. 6 F-14A Tomcat—at that time, the Navy's fighter of the future. Nearly 30 years later, that day—June 20, 1973—remains sharp in my memory.



This is how it's supposed to go: the missile drops down far enough to clear the airplane and then travels on its merry way (photo by Ted Carlson).



Four photos from the actual misfiring sequence show the severity of the flames from the initial firing; the failure of the missile to drop and properly clear the airframe; the missile dangerously close to the cockpit and the wayward Aim-7 about to tumble away from us (official U.S. Navy photos by PH1 Bill Irving, courtesy of author).



It wasn't a dark and stormy night. The midday sun was bright in the clear blue southern California sky. The Channel Islands off Point Mugu stood out in blue/gray stark relief against the glistening ocean below as Bill "Tank" Sherman and I flew west toward the test area in the Pacific Missile Test Range. Tank and I had known each other since we were in the same class in the Navy's F-4 replacement air

two of its eight cruciform wings (four forward, four aft) inserted into slots in each launcher. These triangular fins are 16 inches wide and, when the missile is attached to the launcher, stick into the bottom of the fuselage.

The test point for that day was in the heart of the low-altitude transonic range where the high-dynamic pressure-flow fields close to the fuselage are mysterious. The zero G



The Raytheon AIM-7 Sparrow missile that misfired was mounted on station (no. 4) in the "tunnel" between the F-14's two engines (photo by Ted Carlson).

group training. He had a combat tour as a Navy radar intercept officer (RIO) and was good at his business: analytical, competent and cool—the kind of guy you wanted to have along when things got hectic. I had learned the real value of a good RIO over North Vietnam while flying combat missions in the F-4B Phantom from the USS *Coral Sea*.

One of the myriad development tests of a tactical airplane is weapons separation, whether those weapons are bombs or missiles. That day, we were testing a critical point in the Sparrow missile launch envelope. We weren't testing the missile's ability to kill airplanes, only its ability to clear our airplane safely when fired. The crucial test point took place at .95 Mach, at 5,000 feet altitude and at zero G, and it consisted of firing Raytheon AIM-7 Sparrow missiles from the farthest aft station (no. 4) in the "tunnel" that is under the F-14 between the two engines where most missiles and bombs are hung. On the F-14, the Sparrow missiles are mounted in semi-submerged launchers in the tunnel with

launch parameter meant the missile would not get any help from gravity as it was pushed away from the airplane by the two semicircular feet embedded in the launcher mechanism. Each of these feet was attached to a cylinder that contained a small explosive charge that was set off by pulling the trigger on the stick.

This particular launch was not thought to be risky from a pure separation standpoint because preceding Sparrow launches from the F-14 wing pylon, forward and mid-fuselage positions in identical flight conditions had demonstrated favorable release dynamics and good clearance between the missile and the aircraft throughout the entire launch sequence. In fact, Raytheon—on the basis of its own aerodynamic analysis—was concerned that the missile would severely pitch nose down as it had on two of the three prior launches at this condition, and possibly be so far below the aircraft as it passed the F-14's nose radar that it could, in the real world for which it was designed, lose the rear antenna

radar signal and compromise the target acquisition portion of the missile trajectory. Raytheon engineers had predicted a two-foot clearance. Independent Grumman wind tunnel tests confirmed the Raytheon analysis. Such, however, was not to be the case for this launch.

Hal Farley—the other Grumman test pilot sharing the missile separation program—and I had flown an extensive buildup series to get to this critical data point. Flight-test programs are very orderly evolutions. Engineers and test pilots study historical and forecast data carefully as test points progress from the mundane to the hazardous. This one was no different. Neither Hal nor I had flown missile separation tests before this series. And they didn't cover it at the Navy Test Pilot School, either. One of our Grumman colleagues, Don Evans—a former Edwards USAF test pilot and one of the most experienced sticks in the outfit—had warned us during flight test “bonus” discussions that for other than first flights, high-air-speed tests and structural demos, weapons separations were the most perilous, primarily because of their unpredictable nature. Hal and I listened to Don, but his thoughts didn't sink in until we did a bit of on-the-job training. We soon learned that, once they departed the mother airplane, stores sometimes had minds of their own; they sailed away and were known to barrel-roll over the top or, perhaps, disintegrate ahead of the airplane. Once you've seen that happen, you become wary of staying too close when chasing the test airplane. We often had eager Navy pilots flying photo chase, and we had to warn them in no uncertain terms that this wasn't a Blue Angels' tryout.

During the preflight briefing, the engineers once again displayed graphs that showed the predicted missile-to-fuselage clearance as a function of time after trigger pull. As expected, clearance was seen to be tight. But we had the utmost confidence in Grumman's lead separation engineer, Tom Reilly, and his data. All previous launch data used during buildups had come out on the money. We were good to go.

