THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

approach

January 2003

Lost at 500 Feet

Are We Backing Down?

OIL & WATER Don't Mix...

approach

The Naval Safety Center's Aviation Magazine

January 2003 **Volume 48 No. 1**
On the Cover A T-39 from VT-86 on the flightline at NAS Pensacola. Photo by Lt. Caleb Siemon.
RDML Stephen Turcotte **Commander, Naval Safety Center**
Bill Mooberry **Deputy Commander**
Derek Nelson **Head, Media Department**
Naval Safety Center (757) 444-3520 (DSN 564)
Dial the following extensions any time during the greeting

Approach Staff

You can e-mail any staff member by using their first initial and last name @safetycenter.navy.mil (except as noted).

Jack Stewart **Editor** Ext. 7257
Allan Amen **Graphics, Design & Layout** Ext. 7248
Matthew J. Thomas **Staff Photographer** Ext. 7244
Ginger Rives **Distribution (Magazines and Posters)** Ext. 7256
vrives@safetycenter.navy.mil
Publications FAX (757) 444-6791
Col. Dave Kerrick, USMC **Aviation Safety Programs** Ext. 7225
Cdr. Buzz Bauers **Aircraft Operations Division** Ext. 7203
wbauers@safetycenter.navy.mil
Cdr. Mike Francis **Aircraft Mishap Investigation Division** Ext. 7236
Capt. James Fraser **Aeromedical Division** Ext. 7228

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.

Approach is published monthly by Commander, Naval Safety Center, and is an authorized publication for members of the Department of Defense. Contents are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, or the U.S. Navy. Photos and artwork are representative and do not necessarily show the people or equipment discussed. We reserve the right to edit all manuscripts. Reference to commercial products does not imply Navy endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission; please credit the magazine and author. Approach is available for sale by the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Subscription price: $53 domestic, $74.20. foreign per year. Telephone credit card orders can be made 8 a.m. to 4 p.m. Eastern time at (202) 512-1800.Periodicals postage paid at Norfolk, Va., and additional mailing offices.

Postmaster: Send address changes to Approach, Code 73A,
Naval Safety Center, 375 A Street
Norfolk, VA 23511-4399

Send articles and letters to the address above, or via e-mail to the editor, jstewart@safetycenter.navy.mil.

Features

January Thanks

Thanks for helping with this issue…

ADC(AW/NAC) Richard Berry, VX-20
Lt. John Williams, HSL-42
LCdr. Mark Coffman, VAW-121
Lt. Christopher Lovelace, VAQ-134
LCdr. Thomas Tennant, VFA-27
Lt. Garrett Smith, VS-21
LCdr. Thomas Cawley, VAW-113

Departments

Visit us on-line at
www.safetycenter.navy.mil

Running Out of OPTIONS

I wouldn't be telling this story if it was that easy.

By Lt. Brandt Moslener

It had been a while since I had flown an eight-hour burner in the P-3. Most of our flights out of NAS Patuxent River are only three to four hours, but we had a target-of-opportunity off the Jacksonville coast, and I felt like I was back in the fleet.

I had my lunch, coffee and water. Bingo bag? Nah, the times I take a bingo bag are the times I don't get home. I had a chart bag with every approach plate along the coast, south of Pax River. We didn't require an alternate for our recovery, but we put Dover AFB on the flight plan anyway and checked NOTAMS. We took off at noon, with the weather right at minimums, 200-foot ceiling and half-mile visibility. All this bad weather was supposed to blow out around 1800, and the forecast for our 2000 recovery called for an 8,000-foot ceiling.

We had a successful mission and headed for home when we reached our bingo fuel. We caught a tailwind and had planned our fuel conservatively—we planned to land at Pax with 10,000 pounds of JP. Although we like to be on the deck with 8,000 pounds, today we had kept a fuel log and dipped the fuel tanks before takeoff, so we actually could go down to 6,000 pounds. Fuel wasn't going to be an issue tonight. I don't like to plan on 6,000 pounds anyway, since the fuel-quantity system is subject to error at lower fuel loads.

Everything looked good until we copied ATIS about 100 miles out. I caught the tail end of the observation and thought I heard ceiling and visibility were 100 and a quarter. Well, that must be for another field because Pax is supposed to have an 8,000-foot ceiling. So I double-checked the frequency and listened to the entire report. Sure enough, Pax was sitting right at the approach minimums. I guess all that bad weather at takeoff decided to stick around southern Maryland for the night. Not a big deal—yet.

We called metro to find a good alternate. Since there are plenty of fields close to Pax, I figured we could shoot a couple approaches, and, if we didn't break out, we would head over to Dover, Andrews, or Oceana. Well, I wouldn't be telling this story if it was that easy. All my favorite fields also were at minimums, which was when it got a little frustrating to deal with metro. We were getting closer to Pax, so I told metro we needed to know where it was clear. I needed a field I knew we could get into; metro, on the other hand, wanted to know what my criteria was and where I wanted them to look. I replied we needed a 500-foot ceiling and three miles visibility and to check Atlantic City, N.J., and Willow Grove, Pa. A few minutes later, which seemed like an eternity, metro came back and read me the entire observation for each field. I hoped for a more subjective analysis of the weather, something like, "It's clear about 50 miles west of Pax."

I knew the airport handled a lot of business aviation, and I thought the runway would be long enough for a P-3.

Anyway, Willow Grove reported an 800-foot ceiling. "There's our field," I thought. "I know we can get into Willow Grove tonight." We didn't have the approach plate, but I figured we would have ATC read us the decision height for the PAR.

We had enough gas for one approach at Pax, which was landing runway 32. We actually were coming from the south, so the approach really wouldn't take much gas. We got our clearance to Willow Grove in case of a missed approach. We didn't see a thing at Pax, and we climbed out on our way to Willow Grove. As we executed the missed approach, the off-duty pilot got the charts ready, and the nav called home plate.

We had 10,500 pounds of gas, and it was about a 45-minute flight. It was going to be tight, but we felt confident we would get into Willow Grove, at least until I called base ops. I wanted to give them a heads up, tell them we were coming and make sure their PAR was up. Much to our surprise and disappointment, the PAR was out of service. The ASR went down to 800 feet, with a height-above-touchdown of 500 feet. The ceiling still was reported at 800 feet, which gave us a 300-foot window. Still trying to think one step ahead, the nav was on the radio finding another field if we needed it. Things got too busy, and we were setting up for the approach before we could find a good field.

As we got closer to the MDA, I got a little nervous. We still were in the goo at the missed approach point and had no option, except to climb out. As we went missed approach with about 7,000 pounds of gas, ATC asked if we wanted to go to Northeast Philadelphia Airport, because they had an ILS. Having grown up in the area, I vaguely was familiar with the field. I knew the airport handled a lot of business aviation, and I thought the runway would be long enough for a P-3. Low on gas, we were running out of options. The field was only 15 miles south, so we declared minimum fuel and requested vectors and the localizer frequency. I asked for the final-approach course, and some airline pilot, sounding like the voice of God, said "240" over the radio. We lined up on the localizer, intercepted the glideslope, and, with a sigh of relief, broke out around 500 feet. As we taxied to our parking spot, I saw 6,300 pounds on the fuel totalizer.

As I sat in my hotel room that night, I went over the flight and the decisions we had made. I didn't, and still don't, feel we made any wrong decisions. We exercised solid crew coordination and made the best decisions with the information we had at the time. Are there things I'll do differently in the future? Sure. If I takeoff at minimums, I'll keep a closer eye on the weather, even if it's supposed to clear out a couple hours before recovery. I may have to talk on the scratchy HF radio, but it sure beats surprises.

Someone with a lot of experience also told me that he usually carries an approach plate surrounding his destination in every direction. Seems like a good idea. Our operations department also got with Metro and gave them feedback concerning alternate field selection when an aircraft is fuel-critical.

Lt. Moslener is a P-3 project pilot for VX-20 (formerly known as FORCE).

You Can Have My Goggles When You Pry Them From My Cold Dead Fingers

By Capt. Andreas Hau, USMC

"Some Things Don't Look Better Through Goggles," an article by Ltjg. C. J. Warren, in the May 2002 issue of *Approach* discussed several problems with using NVGs. As an NVG instructor pilot at the AH-1W FRS, I say that almost everything looks better on goggles. I want to dispel any negative myths about using NVGs. I do agree with Ltjg. Warren's statement, "Take the time to think of how you would handle an emergency while wearing goggles." Let me share my views on NVGs and their value.

As an ASO, I feel night-vision goggles are one of the greatest safety devices we have introduced into naval aviation. Certain communities have not gained enough experience to believe in them and to fully understand how goggles, if used within their design parameters, increase situational awareness and safety. Besides increasing mission effectiveness, goggles improve takeoffs and landings, especially at the boat. You can execute precautionary emergency landings with more confidence.

Let's face it, the human eye has a nighttime visual acuity of 20/200 to 20/400, and NVGs have a visual acuity of 20/40 (ANVIS-6) and 20/25 (ANVIS-9). Which would you rather have? Goggles do have some limitations, such as a 40-degree field of view, monochromatic display, and a two-dimensional image, but, when compared to the unaided human eye, NVGs are the clear winner, especially over water.

Several items Ltjg. Warren discussed should be revisited:

• All crew members should be goggled from takeoff to landing. Why would you be ungoggled during the most dangerous parts of your flight?

• Keep goggle adjustments to a minimum. Find your optimum goggle settings before takeoff. It's OK to refocus as the illumination levels change, but your basic setup—inter-pupilary distance, eye relief and mount height—should remain optimized and unchanged. If you need to make an adjustment or degoggle, tell your crew and pass the controls to the other pilot. If your goggles fail, immediately pass the controls.

• On an approach, both pilots should be goggled, with the PAC scanning the gauges under his goggles. The PNAC should be backing up the pilot on the gauges and looking for the intended point of landing. If your goggles are setup correctly, you can accomplish these tasks without making adjustments.

• Why would you degoggle during an emergency? On a high-illumination night, (e.g., the case on Warren's flight), goggles turn night into an almost VFR situation. Degoggling instantly puts you into an IFR situation. Last time I checked, it always was easier to handle an emergency procedure in VFR, rather than in IFR.

• NVGs increase situational awareness during emergencies.

• Like Ltjg. Warren said, brief how you will handle EPs on the goggles. Bottom line: Stay goggled.

