THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

approach

March 2003

Bad Day for the Prowler

New Programs That Actually Work

approach

The Naval Safety Center's Aviation Magazine

March 2003 **Volume 48 No. 3**
On the Cover A P-3 Orion taxis through the rain onboard Naval Air Facility Misawa. Photo by PH2(SW) John Collins.
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Mission Statement

Mishaps waste our time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness.

This magazine's goal is to help make sure that personnel can devote their time and energy to the mission, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk.

We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous enough; the time to learn to do a job right is before combat starts.

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Seahawk in Afterburner
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Bad Day for the Prowler

By Lt. Michael Orr

Day one of WestPac 2002. I was beginning my second cruise on board USS *Abraham Lincoln* during my first tour with the Cougars of VAQ-139. Throughout my first two years in the EA-6B community, I had experienced a long list of emergencies around the ship, including a night, single-engine landing during my first at-sea period. I began to have a black-cloud aura about me, but that all had been in the past. "I'm now a senior pilot and ready to finish this tour uneventfully," I thought.

My first, post-CQ flight was a day VMC, 45-minute-cycle flight, 900 miles off the coast of Hawaii. As I manned-up Warcat 503, I looked at the beautiful, blue skies and wondered what possibly could go wrong. I had no idea what I was about to get myself into.

We had briefed a basic-fighter-maneuver-counters (BFMC) flight with our Super Hornet brethren. Unfortunately, maintenance problems and an emergency pull forward prevented us from launching during our assigned cycle. Losing the BFMC flight, we coordinated a launch during the next cycle and discussed alternate missions.

Following a brief sea-control-neutralization scenario, we proceeded 50 miles aft of the ship for a basic-air-maneuvers (BAM) mission. I briefed the crew on all the

maneuvers I planned to complete, including mild aerobatics, SAM defenses, and, finally, low-level defensive jinks. For the jinks, I descended to determine the altitude of the low, broken layer that was forming below us. The highest layer in our area topped off at 5,000 feet MSL, so I briefed the crew 7,000 feet MSL would be the hard deck for the defensive jinks. That decision, while conservative, would prove to be critical.

The first three defensive jinks went as briefed: 420 knots, 4 G pull to 30 degrees nose up, followed by rolling inverted and pulling to 20 degrees nose down. The final jink was a reverse-oblique. The maneuver began normally, but as I bunted the nose and rolled inverted, I suddenly discovered I could not pull the control stick aft of slightly forward. Lateral control appeared inhibited as well. At 8,300 MSL, 30 degrees nose up, and inverted, I yelled out the words I never thought I would hear myself say, "I've lost control of the jet!"

Aircrew who have experienced serious emergencies often talk about time compression, and my circumstance certainly was no exception. As we floated inverted in our straps, passing 15 degrees nose up, I thought about an incident in which a Marine EA-6B pilot experienced jammed flight controls on a low-level, and he had righted the plane with his rudder. I then applied full right rudder and what lateral-stick movement I could to regain upright level flight. Assuming this problem was just another of the many related to the EA-6B's aging automatic-flight-control system, I actuated the emergency AFCS-disconnect switch. Simultaneously, ECMO 3 pulled the system circuit breakers in the back cockpit. The combination of these actions broke free the control stick, and I regained controllable, yet sluggish, command of the airplane. The entire process, from losing control to regaining controlled flight, took no more than 10 seconds.

After catching our breaths, we proceeded overhead the ship to troubleshoot our problem. The crew discussed the possibility of damaged flight-control surfaces, so we began the damaged-aircraft checklist. After a section of FA-18Cs had inspected us, without finding apparent damage, we configured the aircraft for landing. Upon dirty-up, I watched as the integrated-position indicator (IPI) showed the flaps and slats extending. The horizontal stabilizer shifted to dirty throws, which save me more pitch authority in the flaps-down configuration.

I also noted the main gear were down and locked, but I didn't recall whether the nosegear indicated down and locked. ECMO 1 distinctly recalled all the gear indicated down and locked—this point would become significant a short time later. As we decelerated and the flaps and

slats continued to extend, I bunted the control stick forward to counteract the normal ballooning effect of the extra lift. As I tried pulling the stick to neutral, it again jammed in the slightly forward position, and the aircraft began a descending, left turn. I immediately told the crew I had lost control and simultaneously retracted the landing gear and flaps-slats. With the flaps-slats retracted and the stab returned to clean throws, I again regained controlled flight.

I realized we had damage to the linkages between the control stick and the horizontal stab. Since the stab actuator always shifts with flap extension, I decided the airplane was to remain in the flaps-up configuration for the rest of the flight. We told the ship we would execute a no-flap, no-slat approach. I also told the crew and the CATCC rep (our CO) that, while I still had pitch control, the control stick was very stiff in the fore and aft direction. This condition occurs in the simulator when the hydraulics are disconnected, but, all our hydraulics indicated good. Concerned with how much pitch control I would have on the approach, I told the crew I would slow flight the airplane in the no-flap, no-slat landing configuration.

Slowing below 250 knots, I extended the landing gear and watched as the main gear extended normally, but the nosegear remained barberpoled. NATOPS states the nosegear may not extend fully above 200 knots, so I continued decelerating to my calculated approach speed of 169 knots. The nosegear remained barberpoled. This quickly was turning into a bad day.

We requested a visual inspection by the S-3 tanker that had joined us. The tanker aircrew reported our nosegear appeared down and locked. However, Warcat 502, who just had launched and heard our conversations on the CATCC rep frequency, soon joined up. Incidentally, Warcat 502 was honored with the presence of CAG, experiencing his first flight in the Prowler. He sat in ECMO 1's seat, struggling to decipher the highly complex and ever-confusing EA-6B radio-ICS system. Warcat 502 immediately told me not only was my nosegear not down and locked, but the tow-link, launch-bar linkage and the nosegear door appeared to be damaged. Have I mentioned this was turning into a bad day?

Based on Warcat 502's observation, we decided against recycling the gear and told the CATCC rep of our situation. This report must have sounded more or less like, "What the $@#! do we do now?" Like a dentist telling a patient to rinse, we were directed to tank while they figured out what to do with us.

As I enjoyed the thrill of in-flight refueling without stab aug and gear down—mostly, anyway—ECMO 3 dutifully told me Hickham AFB was a 900-mile bingo, requiring about three hours and 17,500 pounds of gas. A flashing master-caution light quickly shattered my pleasant fantasy of a three-hour flight to a gear-up landing. The annunciator panel showed an L CSD OVERHEAT caution light, which meant the generator's constant-speed drive assembly had had enough of this flight and was ready to go its own way. I backed out of the refueling basket, and ECMO 1 secured the left generator. The situation seemed to be cynically humorous, and I let out a chuckle as ECMO 1 inquired if I would sign off his NATOPS check when we landed. I reset the refueling switches and noted our fuel state was 8,500 pounds: 7,500 pounds in the main tank and 1,000 pounds in the wing tanks.

Our CATCC rep called to give us the plan. After the last aircraft recovered, we were to attempt an emergency extension of the gear by zoom climbing, to obtain the maximum 150-knot NATOPS limit for actuating the emergency blow-down system. If the gear came down, we would execute a normal no-flap, no-slat landing. If it did not, we would barricade.

I had seen this maneuver tried in the occasionally sadistic NATOPS warm-up simulators in the FRS. More often than not, the maneuver seemed to end with the pilot departing the airplane. I talked with the aircrew and explained my strong hesitation in trying this maneuver. I still had stiff resistance in the control stick. Each of the previous times I had pulled hard aft, I had lost control of the airplane. We told the CATCC rep my concerns, and, after a short conference, he agreed with our decision not to

try the zoom climb, and he told us to expect a barricade.

As my thoughts drifted to becoming the first Prowler pilot to barricade—an accomplishment I'm sure would not surprise anybody in the community that knew my history—the digital fuel gauge caught my attention. It had been about 10 minutes since we had in-flight refueled; however, now, the fuel gauge showed 8,000 pounds, with only 2,000 pounds in the main tank. Despite the long history we have had with inaccuracies of the digital fuel gauge, and since the low-fuel caution light was not on, we declared emergency fuel, and the S-3 tanker joined on us. We were plugged and receiving fuel within two minutes from the time we declared an emergency. Unfortunately, after a couple of minutes of tanking, the main tank still was not fueling. I cycled the in-flight refueling switch from air to ground, and the main tank quickly filled to 7,500 pounds.

As this emergency was averted, the CATCC rep called to tell us of our situation. In order to barricade the Prowler in a no-flap, no-slat configuration, the ship required 60 knots of wind over the deck. Barring a sudden tropical storm to provide that much wind, we would have to find a way to get our flaps down.

To sum it up, if I couldn't blow the nosegear down, I had to barricade, and to do that, I needed to have the flaps down. The last time I had tried this maneuver, I lost control of the airplane. Even BuPers would admire this Catch-22.

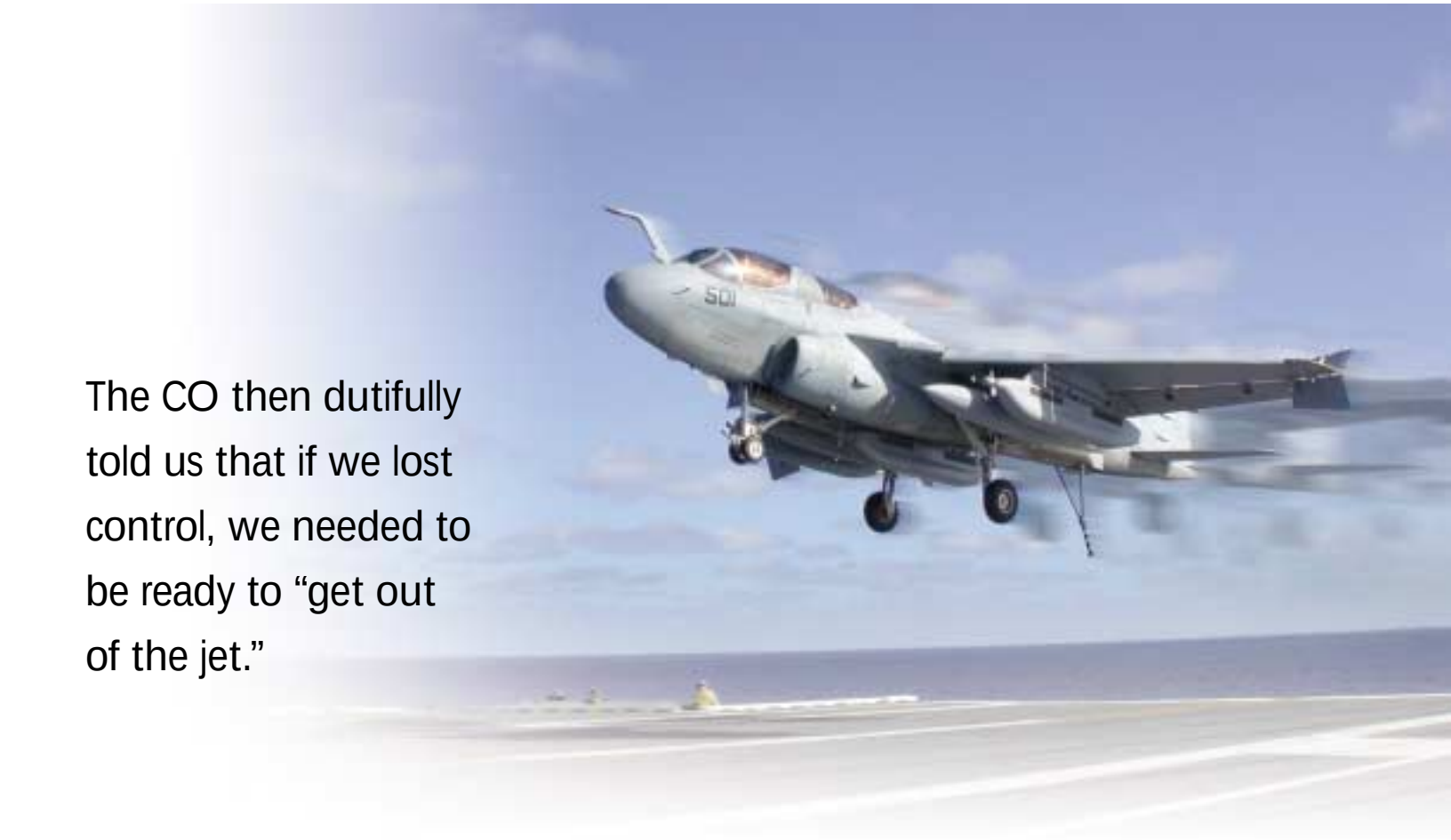
After a crew discussion, we had no choice but to try again to lower the flaps. Our CATCC rep directed us to point the aircraft away from the ship and to extend the flaps. The CO then dutifully told us that if we lost control, we needed to be ready to "get out of the jet." My crew was well prepared for this possibility. We had long since removed all kneeboards, stored all gear, tightened all straps, and lowered our seats. As we headed to a VMC area, away from the ship, and directed away all escorting aircraft from behind and above us, I extended the flaps and slats.