The test missile was a dummy AIM-7E-2, an obsolescent model of the Sparrow with the same form, fit and function as the AIM-7F, the missile scheduled for the Fleet. The 7E-2's casing, however, was slightly thinner than the 7F's. The missile launcher feet contained a smaller charge because Raytheon's engineers thought a larger charge might fire the feet with enough force to break the missile casing.

The rest of the briefing was routine. As usual, F-14 no. 6's test coordinator, Bob Mottl, was facilitator and ensured that all the supporting cast had their moment. Tom gave us the usual five-inch stack of 5x7-inch index cards that detailed each step of the test. Jim Homer, Grumman's range coordinator, briefed us on the boundaries of the test area and an array of test frequencies and range procedures. Tank and I briefed our chase F-4 crew—Lt. Col. Fritz Menning, USMC, from the VX-4 tactics development squadron (who had chased many previous flights) and PH1 Bill Irving, the top aerial photographer at the Naval Missile Center, Point Mugu. After the routine ground checks, we took off and flew directly to our test location about 80 miles offshore between Santa Rosa and San Nicolas Islands, directly west of Los Angeles.

“AS I REACHED FOR THE LEFT FUEL SHUTOFF HANDLE, THE NOSE PITCHED UP VIOLENTLY; SO SHARPLY THAT THE FORCE OF MORE THAN 10G CURLED ME INTO A FETAL POSITION. I COULDN'T REACH EITHER THE FACE CURTAIN OR THE ALTERNATE HANDLE BETWEEN MY LEGS. IT DIDN'T TAKE LONG FOR ME TO FIGURE OUT THAT I WAS NO LONGER IN CONTROL OF THE SITUATION”.

The test pilot—in this case, the test crew—has two primary jobs: first, to hit a specific data point (aircraft attitude, altitude, airspeed, G loading) in the most efficient manner, and then relate unusual phenomena and analysis to the folks back on the ground. On this day, the second part was covered by several million dollars' worth of test instrumentation. Very fortunate, because things were about to get exciting.

We hit our point in the sky (567 KIAS, 5,000 feet, 0 G), and I pulled the trigger. Ka-whumpf!—a much louder Ka-whumpf than we'd experienced before. The missile appeared in my peripheral vision as it passed from beneath the left nacelle. It was tumbling end over end, spewing fire. That's weird! My first thought was, I'll bet stray pieces FOD'ed the left engine. My instant analysis seemed to be confirmed a few seconds later when the master caution light flashed in front of me. My eyes jumped to the caution panel, which had begun to light up like a pinball machine! HORIZONTAL TAIL and RUDDER AUTHORITY, numerous lesser lights, then BLEED DUCT! That's the one that usually came on before fire warning lights. I disregarded all but the BLEED DUCT light and tried to punch it out by turning off the bleed air source. That didn't work! Now the chase told me I was venting fuel, and I had a “pretty good fire going.” “How good is that?” I asked in my cool-guy, smart-ass best. There's the left fire warning light! He's right! Shut down the left engine. Well, that didn't work either. As I reached for the left fuel shutoff handle, the nose pitched up violently; so sharply that the force of more than 10G curled me into a fetal position. I couldn't reach either the face curtain or the alternate handle between my legs. It didn't take long for me to figure out that I was no longer in control of the situation. “Eject, Tank, eject!” And as the high G force (data said it peaked at 1.3 seconds) bled off to a point at which one of us could reach the face curtain, either Tank or I initiated the ejection sequence, and in just one second we went from raucous noise and confusion to almost complete peace and quiet.

The ejection was smooth, and after my body completed about four somersaults, the chute opened. The opening shock was gentler than I had expected. In fact, I hardly noticed it. All the action from missile launch to our ejection took only 39 seconds! It seemed much longer. We had ejected at an estimated 350 knots, having bled off 150 to 200 knots in the pitch up, and at 7,000 feet—2,000 feet higher than we started. Post-accident analysis of the instrumentation showed the violent nose-up maneuver was caused by a full nose-up stabilator command, the result of a probable burn-through of the control rod that actuated nose-down commands. Had the stabilator command gone full nose-down, you wouldn't be reading this story.

As I stopped swinging in the chute, I saw Tank about 75 yards away and 100 feet below me. We waved at each other to indicate we were in good shape. We both waved at Fritz, who circled until he was low on fuel. We had hoped to wave at a helicopter, but to travel 80 miles in a helo flying at 120 knots takes a long time—even though it launched a few minutes after we ejected. Our airplane descended in a slow, shallow left spiral, burning fiercely in a long plume reaching from the trailing edge of the wing to well beyond the tail. It hit the water in the same altitude as it had descended—5 to 10 degrees nose down and in a 10-degree left bank. On impact, it broke up and scattered pieces in a 100-foot radius. The largest chunk was the left portion of the tail section that floated in a pool of pink hydraulic fluid.