If you are not comfortable on goggles, here are some suggestions. Read the MAWTS-1 NVD Manual. Visit your local night lab and fly the simulator with goggles. It does take a few hours of flight time to figure out how you like your NVGs setup and what works best for you. Fifteen years ago, everyone was scoffing at computers, and now the Navy and Marine Corps can't do a thing without them. This same paradigm shift needs to happen with goggles. I think it has happened in the Marine Corps and the Army. To paraphrase what John Wayne said in the movie "Sands of Iwo Jima," "Life is tough, but it's tougher if you're not goggled."

Capt. Hau flies with HMT-303.

Are We B

Three weeks after the World Trade Center and Pentagon attacks, our ship transited the Straights of Gibraltar with the USS *Theodore Roosevelt* battle group. Tensions were high, and we were ready to do our part in the war on terrorism. Every flight felt like we were about to go into combat. We briefed every possible scenario we could think of and treated every contact as hostile until proven otherwise.

A few nights later, we launched one of our two SH-60Bs into a moonless night, looking for a Kilo class submarine transiting the surface. We briefed, preflighted, and read the ADB. Nothing stood out in the book, except an inop gimbal on the FLIR. Before start-up, I manually slewed the FLIR off the nose and up to an angle that seemed good. We goggled-up and launched. The FLIR remained in the same fixed position. The picture was working well, and we proceeded to VID contacts, using NVGs. We preferred using the goggles because it was a pain to find the contacts by moving the nose of the aircraft to move the FLIR.

As we looked at yet another group III merchant, we picked up a submarine radar with our ESM and went toward it. The chain of command gathered in CIC to watch the FLIR on one of the cruiser's large-screen displays. We did runs from every side, making sure we held to our standoff distances, but the ship wanted more. The tactical-action officer (TAO) came over Hawklink and started to dictate the angles he wanted.

Because the FLIR was fixed at a down angle, I had to climb to get more than a glimpse of the sub and still maintain my standoff. This plan worked: we got a few minutes of FLIR imagery. Again, the TAO came on the Hawk and wanted closer, lower angles on the FLIR.

Wanting to get all the video the ship asked for, my copilot and I decided we would make a run-in and lift the nose to get the fixed-FLIR turret pointed at the sub. It worked like a charm, almost. My H2P was operating the FLIR, and I was flying right seat. Neither of us was looking at the instruments or outside. We had RadAlt hold engaged and were flying at 400 feet AGL. As he switched between wide and narrow views, I worked the nose to keep the sub in the center of the reticle. We were getting video.

Our aircrewman broke the silence with an earth-shattering question, "Are we backing down?"

We snapped our heads to the gauges, and, sure enough, airspeed showed zero, and HI-RAWS on the radar altimeter went off. For those of you non-60 bubbas, HI-RAWS is the "You're descending through 250 feet AGL" tone but without "Betty."

We both pushed the nose over and pulled an armpit full of collective. It seemed like an eternity before the rate of descent turned into a climb, and we started to see airspeed on the gauge. The TAO again called up as we were discussing our near-miss, and, with our hearts in our throats and our pride on the deck, we told him what had happened. We decided it was too risky to get more video that way, and we told them we were breaking contact. The ship agreed; they had enough video, and we finished the hop without incident.

A simple sensor degradation had caused both pilots to lose situational awareness and put the aircraft in extremis. After landing, we held an all-aircrew meeting and briefed the incident, so that it would not be repeated. Had it not been for an alert crewman, we very well could have put a perfectly good aircraft in the water.

Lt. Greiner flies with HSL-48 Det 5.

Photo by Matthew J. Thomas, modified.

acking Down?

We snapped our heads to the gauges...airspeed showed zero...the radar altimeter went off.

By Lt. Bill Greiner

Crew Resource Management

Situational Awareness
Assertiveness
Decision Making
Leadership
Communication
Adaptability/Flexibility
Mission Analysis

Lost at 500 Feet

By Lt. Todd Friedman

The flight students had returned from Christmas holiday break after visiting family and friends. Only a few sorties were flown during the holidays with students who did not go home. The air wing just had completed a morning post-holiday, half-day "back in the saddle" safety stand-down. I was scheduled later that afternoon for a low-level with a student.

I had been a T-39 mission commander for only three weeks and had flown with just a few students since the holidays were in full swing. Once the safety stand-down was over, I went to

CRM Contacts:

LCdr. Scott Stroble, OPNAV N789F3
CRM Program Mgr.
stroble.scott@hq.navy.mil, DSN 664-7721

CRM Model Mgr., Pensacola, Fla.
http://wwwnt.cnet.navy.mil/crm,
DSN 922-2088

LCdr. Mike Reddix, Naval Safety Center
mreddix@safetycenter.navy.mil
(757) 444-3520, Ext. 7231 (DSN 564)

brief with my student for his third low-level flight. Based on his grade sheets, he had a good track record. During the brief, he knew all of his points, or so it appeared to me—with my limited instructor experience. I was under the impression this was going to be a great flight with few problems. I was wrong.

During the brief, the student said he would look for a couple of bridges a mile right of course for time and course updates. "That's fine," I told him, but added, "they may be difficult to find at 500 feet." Since I was an E-2 guy, my last experience flying a low-level prior to instructor training was as a VT-4 student. Yet, I had little difficulty remembering the procedures in the IUT syllabus, and now I was teaching low-level procedures. The contract pilot probably had flown this route a thousand times. Knowing every turn, every little gouge point, and every checkpoint, how could he get lost? Again, I was wrong.

The transit was uneventful, and we entered the low-level route. As we proceeded north between points C and D, we neared the bridges the student had briefed. He looked outside and saw what he thought were the two bridges. Believing we were right of course, he made a correction to the left. At the same time, I saw the bridges go down the right wing, exactly where they should be. As part of the student-learning process, I allowed him to continue with his correction to see if he could get us to our next turn point. Wrong again.

We approached point D, a difficult but not impossible turn point to see. The student did not see it, and neither did the pilot or I. Following procedures, the student turned on the prebriefed elapsed time, and we continued to point E.

Before point E, we located a large tower that is a great intermediate checkpoint. The tower should have been a half-mile left of course. I saw the tower well right of our position and directed the student to get back to the tower. He followed my direction but wasn't aggressive enough, keeping the tower to our right. The pilot played the game of doing only what he was told to do by the student. I was sure he knew exactly where we were. I was wrong for the fourth time.

As we continued to point E, we again did not see the turn point. The student turned on what he thought was the correct time. However, the turn took us to the east, and, as we continued on the target leg, I heard a call on the aux radio. Another T-39, on a different route asked, "Is there anyone else on the VR-1021?"

That call should have been a big clue for the pilot and me, but it didn't register with either of us. I was more concerned with finding out where we were. We continued east, and I noticed a sawmill that should have been just right of course, but it was well left of our position. I asked the student to locate us on his chart. By now, he was a soup sandwich. We finally flew past a point I recognized, a lock and dam about a mile right of our position. Now I knew exactly where we were. We were actually on the VR-1021, not the VR-1022. I told the pilot we were way off course, but he replied, "No, we're right on."

I told him we not only were off course, but that we were on the wrong route. The pilot said, "We are doing the 1021, right?"

I said, "No, we are doing the 1022." We immediately pulled off the route, climbed, and headed home.

There were many CRM lessons learned. Situational awareness of the entire crew was gone completely. The student's SA was gone because he knew he was lost, and the fear of failure played deeply on his mind. My SA was gone because I knew we were lost. My lack of experience on that low-level was a contributor. I allowed the student to get way off course to teach him a lesson, but I ended up getting us extremely lost. The pilot's SA was gone, as well; he thought we actually were flying a different route than the one planned. Otherwise, the pilot would have recognized our position and had us correct earlier.

Communication flow in the cockpit virtually was nonexistent. The only one talking was the student giving his procedure calls. The radio call from the other T-39 was blocked out because of our cockpit talk about being so far off course and trying to correct. Both external and internal factors contributed to the breakdown in communications.

Decision-making was the final lesson. As the mission commander, I should have pulled off the route earlier, since I knew the student was lost. I also should have been more assertive in the decision-making process to get the student out of his hole, the pilot back on course, and all of us out of harm's way.

Lt. Friedman flies with Training Wing Six.

