

THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

[www.public.navy.mil/comnavsafecen/](http://www.public.navy.mil/comnavsafecen/) • July-August 2014

# Approach



# The Navy & Marine Corps Aviation Safety Magazine

July-August 2014 Volume 59, No. 4

**RDML Kenneth "K.J." Norton, Commander, Naval Safety Center**  
**Col Glen Butler, USMC, Deputy Commander**  
**CMDCM (AW/SW) Paul Kingsbury, Command Master Chief**  
**Derek Nelson, Head, Media and Public Affairs**  
**Naval Safety Center (757) 444-3520 (DSN 564)** Dial the following extensions any time during the greeting  
**Publications Fax (757) 444-6791**

## Approach Staff

**LCDR John (Stork) Lynch** Acting Editor  
john.lync@navy.mil Ext. 7224  
**Allan Amen** Art Director  
allan.amen@navy.mil Ext. 7248

## Aviation Safety Programs Directorate

**CAPT Chris Saindon** Director  
christopher.saindon@navy.mil Ext. 7225  
**Kimball Thompson** Deputy Director  
edward.thompson@navy.mil Ext. 7226  
**LCDR Richard Thousand** Aircraft Maintenance and Material Division  
richard.a.thousand@navy.mil Ext. 7265  
**CDR Albon Head** Aircraft Operations Division  
albon.head@navy.mil Ext. 7203  
**CDR Frederick Lentz** Aircraft Mishap Investigation Division  
frederick.c.lentz@navy.mil Ext. 7236  
**CAPT Robert Frick** Aeromedical Division  
Robert.frick@navy.mil Ext. 7228  
**CDR Rich Couture** Safety Culture and Risk Management Division  
richard.g.couture@navy.mil Ext. 7212

## Analysts

**CDR Albon Head** NATOPS/WESS Program Manager  
albon.head@navy.mil Ext. 7203  
**Leslee Duncan** Asst Div Head, WESS, ATC, NEXTGEN, MISREC  
leslee.duncan@navy.mil Ext. 7245  
**LtCol Michael Cunningham, USMC** Marine Liaison, H-1, NVD  
michael.cunningham@navy.mil Ext. 7209  
**LCDR John Lynch** FA-18E/F, EA-18G  
john.lync@navy.mil Ext. 7224  
**Maj W.D. Hodgins, USMC** AV-8B, F-35, NVD, JSSC  
wynn.d.hodgins@navy.mil Ext. 7216  
**LCDR Shawn Frazier** E-2, C-2, UAS, LSO, MFOQA  
shawn.e.frazier@navy.mil Ext. 7274  
**Capt Dick Symons, USMC** FA-18A-D, F-16, F-5, T-38, ARSAG  
scott.symons@navy.mil Ext. 7217  
**Maj James Trotter** EA-6B  
james.trotter@navy.mil Ext. 7261  
**Maj Jason Vrabie, USMC** H-46, CH-53E, MH-53E, V-22  
jason.vrabie@navy.mil Ext. 7206  
**LT Jake "Plates" Emig** T-39/45/6/44/34, C-12/20/26/35/37, EA-18G  
peter.emig@navy.mil air refuel ADV group Ext. 7071  
**LT Steve Whiteway** MH-60S, MH-53E, TH-57, SH-60F, HH-60H  
stephen.whiteway@navy.mil Ext. 7266  
**LCDR Jim Landis** ORM, Culture workshop  
james.r.landis@navy.mil Ext. 7263  
**LT John Betza** MH-60R, SH-60B  
john.betza@navy.mil Ext. 7242  
**LCDR Ken "Rico" Tallarico** P-3, EP-3, P-8, C-9/40/12/20/26/35/37/130,  
Kenneth.tallarico@navy.mil E-6B, T-6, T-44, Ext. 7272  
**LCDR Tracy Mackey** Facilities Branch, Fuels, CFR/ARFF, BASH  
tracy.mackey@navy.mil Ext. 7281  
**ABCM (AW/SW) Tyrone Roseborough** ALRE/Air Terminal  
tyrone.roseborough@navy.mil Ext. 7208  
**ACC(AW/SW) Chris Sweet** ATC  
christophere.sweet@navy.mil Ext. 7282  
**All Analysts** All  
safe-code11@navy.mil Ext. 7811

Mishaps cost 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. 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; the time to learn to do a job right is before combat starts.

*Approach* (ISSN 1094-0405) is published bimonthly by Commander, Naval Safety Center, 375 A Street Norfolk, VA 23511-4399, 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 979050, St Louis, MO 63197-9000, or online at: bookstore.gpo.gov. Telephone credit card orders can be made 8 a.m. to 4 p.m. Eastern time at (866) 512-1800. Periodicals postage paid at Norfolk, Va., and additional mailing offices.