The parachute ride was calm, serene and long. The only noise was the chase plane roaring by several times. As I hung in the chute, my thoughts turned to the next phase: water survival. The sea below was calm. First thought: did the airplane crash sound reveille to the sharks, who must be lurking hungrily below awaiting their next meal? Oddly, that was the last time I thought of sharks for the rest of the day because my mind soon became otherwise engaged.

Sharks weren't something I could control, but water entry was, so I began to go through my water survival tactics. I pulled the right handle of the seat pan to release my life raft, which was supposed to remain attached to the pan on the end of a long yellow lanyard, or so I'd been told. I peered carefully below, but saw no raft or shadow on the water. Pulled the left one. Still no sign. Sure hope there is one.

Bear in mind that the last time I had hung in a parachute harness was in preflight some 16 years before, and then not for very long. I wasn't about to perform a creative search for my life raft using chute steering or other acrobatics best left to the 82nd Airborne. Nor did I care to enter the water in other than the prescribed manner, so I gingerly walked my fingers up the risers and found the parachute's quick-release fittings (they're parked a foot or so above your shoulders when you're hanging under a parachute) so I could actuate them when I hit the water to avoid becoming tangled in parachute and shrouds—yet another way to die.

After what seemed like a very long time hanging in the chute, the water suddenly rushed up at me, an event that according to survival school anecdotes signaled impending water entry. Water entry was like jumping off a 10-foot diving board—just like they said. I plummeted about 10 feet under, then bobbed to the top while trying to actuate my life



When attached to the launcher, two of the missile's 16-inch-wide triangular fins protrude into the bottom of the fuselage (photo by Ted Carlson).

vest all the way. In my state of diminished IQ—probably about 20—I had forgotten that very basic step on the way down. I flailed about the surface, kicking, treading water with one hand and searching for the life-vest toggle with the other, then treading water with both. My addled brain realized that this maneuver wasn't going to be a long-term survival technique. Epiphany! You'd better stick your head under water, submerge if you must, open your eyes and find the damned toggles, or you're going to die. Doing so, I found the right one, pulled it, and once again ascended to the surface, this time from about eight feet down. Next, find the left toggle. Now that I was at least floating, I figured I didn't need to perform my immersion act again, so I somewhat calmly found the left toggle and inflated the rest of the life vest that contained most of the neck collar and thus, lots more comfort.

Now that the most basic water survival goal—floating—had been achieved, I turned my attention to getting rid of the chute, which I found still connected to my left quick-release fitting. Release was a bit difficult because no tension was on the riser. Small problem. A few shrouds plus the yellow raft lanyard were wrapped around my left ankle. The shrouds untangled easily, but not the lanyard.

The life raft episode, which at times brought to mind thoughts of monkeys playing football, would roll an audience in the aisles if included in a water survival flick. Where was the raft? Because I hadn't seen either the raft or its shadow on the way down, I assumed it hadn't inflated but it must be on the water nearby. I couldn't turn around very well because of my stiff neck. I soon saw the raft about five yards away out of the corner of my eye. I remembered rafts being yellow, but this one was black and at first glance seemed partially inflated. Both illusions were caused by the protective cover draped over the raft's side. I began to swim toward it and after splashing through one yard of the five-yard gap in about 10 seconds, the light turned on. I'll bet if I pulled on the yellow raft lanyard it would come to me. I did, and it did.

Now the fun began! I remembered the raft was attached to the seat pan, so there was no way I was about to get rid of the seat pan and see my new home headed toward Hawaii. I didn't recall that the raft had a lanyard to attach your harness to the raft. Now came the time to board the raft. I remembered the "method" from earlier days in water survival training. "Face the low end of the raft, grab the sides, pull it toward you, do a snap roll, and you'll be in a nice, comfortable position on your back." Right! But this approach didn't consider that the idiot boarding the raft still had his seat pan strapped to his butt. The outcome of this trick was an inverted raft parked on top of my head. I flipped the raft and rested.

Let's try this a different way: hoist yourself into the raft on your stomach, rest, then try a sneaky slow-roll. After about 45 degrees of roll, I became hung up on something. My oxygen hose was still connected to my seat pan. I fumbled around and eventually freed the hose. Now, continuing my roll to 135 degrees, I was sort of face up but still hung up. It must be the seat pan. I disconnected it, and very carefully pushed it to the foot of the raft—I certainly didn't need to puncture it now. Still hung up! OK; disconnect the mask from the harness. No luck. About now, my tired and befuddled mind decided to take stock of the situation and sort out priorities. I am in my raft and floating nicely; it's pretty calm

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(a 5- to 7-knot wind and a 4-foot swell at about twice a minute), and I have better things to do now than flail about trying to get flat on my back in this raft.