My Ticket to PSAB

By LCdr. Herb Carmen

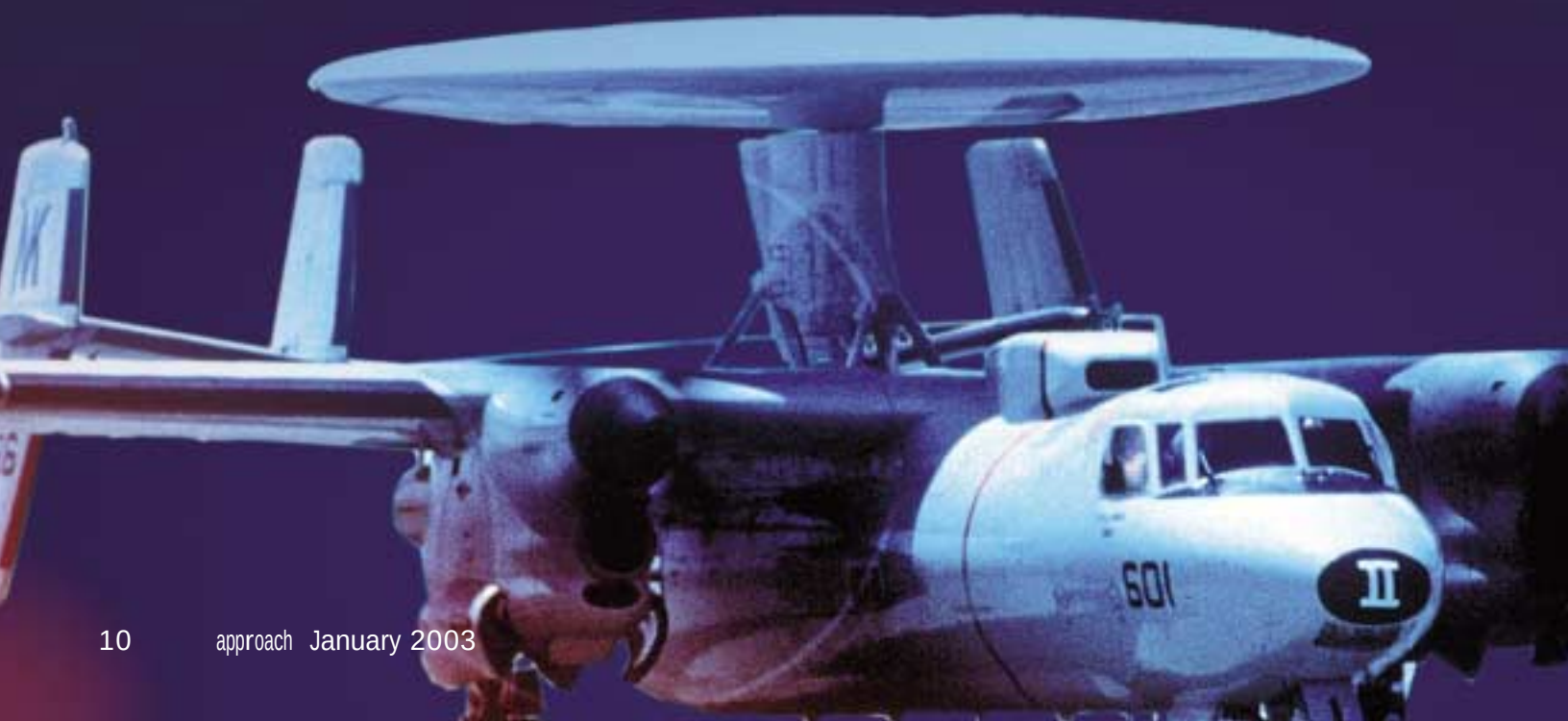
Just days from getting underway, the Liberty Bells were cramming in as much field-carrier-landing practice (FCLP) in the Hawkeye as we could stand. As a new department head, I was establishing my reputation in the squadron. I already had experienced an engine-turbine failure on one flight and a trim failure on another. In just two months, to "Carmenize" an E-2 quickly had become the descriptive term in the squadron for downing an airplane. I wanted to avoid downing any more airplanes during our FCLP periods.

Ben had been my "partner in crime" during both of my previous emergencies, and he again was my copilot for a night bounce at home field. Corpse was our CICO for the flight. Ben would get eight FCLP passes, then we would seat swap, and I would get eight. We'd seat swap again for another period for Ben.

As we walked to the plane, our skipper joked that operational risk management should prevent Ben and me from again flying together. We laughed, but I already wondered if I would spend more time on cruise in Prince Sultan Airbase than I would on the ship, since I kept breaking his planes.

Ben flew his first eight night passes, and we departed the pattern for our side-to-side crew swap. On the long trip back to the initial, we swapped seats, and I flew into the break. We slowed and cranked through the landing checklists. Ben reviewed them, "Three down and locked, 20 flaps, max rudder 20 degrees, auto, indicates 20 degrees."

I turned base and set up for my first pass. Since I just had been an instructor at the FRS and was current in the Hawkeye, I would get fewer passes than the younger



guys. I had to make each pass count. I concentrated on a good start and flew a good pass. We still were above max-trap weight, so I went to full power just before touchdown for the heavy waveoff. As we began to climb, things didn't feel right.

I immediately realized I could not control the nose. It pulled and rolled to the left because of the huge p-factor generated by the power addition. For a Hawkeye pilot, adding power and right rudder simultaneously is as natural as breathing, so it took a second for me to realize what the problem was. I pushed with my right foot, but the pedals didn't move.

As I pulled back on the power to reduce the yaw, I blurted something the chaplains would not appreciate. I told Ben the pedals were stuck as I kept the nose low enough to keep speed on the plane. I noticed the slower I flew, the more right rudder we needed to fly straight. I added a little differential power on the left engine to help counter the yaw and to keep up our speed. As we accelerated, I reset the climb and got away from the runway.

Safely off ground, I easily could keep the plane straight at 150 knots. If I slowed, the nose again would pull left. At high speeds, the Hawkeye has a mechanical stop that engages to prevent rudder movement more than two degrees. I had heard of pilots who had had the two-degree rudder remaining engaged after slowing out of the break, so that was my first thought. A lever in the back of the plane could release the two-degree-rudder stops.

There were no caution lights, and the max-rudder indicator showed we had 20 degrees available. According to what we saw, we should have been able to push the pedals full throw. With 20 degrees or six degrees of rudder available, the pedals move about three inches fore and aft. With just two degrees available, the pedals still should move an inch in each direction, but neither of us could budge the pedals. Even kicking the rudders didn't help; they may as well have been welded in place. Using rudder trim didn't help, either. Corpse and Ben scoured NATOPS to find the appropriate emergency. Not a single, rudder-system failure fit the problem. Looking at the NATOPS, nothing except, "Jammed/Restricted/Binding Flight Controls" matched. We determined the rudder pedals were stuck.

arresting gear was in place on that end. Since we were heavy, we considered dumping fuel. However, climbing to 6,000 feet with no rudder control wasn't an enticing option, and the idea of creating an international incident by dumping gas on crowded Tokyo suburbs didn't appeal to me, either. We'd just take what we had and trap.

We set up for a long straightaway, so we could get used to how the plane responded to heading, power, and airspeed changes.

It was clear we'd have to keep up our speed. Slowing below 140 knots required more aileron and differential power than I felt comfortable landing with. We saw that 145 knots and a few degrees right wing down kept us pointed down the runway. We told the LSOs our plan, and they briefed us on how to get the wire. All three of us wanted to make sure we got the wire on the first try, since a rollout with no rudder, at best, would be squirrelly. If we boltered, we planned to keep up our speed, get airborne, and try again.

As we motored down the glide slope, we knew the extra speed would make it that much harder to get the plane on deck. A little settle in close helped, since it let me flatten out the glide slope and reduced the rate of descent as we touched down. I kept the power where it was until I felt the tug of the arresting gear. The E-28 gear quickly stopped us.

After the trap, we took a deep sigh of relief. I pushed the pedals one more time, and they worked just fine.

We taxied to the line and let the troubleshooters look at the plane. After examining the rudder system and the two-degree stops, they determined it wasn't the rudder stops. The next step to solving the mystery was to shut down and search for what had obstructed the rudders.

Three separate nose-to-tail FOD searches by three different crews never revealed the golden BB. They did find some FOD, but nothing that would have bound the rudders. The airframers checked and tightened every bolt, nut, screw, and cotter key in the system.

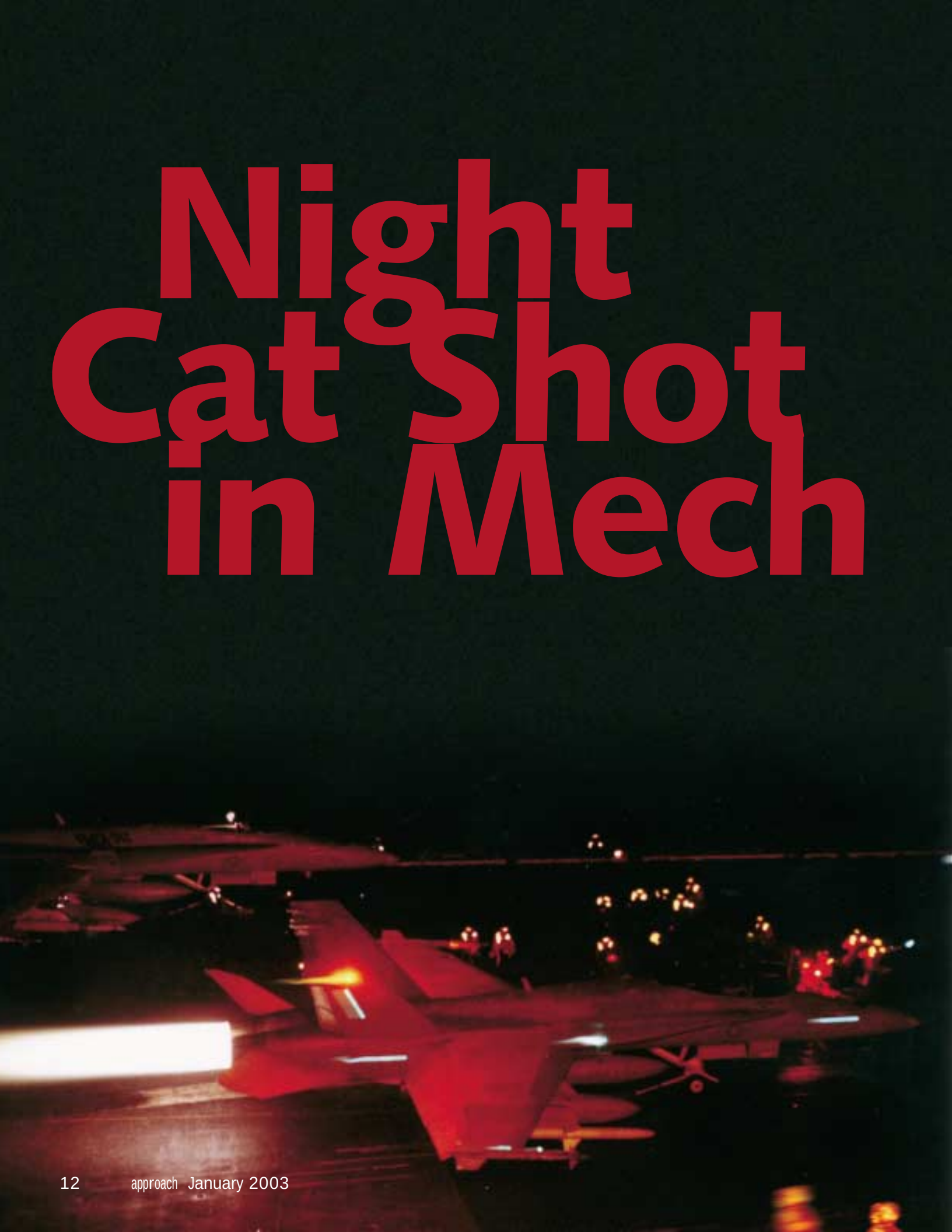
That night, we concluded not every emergency perfectly fits a NATOPS procedure. In this case, we pooled all the knowledge and experience in the airplane to help get back on deck.