Postmaster: Send address changes to *Approach*, Code 71B,  
Naval Safety Center, 375 A Street  
Norfolk, VA 23511-4399

Send article submissions, distribution requests, comments or questions to  
the address above or email to: [SAFE-Approach@navy.mil](mailto:SAFE-Approach@navy.mil)

# C O N

## Features

3. Time Travelling  
By AWR3 Cornelius Donnelly  
Hmm, there's the flight deck. What kind of landing are we doing?  
Why are we landing early?
8. What's Different About Today?  
By LT Aubrey Hodges  
Another "simple" log run turns out to be guess what.
10. Just Another AIRNAV  
By LT Andrew Kiehaber  
How to land below SOP min fuel on deck, in one not-so-easy lesson.
12. Hypoxia Over Afghanistan  
By LCDR Patrick Salmon  
When you suspect hypoxia, you don't have time for a leisurely self-evaluation – the clock is ticking.
14. You Can't Land Here!  
By LT Omar Sanusi  
The day that three diverts almost weren't enough.
17. Hydration and Fatigue: What's the Connection?  
By LT Phillip S. Dobbs, MSC; LCDR Thomas E. Sather, MSC, CASP; and LCDR Daniel A. Foster, MC  
Staying properly hydrated takes planning and conscious decisions, not just waiting until you're thirsty.
19. Nocturnal BASH  
By LT Matt Sumner and LT Joey Giordano  
Why the black-crested night heron has "night" in its name.
22. First Flight  
By LT Robert Delucca  
Is there really any reason not to tell everyone aboard what's going on?
24. Different Mantras  
By LT Andrew Horvath  
Two weeks of wrestling with a FLAP ASYM light, two weeks of risk management decisions.
27. Fighting Complacency One Autorotation at a Time  
By LT Chris Krueger  
When simulated emergencies become real emergencies, preparation isn't just a nice-to-have.
30. Two More Minutes?  
By Capt Chris Schwamberger, USMC  
No fun in the simulator, and even less fun in real life.

# CONTENTS

## July-August Thanks

Thanks for helping with this issue...

LCDR Scott T. Miller, HSM-70  
LCDR Nolan S. King, VAW-121  
LCDR Timothy "Dill" Drosinos, HSC-7  
LCDR Dirk "Brady" Heron, VFA-131  
LCDR Matt "Buck" Rodgers, VAQ-137  
LCDR Donald McIlvaine, VAW-120  
LCDR John "Stork" Lynch, NSC  
LTJG Aaron L. Pickens, VP-47  
LT Thomas P. Carroll, VQ-1  
LT Tom Carroll, VQ-1  
John "LJ" Minners, CNATRA  
Captain Nolan Dean, USMC

## Departments

### 2. Initial Approach Fix

Welcome to the Sierra version of the 3750 – and welcome to the Safety Management System.

### 5. CRM Corner: The Shortest Flight of My Life

By LT Michael Eason

Tornado in the cabin, five seconds after liftoff.

### 20. Bravo Zulus: VMM-263, VT-10, VQ-1, VT-6

Front cover: An MH-60R Sea Hawk helicopter from the Spartans of Helicopter Maritime Strike Squadron HSM-70 aboard the guided-missile cruiser USS *Philippine Sea* (CG-58).  
Photo by MCS3 Abe McNatt.

Back cover: Photo composite by Allan Amen.

### Go To:

School of Aviation Safety, Quarterly Newsletter  
<https://www.netc.navy.mil/nascweb/sas/newsletters.htm>



[www.facebook.com/NavalSafetyCenter](http://www.facebook.com/NavalSafetyCenter)



[www.twitter.com/NSC\\_Updates](http://www.twitter.com/NSC_Updates)  
Get Twitter Video Updates at: [www.twitter.com/NSC\\_Vid\\_Updates](http://www.twitter.com/NSC_Vid_Updates)



WATCH OUR VIDEOS at:  
[www.youtube.com/navalsafetycenter](http://www.youtube.com/navalsafetycenter)

Visit Approach  
online



NAVSAFECEN Anymouse Submissions. Have a safety problem that isn't getting solved? Submit an Anymouse form anonymously. Go to our website for details. [https://www.public.portal.navy.mil/navsafecen/Documents/staff/ANYMOUSE\\_submission.pdf](https://www.public.portal.navy.mil/navsafecen/Documents/staff/ANYMOUSE_submission.pdf)



## 3750 Gets Update, New Title

By LCDR John “Stork” Lynch, interim *Approach* editor and F/A-18 E/F Analyst

The revised naval aviation safety program instruction was signed on 13 May 2014. As a result of reorganization and update, its title was changed from the Naval Aviation Safety Program to the Naval Aviation Safety Management System. I know you’re probably thinking this is just some LCDR trying to get a FITREP bullet, but safety management systems (SMSs) are widely accepted in commercial and general aviation as the preferred framework for programs, procedures, practices, reports, methods and approaches to airmanship and safety.

The revised OPNAVINST 3750.6S is now largely aligned with (and uses the essentials of) the SMS adopted by the FAA and others. Naval aviation has been doing the essentials of an SMS for years, so adopting the SMS aligns naval aviation safety with many of the world’s aviation safety programs and the USSFC/USPACFLT safety campaign plan.

Changes include:

- 3-year periodicity for all safety surveys
- Removal of obsolete message-traffic formats
- Additional guidance about WAMHRS (WESS Aviation Mishaps & Hazards Reporting System)
- Detailed explanation of the authority of controlling custodians for control the investigation and endorsement timeliness and deviations to AMB membership.

The new Sierra version of 3750 also includes discussion about the differences in AMBs for UAS/UAV and manned aircraft. Changes to Class C mishap lost working days and the addition of Class D mishaps were made to comply with DoD directives. Clarifications to the mishap-exceptions policy (with detailed notes about when and when not to apply mishap exceptions) were added, as well as updates to mishap costing rules.