For dramatic purposes, I'd like to tell you that we had to eject or barricade in the end. However, a higher power intervened that day. The flaps and slats extended normally, I maintained control of the aircraft, and while passing below 145 knots, the nosegear came down and locked on its own. After three and a half hours of in-flight troubleshooting and multiple unrelated emergencies, the flight ended with a straight-in, no-stab aug, I-want-to-land-now-get-aboard-safely 1-wire. Would you believe those stingy LSOs gave me a no-count?

Postflight-maintenance inspection showed that a bolt and a washer connecting the stab-artificial-feel bungee to the stab actuator had worked free. Whenever I pushed the control stick forward, the bolt holding the assemblies together would pull out and jam the linkages. The jamming is why I couldn't move the stick following the nose bunt on the jink. It's also why the same thing happened after I bunted the nose during the initial flap extension. The period of flight when I had normal controls was because the bolt just happened to have found its way back into its hole.

As my thoughts drifted to becoming the first Prowler pilot to barricade—an accomplishment I'm sure would not surprise anybody in the community that knew my history—the digital fuel gauge caught my attention.

The hour or so I had stiff resistance was because of the disconnect of the artificial-feel bungee, leaving me to absorb all the aerodynamic loads of the stabilizer. The only reason I maintained control on the final attempt to lower the flaps is I did not try to counteract the ballooning effect. The fact the linkages did not become entangled during the approach simply was luck. This occurrence was the first one of its kind ever in the EA-6B.



The CO then dutifully told us that if we lost control, we needed to be ready to "get out of the jet."

As for the nosegear, there had been a short history of that particular gear requiring slower speeds to extend fully. Without lowering the flaps, we never could have achieved that speed. We did have some tow-link damage, most likely on the cat shot. The nosegear door was fine; it just appeared to be flapping in the wind since the gear was not down fully.

The L CSD OVERHEAT was bad timing, possibly brought on by tanking with the nosegear partly extended. The fuel incident was more serious. Since departure for WestPac, we had had several issues with the digital fuel gauges being inaccurate. As maintenance continued to work the problem, and we continued to fly the airplanes, it was inevitable the gauge would fail at an inopportune time. We are convinced we never had a fuel-quantity problem, just a bad gauge.

The first lesson learned is that every aviator has been through some sadistic, NATOPS-emergency simulator, which had multiple unrelated emergencies. The usual comment is that those simulators are unrealistic. I'm here to tell you this emergency can and did happen. We started with the jammed flight controls, then the barberpoled nosegear, then the left CSD, and finally the fuel gauge. Add in blue-water ops and 900 miles to the nearest land, and you have one whopper of a scenario.

Second, ship-to-crew coordination, which was cumbersome at first, became a real positive, as every controller and aircraft involved was switched to the CATCC-rep frequency. This allowed me to talk with whom I needed without trying to figure out which radio to use.

Finally, our aircrew coordination was excellent. For a flight in which nothing seemed to go right, everybody made positive contributions to getting the airplane back safely. Few crews find themselves seriously discussing ejection, controlled and uncontrolled. We discussed our issues rationally, logically, and, most importantly, calmly, in a high-stress environment. I believe as we extended the flaps that final time, my crew were the calmest people in the battle group. Day one of cruise finally had ended, 179 to go!

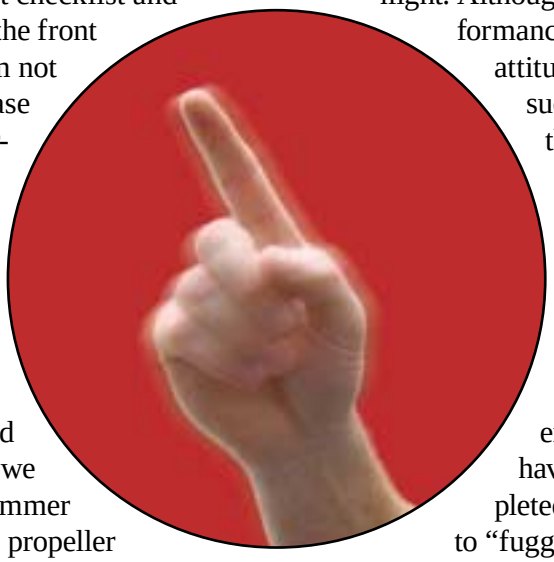
Lt. Orr flies with VAQ-139.

Be Careful What You Say

By LCdr. Tom Long

During my tour as a flight instructor, training NFOs on the finer points of the T-34C and navigation, I found myself sitting at the hold-short and going through the engine run-up checklist. My student was in the front seat, on his third hop in the VNAV stage, having recently finished a phase of AIRNAVs flown from the backseat.

My student had completed the FAM syllabus months earlier—where he was taught the start checklist and recently had flown two VNAVs from the front seat. However, I calmly reminded him not to push on the condition-lever-release mechanism when doing the propeller-feather check. I instead had him look at the throttle quadrant, as I pushed the release mechanism.



Thinking my discussion was thorough, I did not do my routine of preemptively blocking the lever with my hand. The student began the procedure and promptly did what I had showed him and told him not to do. As we sat there in the baking, Pensacola, summer sun, the aircraft got very quiet as the propeller began to spin down. Looking around at the other T-34s in the run-up area, I saw many snickers and fingers pointing at me, piercing my pride.

I calmly told the student to check certain switches. Meanwhile, I quickly went through my checklist to restart the engine before the scalding sun melted us into a puddle on the floor of our T-34. I fully now understand why it was considered a downing discrepancy if the air-conditioning did not work in the "Turbo Weenie."

Once I had restarted the aircraft, I told my student, "No sweat. Don't worry about what just happened. Pretend it didn't happen and continue accordingly. The past is the past. You must think ahead of the aircraft, not behind it."

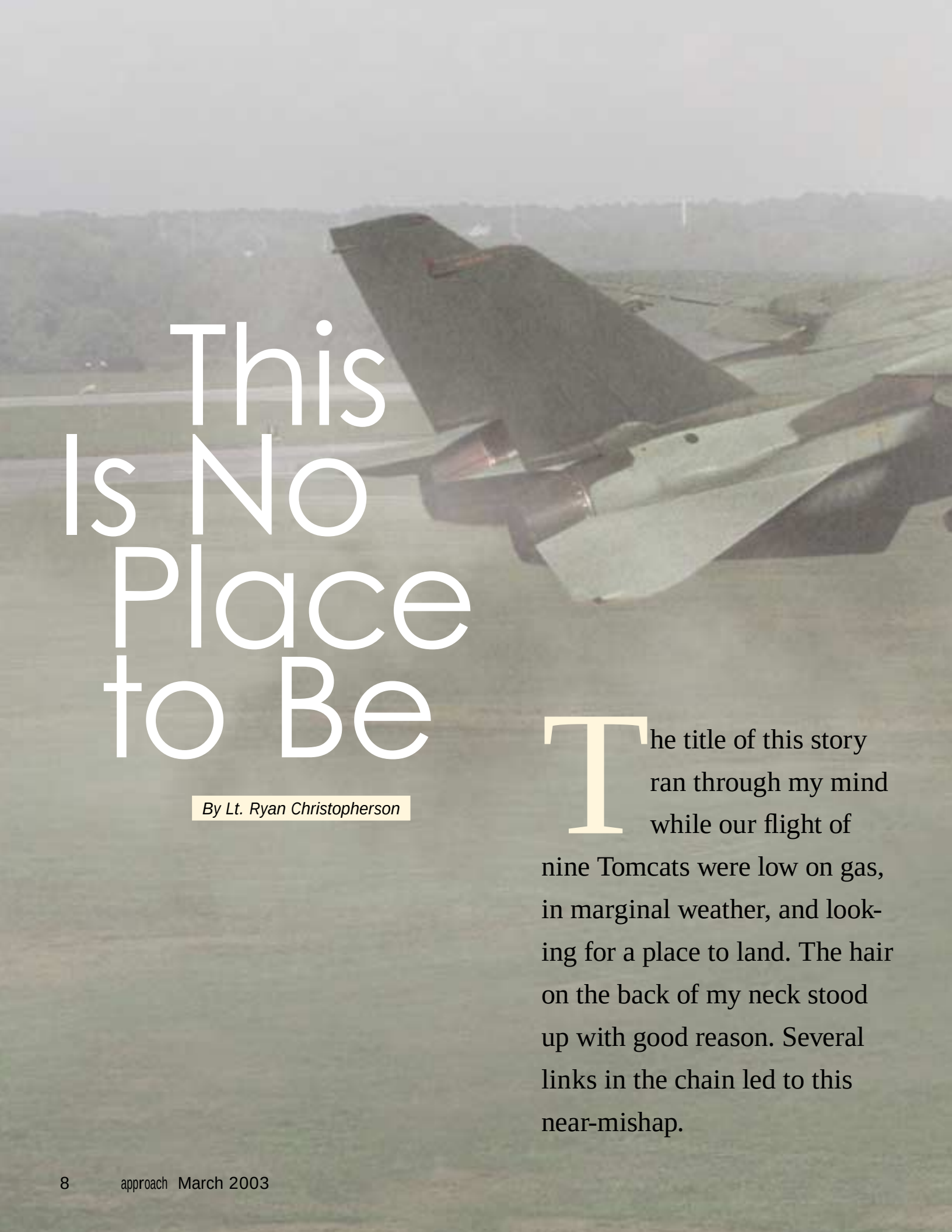
In retrospect, I'm sure he was sweating the load the entire time, thinking he was a goner.

