# ORM Corner

# "It'll Probably Never

*By Capt. Terrence H. Latorre, USMC*

My squadron recently completed a six-month deployment, and our EA-6Bs were getting a well-deserved avionics upgrade. The robust upgrade included GPS, VHF radio, VOR and ILS capabilities, as well as replacing two essential flight indicators. The primary attitude-reference indicator and heading-situation indicator were upgraded to a commercial, off-the-shelf, electronic flight-instrument system (EFIS) that consisted of two, 4-inch-by-4-inch color screens. Incorporating EFIS into the cockpit was a big

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# Happen, But..."

change from the analog gauges and required instruction on the many new functions and improvements.

Aircrews were required to complete a transition syllabus for familiarization, proficiency, safety, and standardization. The syllabus included a two-hour lecture, two simulator hops, and two flights. I was one of the first pilots to complete the syllabus and would assist in training of the remaining electronic-countermeasure officers (ECMOs). Our crew of three was scheduled for a day, single-ship, medium-altitude radar hop to complete the EFIS syllabus for my right-seater (ECMO 1).

The weather forecast was VMC, with normal cumulus build-ups and isolated thunderstorms—typical for spring on the East Coast. We completed a NATOPS brief and focused on crew responsibilities for the radar route. It turned out to be a beautiful day to fly, and things were just warm and fuzzy.

We manned-up, launched, and headed out with a full bag of gas—19,400 pounds. We leveled off at 11,000 feet, and I demonstrated some of the different functions and modes of the new boxes. We had been airborne for an hour and were over South Carolina, 250 miles from Cherry Point. My frontseater and I, having fiddled enough with the boxes, called the hop a success and were ready to sit back and enjoy the rest of the flight. The air-traffic controller was talking on the radio to a commercial airliner heading into Greenville, S.C., when suddenly the words stopped in mid-sentence. I heard a loud click and immediately noticed the EFIS displays go blank. The plane had lost electrical power, so I pulled the ram-air turbine (RAT) handle and scanned the cockpit to see if anything else was wrong. For a minute, my senses soaked in every little bump, vibration, or noise while I waited for

any other problems. Nothing else popped up; the controls, hydraulics and engines were OK, and the jet seemed flyable. The two of us in the front exchanged blank stares and began tackling the emergency.

I had no response on my ICS or radios, so I removed my mask to communicate with my rightseater. I yelled to ECMO 1 what was now obvious to us all, "I think we have a partial electrical failure—engines good, hydraulics and controls seem OK. I'm gonna head back to Cherry Point, VFR." ECMO 1 nodded in agreement as I selected emergency on our IFF and scrambled for a chart. Both generators seemed to be on line, but a quick scan of the instrument panel showed we were missing both EFIS displays, the radar, all five radios, ICS, TACAN, VOR, GPS, and the INS.

I couldn't help but think back to my first NATOPS check when the instructor said, "It'll probably never happen, but…"

Without any electronic-navigation equipment, we used our chart and wet-compass to dead reckon the 250 miles from our present position to Cherry Point. We had passed a turn point on our route, so I was able to take a reasonable cut toward the coast. I thought this heading would get us south of Cherry Point, and then we would turn north and follow the coast to home field. Since the plane was flying OK, we could evaluate the situation and develop a plan.

As ECMO 1 broke out the pocket checklist (PCL), I tried to yell to our backseater what our situation was. The backseat is completely blocked off from the front cockpit, except for a small opening behind the pilot's right shoulder. I held up a kneeboard card on which I had scribbled our current situation and intentions. I looked back through the tiny hole and saw he understood the note. At least we could keep him informed of our plan. ECMO 1 pointed to the PCL and showed we probably had popped the No. 1 DC circuit breaker; it cannot be reset in flight, so we could do nothing to improve the situation. We continued reading the emergency procedure and discovered we could not use the flaps and slats or extend the landing gear by normal means. Singly, these configuration problems aren't too hard to handle; together, they would prove to be a troublesome combination, especially when we had to yell to each other to communicate.