We took our time before flying the plane again, completing throws, an FCF, and a confidence flight, just to be sure. We didn't want this gripe to reappear at the ship. Meanwhile, I wondered if the Atsugi uniform shop sold insignia for desert-camouflage uniforms.

While circling overhead the field, we devised our plan. The binding-flight-controls procedure calls for using minimum-flight-control inputs and landing as soon as possible. We maneuvered for the opposite runway because the

LCdr. Carmen flies with VAW-115.

Night Cat Shot in Mech



The nose rapidly dropped, and I saw my altitude and airspeed boxes fall below the horizon.

By Lt. Christopher M. Schmidt

It was a particularly dark, moonless night in March, when I explored the mechanical capabilities of the FA-18C. We had been operating in the 5th Fleet AOR for two weeks, and it was my second OEF airborne-spare mission since arriving.

Because we were the new CV on the block, we operated on the night page and conducted vampire ops. I hoped somebody would get cancelled, so I would get the 5+00 day trap, vice the 1+30 airborne re-spot and good-deal night trap. Everyone checked in good on deck, so the odds of getting the night trap looked inevitable. The yellowshirts gave the standard night-taxi fam from the four row to cat 3, with a delay under the bright sodium lights, which destroy night vision.

While crossing the JBD and mentally reviewing the settle-off-the-cat boldface, I verified the takeoff checks were complete. The motivated weight-board petty officer frantically jumped around to verify the proper weight-board setting of a 44,000-pound shot, and I said, “Give me a break already; I’m doing this alone in here.”

I set 75 percent and took the remaining tension out of the buffer hook and holdback assembly. A motivated ordnanceman armed the ’Winder. So far, so good. The yellowshirt gave the take-tension signal, and I ran up the F404-GE-400s. With indications normal after the wipe out, no spurious BLINS, and the hyds stable, I flicked the pinky switch. My externals lit up, and the deck-edge petty officer did his thing. I selected full afterburner upon holdback release.

Everything was routine until halfway through the stroke—the unsettling deedle-deedle.

At the end of the stroke, all the displays flickered off and then on again. Now what? With weight-off-wheels, I noticed the aircraft did not rotate and capture on-speed AOA. I immediately started the boldface items mentioned earlier, and I went to 10-degrees-pitch attitude with the waterline symbol. Somewhere in all this, I raised the landing gear.

Full afterburner already was selected at the hold-back release. However, the velocity vector still did not rise above the horizon, so I went to 15 degrees and got a positive VSI. Because I couldn't recall the RadAlt going off, I didn't emergency jettison my stores. Fearful it was my mistake for grabbing the stick too soon—the Hornet flight-control computers (FCC) use AOA to program the stabilator position to capture a predetermined attitude—I eased the back-stick pressure. The nose rapidly dropped, and I saw my altitude and airspeed boxes fall below the horizon. This action, in conjunction with a night cat shot, contributed to a full-blown case of pilot-induced oscillations (PIOs).

With the stick full aft, the PIOs dampened but left a limited range of motion. I inputed nose-up trim for what I thought would provide more aft-stick authority–the first clue that this might be a MECH ON condition. At this point, the rubber-coated, ejection-seat handle was pressed against the backside of my wrist, and that was comforting to know.

I scanned more displays, and I saw the flight-control system (FCS) and MECH ON cautions at the bottom of the left DDI, reaffirming my initial assessment. I called for a representative on departure freq.

MECH ON is caused sometimes by a mismatch between what the FCCs are calculating and what the mechanical linkage indicates for the stabilators. The Hornet was designed with this backup system for FCC failures.

The response from CATCC was not reassuring, so I called my wingman on aux and asked for his assistance. After more oscillations by the jet and a case of vertigo for me, I finally maintained a positive rate of climb. I started to feel in control of the aircraft, and I developed a feel for the new flight-control regime. However, it was a false sense of security. I saw the flap light transition from green to amber as the airspeed fell from my scan with afterburners fully staged. Oops, flap blowback, and another set of PIOs. A NATOPS caution refers to selecting the flap switch to auto before 250 knots, while in MECH, or standby for magnified PIOs. I deselected afterburner and re-evaluated.

Departure told me the aircraft rep was available on button 19. As I switched, my scan broke down again. While holding the same attitude as I had with full afterburner selected, the nose started to fall, as did airspeed. I again found myself in the flap-transition phase of flight. I reselected afterburner, eased the nose for airspeed, and placed the flap switch in the proper position: auto. Not comfortable with what my inner ear told me, I fought the urge to pull up. This was the first time altitude had entered my scan.

I recalled, from seconds earlier, the altitude rising from the hundreds of feet to thousands of feet, and now it finally read 2,500 feet. After a brief conversation with my rep, CAG's calming voice broke the radio waves. We evaluated the FCS page and saw all four channels of both servos on the right and left horizontal stabilators had X'd out. Now, leveling off at 10,000 feet and 275 knots, I recalled the MECH-stick-recentering function of the takeoff-trim button. When you are in MECH, the stick physically moves with the trim inputs. Pressing this button recenters the stick but holds the same trim inputs. After holding back the stick only inches from my lap, for straight and level flight, recentering the stick was quite a relief.

I tried the first FCS reset, and the nose abruptly pitched down. The velocity vector appeared steady on the horizon, but the airspeed and altitude boxes quickly framed 20 degrees nose low. After we regained control and composure, we decided to jettison the 2,000-pound

JDAM on my left wing. We visually cleared the area with our NVGs and by coordinating with strike. At 15,000 feet, heading toward the divert over 300 miles away, the JDAM came off without incident. Another try to reset the FCS resulted in another abrupt nose down and negative results. We made the decision to divert with wingman in tow.

The nose was very sensitive to pitch movements and airspeed changes. It reminded me of flying the T-34 or any other aircraft that isn't computer stabilized. My wingman assisted with radio coordination and divert-airfield descriptions.

My only priority was to fly the aircraft. The transit was uneventful. We went over our landing-ashore procedures, selected the correct switch positions, and reviewed the emergency again. We referred to the PCL about landing configurations and for a controllability check. Twenty-five minutes later, I had three green and an on-speed check that matched my wingman.

Nose pitch still was sensitive to stick movement but slow to affect the flight path. The PAPI lights and velocity vector provided a reference for the recommended, minimum-rate-of-descent landing. On touchdown, the jet wanted to fly again, so I pushed the stick full forward, and the jet got loose (look out Jeff Gordon). Use of the rudders and NWS helped the condition.

I applied the brakes at 100 knots and didn't use aero-braking. A buildup of catapult grease affected the brake response, but braking action finally felt normal as the long-field gear approached. The divert did not have runway-remaining boards, and the arresting gear was not bi-directional, as with the long field gear. My wingman reassured me that I had plenty of runway remaining. The jet stopped 100 feet short of the threshold on the 10,000-foot runway.

After sunrise, we did a quick turn for the maintainers, and big surprise, we couldn't find anything wrong. Ultimately, maintenance decided to change out the stab servos, based on the aircraft's codes from the previous night. Another quick turn, and it was 4.0, but, during the FCF takeoff roll, the jet once again reverted to MECH, passing 70 knots. After a quick swap of the computers, the jet was good to go.

The ship's AIMD inspected the FCCs and servos but returned them A799: nothing wrong. How confident would you be in that assessment? We have yet to receive the engineering investigation to support this finding.

If not for the simulators and various emergency-procedure and NATOPS checks, I probably wouldn't have recognized the MECH condition and ejected. After all, nine out of 10 pilots eject in the sim with this scenario.

It reminded me of flying the T-34 or any other aircraft that isn't computer stabilized.

Had it been daylight, or with some type of horizon, the face full of water may have motivated me to give the airplane back to the taxpayers. What you don't see can't hurt you.

As the flight deck went by in my peripheral vision, I had the initial cue that something was wrong. Scan everything.

Aircrew coordination is paramount. Hearing an experienced and familiar voice in a difficult situation helps bring order to the chaos. My wingman, being in position at all times, helped prevent incidents en route and when the jet was on deck.

Lt. Schmidt flies with VFA-136.

In Over My Head?

By Lt. Gregg Dewaele

Ever get the feeling you were in over your head? That's a bad feeling, but it's the one I had as I prepared to fly into a war zone.

My situation started innocently with a bad case of "been there, done that." Our squadron was at the beginning of a three-month rotation. We were tasked to patrol the Iraqi southern no-fly zone from Prince Sultan Air Base, Saudi Arabia. I had been with the squadron for two years and had deployed to PSAB and to Incirlik, Turkey. This one would be a carbon copy of our last deployment in support of OSW.

When our squadron touched down in Saudi Arabia, the Air Force and our intelligence assets briefed us. We had ample time to study the SPINS and to review our evasion plans and procedures. These are good things to know if the worst-case scenario should present itself—namely, going down in enemy territory.

As the days passed, and my name finally appeared on the flight schedule to make my dramatic return to the box, I neglected to read and prepare as I should have for the coming mission. The morning of the flight started well. The mission and Prowler-specific briefs went as they had a year and a half earlier. My comfort level was high—right where it should not have been.

As we walked into the PR shop, our crew's discussion turned to that worst-case scenario. Right then, a horrifying fact dawned on me: I was not prepared to fly. I was not sure what I would do if we had to eject. I did not know in what direction to travel if I found myself on the ground in enemy country. I also did not know how to work the GPS or the new radios we had been issued as part of our survival gear. Even if I did know how to use the radio, I wasn't sure of the procedures for getting in touch with the friendly forces that would rescue me. This uneasy feeling got worse as we walked to our jet. I was not as familiar as I should have been with the procedures we were using for check in, taxi, or the departure. I was in the back seat and would not be called upon for this knowledge, but, as a member of the crew, I was responsible.

Fortunately, for my crew and me, my inputs were not needed, and the flight went without a hitch. However, I learned a hard lesson that day, one that I will not soon forget. Take nothing for granted, and study what you need to know for your job. It doesn't matter if you've "been there, done that." Your memory is not as good as you think it is, and some things just are not intuitive.

Even if you are in a multi-place aircraft and don't expect to contribute to certain aspects of the mission, you are part of a crew, and, therefore, you should act accordingly. Know your standard-operating procedures and your aircraft-specific procedures because the life you save may be your own.

Lt. Dewaele flies with VAQ-134.

What Could Go Wrong Now?