We continued the VNAV flight, but his performance was not up to standards, probably because he dwelled on the incident in the run-up. We returned to base without further incident. I subsequently downed him for the flight. He was a good guy, and I enjoyed flying with him, but his performance did not meet VNAV standards for that flight. Although he was disappointed in his performance, I could tell he had a positive attitude, which is an important key to success, and he now flies B-1Bs with the Air Guard.

My teaching technique of negative reinforcement, by telling him, "Don't do this," was intended to keep him from making a mistake. Instead, it caused him to do exactly the opposite. After he shut down the engine in the run-up area, I should have returned to base and incompleted the event. I thought telling him to "fuggedaboudit" would be enough to get him back in the game and get the X. Sometimes students cannot put little things behind them—things that experienced instructors consider minor issues. However, unintentionally shutting down your engine is not minor. Students often are overly concerned with their grades and what their "been there, done that" instructor thinks about them and their performance.

I learned a lot about my instructional technique and student psychology. I also evaluated my CRM skills and made several technique changes. On your next instructional hop, remember, even a very small mistake by a student can be amplified in their mind, and they may dwell on it throughout the flight. You might be better off to call it a day and try again next time.

LCdr. Long flew with VT-10 during this event; he currently flies with VR-53.



This Is No Place to Be

By Lt. Ryan Christopherson

The title of this story ran through my mind while our flight of nine Tomcats were low on gas, in marginal weather, and looking for a place to land. The hair on the back of my neck stood up with good reason. Several links in the chain led to this near-mishap.

Aircraft photo by Capt. Dana Potts, background photo by Matthew J. Thomas. Composite.

The Tomcat has a terrific precision-approach system designed to work with the aircraft carrier but not with the civilian ILS.

I was a senior lieutenant, with 1,600 hours of flight time, and a veteran of 15 East-to-West-Coast detachments; most of the dets were planned by me. I also had been in the squadron for two and a half years. The weather was supposed to be good, and no problems seemed to be in sight. I was the det OinC and preoccupied with helping solve the usual last-minute changes to our personnel and cargo airlifts.

The cross-country planning task had been given to me two days before the flight, and it was mostly complete. I flew as Dash 4 in a nine-plane, three-leg flight from Oceana to Whidbey Island. The first stop was planned for Whiteman AFB. The weather at 0600 for Whiteman was low fog at 100 feet, with quarter-mile visibility. However, it was forecasted to be 100 sct, 200 bkn at our arrival time, six hours later. There was no need to file a divert by OPNAV rules, and the satellite picture showed no clouds within 300 miles of Whiteman, but we filed Scott AFB as the divert anyway. I have seen low fog burn off in the early morning hundreds of times.

The brief went smoothly and included a thorough weather review. The plan was to get weather updates at takeoff and en route. The weather at Whiteman had improved to 200 feet and one-half mile at our takeoff, but we still had nearly three hours before arrival, and the fog was expected to lift very soon.

The takeoff and rendezvous went well and made for a great start to our 3,000-mile cross-country. My RIO and I checked the Whiteman weather about an hour into the flight, and it was 300 feet and three-quarters mile, improving slowly. I started to get a little worried, but we still had two hours left en route, which gave us time and options.

Events then started to conspire against us. We were flying on a Saturday, which means that

some of the Air Force bases were closed. The Tomcat has a terrific precision-approach system designed to work with the aircraft carrier but not with the civilian ILS. In other words, if the airport does not have a PAR, as most in the United States don't, we have no precision-approach capabilities. Our system is not approved for GPS approaches. We, as military pilots, are not required to carry low plates, SIDS or STARS. We flew as a flight of nine, and very few, if any, approach controls can handle an influx of nine aircraft quickly and efficiently, because the planes are forced to split up as singles and shoot individual TACAN approaches.

The Tomcat burns about 6,000 pounds of gas an hour. If you have to orbit for a half-hour waiting for your buddies to land, after flying 1,000 miles, this burn rate makes it difficult to have enough gas for an approach, and then have enough gas to divert if you don't break out. Did I mention there were nine of us? A five-minute delay each, adds up to 45 minutes for dash last.

At only an hour from Whiteman, the field still was 100 feet below mins. Even with the recent shearing I got at the base-exchange barber shop, the hair on the back of my neck stood up. A quick check of the weather for the fields around Whiteman showed they also were below mins.

Now, it started to get tricky. We have, at best, an hour's worth of fuel left and no place to go. The flight lead made a good and quick decision to divert into Scott AFB. Didn't I mention we are not required to carry low plates anymore? Yes, in fact, the Scott AFB approach was in the lows. A quick check of the nine-plane flight confirmed nobody had the plates. The flight lead did a good job of contacting tower, telling them we were diverting to his field, and needed the final portion of the TACAN read to him. The tower understood and got the necessary information to our flight.

The flight lead shot the approach and reported two widely spaced runways; we were shooting the approach to the left one. They had broken out about 200 feet above mins. I sighed with relief, but, by this time, I had been orbiting for nearly 35 minutes and was starting to get nervous about gas.

I finally was cleared to commence the approach as my RIO and I discussed the information he read from the IFR Sup. The approach was uneventful, and we even broke out about 250 feet above mins, but, again, without seeing the airport diagram in the plates, the sight picture just didn't look right.

Although the TACAN needle was pegged on the correct radial, we broke out extremely far left. I started to wonder if we had shot the approach to the correct field. Instead of seeing two runways, we saw only one, and it didn't look like our approach was designed for the runway we were cleared to land on. We were at 700 feet and one and a half miles, with the visibility obscured by light fog. The sight picture didn't look right, and the hair on the back of my neck was standing up. As we got closer, we still didn't see the second runway; however, we now were breaking out Tomcats on the runway, as well as on the taxiway.

Time compression set in, and my RIO and I seemed to make the logical conclusion at the same time—the taxiway actually was the left runway, which we were cleared to land on. We were about one mile and 500 feet when I made the call on squadron tac freq for the planes to exit the runway. I realized we were lined up on the taxiway, as I got a call to wave off. I just had broken a golden rule of aviation: Never make a mistake that you can't blame on your RIO or more junior wingman. We waved off, shot another approach, and landed uneventfully—last.

The lessons are many. First, when things start to go wrong, the hair on the back of your neck is telling you something, so listen. Second, the weather always will screw you; be prepared for it by thorough preflight preparation. Just one copy of the approach plate in one the nine planes would have made a huge difference. Third, don't disregard the capabilities of your aircraft. The Tomcat was designed to fly high, fast, and destroy multiple enemy aircraft. We tied our hands by flying as a large formation on the weekend.

Further hampering us is the inability for the Tomcat to shoot precision-civilian-ILS approaches—this deficiency will increase as more fields become ILS capable. Navy bases seem to be the only PAR-capable fields; however, they seem to be water-soluble, and there are precious few of them in the middle of the country. Last, no 3,000-mile flight is ordinary, no matter how many times you have done it.

As Navy jet pilots, we are very comfortable around our home-field operating area or carrier. Cross-country flying is nearly a warfare-mission area, all onto its own, and should be treated as such. When we leave our comfort zone for places that might have the equipment we are accustomed to, things quickly can go wrong. A solid preflight will allow you to make decisions based on all available options, instead of being forced into a less than optimal situation.

Lt. Christopherson flies for VF-31.

Way Too Ahead of the Airplane

Photo by Matthew J. Thomas

By Lt. Ben Clammer

We were set to return home to Pt. Mugu for a long weekend, after winding up a detachment in Fallon. We would be flying our DCAG, a former A-6 BN, to NAS Lemoore on an E-2C fam flight, then would press on to Mugu. Normally, the E-2 flies with two pilots in the front and three NFOs in the back. The Hawkeye is usually a handful to fly with two pilots, but, for this flight, I planned to be a single pilot, with DCAG in the right seat. I assumed our VIP passenger just was along for the ride, and I would be extra busy doing the flying, comms, nav, and driving the checklists.

During the ORM portion of our brief, we discussed having a passenger on board and ways to avoid get-home-itis. During the man-up, I briefed our DCAG on various emergencies in the plane, particularly how he would egress in case we had to ditch or bail out. As I worked through my start checks, I was surprised he knew his way around the cockpit, was very comfortable on the radios, and had good SA—for his first time in the front of an E-2.

We were cleared into position and hold, took the active runway, and finished our takeoff checks. The Hawkeye has six UHF radios, and having more than one radio selected at a time can saturate you with comm traffic, which was the case as we readied for departure. We heard tower clear an F-5 (with an almost identical call sign as ours) in for the break.

My crew in the back signaled they were ready to go, and DCAG gave me a thumbs up for takeoff. I advanced the throttles, and we began to roll. Shortly after we rotated, tower called and asked us to call the supervisor when we landed. I shuddered to think what we had done wrong, as I still was busy completing the climb checks.

Once we were climbing safely, I asked DCAG what he thought the call was about. “I think they’re going to say we didn’t have clearance for takeoff,” he said. My heart sank. We had an O-6 in the front and my skipper in the back. Not a good way to show off my skills as an aircraft commander. We didn’t have time to discuss it because we got a generator light and were forced to return to Fallon.

After shutdown, we discussed the incident. Everyone felt confident they indeed had heard a clearance for take-off, However, our fears that we had confused a similar call sign with clearance to break for our own takeoff clearance began to grow.

I called tower and they confirmed we indeed had not yet been cleared. I explained the confusion to the tower supervisor and accepted responsibility. “No harm, no foul” was a welcome response. Chock it up to a good lesson learned for everyone.

Many ingredients were present for this to happen. Having an O-6 passenger in the cockpit changes your familiar habit patterns and the dynamics of crew coordination. Wanting to get back for the long weekend was certainly a factor, too. As the AC, I knew safety of flight ultimately was my responsibility, and I accepted it. However, with five competent aircrew in the plane, rank should not have been an issue. We should have done a better job backing up each other, as we had briefed. Staying ahead of the plane always is imperative, but focusing on the immediate task at hand must remain the priority.

Lt. Clammer flies with VAW-116.

Who Needs Gas Anyway?

By LCdr. Tom Tennant

We had been on station in the Gulf for about two months, and the daily grind was a little like "Groundhog Day." I was the lead of a two-plane of Hornets, scheduled for a daytime double-cycle patrol over the no-fly zone in southern Iraq. We had briefed all contingencies, including our NORDO procedures. Everything was going as planned, as I took tension on cat 3. The anticipation of the cat stroke and subsequent three-hour flight had my adrenaline flowing; that was when it all got interesting.