I don’t want to reinvent a wheel and I do want to give credit where credit is due, so I suggest you read the concise and informative article about SMS in the Naval School of Aviation Safety’s newsletter, “Safety Sigma”, where credit belongs to CAPT Jody “Caveman” Bridges and LCDR Mike “Spock” Chenoweth. Find it at [http://www.netc.navy.mil/nascweb/sas/newsletters/SAS\\_Safety\\_Sigma\\_13-2\\_\(Summer\\_2013\).pdf](http://www.netc.navy.mil/nascweb/sas/newsletters/SAS_Safety_Sigma_13-2_(Summer_2013).pdf).

## Excerpts from “SMS for Dummies”

A Safety Management System can be thought of as a table top supported by four elements, or legs: risk management, policy, assurance, and promotion. These have become known as the “four pillars” of SMS. The Naval Aviation Safety Program incorporates many of the pieces that make up an SMS, so it looks a lot like one already. Coupling what we do now with the holistic, integrated approach can help us leverage the tools we already have in order to further reduce mishap rates and, in turn, enhance mission effectiveness...

The Safety Policy Pillar is where your SMS starts. You will then implement, or promote it (Safety Promotion Pillar). You will implement methods of assuring the functionality of the SMS (Safety Assurance Pillar). Continuously you will manage risk in your squadron (Risk Management Pillar). You continuously “balance the tabletop” the pillars support...

Although we call it the ORM Program, and within an SMS it is SRM, we don’t restrict the process to an operational or safety bin. As leaders, we seek to influence and improve decision-making both on-duty and off, in training and in operational scenarios. Whether the enemy has a vote, you are going out on a day VFR fam flight, or the Sailor or Marine is headed home for the weekend, effective risk management and, by virtue, good decision-making are crucial to executing the mission.

# TIME TRAVELLING

BY AWR3 CORNELIUS DONNELLY

Our crew was on final to our cruiser's flight deck, but I didn't know what kind of landing we were doing, why we were landing early or why the pilot seemed concerned about me when I asked those questions. I didn't know because I had slept through the previous 15 minutes of our MH-60R flight. I woke up during our emergency landing. The landing was uneventful.

The debrief was not.



OUR DETACHMENT WAS TASKED with daily surface search and control (SSC) missions from midnight to noon during our predeployment exercise. We found ourselves adjusting our sleep cycles to match the rhythm of the exercise, while doing our best to get rest during the high winds and seas typically found off the Virginia coast during early winter. The seas tossed our cruiser like a toy in a washing machine, making sleep difficult and fatigue management a constant battle.

While I discussed my sleep episode with the ship's medical team, the details of our morning routine came rushing back. Let's rewind the tape to that morning.

When we conducted our NATOPS and operational risk management (ORM) briefs, I felt nauseated from exhaustion and the constant rocking of the ship. The crew had a total of 12 hours of sleep between the three of us, and I'd gotten only three hours of broken sleep

I looked at my watch — 0830. I checked it again on final for our emergency landing — 0845. I had passed out without warning and slept so soundly that movement of the aircraft and constant yelling over ICS couldn't shake me out of the slumber. I had been effectively traveling through time without any knowledge of the trip. I hadn't even felt tired while we were airborne.

Two days later I was flown over to the aircraft carrier for interviews with the flight surgeon and a safety board. After detailing my previous week's schedule to the flight surgeon, it was determined my fatigue level was equivalent to that of 0.08 blood-alcohol content. I was operating at about 70 percent, with the same motor skills and information-processing ability as if I had been legally drunk during the flight. My brain decided that it was time to go to sleep and it just switched off in midflight.

## **I had passed out without warning and slept so soundly that movement of the aircraft and constant yelling over ICS couldn't shake me out of the slumber.**

during our transit. The H2P and I were in no shape to fly. To his credit, the H2P discussed his fatigue with the aircraft commander and was pulled from the flight. I knew that the only replacement possible to take my place was my buddy who had flown the lion's share of hours over the last couple of days. I couldn't let him get hammered with another hard day's flying, could I? I pressed on.

Fatigue is a devious adversary, taking hold of you during routine tasks. You might not even know until it's too late. It seems that the harder you fight it, the harder it fights back. During the flight, work kept my mind busy. We had systems to troubleshoot, and I did the work quickly and effectively, returning the aircraft to full mission capability. Once I was done, we settled into the rest of a routine surface-surveillance flight. That's when the real fight with fatigue began.

I worked our forward looking infrared (FLIR) systems, but there wasn't much to see that morning.

THIS INCIDENT OPENED MY EYES to the importance of crew rest. OPNAV 3710 has very strict crew-rest guidelines in place to ensure that aircrew are flying at their peak level of performance. Naval aviators tend to have type A personalities that prompt a "can do" attitude and pressure teams to disregard those guidelines. However, getting the proper amount of sleep is extremely important and directly impacts flight performance. If you find yourself in a situation where you are encountering sleep deprivation and questioning your ability to fly, be assertive and make it known to your crew. If you don't, you'll find yourself "time traveling" too. 🦅

---

AWR3 CORNELIUS DONNELLY FLIES WITH HSM-70.