The situation was deteriorating quickly and definitely was getting difficult. We still were more than 200 miles from Cherry Point, flying a lost-communications profile and using the wet compass and a chart to guide our journey. My throat was beginning to hurt from yelling as we discussed our game plan for getting the aircraft configured for landing. NATOPS procedures for blowing down the landing gear required us to be below 8,000 feet and slower than 150 knots. However, to blow down the gear without any available flaps or slats would cause the aircraft to decelerate below stall speed and could cause it to depart controlled flight. The situation in which we found ourselves is well-known in the Prowler community and is presented often during emergency-procedure simulators. The aircraft must be pulled into a zoom climb and placed in a zero-gravity state to prevent it from departing controlled flight while you blow down the gear. As the airspeed decreases toward stall speed, forward stick is applied to place the aircraft in a zero-G state before reaching the 150-knot limit. Technically, the aircraft isn't flying during this ballistic profile, which means it cannot stall even though the instruments indicate less than stall speed. I have practiced this maneuver dozens of times in the simulator but was a little anxious to see how the plane would react. Our game plan was to remain clean until within visual range of the field to conserve gas (there is never enough when you need it) and then do the zoom maneuver just off the coast from Cherry Point.

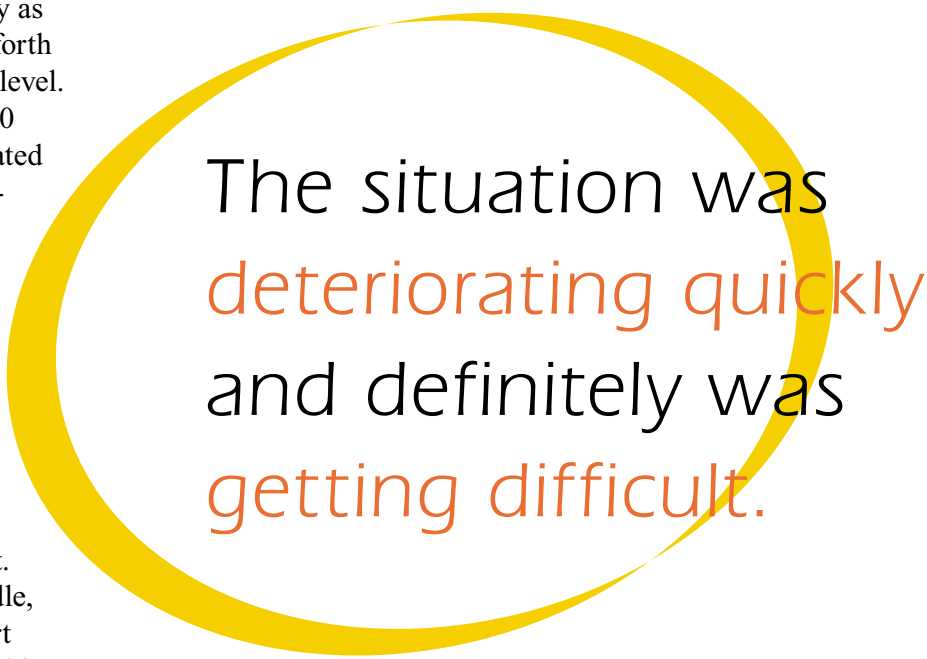
We decided to perform the zoom maneuver over the water, in case we had to eject. Following the emergency extension of the landing gear, I would fly a lost-comm recovery into the tower

pattern and do a no-flap, no-slat approach to a rolling, short-field, arrested landing. It took 20 minutes to reach the coast, and my dead-reckoning navigation put us exactly where we wanted to be—20 miles south of Cherry Point and over the Intracoastal Waterway.

I descended to 4,000 feet and set up for the gear extension. I planned to pull the nose up to 35 degrees above the horizon and wait for the airspeed to bleed off. I then would push the nose forward, place the aircraft in zero-gravity state, and blow down the gear within the NATOPS parameters. As the aircraft decelerated, the controls became extremely shaky, and the aircraft buffeted moderately. The aircraft continued to climb and 8,000 feet came quickly. I pulled up the nose more and waited as the airspeed finally bled off. The plane was shaking moderately as I manipulated the sluggish stick back-and-forth between my legs trying to maintain wings level.