At holdback release, my ears filled with the familiar but annoying squeal Hornet pilots hear when they shut down the right engine. The sound usually stops after a couple seconds. Once airborne, I tried to diagnose my jet's problem. The sound in my headset was distracting, so I disconnected the communications cord to my helmet—for a little quiet time to think. As suspected, I had a communications-signal-converter (CSC) failure, which left me NORDO, unable to squawk any modes, and without use of my up-front control. As I proceeded straight up the BRC, I looked for other cockpit indications. My engine-fuel display was blank, and my fuel page indicated invalid—classic indications of a signal-data-computer (SDC) failure. The SDC is what monitors engine parameters and fuel levels and helps control aircraft CG. You often can reset the SDC when it hiccups, but the reset option is not available with a CSC failure—lucky me. Bottom line, I was NORDO and did not know how much fuel I had.

We had briefed to rendezvous on the tanker, 100 miles from the ship. Any NORDO contingency would be handled then, with recovery on the next cycle. Since I couldn't transmit, receive, or squawk, and didn't know how much fuel I had, I decided to go out to 10 miles, climb, and hold overhead the ship. Our squadron had a yo-yo FCF that took off in the same event, so I decided to join on him, dump gas, and immediately recover.

My NATOPS knowledge became my worst enemy. After cleaning up, going out to 10 miles, and returning overhead into low holding, I estimated my fuel state to be around

15,000 pounds. I knew the Hornet NATOPS fuel-dump rate was 600 to 1,000 pounds per minute, so I started to dump gas. Because of the SDC failure, I had to hold the dump switch in the dump position the whole time. The Hornet fuel system has many safeguards to keep a pilot from dumping himself out of gas. One of these safeguards precludes dumping fuel from the engine-feed tanks, leaving the pilot about 3,200 pounds to work with. This information soon would come into play. I had planned to dump for nine minutes, which would leave me about 1,500 pounds above max trap.

I found my squadronmate, joined, and passed a HEFOE "F" code, letting him know I had a fuel emergency. He could see I was dumping fuel and asked my fuel state. The only response I could give was the "ensign's salute." My new lead visibly was frustrated while he tried to coordinate our recovery. I continued to fly on his wing.

Seven minutes after initiating the fuel dump, I noticed, in my mirrors, the fuel dump had stopped. I don't know how long I had been flying without dumping, but I certainly wasn't dumping now. I double-checked with my left hand to make sure the dump switch was in the dump position. It was, which only meant one thing: I was down to engine-feed-tank fuel only.

My heart lept into my throat as I thought about the stupidity of the situation. With my state somewhere less than 3,200 pounds and the ship 15 miles behind us, I frantically signaled to my lead: I needed to land, now!

I got aboard on the first pass, knowing I was well below the bingo fuel state. It was not the prettiest pass but a safe one, considering I knew I didn't have gas for many more looks at the deck.

Seven minutes after initiating the fuel dump, I noticed, in my mirrors, the fuel dump had stopped

Photo by Lt. L. M. Johnson, modified.

After the debrief, I found out I had shut down with 2,100 pounds of fuel remaining—not bad for a shore-based flight. However, I was about 1,500 pounds lighter than I should have been at the ship and was well below the briefed bingo fuel state.

It had been incredibly frustrating to be unable to communicate the problem and get assistance from anyone else. The Monday morning quarterbacks in the squadron, all senior aviators, asked me why I simply had not done a dirty on-speed check to determine my fuel state. This check always should be done to verify our angle-of-attack indications. It did not occur to me at the time but made perfect sense after the fact.

LCdr. Tennant flies with VFA-27.

Photo by PH2 Shane McCoy

Am I in the Simulator, Or What?

By Cdr. Samuel Schick

We just had inchopped to the Fifth Fleet area of operations on Sept. 11, one year after the terrorist attacks against our country. It was our fifth day of flying in support of Operation Enduring Freedom. We were getting comfortable with the procedures involved with flying in and out of Pakistan, supporting special operations forces in Afghanistan. We were fired-up to be in the North Arabian Sea, doing our part to "bring the fight to the enemy." Our squadron aircraft had been holding up well, although I already had flown one single-engine approach to the ship. I thought this was my quota of problems for the deployment—think again.

It was the typical, soupy, summer day, with two-to-three-mile visibility and no horizon to speak of. We had a Case I launch, and I was not concerned in the least about the flight: It was daytime, and no night trap was required. The brief, man-up, start, and taxi to cat 3 were uneventful.

As we went into tension, I went through my normal litany of cockpit checks, "…all breakers in, hydraulics look good, gear down, flaps set 10 degrees, trim set 2-3-0, pitch feel good, max rudder set 20 auto 20, caution and advisory lights good, all engine instruments in the green, good TMT-horsepower-rpm, heading is 210."

I got concurrence from my copilot, who was second-pilot qualified, and asked him to salute the cat officer. As you can guess, things went bad just after we started down the catapult. I heard a change in engine rpm, and, halfway down the stroke, the right engine spooled down past 72 percent. I told the crew we were losing the right engine—that was the last we talked to each other over ICS for the next few minutes.

By the time we got to the end of the cat stroke, I was feeding in left rudder to compensate for the inevitable swerve that was coming. Once airborne, I made sure the power levers were at max, put in more left rudder, and got the gear up. We safely were climbing away from the water, at 500 feet per minute, when I realized the aircraft was silent. There was no ICS, and UHF-1 was not working; we had missed the call from the air boss telling us to do a clearing turn off the cat.

The next part of the procedure calls for the copilot to feather the right engine, using the T-handle. I had to tap

him on the arm, point at the right T-handle, and yell to him to pull it. With that done, the flaps and max-rudder system were set for the rest of the climb-out.

At 500 feet, I glanced down at the caution-lights panel, expecting to only see an R GEN caution light, because the right generator was not running. The R GEN light was on, but, in addition, the right transformer-rectifier (R RECT) light was illuminated, indicating an AC bus-tie failure. At the same time, the copilot said the right propeller still was windmilling, very slowly.

Basically, I had no ICS, no radios (except UHF-2), no carrier-aircraft-inertial-navigation system (CAINS), no heading- and attitude-reference system (HARS), no TACAN, no normal trim, no primary-attitude reference (except for nine minutes of standby gyro), and a windmilling propeller. I couldn't believe the scenario that had developed in such a short period.

I remembered thinking, "This is just like those simulator flights back at the FRS, when you get angry with the instructor, because there was no way the scenario he just gave you could happen in real life." I shook off that thought quickly, decided to deal with real life, and continued climbing to 1,000 feet.

At 1,000 feet, I asked the copilot for help holding in enough left rudder for balanced flight. With a takeoff setting of three units of right rudder and no rudder trim available, a large force was required to maintain the full left rudder necessary in the climb. My left leg was tiring rapidly. With his help, I continued the climb to 3,000 feet. Hawkeye aircraft and electrical fires do not mix well, and I wanted to be at a comfortable altitude for a bailout if the electrical gremlins turned into an ugly fire.

In the climb, I reset the L GEN switch, hoping that the AC bus-tie would work—it didn't. For some reason, the ICS started working again, and the propeller fully feathered—these two items are on the DC essential bus. I asked the combat-information-center officer (CICO) in the back to see if he could get the ship on one of the radios, but he said his radios were not working, and the their scopes were dead.

I turned to a downwind heading of 030, using the wet compass and standby gyro, to see if we could get a visual on the ship. Once wings level, I turned off the L GEN switch and manually selected "on" for the EMER GEN. I knew this would at least get our HARS attitude-heading, TACAN, UHF-1 and 3, and trim back.

I immediately heard the air boss on UHF-1 telling the aircraft in the overhead stack, "Heads up…watch out for the Hawkeye in the pattern."

I now knew some radios were working. I had the CICO contact strike and let them know our situation, while we gave the air boss a heads-up on our position, relative to the ship, and asked for an immediate recovery. We went through the engine post-shutdown procedures, making sure we turned the fuel dump off as close to max trap as possible. We set ourselves up for a straight-in, single-engine, no-AOA approach (no indexers-AOA gauge), briefed paddles on our configuration, and landed with an OK 2-wire.

Crew coordination was key to the successful outcome of this unusual emergency. I had my hands full at the end of the cat stroke, and my copilot responded just how we had briefed an in-flight engine shutdown—although the communication method was a little nonstandard. He then helped me hold the left rudder in until we could figure out what was going on. The CICO pulled out the pocket checklist, backed us up, and coordinated with the ship.

The air-control officer and radar officer backed up the CICO, provided altitude backup to make sure we didn't get wet, and had the checklists ready. The next time you are flying along fat, dumb and happy, get ready for that FRS flashback: "Am I in the simulator, or what?" Then think again—it is reality.

Cdr. Schick is the executive officer of VAW-113.

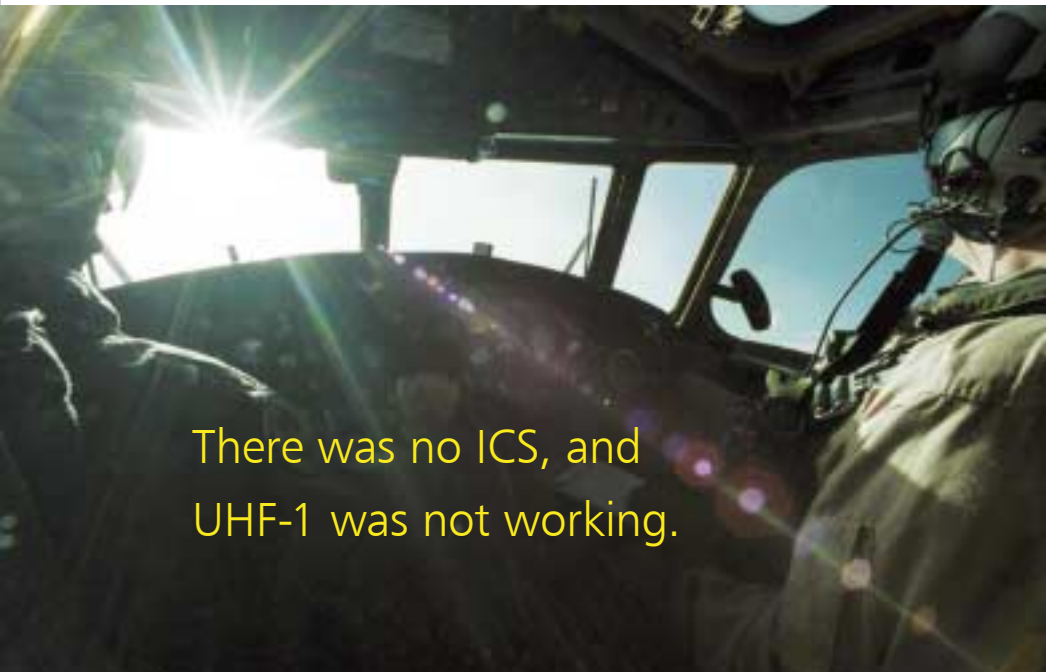


Photo by PHAN Christopher B. Stoltz

Something Just Doesn't Feel Right

By Lt. John Allison

It was a not-so-gorgeous winter day in Atsugi, Japan, with a solid overcast from 2,500 to 8,000 feet, and multiple layers above that. The visibility was restricted to about one and a half miles, and the freezing level was at 2,000 feet. I was scheduled for a level III, defensive-BFM flight with a senior department head, and I looked forward to showing him how it was supposed to work.