*Analyst Note: The Fatigue Avoidance Scheduling Tool (FAST) has been approved for installation on NMCI machines. Contact your NSC Analyst (listed on masthead) for details.*

## The Shortest Flight of My Life

BY LT MICHAEL EASON



**I**t was just another autumn day at Chambers Field in Norfolk. As we conducted the administrative and safety-of-flight portions of our preflight brief, our fifth crewmember attended the fighter brief at NAS Oceana. We planned to pick him up and then head out to the warning area off the Virginia coast to provide airborne control for a strike-fighter training event.

The crew walked to the E-2C on time, did a preflight inspection, started the engines, and taxied for takeoff. The day was overcast with ceilings at 2,500 feet. The only hiccup during the preflight was a delay at the holdshort while field support chased away some birds. After that, tower issued our takeoff clearance, and we were on our way.

"Airspeed's alive, 50 knots, 80 knots, 123, rotate, two positives, gear, flaps, max rudder."

"Copy, gear's up, flaps are up, max rudder is shifted."

Bam!

"What was that?"

Five seconds after liftoff all four members of the crew heard a loud explosion, with a simultaneous pressure change inside the aircraft. My ears popped and I was momentarily disoriented as I tried to assess what just happened. An intense wind noise (later described by some of the aircrew as a tornado

inside the cabin) filled the cockpit and remained for the remainder of the flight. Unable to determine a specific failure, we decided to turn downwind at pattern altitude and land as soon as possible on the same runway we had just used.

While the carrier aircraft plane commander (CAPC) in the right seat coordinated our downwind turn with tower, I scanned the engine instruments and looked out the left window to check the port engine. Everything looked as it should. The CAPC remarked that it sounded like we had blown a seal. He checked that the ditching hatches above our heads were still closed, then checked the starboard engine — it looked normal. I shifted mental gears from flying the mission to getting the aircraft on deck.

About halfway through the crosswind turn and level at 1,000 feet, we heard the mission commander in the CIC call over the ICS, "Smoke, smoke, going on oxygen."

I notified the CAPC that I would be donning oxygen as well. He responded, "I have the controls."

After a quick, positive, three-way exchange of controls, I reached over my left shoulder to grab my oxygen mask — the first time I've ever needed to do so in the E-2C. I put the mask over my face, slid the bayonet fittings into place, and took a deep breath of cool 100-percent oxygen. In the Hawkeye, connecting the oxygen mask to the aircraft's

ICS and radio system requires aircrew to disconnect their ICS cord and then reconnect half of it back into the same plug for audio. Once that is done, you must locate a third cord hanging off your oxygen mask and insert that cord into the ICS plug to enable transmissions from the mask. This simple process had never seemed like a big deal to me when I practiced it at the FRS. However, a little less than a year since my initial NATOPS check at the FRS, I was rusty. After hearing the word “smoke,” my pulse quickened, and I couldn’t remember the exact steps I needed to perform as I noticed smoke begin to creep under the door into the cockpit.

Knowing that the CAPC had the radios, and focusing on the fact that we needed to get on deck as

air valve. He declared an emergency with Chambers Tower, citing smoke in the cockpit, and told them that we would be landing immediately on runway 28.

AFTER I TOOK BACK THE FLIGHT CONTROLS, the CAPC began to don his oxygen mask. He also experienced difficulty connecting his mask to the communication systems. He opted to improvise by hooking up only the right bayonet fitting, so he could push the mask over his face to breathe, but then remove the mask and use his boom microphone to communicate. Shortly after turning off the personnel air conditioning, the intense wind noise remained unchanged; smoke continued to accumulate in the cockpit and had completely filled up the CIC.

I again turned on the personnel-air-conditioning switch. The CAPC turned our side-window-defog knob to max, in accordance with the bold-face steps of the Smoke and Fume Elimination emergency procedure. The intent was to keep positive pressure inside the cockpit, slowing the buildup of smoke long enough to land.

Here’s a snapshot of our situation: our Hawkeye, which

had been perfectly healthy 30 seconds ago, was now midfield downwind in the landing pattern, and smoke had filled the CIC compartment to the point that the two crewmembers back there could barely see each other. The CIC crew ran the bold-face steps of the Fire, Smoke, or Fumes of Unknown Origin checklist by donning oxygen and by trying to isolate electrical equipment by turning off the vapor cycle (a giant air-conditioning system that automatically removes power to a number of systems when you turn it off).



quickly as possible, I dismissed my communication difficulties as trivial and yelled through my oxygen mask, “I have the controls.”

We once again completed a positive, three-way exchange of controls, and I resumed flying the plane on downwind at 1,000 foot MSL. As I was fumbling with my mask, the CAPC correctly deduced that the pressure change, howling wind and smoke were probably related to the environmental control system. He directed me to turn the personnel air conditioning switch to OFF, which also closed the fuselage bleed-

The cockpit began to fill with smoke. Communication was difficult because of the various ICS configurations employed by the crew. Tower was informed of the situation, and emergency vehicles were standing by.