By LCdr. Paul Neuzil

Gather a bunch of aviators, and you'll hear some hair-raising sea stories. Usually they are about someone else who met an unfortunate end or who lost a few fingers, toes, or a pound of flesh. My story centers around what happened to me. It is said, "He who tells the best story speaks of himself."

Long ago and far away, I was a young instructor pilot at VT-31 in Corpus Christi, Texas. We were in the infant stages of introducing the TC-12 to the squadron. Navy and Air Force students headed to P-3s or C-130s received TC-12 training.

Most instructors flew two events (four sorties) a day to maintain student throughput, and this day was no exception. I started the day with a T-44 flight from 0600 to 1100, followed by a second event in the afternoon in the TC-12. It was a great day for flight training. The weather was a perfect spring day in the Texas Riviera.

The first event went off without a hitch, and I was confident the second would go as well. However, as I came out of the debrief, I was told I needed to do a functional-check flight (FCF) if I wanted to have an aircraft for my second event. The command duty officer had a student as my copilot, and we were to meet in maintenance control at 1300. I grabbed a quick lunch, then went to the TC-12 hangar to catch up with my copilot and to brief. After the pleasantries, we read the aircraft-discrepancy book (ADB) and got the QA brief.

During the brief, we learned the mechanics had worked on the No. 2 propeller control and adjusted the fuel-control unit. The FCF would be a piece of cake, and my copilot and I went to preflight, which went like clockwork. Twenty minutes later, we were in the run-up, completing our final checks. All aircraft systems checked good, and we taxied to the active runway for takeoff. I received clearance to work block two central, briefed the takeoff, and took off VFR to the warning area. We flew out the climb radial to our assigned block altitude of 7,000 feet. My copilot was busy reading checklists and the FCF deck, making sure we did each step of the check flight. The aircraft had performed as advertised to this point.

We leveled off and were ready to do the required engine checks. The first step was to fuel chop the engine and try to restart it, using

the windmilling-airstart procedure. I confirmed with my copilot that I had the No. 2 condition lever, then started to cut off the fuel. The engine shut down, and the propeller continued to windmill. I completed the required steps to reintroduce fuel to the engine, then placed the condition lever to the on position, but the engine did not relight.

To make matters worse, I had the classic no-fuel-flow, no-lightoff. I elected to completely shut down the engine. We feathered the propeller and discussed our options. The FCF deck called for a reattempt to light off the engine with the starter. I was certain this second try wouldn't work, because I wasn't able to get fuel to the igniters to light off the engine during the windmilling airstart. We elected to give it the ol' college try, figuring the worst thing that could happen would be another failed lightoff, and we always could refeather the engine.

We performed the procedures for a starter-assisted airstart, and, sure enough, the engine again failed to lightoff. I secured the start and completed the emergency-engine-shutdown procedure. I verified the engine switches were in the proper position while my copilot completed the checklist, which requires checking the voltmeter to make sure the remaining generator is not overworked. I checked the voltmeter, and it exceeded output requirements. I thought to myself, "This is not good."

I reverified all switches in the proper position and had the co-pilot also check their position. We began to shut down all non-essential equipment to reduce the load. I mainly was concerned with the air conditioner and the load it draws on the system, but we couldn't reduce the load. We immediately headed back to NAS Corpus Christi, declared an emergency with ATC, and hoped for a favorable outcome.

As we began our descent toward home, we again discussed the possible outcomes. We faced the real possibility we would lose the No. 1 generator, which would leave us with just battery power.

No sooner did we finish discussing this possibility than the No. 1 generator-failure light came on. A little concerned now, I turned off the generator, updated ATC, and told them of my intentions to enter a left base, for a full stop on the active runway at NAS Corpus Christi. I also advised them I probably would lose all communications because of a dwindling battery charge. They switched me to Corpus Christi tower, and I was cleared to land.

We were six miles northeast of the field at 5,000 feet when I began to configure the plane for landing. We put down the flaps, and I saw they moved very slowly. The radios were intermittent. I tried to contact the tower and update them on our situation and intentions, but, within seconds, the battery was gone—we had lost electrical power. My student copilot, a little frantic but still in control, began to read the approach and landing checklists when we were two miles from the field.

Suddenly, the copilot stopped and reminded me the gear was not down. In my haste to get the aircraft back, I had forgotten a very important step: the landing gear. Fortunately, the TC-12 has a manual-system backup for the gear. It requires a strong arm and a bit of elbow grease, but we were determined to land with the gear fully extended. As I began to pump down the gear by hand, I elected to set up the overhead-pattern entry into the active runway. This plan would give me more time to get the gear down and to set up for the landing. We got the gear down, but we couldn't confirm them down with the traditional means of landing-gear-positional indicators. Rather, we had to visually check the mainmounts, and to hope the nose gear was safely in position. We relied on blind faith and the knowledge all three landing gear were connected on the same linkage. The gear looked to be down, and that was good enough for me.

As we turned to the right downwind, I briefed the copilot to look for our clearance-to-land via the green Aldis lamp from the tower, since we had no radios. We got to the right 180 position, and we rocked our wings. I initiated the turn to final as the copilot reviewed the landing checklist. We rolled through the 90, again rocked the wings, and the copilot looked for our landing clearance. As we rolled onto final, my copilot still had not seen our landing clearance from the tower. I continued the approach because the tower was aware of our emergency, and the runway was clear with the crash trucks waiting for us. I breathed a sigh of relief when we felt the wheels contact the runway. We landed normally, turned off the active, completed the secure checklist, and exited the aircraft on the taxiway.

The crash crew met us and began to safe the aircraft. They went to the battery compartment to disconnect the battery. When they opened the compartment, my heart

skipped a beat. The nickel-cadmium battery had begun to swell. The crash crew disconnected and removed it from the aircraft.

We went to maintenance control and started to debrief what had happened. Midway through the debrief, we were notified the aircraft battery had gone into a thermal-runaway condition, which is very bad. The battery compartment on the TC-12 sits on top of the fuel tanks. The danger with a thermal-runaway battery is it can explode. If that had happened, we wouldn't have had an in-flight emergency; it would have been more like the Challenger disaster.

Later it was determined we had a failure in the starter-generator switch on the No. 2 engine. The relay had frozen in the energized position, allowing the starter to continue to run. This problem caused an excessive drain on the remaining generator and was why the battery went into a thermal-runaway condition.

What I took away from this experience was that even the most benign event can have serious outcomes in naval aviation. We never can predict what will happen to us, and we must be on top of our game all the time. All crew members contribute, no matter how junior they are. The use of ORM, coupled with good CRM, can increase your awareness of potential hazards and can give you the opportunity to change your fate, based on sound decisions from great inputs.

LCdr. Paul Neuzil flies with VP-47.

ORM Corner

To Launch or Not to

Imagine this: You're in the Baltic Sea in March, participating in Strong Resolve 2002, a NATO exercise. The water temp is 41 degrees Fahrenheit, and the air temp is about 50. Two days ago, your detachment had installed a new main-rotor blade. Because of ship's schedule, weather, and a finicky blade, you have not finished the functional-check flight. The main-rotor blade track and balance is coming along nicely, but you probably will need a couple more adjustments.

As you walk into combat to see how the day is progressing, you hear the horrible phrase, "Man overboard." You quickly make mental calculations about survival time and you get more details. Thirty miles away, a British small-boat has turned over during a passenger transfer. One man is in the water, and NATO ships are heading to the area to assist.

Photo by Matthew J. Thomas

ORM Corner

Please send your questions, comments or recommendations to Ted Wirginis: Code 11, Naval Safety Center, 375 A St., Norfolk, VA 23511-4399. (757) 444-3520, ext. 7271 (DSN-564). E-mail: twirginis@safetycenter.navy.mil

Launch

By LCdr. R. Todd Lewis

You start asking the question that everyone in combat is asking by merely looking at you: "Can you fly?" Let's see. Although the helicopter feels very smooth, the FCF is incomplete, with vibration-analysis-test-set (VATS) gear still installed. The weather is about 400 and 2, with light rain. Sunset is in two hours. You learn another helicopter is airborne and on scene. Painfully, you say "no" to launching. Just in case, though, you tell the detachment chief to go ahead and remove the VATS gear and prep the helicopter for launch.

Fast forward five minutes. Instead of one sailor in the water, now there are five. The helicopter and other ships on scene can't find all five. The on-scene commander frantically is asking for a ship with a doctor. Medical evacuations are very likely. Ownship is closing datum at 28 knots.

Several eyes are on you, looking for a launch decision. Weather is not great, sunset is not that far away, the pressure to fly a SAR-medevac is great, and the FCF still is incomplete.

What would you do? You are an OinC, and you don't have time to consult with your skipper. The decision needs to be made now. The helicopter technically is not legal to fly on anything but an FCF. Five allied-nation sailors are floating in the 41-degree water, and you have an outstanding SAR asset.

So, what did I do? My MO and I found a quiet corner, outlined all the reasons we should not do it, talked about how we would try to control the hazards, and listed reasons why we should do it. Ultimately, after our ORM session, we decided launching was justified. The det chief and both rescue swimmers agreed. We suited up and told the captain we were standing by to pull the helicopter out of the hangar for launch.

In the end, we were not needed. A second helicopter got airborne to assist, and another small-boat was launched. The helicopter picked up two sailors, the small-boat three. One sailor was pulled out of the water unconscious. Thankfully, whatever caused the first boat to capsize didn't affect the rescue boat.

Is this a true story or a training scenario? Unfortunately, it is a true story. Two NATO sailors lost their lives that day. They were in the water for about 30 minutes. The next time you complain about having to put on your anti-exposure suit or wonder if you should wear it on a borderline day, think about the family members of those two sailors. They probably would give everything to roll back time and put their loved ones in an appropriate suit.

I took two things from this fateful day in March. First, ORM is a key tool when used correctly. It cannot be reverse engineered. One cannot say, "OK, we are going to launch. Let's do an ORM to make it safe." That is wrong. ORM is, of course, a process to determine if you should do something before you try it or decide to try it. Completing ORM does not guarantee safety, either. It helps you make a decision on whether something can be completed with minimal risk.

Second, we are issued aviation-life-support-system equipment for a reason. Comfort is not always one of the reasons. Being a little uncomfortable for a few hours is much better than being dead for the rest of your life.

LCdr. Lewis flies with HSL-42.