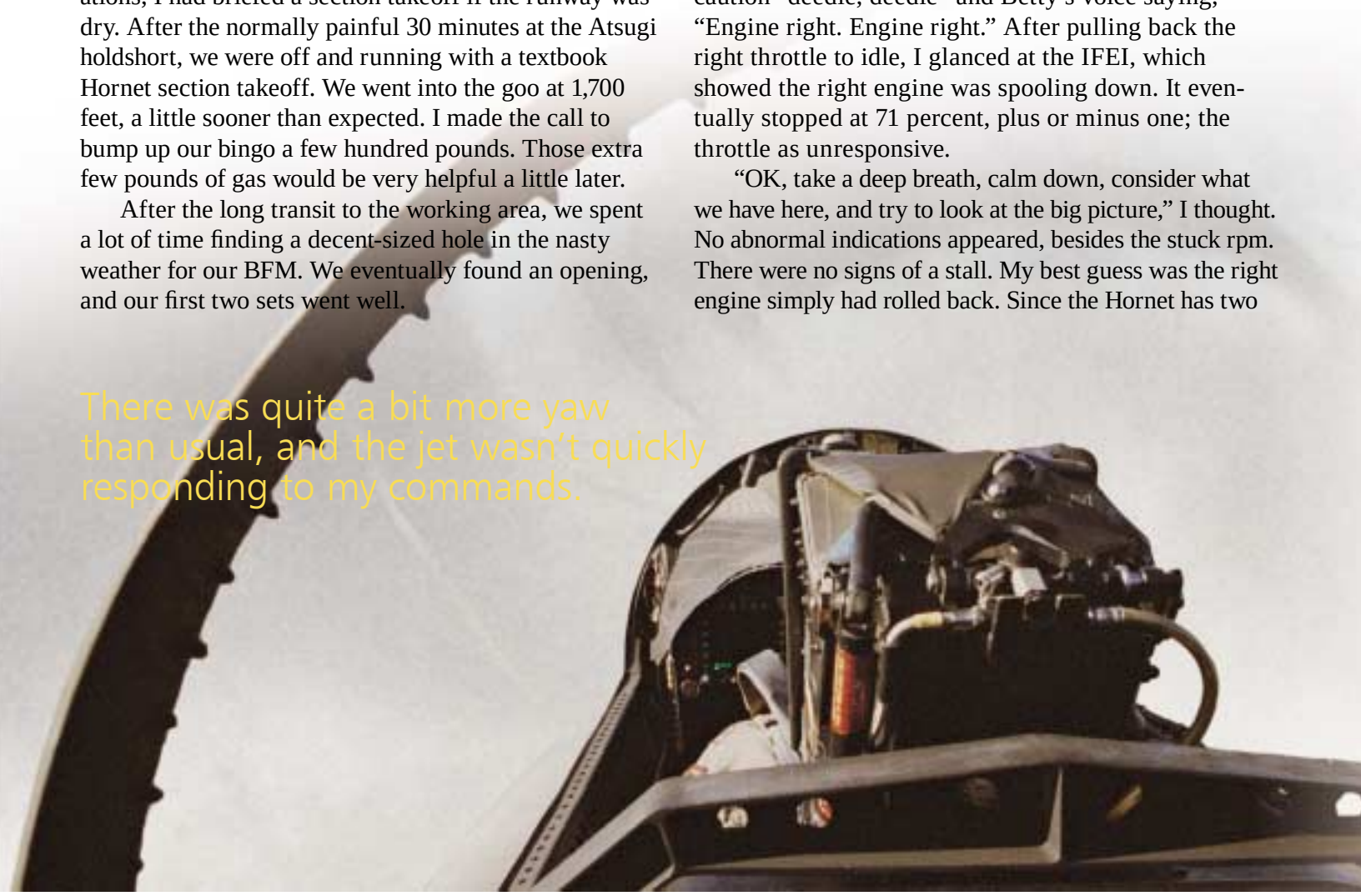
The brief went as advertised. For weather considerations, I had briefed a section takeoff if the runway was dry. After the normally painful 30 minutes at the Atsugi holdshort, we were off and running with a textbook Hornet section takeoff. We went into the goo at 1,700 feet, a little sooner than expected. I made the call to bump up our bingo a few hundred pounds. Those extra few pounds of gas would be very helpful a little later.

After the long transit to the working area, we spent a lot of time finding a decent-sized hole in the nasty weather for our BFM. We eventually found an opening, and our first two sets went well.

The third set had a slight twist. I was in the middle of a nose-low, defensive maneuver, when I noticed something just didn't feel right. There was quite a bit more yaw than usual, and the jet wasn't quickly responding to my commands. My mind raced. "What in the hell is wrong with this airplane?" I thought. I immediately called a knock-it-off, leveled my wings, and investigated the problem.

Soon after I leveled my wings, I heard the master caution "deedle, deedle" and Betty's voice saying, "Engine right. Engine right." After pulling back the right throttle to idle, I glanced at the IFEI, which showed the right engine was spooling down. It eventually stopped at 71 percent, plus or minus one; the throttle as unresponsive.

"OK, take a deep breath, calm down, consider what we have here, and try to look at the big picture," I thought. No abnormal indications appeared, besides the stuck rpm. There were no signs of a stall. My best guess was the right engine simply had rolled back. Since the Hornet has two



There was quite a bit more yaw than usual, and the jet wasn't quickly responding to my commands.

engines, a rollback is not a serious emergency, although it is prudent to get the jet on deck as soon as possible.

I put the needle on the nose and coordinated a trap and a tow with Atsugi tower. I would have to fly a PAR back into Atsugi, and I knew a trap would foul the runway for at least 15 minutes. There were six other Hornets airborne—seven, including my wingman—and all would be coming back into Atsugi about the same time for PAR approaches.

NAF Far East, by the way, has only one runway, with a tendency for the arresting gear to de-rig on landing, which presented a problem. I switched to area-common frequency, told everyone of my emergency, broadcast my intentions, and advised everyone they might want to buster home and beat us to the field. My wingman and I would fly a semi-max-endurance profile and would land after everyone was safe on deck.

The plan was working well, and three jets had managed to pass us and land. However, it became apparent the plan, from this point on, would not play out so smoothly. Yokota Approach Control started to have serious difficulties handling the recovering aircraft. They were confusing call signs and giving vectors to the wrong aircraft. The three aircraft behind us were unable to pass us, despite our attempts to slow. We were all in relatively the same airspace, low on gas, and getting vectored by Yokota Approach.

I had started my descent from 8,000 feet and again went IMC. I noticed my rpm slowly was decaying, with decreasing altitude, but I had decided to keep the right engine at idle to maintain hydraulics for gear-flap extension, normal braking, and anti-skid.

I was at 4,000 feet, with 2,800 pounds of fuel. SOP states we shall be on deck with 3,000 pounds of fuel during night-IMC conditions. The other Hornets also were low on gas, which compounded the problem. From talking with Yokota Approach and other aircraft, I decided to execute another 360-degree, left-hand, delay maneuver to allow two other aircraft to land, before I fouled the runway for 15 minutes.

Halfway through my delay maneuver, the situation took another turn for the worse. I received Betty's "Engine right. Engine right" aural warning. The right engine rpm had decayed so much the engine had flamed out. I immediately went to half flaps and dropped the gear and hook. I was hoping the residual hyd 2A pressure would be enough to get three down and locked. With all that was going on, I didn't feel like fooling with emergency-gear extension. I breathed a sigh of relief when I felt the familiar "thunk, thunk, thunk," and three green lights stared at me.

The combination of IMC, potential icing, low fuel, and single-engine conditions had me more than a little uneasy. The situation was deteriorating rapidly, and still there were two airborne Hornets. I knew our divert, Yokota AB, had 11,000 feet of runway, TACAN weather minimums, and only was 18 short miles away. Our fuel states all were close to 2,000 pounds, which left little time for fooling around. I needed to get that jet and myself on deck as soon as possible. The two remaining Hornets easily could make it to Yokota and take the gear if they needed to.

I declared an emergency and immediately received vectors to the final approach course for the PAR. The last remaining hurdle was descending from 4,000 feet to a point where I could receive commands from the final controller. Since I was so close to the field, my profile closely resembled a falling rock. This situation definitely was not ideal, especially since I had to keep the left engine above 85 percent to avoid a MECH reversion of the flight controls, and I still was in IMC. Eventually, I received PAR commands and saw the threshold lights at a mile. I was aiming for the short-field gear and was elated to feel the jet decelerate and finally stop. Although the other jets were low on fuel, they landed uneventfully.

The entire flight started out as a good-deal BFM flight, albeit with marginal weather at the field. My original emergency was not that serious, and I felt we had a good game plan to get all the Hornets on deck. A combination of single-runway operations, bad weather, numerous aircraft airborne, saturated approach control, and a deteriorating situation with my aircraft all contributed to a stressful event for everyone.

Considering our fuel states and the requirement for each of us to shoot an approach, it would have been prudent to divert more aircraft to Yokota earlier in the evolution. I felt our bingo-fuel numbers were more than adequate for our RTB profile, an approach, and a divert. We actually started our trip home above our conservative bingo-fuel state. However, all the unforeseen complications involved with operating out of NAF Atsugi reared their ugly heads at one time and quickly put most of us in the proverbial hurt locker. The best we can do is prepare for each flight, use ORM, concentrate on execution once airborne, and adapt to rapidly changing conditions.

Lt. Allison flies with VFA-192.

Photos by Matthew J. Thomas.

Seahawk in Afterburner

By LCdr. Bert Race

It was 0720, Feb. 7, 1994, my second underway period as a relatively new H2P. Our LAMPS detachment just had completed six weeks of flight-intensive Haitian operations, and I felt comfortable flying the mighty Seahawk around our FFG. The weather was typical Caribbean: warm and breezy, with two-to-three-foot seas.

The aircrew included the junior aircrewman and my OinC, who seemed much older at the time. I briefed NATOPS procedures, then we preflighted, strapped in, and soon were ready for the takeoff checklist. I had the controls. We had no way of knowing our routine ASW flight was about to become much more interesting.

The LSO released the RSD beams and issued a green deck. I lifted into a stable hover, maneuvered up and aft to 40 feet, turned into the wind, pulled power, and began to dip the nose when I heard, "kaboom…boom…boom." Three distinct concussions had shaken the airframe. Time slowed down.

I immediately felt us descend as the main rotor slowed. I already was in an accelerating attitude, so I maintained cyclic position and cracked collective, hoping translational lift

would take affect before Nr and altitude ran out. Within two seconds, the engine-out and low-rotor warning lights came on. Out the corner of my eye, I could see a tall strip of red on VIDS, indicating skyrocketing TGT. The aircraft continued to descend, and so did Nr.

I looked at my OinC, who, to my surprise, was scanning the instruments. We were at 20 feet and still descending. He stated the low Nr situation and helped me on the controls by further lowering collective. Water entry appeared inevitable as we descended at 85 percent Nr, with full left pedal. Airspeed indicated zero knots, but we were near 15 knots groundspeed. I started to flare the aircraft at 15 feet in preparation for our swim.