The CAPC coordinated our landing clearance with tower, deferring their repeated inquiries for amplifying information. We initiated the landing checklist and completed it with me yelling the responses through my mask and pointing at the items to be checked in the cockpit. We opted to leave the arresting hook up, knowing that the short-field gear was derigged at Chambers Field. About this time, I noticed the master caution light illuminate, which drew my attention to the caution/advisory panel, and a yellow caution light that said “pitch feel” (an indication that our aircraft’s artificial feedback system to the yoke had failed).

Utterly confused as to what was happening to our plane, I pointed to the light and reported it to the CAPC, as we began our approach turn. I assumed that he had heard me, and I matched up our pitch-feel airspeed to our indicated airspeed manually, in accordance with the Flight Control Malfunction emergency procedure. Shortly afterwards, the light went out (because the bleed air had melted pitot-static lines in the cabin and induced a malfunction). Coincidentally, the pitch-feel indicated airspeed failed at a position correlating to our approximate final-approach airspeed. Either way, the aircraft was handling normally, including the appropriate tactile feedback in the yoke.

Having not heard our landing clearance over the radio because of the background noise in the cockpit, I yelled to the CAPC for confirmation that we had clearance to land. I asked him to review my landing checks complete. The CAPC and I strongly agreed that waving off our approach for any additional emergencies would be a “below” for headwork.

We rolled out on final, set a landing attitude, and brought our smoking Hawkeye down right on centerline. I followed standard landing procedures for rollout, slowed to braking speeds, and told tower that we would be off on the next available taxiway. We exited the runway and set the parking brake. It was silly for the crew to spend any more time in this airplane than necessary. The CAPC told the crew to egress immediately. I reached up to pull both engine-fluid cut-off handles to shut down the motors. As the engines were winding down and I was still unstrapping, I motioned that the CAPC should leave. I would be right behind him.

He opened the cockpit door, saw smoke in the center section of the fuselage, and yelled for us to go out our overhead ditching hatches. We slid down the nose of the aircraft and dropped to the ground as the fire trucks rolled up to the scene. All four aircrew met well clear of the plane and watched in amazement as smoke poured from the open hatches. The fire crew charged a hose to go in to investigate.

I’d call it a solid day’s work and a memorable 0.1 hrs for the log book.

What happened to our airplane on that fateful October morning? It turned out the CAPC was correct with his diagnosis that the problem was the environmental control system. The fuselage bleed-air line had ruptured inside the aircraft, and fourteenth stage compressor bleed air from the engines was blowing high-pressure, 900-degree Fahrenheit bleed air into the cabin. The bleed air melted wire bundles, insulation, and everything that it touched. This explained the loud bang, rapid aircraft over-pressurization, and the smoke that quickly filled the back half of the airplane. We couldn’t isolate the leak by shutting off the personnel air conditioning switch because it occurred a few inches upstream of the fuselage bleed-air valve.

THIS EMERGENCY WAS RESOLVED in minutes by simply landing the aircraft because it occurred very close to home. Had this rupture taken place in the warning area off the coast of Virginia, the loss of multiple systems coupled with intense smoke, an explosion, and the instantaneous pressure change could have made the bleed-air leak extremely difficult to manage. Further compounding the problem was the crew’s various ICS configurations, which made troubleshooting multiple system failures extremely challenging due to ineffective CRM.

Multi-crew aircraft require all crewmembers to work as one, and the loss of internal communication can be crippling in an emergency situation. In hindsight, closing the engine bleed-air valves would have isolated the bleed air at the source and solved the problem, but without any training or procedures geared toward this scenario, I am doubtful that we would have arrived at that conclusion in the heat of the moment. Being one of a few E-2C aircrew that I know of to have encountered this situation, I have a new perspective on how CRM can make or break your day when the unexpected happens. 🦅

---

LT EASON FLIES WITH VAW-121.

# What's Different About Today?

## This Question Can Get You Out of Trouble



**BY LT AUBREY HODGES**

**I**t was just another day in the Arabian Gulf, my first deployment as a HAC. I felt confident about life as a helicopter pilot; I was approaching a year as a qualified aircraft commander. I had made all the workups and had adjusted well to life on a carrier.

As I walked to the bird that morning, I was thinking about “groundhog day”: many senior personnel had warned me about it, and it had started to set in. Days were running together, and time was flying by. A day plane guard here, a night plane guard there, and a sprinkling of log runs thrown in. The safety officer led a discussion about complacency during a wardroom talk.

We faced a simple, three-aircraft log run into the Omani base at Masirah. We’d be making multiple trips back and forth to drop off cargo and personnel for the squadron’s upcoming detachment. We walked early, preflighted, spun up and loaded the birds. I was flying with a senior H2P. We’d flown together a number of times, and I was comfortable with his ability and skills. I double-checked our preflight calculations and glanced at the extra weight we’d be carrying. We were much lighter than we had planned. However, I knew the next run included transporting eight passengers.

After completing our checklists, we lifted and departed forward off of Spot 2. As we broke the deck edge, we sunk slightly. My copilot had not added in enough power, and I told him “You can pull more, we have plenty of power this run.”

The log run to Masirah went more smoothly than expected, and everyone was in high spirits. As we came back in for landing on Spot 2, tower warned us that there was a jackstaff on the bow. We saw it and knew we would have no problem avoiding it. The ship was at anchor and the colors were flying. Once we were chocked and chained, I looked at the power calculations. We had calculated for a full bag of gas (3,700 pounds) and had allotted 200 pounds per passenger.