OIL & WATER

Don't Mix...Except *in a* GE F404

By LCdr. Peter Matisoo

Here we go: Two night traps, and I'd be CQ complete. Overall, this looked to be a smooth-deck certification—not so fast!

No moon, and it was dark, but the deck was steady, and the weather was beautiful. I got my day traps, and the walk-on pilot hot-seated into my jet to "bag." We planned to be efficient and hot-seat me back into the jet for my comfort time and two night traps.

I jumped in, and the previous pilot told me "no problems, good jet," as the purpleshirts hooked up the fuel hose. Here's where the fun started. The jet had 4,000 pounds before they hooked-up the hose. The jet was almost a full 14,500 pounds when I received a G-LIM 7.5 caution, and the fuel quantity dropped to 11,700 pounds. I thought it was an SDC problem, so I checked the fuel format and discovered tank No. 1 indicated INV and tank No. 4 was EST.

I reset the SDC, but that move didn't help. The two probes in tank No. 1 and the forward and center probes in tank No. 4 displayed fluctuating and negative values. Why would the values in the transfer tanks Nos. 1 and 4 be affected and not the values in the engine-feed tanks Nos. 2 and 3?

"This is odd," I thought. One of our sister squadron's aircraft parked next to me along the foul line also was having fuel-probe issues. "What's going on?" I wondered. I tried an SDC IBIT, and the SDC was "go." It was time to

Photo by PHAN James Wagner, modified.

call a troubleshooter. We swapped SDCs, but that change did not help. We were out of ideas and at an impasse. We shut down and called the beach for guidance.

The ship had finished deck certification and planned to enter port early the next morning. If the jet did not fly off that night, it most likely would stay aboard the carrier until the ship pulled out a week later.

Tanks No. 1 and 4 indicated quantities within the normal transfer schedule, so there should not be a CG issue. We thought through the contingencies, but I had a nagging feeling I was relying too much on my over 2,000 hours of Hornet experience. We decided to skip the CQ and do a one-time flight to NAF Atsugi, 110 miles away.

I manned-up the jet, and there had been no change to the Nos. 1 and 4 tank indications: The readings still were erroneous. I'd never seen anything like this before.

The cat shot was normal, at least as normal as a night cat shot can be. Passing 2,500 feet, I noticed the fuel indications were back to normal. I climbed to 10,500 feet for the return trip home,

and I thought, “Hey, it’s back to normal. I can turn around and finish CQ.”

However, common sense returned and I decided to stick with the plan. The soundness of my decision and the stupidity of my previous thought of finishing CQ was confirmed shortly thereafter when tank No. 1 indicated EST again. I definitely was heading home.

The dumps were on, and I adjusted down to 4,000 pounds to land. I wanted to strike a balance between landing with carrier-pressure tires and having enough gas to keep my options open, since the nearest divert was Hyakuri, a Japanese F-15 base 65 miles away. After an uneventful landing, I shut down, did the requisite paperwork, and headed home a thankful man.

When I arrived at the squadron the next morning, I stopped by maintenance control to see what they had found wrong with the jet. After I heard the news, I knew beyond the shadow of a doubt someone had been watching over me. The fuel samples contained approximately 40-percent saltwater. Apparently, one of the fuel tanks aboard the ship had been contaminated with saltwater, and the contamination had gone undetected. Of the other two Hornets at the carrier the previous night, the jet parked next to mine—the one also with fuel-probe problems—had contaminated fuel. The other Hornet was parked closer to the bow for refueling and did not use the same fueling station.

It seems the trusty GE F404 engine, which has been known to run after ingesting a rubber catapult-track cover, also runs on a mix of saltwater and JP-5. At least 4,000 pounds of uncontaminated fuel were in the engine-feed tanks, so I’m sure the saltwater-fuel mixture from the transfer tanks was diluted more than what was in the transfer tanks. Those motors did not cough or sputter once that night.

I asked myself, “What would have happened had the trip been long enough to have burned into the 40-percent-saltwater and 60-percent-JP-5 mixture?” I don’t think GE has a test point for that. Those who have flown around NAF Atsugi understand there are not a lot of places to jettison an airplane.

Beyond the obvious contamination of the fuel, what went wrong? We looked at what we perceived to be the risks at the time and decided they were acceptable, based on the information we had. We knew the tanks were full, because my initial indication was 14.5, and the fuel valves had closed off. We didn’t know something besides JP-5 was filling up those tanks. Taking fuel samples in response to erroneous fuel-probe indications is not a step in the maintenance manuals—but it soon will be. What we have here is the same lesson learned many times over: It’s what you don’t know that really can hurt you. That night, the circumstances were just right to escape a mishap.

LCdr. Matisoo flies with VFA-27.

Photo by PHC Greg McCreash

BRAVO Zulu

Lt. Peter Dicaro, Ltjg. Dan McShane, Ltjg. Tom Woodside, Cdr. Samuel Schick, and Lt. Randy Cruz.

The crew of Black Eagle 601 lost their right engine during the catapult stroke. The aircraft lost ICS, navigation systems (CAINS, HARS, TACAN), and UHF-1, 3, 4, 5, and 6. The aircraft had no trim and no attitude gyros; the only reference was the standby gyro. Visibility was two to three miles. Without ICS, Cdr. Sam Schick (CAPC) had to signal to Lt. Peter Dicaro (copilot) to secure the right engine on climb-out.

The AC bustie had failed, and an attempt to reset the left generator failed to get the AC bustie to work, but the ICS was restored. The NFOs, (Lt. Randy Cruz, Ltjg. Dan McShane, and Ltjg. Tom Woodside) pulled out the emergency checklists and backed up the pilots on altitude. The crew climbed to 3,000 feet to allow for a possible bailout. Cdr. Schick restored power to the essential busses by securing the left generator and turning on the emergency generator. HARS, TACAN, UHF-1, UHF-3, and trim were restored. Lt. Dicaro talked with tower, and Lt. Cruz coordinated with strike for an immediate single-engine, no-AOA landing.

Postflight inspection by maintenance personnel found failures of the propeller valve-housing unit, the AC bustie, and the voltage regulator.

Boxing Myself In

By Lt. Peter Fey

Our squadron returned from a detachment to NAF El Centro with maintenance and safety concerns. We cancelled follow-on tasking in support of a weapons school and started fixing our problems.

The decreased flight time meant the aircrew had started to fall out of NATOPS qualifications. To compound our situation, our Prowler squadron of four jets was way down on the parts-support priority. I was regular Navy in a reserve squadron, and while I was better off than most of the reservists who hadn't been flying nearly as much, I still hadn't flown in over three weeks.

To top it all off, our one remaining "up" jet had had a bird strike while on a low-level and had diverted to Roanoke, Va. A maintenance team drove to Roanoke and fixed the damaged radome and pitot-static system. Ops then arranged a hop for the aircrew on the base's C-12, which was on a routine flight to Roanoke. I wasn't scheduled to be part of the retrieval crew because I was taking a week's leave and was busy tying up loose ends.

However, plans change, and, as the only person available, I was thrown into the fray. An EP exam was required to get me current because I hadn't flown for so long, but the thought of taking the exam never occurred to me. I was busy hustling to catch up with the others, who already had put their gear in bags and were headed to base ops.

The C-12 flight to Roanoke was uneventful. Upon arrival, however, we found out the jet still wasn't fixed. We waited another two hours as the maintainers finished the repairs, fueled the jet, and did a daily.

The C-12 pilot had filed a flight plan and had checked weather before leaving Andrews. The weather shop claimed the weather would be good until late afternoon; then, the typical summer thunderstorms would develop. We updated our takeoff time and weather, then milled about in the general-aviation terminal. The forecasters still called for thunderstorms to develop as the afternoon got hotter.

Because the runway at Roanoke is only 6,800 feet, we opted just to fill the main fuel tanks and make a flaps-30 takeoff. After a FOD walkdown, we preflighted

the jet and made sure our exhausts weren't pointed at the small planes that surrounded ours. Engine starts and all ground operations were standard, with one exception. While we taxied, the pilot commented that one of the brakes was grabbing and was causing the plane to swerve. No worry—if we needed to, we'd take a trap and fix it when we got home.

Once airborne, we were put on the long-arrival train to get through Washington, D.C.'s busy airspace. As we approached the first part of the STAR, we checked ATIS, which reported weather below minimums. We quickly asked for holding to sort out our problems. As the backseater called METRO, asking for weather conditions at NAS Patuxent River, the pilot and I tried to figure out how long we could hold with our already low-fuel state. The storms clobbering Andrews AFB slowly headed for Pax, and, if we didn't hurry, our divert wouldn't be an option.

It turned out ATIS was wrong, and METRO reported weather at minimums—enough for us to try the approach. After one turn in holding, we continued on the arrival. Did I mention that we didn't have a radar because it had been damaged in the bird strike? The maintenance guys had just pinned the pedestal so we could get home. It would've been nice to have, since we were getting beat up by some ugly cumulonimbus clouds. We tried in vain to receive the Andrews TACAN but got an intermittent no-go light. The TACAN eventually failed.

As I checked in with Andrews Radar, we figured our fuel state would give us one pass before we had to head for our divert. I thought "trick or treat on the ball" was just a ship term. I called for vectors to the ILS for a full stop, which we received. The bird must have damaged the ILS antenna because we had nothing—no glideslope, no azimuth, and no outer, middle or inner markers. We quickly called for an ASR, much to the dismay of the controller, who brought us in. We broke out the lights of the field just as he called the MDA. The controller did a great job.

Andrews AFB has dual runways. The Air Force side is used extensively by heavy guys and has no arresting gear. We requested the Air Force side because it has lower minimums to get us below the weather. After we broke out, we got a good look at the wet runway; the grabby brakes immediately came to mind. So much for making an arrested landing if needed. The pilot aerobraked as long as possible, and we used the entire 9,300 feet of runway to slow. We taxied to our line, with the brakes squeaking and grabbing the entire way, then shut down—a little wiser and with some serious lessons learned.

I kept thinking of a NATOPS-simulator flight when I was in the RAG, where a particularly vehement instructor kept warning us not to back ourselves into a box. He warned that at some point in our career, we probably would do just that, and, hopefully, we'd have enough skill, luck, or both, to pull through. Today was that time.