The flare maneuver caused Nr to increase slightly. We stopped descending just below 10 feet. My OinC said, "I have controls."

It was as if I were reading NATOPS for the very first time.

I promptly replied, "You got 'em" and placed my hand on the window-release handle. I then realized we were scooping this thing out, albeit precariously close to the water, with zero extra horsepower. I jettisoned the sonobuoys—for the record, this feature works 4.0—and activated the fuel dump. We began to accelerate and build Nr; time then resumed normal speed.

We declared an emergency as we gained altitude, completed the emergency procedures, and agreed to perform a shipboard, single-engine recovery. The aircrewman said he had pulled his window-jettison handle, but he never jettisoned it. Our OinC made a perfect approach to a no-hover, bull's-eye landing. I never felt any rush of panic or nervousness until I stepped out of the aircraft—that's when my knees went weak.

The postflight inspection revealed the No. 2 engine had suffered catastrophic destruction. The engine sounded like a blender full of marbles when someone manually rotated it with a wrench. The LSO and bridge watchstanders all heard the series of explosions. Witnesses later commented that hot-metal sparks, similar to a welder's cutting torch came from the tailpipe in a long, blue flame. The LSO said, "It looked like No. 2 was in afterburner."

I should have been happy, knowing we had beat the odds and had recovered from a single-engine failure, while heavy in a 40-foot hover. I was troubled, however, knowing we had deviated from the procedures we had briefed for single-engine failure. Our NATOPS brief called for the non-flying pilot's hand to be on the fuel-dump switch during takeoff, so, in case of engine failure, fuel dumping rapidly would shed weight, making single-engine recovery more likely. Also, we never discussed anything about swapping controls.

With these thoughts weighing heavily on my mind, I set out to reread my NATOPS manual. After reading the first few sentences of the procedure section for single-engine failure, I wondered if I was reading the right book. It was as if I were reading NATOPS for the very first time. I could tell the author of the single-engine-failure procedures had experienced one for real. Every word was placed strategically. This person knew what an engine failure was all about and described it well. I hadn't been able to really appreciate my NATOPS manual until I had experienced a bonafide emergency. A fitting lyric comes from the hymn Amazing Grace: "...was blind, but now I see."

Afterwards I felt NATOPS had exonerated me from my self-perceived errors. I accepted that our immediate action and the order of execution had been vital to our success. Besides a few expletives uttered during our 10-second tour at very low altitude, our cockpit communication and crew-coordination procedures were on the mark.

An emergency will happen when least expected during the worst possible circumstances. Know your procedures and aircraft systems. Rehearse "what ifs" at every opportunity, and immerse yourself in the imaginary world of worst possible situations. Be mentally prepared to make the right decisions and to react instinctively, especially when you have to deviate. Now, I anticipate engine failure on every takeoff.

Postflight assessment of this event led to another conclusion: At low airspeed, dumping fuel in response to catastrophic engine failure could lead to fire. The shower of hot-metal sparks exiting our failed engine easily could have lit off a highly atomized cloud of JP-5. Good thing we didn't execute a seemingly good idea.

After our return to homeport, AIMD Mayport personnel looked at our ill-fated engine. Over one-third of the turbine blades on the second stage Ng rotor had failed and had departed downstream via the Np stages. The high-time, dust-laden engine simply had self-destructed.

LCdr. Race is the OinC for HSL-48 Det 10.

LCdr. Steve Gozzo sent this letter to Approach. His great uncle, RAdm. John J. Lynch, wrote it while a NAVCAD at North Island. RAdm. Lynch later flew SDBs in World War II and received the Navy Cross for his actions in the Battle of Midway. LCdr. Gozzo adds, "The letter sort of epitomizes the saying, 'Fly what you brief, brief what you fly.' Thank God for second chances."—Ed.

LCdr. Gozzo currently is assigned to the Naval Academy.

Naval Air Station
San Diego, Cal.

8 Feb 1937

Dear Ma and Pa:

Despite the rain and floods they have had in California, I am still safe. From the papers one would imagine that conditions are pretty bad out here but outside of a few puddles around the streets I haven't noticed anything different. Of course Coronado and North Island wouldn't be affected by floods though good old San Diego was pretty wet last week. Some of the boys who went to San Diego on Saturday evening were stranded over there all night. Luckily I had gone to a cocktail party here in Coronado and was able to get back for a good nights sleep.

To get back to my career since last I wrote to you, I have quite a bit to tell. When I first got into aviation I said I would send back word of anything that happened to me and that is why I am telling you this story. Enclosed you will find a clipping that will give you a general outline of what happened but to go into detail the story is somewhat as follows:

"Thursday morning I was out on a bombing drill. This consists of making believe you are lost and trying to get back to your ship or station. To simulate this they have a truck go off into the hills someplace and send out radio signals. The purpose is to follow these signals and find where the truck is located. I did this without any trouble and having a little time to waste, I started to put the plane through its paces. I had a great time for myself, doing all the stunts and get into some funny positions and finally when trying to do two rolls at the top of a loop, the plane went into an outside spin. This had happened to me before but I always managed to get it out before it got wound up. This time it started spinning and despite all my efforts it wouldn't come out so when the ground loomed up pretty close, I released my safety belt and was catapulted out of the plane. In an inverted spin the plane is on its back and keeps twisting around with the wings horizontal to the ground so that when I opend the belt the force of gravity dropped me from the plane.

"There was a quiet, peaceful sensation for a few seconds after I was pitched out it was such a relief to be out of that twisting plane. Instead of having a sensation of falling, the impression I gained was that I was floating around in the air. This lasted until the jerk of my opening parachute took me out of my reverie. Dimly I remember reaching for the ripcord and throwing it far away. The ride in the chute was very nice though my only complaint was that just as I reached the stage where I was daring enough to start looking around to get my bearings, the ground rose up to meet me. I made an unusually gentle landing for a person of my size in a wild patch of sagebrush on the top of huge knoll.

"One of the fellows in my squadron who had seen me jump, circled around where I landed and directed me to the nearest habitation. I never did see the plane again until the wrecking crew brought it back to the station. It was completely demolished. I gathered up my parachute and in my heavy furlined

flying suit, I tramped about a mile and a half through the brush and some ploughed fields before I met a farmer who was coming out to investigate the accident. He had seen the jump and telephoned North Is and before coming out. He informed me that there was an ambulance on the way out to pick me up for they didn't know whether or not I was hurt. By the time we reached his house, there was an ambulance waiting for me so I rode home in style.

The accident happened about 15 miles North of the Air Station. Of course there was quite a bit of excitement connected with the affair and the big question around the station was to the effect. "Why should a pilot have to bail out while on a homing drill." I had to pay a visit to Captain Towers, chief of the Aircraft Battle Force, and explain all about it but outside of a few words of caution nothing else was mentioned.

Now I am a member of the famous Caterpillar Club composed of those pilots whose lives have been saved by jumping in a parachute. They have an insignia which they give to all members. I expect to get mine in about a month or so. It is a small gold caterpillar with a ruby for an eye. I'll wear mine with pride.

Now after telling all this I expect you to take the viewpoint that as long as I am willing to tell of what happens don't have any undue fears and let your imagination run wild.

Outside of that little adventure life has been quiet. I went to a cocktail party at a Captain Calhoun's house on Saturday evening and from there we went to the usual dance at the Coronado Hotel. I enjoyed myself very much so much so that I think I'll start my social life anew.

This week we go out on the Saratoga. Because of the shortage of ship I won't be flying aboard but I ought to get in a couple of hops. We will be in Coronado Roads over the weekend, go to sea again on Sunday night. Come in again on Friday and go out again late in the following week.

Well that's about all there is to say. I am still alive and kicking and getting plenty to eat. Don't do any worrying for I'll take it mighty easy in my plane after this and take no chances on getting into a spot like that again. Figure it was real fun the back.

Your loving son

John

RAdm. Lynch as a lieutenant commander and squadron CO, with his XO (Lt. Weind) and CPOs.

My thoughts went to my last simulator flight in the RAG, which was my emergency carrier-landing hop.

By Lt. Dan Cochran

Blue water in the South China Sea—last launch of the night, and the ship was steaming in a driving rainstorm. The cloud bottoms started at 2,000 feet, and there were layers upon layers through FL300; it was very dark. I was one month out of the RAG, and only four days had passed since our last liberty port. Aside from my day-to-go-night sortie earlier in the day, it had been two weeks since I'd flown.

As I ducked through the hatch leading to the flight deck, my first thought was, "They're gonna make me fly in this?" It was dark, and the flight deck was slippery. I thought my most dangerous task of the night would be getting to my Hornet, which was parked farthest up the bow. My flashlight did not help much, as I kept my head down to keep the rain from my eyes.

After a cursory preflight, the PC opened the canopy long enough for me to get in the cockpit, but, in the time it took to jump into the jet, the consoles and instruments got soaked from the downpour. I dried off the displays and continued with the launch. The deck was slick, but I managed to taxi to the catapult. As a part of my ever-solidifying habit patterns, I went through my emergency-catapult-flyaway procedure.

I went into tension, wiped out the controls, and made sure I hadn't popped any flight-control codes. Once assured the jet was ready to fly, I brought up my ADI (gyro) on the right display, flipped the pinkie switch on the outboard throttle, and waited for the cat stroke that would send