My copilot asked if we wanted to get fuel, as we currently sat at 2,300 pounds, and Masirah was only about 30 miles away. My crewchief spoke up and said over the ICS, “We are getting gas, right?” I agreed and told the plane captain to fuel us. As we hooked up, I heard a discussion between the two other aircraft as to whether to take fuel. One HAC agreed that he would take fuel.

As we fueled, I checked the temperature to see if it was different than what I’d computed for power calculations. It was 30 degrees Celsius, exactly what we

expected. I heard calls for the other two aircraft as they landed and took off. Winds were shifting. One aircraft had landed with a tailwind. Another aircraft had landed with light and variable winds.

As we embarked our passengers, I noted that all their bags were small and looked light. I reviewed our power calculations again and decided to add 200 extra pounds for gear. We had calculated 94 percent in a HIGE (hover in ground effect), and I briefed the crew that I expected to see about 95 percent in our initial hover. I told my copilot that I wanted to get a good power check over the deck. We computed that we had 128 percent torque (TQ) with contingency power on, 123 percent TQ with 878 degrees turbine gas temperature (TGT), and 116 percent TQ with the environment control system (ECS) on.

We completed our checks and gave our number of souls and splash time to tower. When we discussed it later, my copilot and crewchief did not remember what the wind call was. I remembered the call was winds 17 to port, 4 knots. Tower also reminded us again of the jackstaff. We lifted, and I called torque at 96 percent, stating power was good in a HIGE. My copilot said he would slide left to avoid the jackstaff, and the crewman cleared us left. As we broke the deck edge and pulled into a HOGE (hover out of ground effect), torque was at 112 percent, exactly as calculated. The next few seconds were both the fastest and the longest of my life.

My copilot nosed over to start the forward transition and pulled in power. I saw our torque and TGT rapidly climbing through the yellow and into the red. I told him to "Watch power. Take a little out." As I do for every takeoff and landing, I was loosely guarding controls,

*I was also painfully aware that there were 11 people in my helicopter, most likely panicking as we kicked up salt spray over the water.*

with a hand resting on the collective. I felt him push the nose over more to get airspeed, take a hint of power out and pull it right back in.

We started to sink, and he brought the nose up and pulled more power. Right then is when the bottom dropped out of the helicopter. Our gauges lit up, and I

could see several timers starting on the screen counting down. We rapidly settled. The flight deck loomed above us and we began to droop the rotor system. I knew we couldn't arrest the descent with power for fear of drooping more than what we already had and losing control of the tail rotor system. Being this close to the ship, that action would be deadly.

I was also painfully aware that there were 11 people in my helicopter, most likely panicking as we kicked up salt spray over the water. I took the controls as we passed through 36 feet, instinctively tried to turn on contingency power (we had turned it on before we lifted). The helo nosed over, and I flew a profile much like if we had lost an engine in a hover and were trying to fly it away. Our descent slowed and stopped, and I told the crew I was going to keep it down in ground effect until we had airspeed on the bird. After about 45 knots, I pulled the nose up gently.

UPON REVIEWING THE PLAT TAPES multiple times, talking to tower and the crew, and debriefing with multiple senior HACs, we discovered several important items. The helicopter control officer (HCO) was brand new that day, giving us a few nonstandard calls that we should have clarified. Talking with others in the tower, we learned that winds had probably been off the starboard quarter. Operating on the carrier, we get used to having a nice headwind component. This was the first time I had launched with unfavorable winds.

Several members of the squadron independently ran the power calculations and came up with the same numbers that we had. Our power calculations were accurate, but we were operating with a small power margin, maybe four percent TQ. If we selected contingency power, we would have had a 12 percent TQ power margin, which is easy to exceed if you aren't careful and aren't aware of the energy state of the helicopter.

Looking at the tapes, the nose-down transition appears more aggressive than it had felt in the aircraft. Our takeoff would have been fine for a normal plane-guard flight, but we needed a slower, smoother, gentler takeoff that day. I think my comments to my copilot on the first go of the day gave him a false sense of security.

I should have asked the questions that have gotten so many people out of trouble before: "What is different about today?" "What is different about this takeoff?" It would have taken only a minute to look at the variables and plan a better departure from the ship. 

---

LT HODGES FLIES WITH HSC-7.



# Just Another AIRNAV

BY LT ANDREW KIEHABER

**I**t was a cloudy day in October when my wingman and I began our journey west, ferrying two FA-18Cs to the upcoming TOPGUN class. I had been told a week earlier to plan the trip and to prioritize military fields because of the current fiscal climate. After recently returning from two back-to-back cruises, an airways navigation (AIRNAV) across the United States seemed like an enjoyable way to get some much needed flight time, so I happily headed to our mission planning room and got to work.

Just like any AIRNAV, I began tracing out a route, finding divers and prioritizing fields that were military and had arresting gear. After I had selected a route, I asked the maintenance officer (MO) what configuration we would have on our jets so I could calculate the drag index. We would be carrying a centerline fuel tank, an ATFLIR, one CATM-9X and two IMERs, which equated to a drag index of 150. I double-checked this calculation on the mission-planning computers and came up with a similar number. I then calculated the total fuel required for the first leg.