As the airspeed decelerated through 170 knots, I gently pushed forward, and we floated in our seats. My left hand was on the emergency-blow handle, and I pulled it when I saw 150 knots on the airspeed indicator. The gear doors immediately opened, and I thought there were three good clunks. I did not have any internal-gear indicators because of the power loss, so I made a mental note to do a flyby to get confirmation from the tower. I was very surprised at how violent the maneuver was—no simulator ever could have prepared me for that. Fortunately, no one pulled an ejection handle, and the nose fell toward the earth. My heart was racing, and I was soaked with sweat. This wasn't the hard part, either. We set up for a VFR entry into the tower pattern, and ECMO 1 broadcast our intentions in the blind on his handheld-survival radio. As we passed over the field, I saw the airborne-rescue helo shadowing our path around the pattern. I had ECMO 1 relay we would conduct a low approach on the first pass to allow visual verification from tower that our landing gear was down.

I flew the low pass at 200 knots and at 200 feet and received a green ALDIS light from tower, confirming our landing gear was down and locked. The last event to accomplish was the no-flap, no-slat approach into the arresting gear. Tower gave us a second, green-ALDIS-lamp signal, confirming our clearance to land. The crash crew was in position. A no-flap, no-slat approach is extremely fast, generally 165 to 175 knots. It is so fast it can sometimes exceed maximum tire speed on touchdown. We had calculated our approach speed and figured we had five knots to spare. We rolled onto final with 200 knots at two miles. I flew a modified, self-contained GCA until I acquired the ball. I planned to bleed as much airspeed as I could before the wheels touched down, so I flew a low-flat approach.




The aircraft hit ground effect just short of the runway and began to decelerate as I flared the landing. We touched down 800 feet down the runway at 160 knots—15 knots slower than the tire limit. With runway passing by quickly, we entered the arresting gear at 150 knots. Pulling the stick back into my lap, I raised the nose of

the jet to make sure the hook would not miss the wire. As soon as I felt a tug, I was on the brakes, and the jet rolled to a stop.

As I shut down the engines in the arresting gear, I realized the evolution had taken almost an hour to complete. Numerous tasks and challenges were completed in that very long hour.

We learned several lessons that day, some new and some old. First, never say never. A Prowler has five different on-board radios (eight if you include individual PRC-90s), and the aircrew always assumes communications will be available. Think again! Don't overlook your PRC-90 survival radio. During the debrief, we learned tower had heard all of our transmissions, which assisted in the smooth recovery. The PRC-90 has an earpiece, although you must remove your helmet to insert it. My rightseater didn't have one, and, consequently, he didn't hear any of the tower transmissions. Second, communication is critical. My voice was shot upon landing, and it probably wouldn't have lasted had the flight taken another hour. We all remember sitting through our annual crew-coordination lectures and learning the two types of communication: verbal and non-verbal. Without the ICS, talking in the front seat to be heard above the wind blast and engine noise was extremely difficult. We had to depend on non-verbal communication more than normal. The Prowlers side-by-side cockpit arrangement, compared to a tandem cockpit, is excellent for non-verbal communication between aircrew, but I discovered that keeping the lone ECMO in the backseat aware of our situation was quite difficult.

This emergency forced me to be creative, to give specific instructions, and to prioritize information. Finally, the simulator is a great environment to develop habits and reinforce procedures. Everything that occurred during this flight, except for the communications problem and the actual flight characteristics during the zoom maneuver, was exactly as it was in the simulator. The simulator helped me analyze and identify the problem. I then was able to develop a game plan for success. It is good to know all the time in the sweatbox paid off for us. From day one in flight school, aviators are taught to fly the jet first.

A common perception is that a Prowler has lots of gas and radios. Who would ever think a Prowler could lose five radios? Your ability to handle the unlikely is always being tested. Train for the worst, expect the best, and take what's given in the middle.

Capt. Latorre currently flies with VMAQ-1.

# Mishap-Free Milestones

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|---|---|---|
| VP-5 | 24 years | (146,070 hours) |
| VP-45 | 33 years | (211,000 hours) |
| VP-30 | 38 years | (377,000 hours) |
| VMFA(AW)-332 | 24 years | (90,000 hours) |
| VP-1 | 18 years | (110,000 hours) |
| HMT-303 | 20 years | (150,000 hours) |
| VF-154 | 3 years | (4,500 hours) |
| HS-10 | 9 years | (46,500 hours) |
| HC-3 | 28 years | (176,000 hours) |
| VFA-195 | 19 years | |
| VX-20 | 10 years | (38,015 hours) |
| VFA-113 | 28 years | |
| VR-59 | 20 years | (105,000 hours) |
| VPU-1 | 20 years | (39,400 hours) |