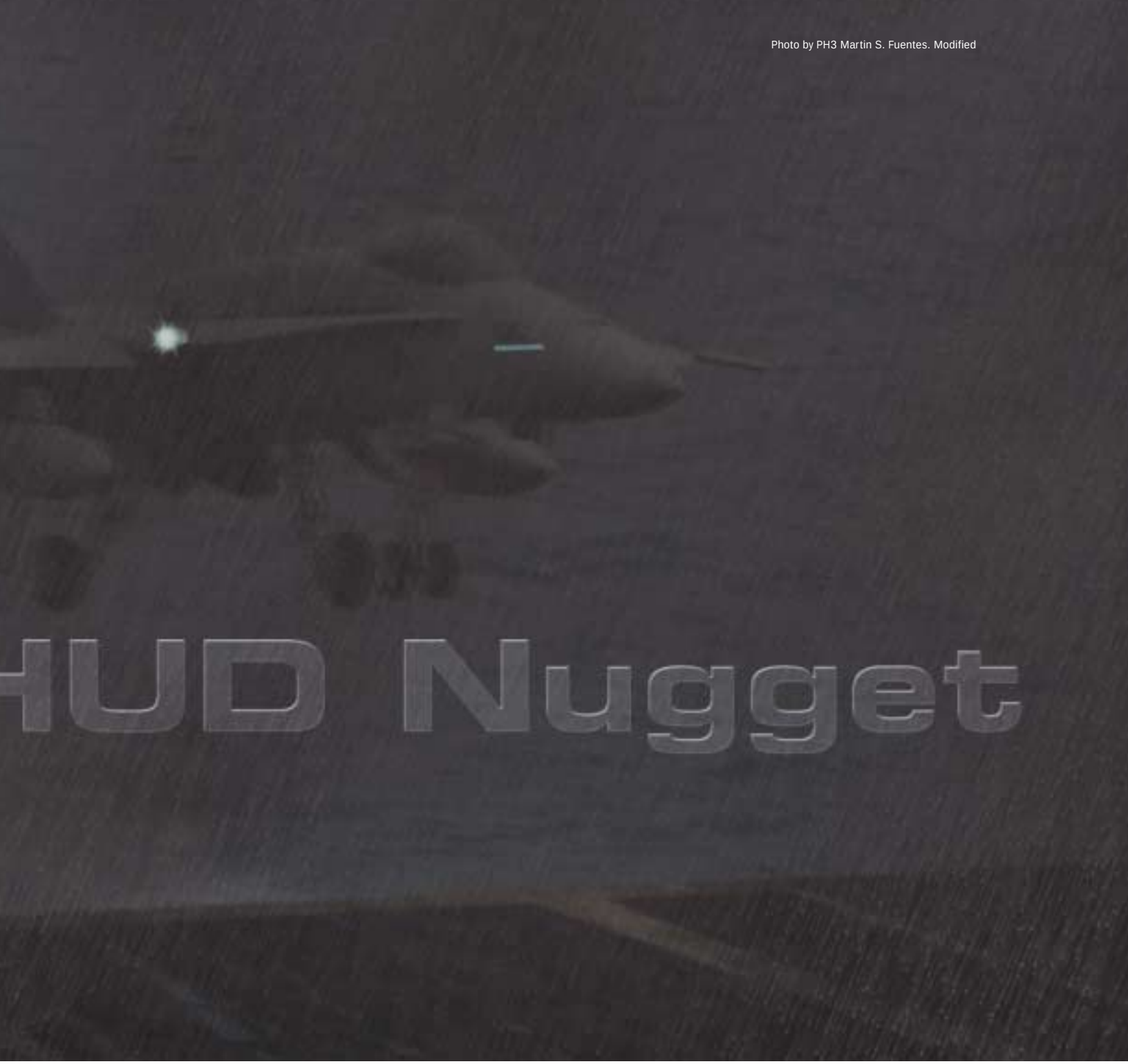


Photo by PH3 Martin S. Fuentes. Modified

me hurtling into the black void at the end of the angle deck.

As I felt the reassuring acceleration of the stroke, my HUD blanked out. I instinctively checked my engine instruments, knowing if they were good, I shouldn't have a problem getting away from the water. My scan went to my right display and the ADI. I rotated to 10 degrees on the ADI and concentrated on keeping my wings level while climbing. It was a few seconds before I remembered to scan the HUD symbology on my left display, and I continued my departure climb.

It wasn't until passing 10,000 feet, and still in the goo, that I radioed my lead to tell him I had lost my HUD on the cat shot and couldn't get it back. I was so preoccupied with troubleshooting I neglected to fly the jet. It wasn't until

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CRM ORM Corner

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New Programs
That Actually Work

By LCdr. Steve Ray

I somewhat resist change, and I cringe when an old program claims to be new and improved, simply by taking on a new name or acronym. Even worse is when a new policy or leadership style is thrust upon me for my own good. These days in the Navy, inspections are called visits, personnel are called customers, and, in my civilian job, the checkride now is called a validation.

It all sounds inoffensive and sensitive, but, if you've been around awhile and seen some of these new and improved products and policies come and go, you become jaded about how great this new stuff really is.

My photo finally has made its way to the top row of the roster board, and I reluctantly have become one of the old guys in my reserve squadron. I've had the opportunity over the last 14 years to experience most of the positive, as well as negative, changes to the way we do business in naval aviation. There are a couple of new programs I hope don't go the way of our experiments with smart per diem and the ever-popular TQL.

Crew resource management, or CRM, formerly known as aircrew coordination training (ACT), is a dynamic program that probably has paid for itself a million times over. The other program is operational risk management (ORM). I don't want to turn this article into a book report on the seven critical skills (SAD CLAM) of CRM, or the principles and steps of ORM. But, I would like to relate a couple of incidents where ORM and CRM were applied and worked as advertised.

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The first incident took place the first day of a recent detachment to the Arabian Gulf. We were scheduled for a quickie, in-and-out, afternoon evolution that turned into a five-leg mission, and terminated at 0500 the following morning. The crew just had arrived in-theater from CONUS, a difference of eight time zones; we were not exactly well rested. Leg four was a planned stop in Fujairah, UAE, at 0200. We would pick up a load that was going to put us above 145,000 pounds takeoff weight: heavy, but not unusually so for a C-130.

If you ever have been into Fuj, you know almost all landings are to the west, and all takeoffs are to the east—to avoid the mountains on the western edge of the field. There are no SIDs or approaches over the mountains, and all missed-approach procedures take the aircraft well to the north or south of the field before crossing the eastern threshold of runway 29. I previously had taken off from Fuj to the west in daytime VMC conditions. This departure requires an immediate 180-degree turn toward the sea, and I had flown it with relative comfort because the mountains were easily visible, but I never had done it at night.

We were about to start our descent when we picked up ATIS for Fuj, and we learned the winds were out of the west at 25 knots, with gusts to 33. I briefed the approach and the possible waveoff procedures in case of windshear. Since we would be taking off to the west, into the mountains, the flight engineer asked what kind of three-engine-climb performance we would need. The truth was I hadn't thought of it at all. We quickly consulted our performance manual and determined that taking off to the west and losing an engine at 145,000 pounds was doable on paper.

However, after a crew discussion on this takeoff issue and employment of ORM, I determined it wasn't worth the risk. In this case, there was no way the benefits outweighed the costs—the risk was unnecessary. Was I good enough to take off at a high gross weight, lose an engine, avoid the unseen mountains within a mile and a half of the field while on instruments? Could I get the engine properly shut down, climb-out over the ocean, and then bring us back to Fuj for an uneventful three-engine landing at night, on minimal sleep after a long day? I don't ever want to find out. Thanks to an AD2 flight engineer who exhibited sound situational awareness, I won't have to.

We skipped the fourth stop of our journey and headed back to base. The pallet of mail, or bug juice, or whatever it was, made it safely to its destination in the bright, southwest Asian sun the next day.

On another detachment, this time in the Med during August, we had the misfortune of breaking a hydraulic line in Palma de Mallorca, Spain. The line was made of aluminum, and it would take four days to order and receive a new one from CONUS. The squadron, or at least the OinC, was not happy. Broken down in Palma? In summer? Something smelled fishy, at least to those on the other end of the phone line.

While discussing our options, my ADC flight engineer had an idea. Maybe we could get the hydraulics section aboard one of the Navy ships in port to make a rubber line we could use to bypass the broken section. Then we could fly our aircraft back to Sigonella, where it would be down, awaiting the proper aluminum part. He showed me the diagrams, and his plan sounded like it would work.

The flight engineer, standing by his creative and mechanical abilities, suggested we immediately go to the ship, get the part made and test it. If it looked good, we would press on and fly the plane back to Sig. Another go-getter crew member agreed, arguing it is better to have a down plane in Sig, "where, at least, it's home," than at an outlying field.

The two other crew members asked if it was a good idea to be flying with homemade hydraulic lines and said they did not feel comfortable doing so. You gotta love the 50-50 split on crew inputs. I called the squadron in CONUS and presented all sides of the story, as well as the options.

The maintenance master chief told me, "Sir, I would put my wife and children on that plane with that rubber hose for a one-time flight to Sigonella."

"Oh yeah, it's definitely a great idea." said the MO.

The Ops O said, "I like it."

"Sounds like a winner to me. You'll be fine. Take it back to Sig," said the OinC.

We spent the next four days in Palma, waiting for the correct part. It was rough, but we managed to make the most of it. The responsibility for decision-making was ultimately mine. I saw no justifiable reason to put an experimental hydraulic line on an aircraft, for which I was responsible, and then fly it home, where it would sit on the deck awaiting the proper part. I received a lot of second-guessing and a few raised eyebrows regarding my mini holiday at one of the top vacation spots in Europe. However, I knew then, as well as now, I never will stand at the wrong end of the long, green table for overspending BA-1 funds on hotel rooms. But, I would have been at that table if I had been a part of an aircraft mishap caused by flying an aircraft without approved parts.

One last story. We went to Lockheed to pick up an aircraft that had been undergoing SDLM work. Since the plane had been down for over 30 days and had been taken apart and put back together again, it required a full phase-A profile, functional-check flight (FCF).

We were flying in a working area, about 80 miles from our field, shutting down the No. 3 engine. When we pulled the condition lever to feather, the engine shut down as advertised, and the prop stopped, but then it began to rotate backward. I've done a hundred FCFs and have had engines not shut down or not restart, but a backward-rotating prop was a new one for me. Again, it was time for crew discussion on what would be the best way to handle this problem, because NATOPS does not cover this condition.

Photo by TSgt. Howard Blair
Modified

Our flight engineer, however, had heard of this happening before. He even had heard of a guy that had heard about a guy, who knew a guy, who knew a great flight engineer, who had been stationed at our wing, who successfully had used the airstart button to bump the prop back to a 90-degree position, so it would not rotate backward. I honestly did not know if a prop rotating backward was pumping oil to its gearbox or not, nor did I know how long it could spin backward without oil before damaging itself. We also did not know what had caused the prop to rotate backward. Was it something as simple as a weak prop brake, or something more serious? You shouldn't experiment with C-130 and P-3 prop systems.

We turned back toward the field, did the usual emergency checklists, and declared an emergency with ATC. Controllability was no problem, and this was going to be my eighth, three-engine landing in the Herc, so I wasn't worried about that either, but still the prop spun. The engineer was champing at the bit to try the bumping maneuver, but I was more concerned with what would happen if we lost control of the prop's blade angle, and it went flat when we tried to bump it. Controllability then would be a serious problem. But, still the prop spun, and I had no idea if it was getting oil as it spun backward. With about 40 miles to go, I told the flight engineer if we had been 1,000 miles over the water, we would do the bump to try stopping the prop. However, since we only had a few minutes to go, we weren't going to mess with it. Saddened, the flight engineer agreed, and everything worked out fine during our three-engine landing.

If the previous events had taken place at different times, under different circumstances, the decisions could have been different. There seldom is only one way to do things. In naval aviation, outside of our memory items, very few things are black and white. It takes a good crew, well-versed in their responsibilities regarding CRM and ORM, to tackle most problems. Every emergency landing I have made was straightforward; every difficult decision I have made on the road wasn't. When employing ORM and using the techniques we learn in CRM training, we can work through these real-world problems and prevent real-world mishaps.

CRM and ORM—one may be a new name for ACT, and one may be just a formal title for good headwork, cockpit presence, and airmanship, but they work. We use them in the Navy, and we use them at the airlines. Let's keep these programs around a while.

LCdr. Ray flies with VR-53.

Female aviators face a dilemma.

Photos by Fred Klinkenberger

TO PEE, OR NOT TO PEE...