Where's Tank? I figured he was behind me because he yelled from that direction a few minutes ago. I had replied by waving my arms. I was too weak to do much else after flailing about, and I was nauseous from swallowing seawater.

I turned on my Guard channel beeper—mainly to see if it would work. Half the world knew where we were, probably including the Soviets who regularly shadowed Pacific Missile Range operations with trawlers offshore. Planes had been flying around us when we ejected: two F-4s (Bloodhound 96, the chase and Vandy 6 from VX-4) and Bloodhound 21, an S-2 used by PMR for range clearance. We also carried a PRC-90 survival radio, which is much better suited for talking to other humans, so I stowed the Guard beeper and pulled out the PRC, connected the earphone plug to the plug on my hardhat (this was probably the most coherent thing I'd done since jettisoning the airplane), turned to Guard transmit/-

receive and held a short confab with Tank. We were both fine. We were the only people talking on Guard, so I attempted to raise someone on Plead Control, PMR's main range-control frequency. Another problem. After about a minute of turning the channel selector in both directions to select the channel, I realized one must push the button in the center of the selector change channels. Another victory for the IQ-challenged! Bloodhound 21 flew low overhead, and we began conversing about our major concern. Where was the cavalry? It was about 10 minutes away, in two helos. Super!

Relieved, I tried to get comfortable. I first sighted the helo as he passed the foot of my raft several hundred yards away, headed for the wreckage. Almost in unison, both Bloodhound 21 and I let him know neither Tank nor I were at the wreckage. "I'm at your nine o'clock." (I was really at his three; another good argument for giving direction first, then clock code.) I vectored him to me over the radio.

He quickly locked on. "Don't need a smoke." I was happy to hear that. If lighting off a smoke flare followed the trend of my misadventures of the past hour, I probably would have doused myself in orange smoke or opened the wrong end and burned myself.

"Do you have any difficulty?" asked the helo pilot.

"I'm hung up on something in the raft," I said.

"I'll drop a swimmer," he said.

After about 30 seconds, he splashed down about five yards away, disconnected me from whatever had me hung up, then guided me toward the horse collar being lowered

by the second crewman. Using sign language, he told me to get out of the raft. Hesitant to leave the security of my newfound home, I somewhat reluctantly obeyed. Strange thoughts race through the mind at times.

I got into the horse collar the right way on the first attempt. (Getting in the wrong way is probably the most common mistake in rescues.) As I came abreast of the helo's door, the crewman grabbed me and pulled me in. I let him do everything his way. At this point, I wasn't about to insert my own inputs, the wisdom of which I had begun to suspect not long after entering the water nearly an hour before.

I saw the other helo getting close to Tank, who had a flare in his hand that was billowing immense clouds of orange smoke. I walked forward in the aircraft as far away from the door as I could get and watched as the crewman hoisted the swimmer aboard. Both helped me out of my flight gear. Then I strapped myself onto the canvas bench along the left bulkhead, looked out the open door at the welcome sight of the ocean now below me and smoked one of several cigarettes offered by the crewmen as we flew to the beach some 40 minutes away.

Naturally, a large welcoming committee had gathered on the ramp to meet us: Capt. Clyde Tuomela, the Navy's Mugu F-14 program manager; Cdr. "Smoke" Wilson, his deputy; Mike Bennett, Grumman's local flight test manager; Hal Farley, and a host of others. Tom Brancati, Grumman's manager at Point Mugu, happened at the time to be en route to Washington to brief the Navy on program progress. You don't lose a hand-built development airplane costing untold millions every day, so Tom, after being notified of the loss of the F-14 as he passed through Dulles airport, had to gather his data and thoughts quickly to explain this one. We had lost two airplanes previously: no. 1 on the second-ever F-14 flight when the hydraulic system failed, and no. 10, the carrier suitability demonstration airplane, which flew into the water during an airshow practice at Patuxent River, killing the F-14 project pilot, Bill Miller, who had ejected earlier from no. 1 along with Bob Smyth, the director of Grumman's flight test.

One tenet of the fighter pilot's creed is: "I would rather die than look bad." You have got to look cool as you dismount—just as though nothing had happened, kind of John Wayne-like. Yeah; right! As I stepped down from the helicopter and my feet hit the ground, I began to shiver uncontrollably, and I had great difficulty talking. The thermal shock from flailing around in the 60-degree ocean for almost an hour had hit. This embarrassing state didn't wear off until later in sick bay, after I had belted down four raw brandies.

Shooting myself down was merely a prelude to the water fiasco. It was apparent to Tank and me—and to our management—that we required some remedial survival training. And so we got ours in the middle of December in the outdoor, unheated pool at NAS Miramar. But that's another story.

That evening, Tank and I had our Grumman bowling league scheduled. We went. Luckily, neither of us dropped a ball on our foot. †



Pete Purvis prepares to test-fly an F-8 Crusader (photo courtesy of author).