The first leg would be flown from NAS Oceana to NAS Meridian — 669 nautical miles, a reachable distance under normal conditions. I did not initially check the inflight winds during my preflight planning; however, I added 100 knots of wind from due west to make sure that we would be fine with a strong headwind component. Once all the preflight planning was complete, I determined that our first leg would be about 1.7 hours. We would land with 3,300 pounds of gas, well above

daytime on deck standard-operating-procedure (SOP) fuel of 2,000 pounds. I showed my wingman the products; he concurred with the planning and was happy with the on-deck fuel.

The morning of the flight we briefed and looked at contingencies. We determined that the first leg would definitely be our most challenging because of the weather. Weather at NAS Oceana was broken at 800 feet. NAS Meridian was calling overcast at 500 feet because of a storm system moving slowly across the southeast U.S. Since the weather at our destination was less than visual flight rules (VFR) but greater than approach minimums, we needed a divert option with non-precision minimums plus 300 feet and 1 nm per OPNAVINST 3710. We had several divers that were available, including Meridian International Airport (KMEI), Jackson-Evers International Airport (KJAN) and NAS Pensacola (KNPA). KNPA was actually a VFR divert if we needed to change our destination inflight. Surprisingly, both KMEI and KJAN showed considerably better weather than NAS Meridian, so we delayed our takeoff two hours and waited for weather to improve just to be sure that weather was developing as forecast.

After a two-hour delay, we decided the weather was satisfactory and we had three legal divers. We knew that every last drop of gas was needed, so my wingman and I hot refueled to top off the jets one last time before takeoff. Immediately upon takeoff, we experienced delays in climbing to our cruising altitude, but also noted that the wind was considerably stronger than

forecasted. While the winds were roughly 80 knots at altitude, the direction was almost head on, not from the west as planned. As soon as we reached our altitude, I placed our destination under my active waypoint and brought up my flight-performance-advisory-screen (FPAS) page. The system calculated that I would be on deck with 2,800 pounds, roughly 500 pounds below my planned fuel on deck. While the fuel on deck was slightly lower, it was still above that mandated by SOP, and would provide enough gas to reach my two local divers and hold for 20 minutes at max endurance. We continued as planned.

WE PROCEEDED ALONG OUR ROUTE, constantly checking the weather using pilot-to-metro stations across the country to provide us with the most current weather in Meridian. We felt that the weather was staying the same with cloud layers right at TACAN minimums, and the visibility greater than 10 nm. I constantly checked my fuel page and rechecked my fuel on deck every 10 minutes, but much to my chagrin, fuel on deck continued to drop. Now, almost halfway between NAS Oceana and NAS Meridian, my fuel on deck read 2,200 pounds. While the changing FPAS-calculated fuel on deck concerned me, I still felt that I would be on deck above min fuel; however, quickly my divert options were starting to fade. While KNPA was a VFR divert, I would need to change my routing immediately to make it to Pensacola with 2,000 pounds of gas. After checking the weather one more time at our destination, we decided to continue along our route and proceed to Meridian.

We entered the Meridian terminal area, and again received an update on the weather — still no change. However, the PAR to the active runway was down. I checked fuel, and now my fuel on deck showed 1,800 pounds, a number that I was not happy with. After a quick decision, we declared minimum fuel with approach, and decided that we would take a PAR to the off-duty runway, one typically used for takeoff when NAS Meridian is using its northern runways.

Approach again passed the weather, and we determined that we should break out. If we didn't, and with our fuel at a lower state, we knew our divert options were quickly fading. At roughly 20 nm from NAS Meridian, while flying formation in the clouds, I received the always jolting, FUEL LO caution. This caution comes on when either of the feed tanks is 800 pounds +/- 100, and normally comes on only when on deck. The caution made me feel uneasy, and I quickly

started thinking about the impending approach and how we would desperately need to break out.

At 15 miles from the field, approach instructed me to break off and head west. I would be the first aircraft to land because my wingman had slightly more fuel. As I broke off I checked my fuel level once again and saw that I was already at 1,900 pounds, expecting to burn almost 800 pounds in a normal approach. I then thought of every scenario I could manage: What I would do if I could not break out, where I would go, and how much time I truly had.

I knew that weather would certainly not be any better only 15 miles away at the KMEI, and KJAN was no longer a viable divert based on fuel. I made the choice to continue to an airfield that I knew had arresting gear and weather that was at TACAN minimums. I also knew that after this approach I couldn't divert anywhere else. As I commenced the approach, I did everything in my power to save fuel by flying my FPAS calculated, maximum-range Mach number until just inside the final approach fix. I would lower the landing gear at the fix.

After starting my descent in known instrument meteorological conditions (IMC), I started to break out sections of ground beneath me and what appeared to be the lowest layer of clouds. Eventually, at 400 feet, I broke out of the clouds and had 10 miles visibility. I had the runway in sight. I told my wingman that I had the field made, checked my gas one more time, and landed on the off duty runway with no issue. As I rolled out, I quickly cleared the runway for my wingman and checked my fuel — 1,500 pounds. My gas-saving measures had decreased my burn rate; however, I had landed below our SOP min fuel on deck. Both aircraft taxied to the line, shut down and we discussed what had happened.