Although nothing went too terribly wrong, all the events in this chain were in place for us to screw up royally. I don't think we considered all the potential risks, nor the appropriate ways to minimize them. I was rusty in the jet, and reviewing EPs would have helped me get my head in the game.

We knew there would be bad weather at the field as the afternoon progressed. We also knew maintenance delays probably would force us into bad weather. On top of that, we had minimum fuel for the shortened runway, which put us further into the box. I don't think it ever crossed our mind we might have problems with the TACAN or ILS—which might have changed our cavalier attitude about heading into known thunderstorms.

Accepting the maintenance delay and waiting for the weather to pass would have alleviated most of our problems. Instead, we made a bad position even worse by pushing forward with our can-do attitude—all this attitude on a simple 0.7 IFR flight. I rather would have spent the night in Roanoke and left later, than press such a precarious position.

The storms clobbering Andrews AFB slowly headed for Pax, and, if we didn't hurry, our divert wouldn't be an option.

Lt. Fey flies with VAQ-209.

"HEY, DOC, WHAT IS THIS THING?"

By Lt. Walter Kucaba

It's midmorning in the Australian Outback; the sun already is blazing, and the temperature is nearing 100 degrees. I'm making my morning rounds of the squadron when a salty staff sergeant from the seat shop stops me and asks, "Hey, doc, what is this thing on my forehead?"

After much review through the derm PCLs, an e-mail consult, and finally an out-and-in to Japan, this crusty Marine was diagnosed with a benign-pigmented lesion from chronic sun exposure. He always had avoided sunscreen. His case increased my situational awareness and scan pattern for other signs of chronic sun-induced damage in my squadron, namely the aircrews and maintainers.

Hornet aircrew and maintainers get lots of sun. Chronic sun exposure is cumulative during a lifetime and can lead to melanoma. If not caught early, melanoma can be a devastating cancer that turns deadly. Melanoma in the United States is not rare; it's growing at a faster rate than any other cancer. In 1935, the incidence was one in 1,500 individuals; today, it's one in 70. In 1999, there were 51,400 new cases and 7,800 deaths. Melanoma is the second most prevalent cancer in males 30 to 49 years old. One in four patients diagnosed with melanoma is under 40 years old.

While melanoma accounts for only five percent of all skin cancers, it causes 75 percent of all skin-cancer deaths. The incidence in the year 2010 is expected to be 1 in 50. These numbers don't include the other more common types of skin cancers—squamous cell and basal cell—which also are caused by sun exposure.

Signs of chronic sun damage include increased freckling with the development of lentigos or sun spots, hypopigmented areas, and wrinkling. Another sign is actinic keratosis (pink to red lesions on the skin with a white, yellow or gray scale). The lesions usually are located on the head, neck and arms, and they can turn into cancer.

Early signs of chronic-sun exposure with wrinkling and classic leatherneck appearance.

Actinic Keratosis

Annoying lesions that peel or flake indicate actinic keratosis. Appearing on the head, neck and hands, the lesions are a precursor to cancer formation.

The canopy on an F-18 Hornet is made of stretched acrylic. According to the Boeing company, this material does not filter the sun's UV rays. When we fly, our helmet, visor and facemask protect our head from the sun's rays, but our necks remain exposed. Several aircrew in my squadron had early signs of sun damage,

Here's an excellent checklist for questioning that funny-looking mole you may have:

Asymmetry

Unusual-looking mole, asymmetrical. A mole that looks like the state of Texas should be examined.

Border and Bleeding

The border of the mole should be smooth, with a clear distinction between skin and the mole. The border of the mole should not look like the coastline of Ireland. Also, if it bleeds, get it checked.

Color

Most moles are brown or tan. If you see variation in the color, get it checked.

Diameter

Many melanomas are greater than 6 mm, but, generally, if the mole is wider than the eraser head of a pencil, get it checked. Don't wait until you can pick it up on the FLIR.

Enlarging- Erythema

If the mole increases in size, or the skin surrounding the lesion is red and irritated, get it checked.

This aviator did not wear a glove on his throttle hand. He has developed early signs of aging: the leathery appearance of the skin. Note sun-induced lentigos in the middle of the hand.

with increased wrinkling on their necks. The term "leatherneck" fits well.

Besides seeing sun damage on necks, I've seen many cases where the hands were damaged. Sun-induced pigmented lesions, along with increased wrinkling, are hand-related problems.

Many maintainers had the same types of skin damage as the aircrew. Why? Because they spend many hours on the flightline, launching and recovering aircraft.

How can we protect ourselves and not become one of the statistics? Aircrews should wear their Nomex gloves. Fold up the collar on flightsuits to protect the back of the neck and to prevent early wrinkle formation. Maintainers on the line frequently and liberally should apply some form of sunblock, with an SPF of 30 or greater.

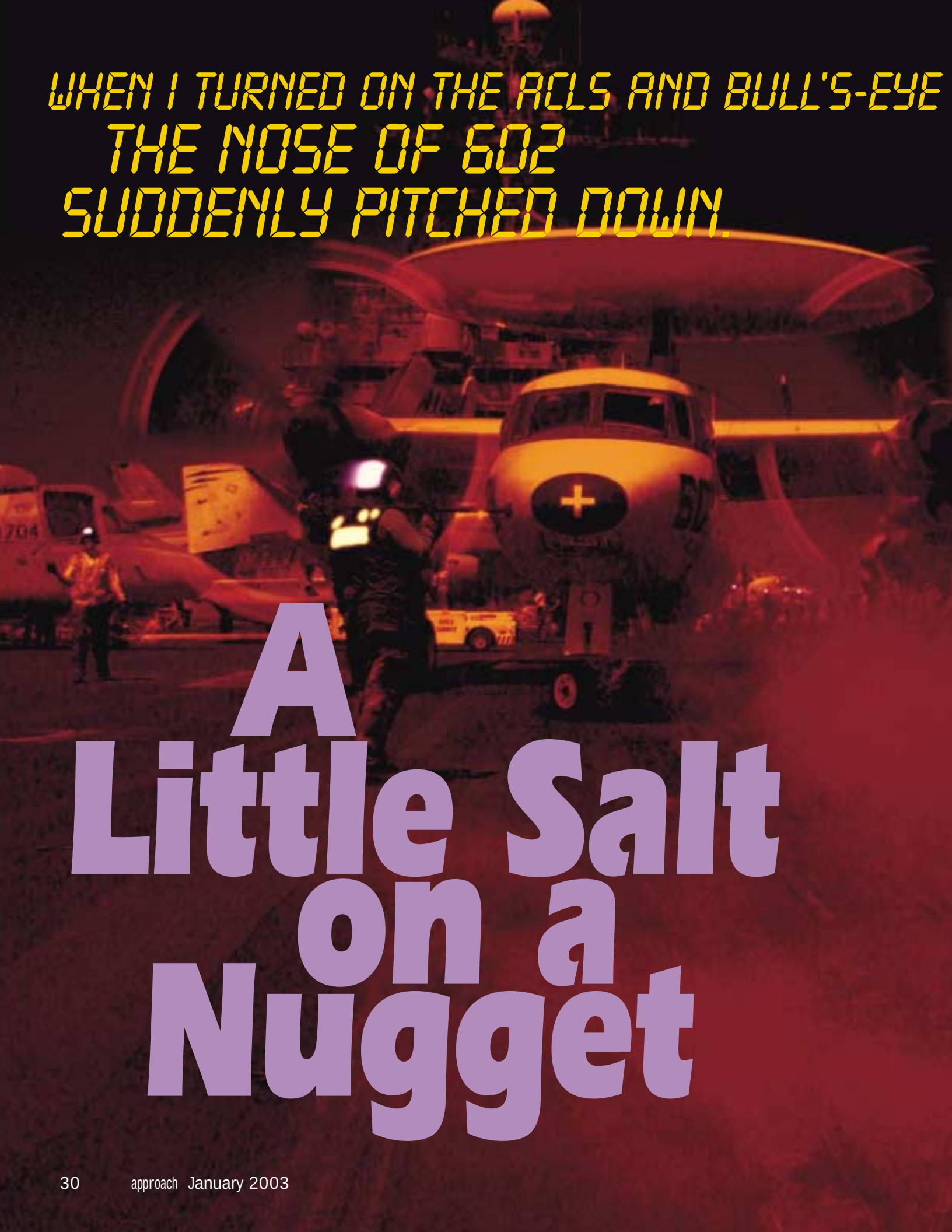
Our Marine from the seat shop was happy that his problem was just a sunspot, and he now uses sunblock out on the line. We monitor him every six months for any change or development of new lesions. Sun-damaged skin can turn into cancer, so you constantly must watch for changes.

Melanoma can be a stealthy disease—one that sneaks up on you like an SA-7. Our radar-warning receiver giving SA on this disease is prevention with a thorough and complete physical. If you notice your moles looking odd or changing, don't wait to get them checked. Your flight surgeon and dermatologist are ready to roll in and drop a diamond on the suspected lesion to give you treatment or peace of mind.

Some excellent websites for review include:

- http://www.aad.org
- http://medlineplus.nlm.nih.gov/medlineplus/melanoma.html

Lt. Kucaba is a flight surgeon with VMFA-224.