By an anonymous female aviator

Operation Enduring Freedom brought with it the challenge of long flights. Extended flights pushed the limit of crew-day-and-rest issues for Navy and Air Force aircrews. Many of our flights were six hours long, with some reaching nine hours.

Besides our mission tasking, we had to "work around" basic bodily processes. Soiling oneself wasn't a worry for the males in our squadron, because they could urinate by using the Prowler relief tubes.

The females, however, had to worry about everything, which begins a debate over the proper way to prepare for long missions. It is not possible in the EA-6B for female aircrew to leave their seats and squat. Any such action would have to be done on top of the ejection seat, which is not safe.

Another option, slightly more practical, is using the strap-on Lady J device. This device acts as a funnel, guiding a woman's urine to the relief tube. This seems like a simple answer, but, maybe it's not. The Lady J device requires easy access to areas inaccessible when you're sitting in a seat or wearing a standard flight suit. There is an extended-fly flight suit out there that enables access, but acquiring one may be difficult.

The piddle pack, a time-honored relief device in many other platforms, is also a possibility. But, the same issue for women arises: They need some type of funnel to get urine to flow into the bag, or they have a messy situation. The piddle-pack option also requires an extended zipper for use in aircraft. In the past, females have stripped out of their gear, including flight suits, to use the piddle pack—moons over Afghanistan!

The next option is another time-honored tradition among female aviators, albeit unsafe. Known as "tactical dehydration," this technique works well. You simply cease taking in fluids well before your brief. Then you purge your bladder before walking and don't consume any more liquids until you're within a reasonable time to recovery. The downfall to this method is obvious: Dehydration brings headaches. The extreme circumstances of ejection, mixed with dehydration (in a desert environment), could be fatal. Obviously, "tactical dehydration" is not a wise choice.

The final option is an old, proven, standby in and out of aviation: the adult-incontinence undergarment, also known as diapers. They provide relief and wick away moisture to prevent irritation. This option doesn't seem appealing at first, but, when faced with holding your bladder for eight hours, you accept the swishing sound when walking to your jet. This option should be given a dry run, no pun intended, before operational use, to make sure no leakage occurs.

So, what is one to do? Until better-designed relief systems are available for female aviators, or missions become shorter, future war heroes have few options. One way to make the diaper option more appealing is to look at how diapers were depicted in the movie "The Right Stuff." It is one of my favorite movies, and it got me interested in flying. Think of the scene where Alan Shepard is in his suit on the launch pad. Unable to leave the cockpit, he relieved himself in his suit. However, as I said earlier, the diaper will wick away the moisture; Alan Shepard had to sit in his.

The author flies with VAQ-139.

From the squadron safety officer.

VAQ-139 has four female aviators, three in the squadron and one assigned to CAG. Each has her strategies for dealing with long missions. But, the fact remains, female relief-system design needs to keep pace with the increasing number of female aviators and long missions in support of our nation's goals. We have identified this issue as an important lesson learned from deployment.

Note from the Aeromedical Division, Naval Safety Center.

The researchers at Air Crew Systems and the Naval Aerospace Medical Laboratories have addressed the topic of in-flight urination in tactical aviation. The latest information can be found in NAVAIR publication 13-1-6.5

Intentional dehydration is strongly discouraged because of the degradation of mental and physical performance that definitely will degrade operational capability, especially when considering G tolerance. Dehydration will impair mental alertness, lower blood pressure, increase heart rate, and increase the risk of G-induced loss of consciousness.

The Aeromedical Division of the Naval Safety Center, along with Chapter 8 of 3710, strongly recommend all aviators remain well-nourished and well-hydrated before and during all flights. This will necessitate using some type of urine-collection device during long missions. We recommend all commands work with their aviators to make sure the aviation survival-equipment shop has procured adequate authorized flight equipment. Also make sure supplies of collection devices are stocked on board the ship or at remote operations sites before deployment.

Capt. Nicholas Webster, MD, MPH
Assistant Command Surgeon

passing through 25 degrees nose high, with airspeed rapidly dropping, that I focused on the priority task of aviating. I reevaluated my plan of action, and decided to fly my jet, to get out of the clouds, and then to worry about getting back my HUD.

I broke out and my lead—the CAG operations officer—and I joined at 33,000 feet, trying to stay out of the rising clouds. We broke out the PCLs and started to troubleshoot the problem. Our good crew coordination was a plus. It was all I could do to fly formation and not get vertigo. I concentrated on staying in position, as my lead read the PCL and talked me through recovering my HUD—no success. What now?

We agreed I should penetrate the weather on my lead's wing and have him drop me off on the ball. We started down, and the bright stars quickly were obscured as we descended into the weather. My thoughts went to my last simulator flight in the RAG, which was my emergency carrier-landing hop. I had to fly the no-HUD approach three times because I almost hit the ship on my first two attempts.

At 1,200 feet and eight miles from the ship, we configured for landing. There were no AOA indications in my cockpit. The gear showed three down and locked, and I had an E bracket on my left display but no red chevron. I checked to see if the AOA lights were burned out and discovered I had neither a fast or slow chevron, but the amber donut worked. I told paddles of the possible AOA failure.

At a mile and a half, I saw the lights of the ship appear out the corner of my eye. Lead did a nice job, dropping me off with a centered-ball start, and I transitioned from flying form to flying a good pass. I felt good about the pass until, suddenly, the waveoff lights illuminated, and I heard paddles' frustrated call, "Wave off, foul deck."

As I climbed away from the carrier, I spied my flight lead in perfect position at my 10 o'clock. I still had fuel for two more looks before I would have to visit the tanker. We flew around the bolter pattern. Again, at three-quarters of a mile, I transitioned from form flying to ball flying. The transition was too much for me; somewhere in the middle, the ball crept off the top of the lens.

My correction wasn't enough, and I had to call clara as the ball went off the top of the lens. The LSOs told me to make an easy correction and to keep it coming. My correction wasn't too easy, and I slammed down before the 1-wire with AB fully engaged. My head flew forward, and it felt like I was riding my nosewheel down the deck as I felt all four wires pass beneath me. I was airborne again! My heart sank as I realized, even after that horrible pass, I had to bring it around for another attempt.

After assuring the tower my hook was down, I decided I needed to fly the pattern myself, so my lead turned downwind without me. Practicing my new scan during the circle around the boat turned out to be the right call. It took me a minute or so to cool down and to get it back together. We were blue-water ops, and I didn't want to do anymore no-HUD passes.

For the third pass, I was on my own. Although I was turned in early, I still got a good start, which gave me confidence. I concentrated on keeping a better energy package and got aboard without as much terror as the prior pass.

I never was happier to get out of a jet in one piece. I learned a lot that night. All aviators are taught to aviate, navigate, communicate, and to prioritize tasks. Despite looking at the display after my HUD failed on the cat stroke, I did get safely airborne. However, rather than continue to fly away from the water on a black night, I elected to troubleshoot. Fortunately, I wound up in a 25-degree, nose-up attitude, rather than the other direction. The result could have been a lot different.

My heart sank as I realized, even after that horrible pass, I had to bring it around for another attempt.

The other lesson learned focused on crew coordination. My experienced lead did a super job flying me to good starts and being in position to pick me up after two trips down the groove. The formation flying proved to be disorienting for me. I had flown parade to the start and made a disoriented scan transition without the benefit of my primary flight instrument, as I discovered on my third pass. However, it was far easier to practice my degraded instrument scan all the way around the pattern to the start. From there, it was much easier to transition my scan of meatball, lineup, and angle of attack.

Lt. Cochran flies with VFA-195.

The Uneventful Trip

Photo by Matthew J. Thomas. Modified.

By LCdr. Robert Pereboom

While our squadron was deployed to Diego Garcia, one of our many missions was the primary medical-evacuation platform for personnel at that remote location. We already had conducted 13 medevacs in the first three months of deployment, so the odds of getting launched were good, however random the occurrences might be.

A call came in late one evening requesting a ready-alert launch to Singapore with a patient suffering from abdominal pains. We loaded the patient and departed for another zero-dark-30, six-hour flight to Singapore.

After being airborne for three hours, most of the crew and medical staff were sleeping or relaxing. We had flown through some decent weather, but that was about to change. The weather forecast had shown a large area of isolated thunderstorms we would have to pick through. Unfortunately, in the P-3, we do not have the luxury of flying over T-cells. Instead, we must choose the path of least resistance and use our surface-search radar as the primary means of weather avoidance.

The weather brief was accurate, and we picked our way around the weather, continually going in and out of the clouds. To be safe, I had everyone take a seat and buckle up, and the medical staff secured the patient and his gear.

The intensity of the weather increased. While in the clouds, we saw a spectacular Saint Elmo's fire display on the front windscreen. Caused by static electricity, this display creates lights on the windshield in a spider-web design. Many of the passengers came up front to watch, but I sent them back to strap in because the weather continued to deteriorate.

For about 20 minutes, we successfully had stayed out of heavy turbulence. Suddenly, we hit a pocket of windshear turbulence that lifted the entire aircraft and suspended everything in space. This condition lasted long enough for us to realize we were to sustain a rough jolt—then it hit! Everything not fastened down securely flew into the air.

Shortly after the aft crew reported everyone and everything were OK in the back, we saw a fuel-boost-pump light come on in the flight station. We executed the NATOPS procedures for this malfunction, and the flight engineer went to the aft CB panel to check if the circuit breaker had tripped. While he was there, a huge flash of lightning burst near the aircraft. This flash gave us our second malfunction of the night, a GEN OFF light. We now had lost one of our three generators.

I called for the FE to return to the flight station and received the worst news from our radar operator, "Sir, I just lost the radar." A bus transfer associated with the loss of the generator had caused the radar to fail. After a few expletives, we unsuccessfully tried the reset procedures for the generator. The radar operator worked to get the radar back on-line.

It was night, we were in the clouds, and the radar was down; we had no way of steering our way around the heaviest cells. I remembered the last call from the radar operator. He said a large cell was at our 2 o'clock, so we maintained a steady course. Just when I thought it couldn't get any worse, we popped out of the clouds, and I could see the light of dawn coming up in the east. Even better, though, I saw clear, blue sky and a straight shot to Singapore.

We delivered the patient, and no one was injured during the flight. We were fortunate to break out in the clear when we did and make it to Singapore without further incident. This trip reinforced three things about naval aviation:

• Know your NATOPS procedures. The malfunctions we faced were straightforward; however, we had no time to pull out the book and to go through the procedures step-by-step.

Photo by Matthew J. Thomas. Modified.

• Through careful engineering, our aircraft are designed to keep us flying under extreme circumstances. Our aircraft have numerous safety and backup features.

• ORM works. Faced with the forecast weather and the critical condition of the patient, there was no question the benefits outweighed the risks. We discussed the weather before takeoff and noted it was typical for this part of the world. An evaluation of the weather is part of our ORM process to determine whether a mission can be completed.

LCdr. Pereboom flies with VP-4.

Ready Room Gouge

www.safetycenter.navy.mil

Complacency or a false sense of security should not be allowed to develop as a result of long periods without an accident or serious incident. An organization with a good safety record is not necessarily a safe organization.

International Civil Aviation Organization,
Accident Prevention Manual, 1984