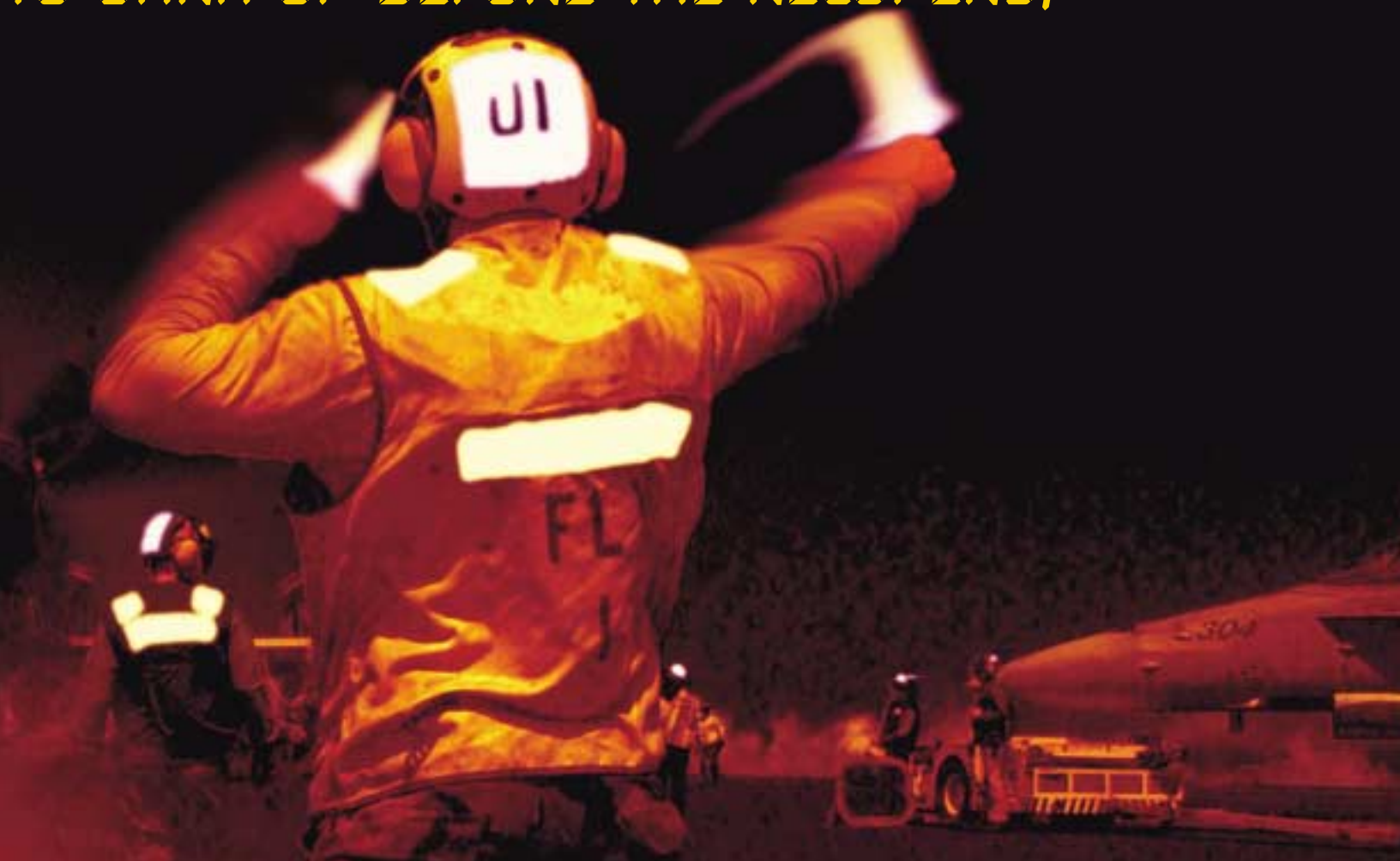


WHEN I TURNED ON THE ACLS AND BULL'S-EYE THE NOSE OF 602 SUDDENLY PITCHED DOWN.

A Little Salt on a Nugget

Photo by PHAA Joshua Karsten, Modified.

TO WARM UP BEFORE THE RECOVERY,



By Lt. Mark Freitag

We were flying in the VACAPES during the last days of JTFEX. The JFK was preparing to deploy in support of Operation Enduring Freedom. All of Air Wing Seven, the Freedom Fighters, were eager to begin our cruise. Although this would be my nugget cruise, I already had my share of interesting experiences in the Hawkeye. What happened this night topped them all.

We launched at 2300 on a dark evening for two cycles of triple-H operations. I flew with the skipper, who is always fun to fly with. The bonus is that he has seen nearly everything there is to see in a Hawkeye. Having an experienced pilot in the left seat is always a plus at night.

During triple-H ops, we normally fly with just two NFOs in the back. We were stationed

21,000 feet and orbited while looking for surface tracks around the battlegroup. The skipper let me go in the back and work on the carrier-based-AEW-training syllabus with the CICO. An hour and a half later, it was time to go forward and get ready to recover. I walked through the forward-equipment compartment to the cockpit and sat in the left seat.

When I turned on the ACLS and bull's-eye to warm up before the recovery, the nose of 602 suddenly pitched down. The skipper and I grabbed the yoke at the same time. It took a couple of seconds to stabilize the aircraft.

The CICO called on ICS, "What's going on up there?"

We asked her to stand by while we analyzed our problem. Although I was managing about 30 to 40 pounds of back-pressure on the yoke with my left arm, I had control of the aircraft. We quickly went through the control-malfunction-emergency procedures. We had lost 1,000 feet of altitude in one to two seconds.

One of the emergency procedures requires you to check a number of systems to aid in combating abnormal control forces. We tried everything but couldn't fix the problem. As a crew, we talked about our situation and tried to figure out what had happened. I was fresh out of the FRS, and I mentioned to everyone the only thing I ever had felt like this was a bungee failure in the simulator. For you non-Hawkeye aviators out there, the Hawkeye is purely artificial feel on all of our control surfaces, which are operated by hydraulics via actuators adjusted by a series of bungees.

There I was, Mr. Salty, talking about what I had felt and seen in the simulator. If I have learned anything since then, it's that simulators are not exactly like the plane.

I'm at 20,000 feet, pulling back on the yoke like it was a 30-pound dumbbell. We tried every emergency procedure that possibly could apply to this situation. We even added power, thinking it might relieve some of the yoke pressure. The skipper pulled back and forth on the yoke to determine the pressure. As he did, we noted the nose-trim indicator moved with the yoke—talk about confusing.

We have a policy in our squadron: In an emergency, the skipper wants the CAPC to do a seat swap and recover the aircraft. I knew that's exactly what the skipper was thinking. There was just one problem: If we tried that, who would keep the aircraft stable during the seat swap?

"Stoner, do you think you can recover this aboard the ship?" the skipper asked me.

I looked at him and said, "No way, sir. I can't bring this aircraft aboard the JFK tonight." I know the skipper already had figured out that part because he started working the divert options with JFK air ops. He told them the nature of our emergency and said we were diverting to Cherry Point, N.C.

The skipper was very calm on the radio, which made me feel better about our situation. I felt he had confidence in my ability to safely land. The skipper from our helo squadron also was flying that night. He talked with my skipper on the radio, stating, "Bluetail 602, we will follow you into Cherry Point until you are safe on deck." That was a good feeling, too. We squawked emergency Mode 3 and talked with the appropriate agencies.

As we set up for a long, straight-in approach to runway 32, Cherry Point approach and tower were a huge help. The skipper explained the nature of our emergency and asked for short-field arresting gear to be rigged and for a crash crew to be stationed.

We started a 1,000-foot-per-minute rate of descent at 40 miles out. At 11,000 feet, we did controllability checks, brought down the gear, and put the flaps at two-thirds, max rudder to 20, and put down the tail hook. We watched the airspeed throughout, deciding 150 knots was the safest approach speed to get on deck.

We commenced our approach to runway 32, but, to add to our troubles, I was fighting a crosswind all the way to touchdown. The crosswind, along with the constant yoke pressure I had to maintain, made it a challenging landing.

When we landed, I looked at the skipper, who had his head down. I know what he was saying to himself, "Why does this stuff always happen when I am flying with nuggets?"

We taxied 602 to the transient line and shut down. As far as diverts go, Cherry Point was awesome. The next day, our helo squadron ferried out our maintainers. It turned out the pitch-trim actuator rod had sheered off inside the actuator. The only thing keeping the rod in the actuator was the pitch-trim bungee. I asked our experienced maintenance-control officer if he ever had seen such a failure. You guessed it. His reply was no.

Lt. Freitag flies with VAW-121.

Classic

BROWNSHOES IN ACTION COMIX

"The kind real aviators like"

Contributed by Lt. Ward Carroll

This Month in Film History

July, 1984 – The Presidential Committee on Film Themes is tasked with writing the original screenplay for the movie "TOP GUN." Because the committee members are on their way to the Cannes Film Festival, they delegate the project, via the Navy Office of Information, to several randomly picked commands. The actual writing falls to a group of officers who are TAD to various FUNCWINGS throughout the fleet.

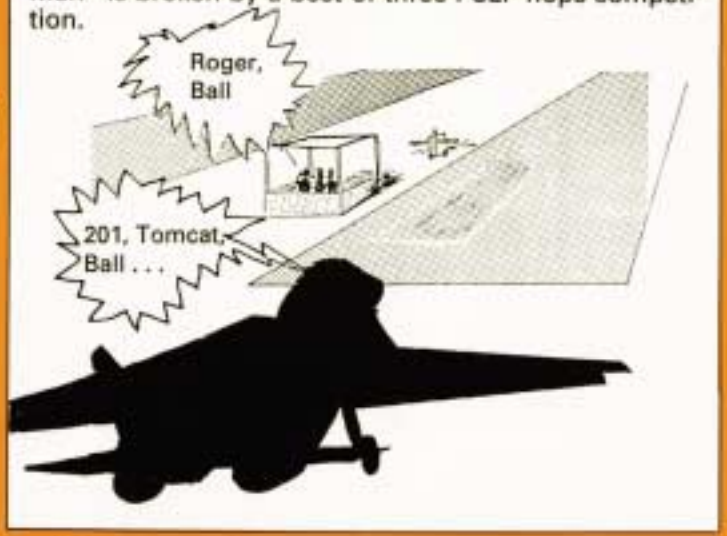
The story begins with Maverick raffling off a motorcycle for Navy Relief, which he, coincidently, wins. The squadron attains 110 percent of their monetary goal for the drive and, also coincidently, Maverick is selected for TOP GUN.

Goose meets the same tragic end. (It is later revealed there were no 1320s involved with the script.)

During the subsequent mishap investigation, the board discovers Maverick has a propensity for cursory briefs and a limited recall of boldface items . . .

"Ice Man" makes big points toward winning the TOP GUN Trophy by volunteering to give a lecture at the safety standdown . . .

As the story comes to an exciting conclusion, a tie for the TOP GUN Trophy between "Ice Man" and "Wolf Man" is broken by a best-of-three FCLP hops competition.



The screenplay is forwarded to Hollywood via FPO San Francisco. Unfortunately, it never arrives. It is later learned that most of the manuscript was used to wallpaper Diego Garcia's O Club "Tiki Room."

Ready Room Gouge

"To invent an airplane is nothing. To build one is something. To fly one is everything."

Otto Lilienthal, 1848-1925, German glider engineer

Photo by Capt. John Leenhouts. Modified.

www.safetycenter.navy.mil