We quickly acknowledged that we hadn't had fun. We talked about the flight planning, and how the winds must have affected our numbers much more than expected, and how our decision to continue with the weather in IMC was not the right choice. While we were fortunate that both aircraft landed safely, it is yet another example of being out of gas and out of options.

While the Hornet is an amazing airplane, it still suffers the same pitfalls as any gas-powered vehicle and will cease to function without its precious JP-5. I have learned once again that you can press the weather or press fuel, but if you press both, you put yourself in a situation where you may have no options. 

---

LT KIEHABER FLIES WITH VFA-131.

# Hypoxia

## Over Afghanistan

**BY LCDR PATRICK SALMON**

I felt flushed and tingly. My fingernails were turning blue, and the world began to disappear. This wasn't good. I did the immediate-action procedures for hypoxia. After a few seconds of breathing 100-percent oxygen, the world began to come back into focus.

How low did my blood-oxygen level get? The corpsman in charge of the Reduced Oxygen Breathing Device (ROBD) put me on "freeze," and I hopped out of the simulator to find out.

As is the case with so many things in naval aviation, many of us turn the biannual trip to the ROBD into a competition. Who can remain conscious the longest? All the while, our squadronmates laugh at our slow response time and slurred speech. While entertaining, this training exercise is also meant to teach each aviator an extremely important lesson about how their body reacts to hypoxia. During a recent Operation Enduring Freedom (OEF) mission, I was reminded yet again why this training is vital.

I was scheduled as the wingman with a fellow department head. It was our second month of combat operations on the second of two back-to-back combat deployments, so we were proficient at flying these missions.

After spending a beautiful morning over Helmand Province, my flight lead checked us out of our final tasking and directed the flight toward the last mission tanker of the day. Per the air tasking order (ATO), our "out gas" was a KC-135, who was also transiting home. This allowed us to begin tanking as we made the long trek down the boulevard. By the time we reached Pakistan, my lead had finished fueling, and I took my turn behind the Iron Maiden, as she leveled off at 25,000 feet.

After a few minutes in the basket, my lead noted that I was streaming a lot of fuel, which was not

unheard of while tanking at higher altitudes. We agreed to monitor the situation. At the same time, I heard a slight audible change to the cabin air flow and felt the air from the environmental control system (ECS) get a few degrees cooler. Thinking nothing of it, I finished topping off my gas. I disengaged from the tanker and began to move to the right side of my flight lead, as he signed off with the KC-135. At that moment, I felt like I was back in the ROBD. I felt flushed and tingly. My vision rapidly deteriorated. I had just enough time to ask myself, "Is this what I think it is?"

I executed the FA-18C NATOPS boldface for hypoxia, pushing my nose over aggressively to start a descent out of 25,000 feet. I announced to my lead, "I don't feel right. I'm on emergency oxygen and heading downhill."

I can only assume that he coordinated the descent with all the appropriate agencies. I have no memory of what was said over the radio during those few seconds. My only recollection is of focusing on maintaining consciousness while I descended.

After about 30 seconds on emergency oxygen, my symptoms began to subside. Recognizing that the cabin altitude was scheduling properly, I leveled off at a medium altitude in accordance with the airspace control order (ACO). I began to assess how I felt. I also began talking to my lead about everything that I was thinking and doing, so that he could judge my mental capacity and assist with decision-making.

We completed the NATOPS procedures for hypoxia and decided to continue down the boulevard to Mom rather than making a U-turn and diverting to Kandahar. We based this decision on my improving condition and our relative position to the ship and the divert field. Having initially passed me the lead when he saw that I was in distress, my fellow DH continued to fly forma-



## **I felt flushed and tingly. My vision rapidly deteriorated.**

tion. He made the excellent recommendation to couple the aircraft autopilot to the navigation sequence. This allowed me to focus on recovery rather than navigation, while also ensuring that the jet would continue in the correct direction should I relapse.

After another three to five minutes, I felt well enough to secure the emergency oxygen “green ring” and continue the flight with my mask off. After a brief relapse, my symptoms stabilized again. I continued to self-assess during the remaining hour and a half of flight and told my wingman that I felt “about 85 percent.” Based on this information, we again discussed our options over the radio and decided to fly a Mode I approach to the ship. I stayed on emergency oxygen just prior to the approach. Then I disconnected the oxygen hose from my mask so that I could speak normally on the radio.

I shared several takeaways in ready room 6. First, the rapid onset of hypoxia with no aircraft indications was eye-opening. As has been discussed within the

Hornet community for several years, OBOGS is an imperfect system that can fail in a way that provides no warnings or cautions. Our postflight engineering investigation of the OBOGS system was inconclusive.

The crew resource management (CRM) in this incident was excellent. Because I had provided my flight lead with near stream-of-consciousness information, he was able to keep me safe during those critical seconds. Once he was assured that I was no longer in immediate danger, he did a great job of helping me with external coordination and decision-making.

My biggest lesson learned is the importance of recognizing the symptoms of hypoxia. In this incident, my only indication that there was a problem was the presence of physiological symptoms that I had learned to recognize during my annual ROBD training. Had I been delayed in self-diagnosing, I might not be writing this article today. 🦅

---

LCDR SALMON FLIES WITH VFA-131.

# You Can't Land Here!

BY LT OMAR SANUSI

**F**lying Growlers out of Whidbey has many benefits. One is racking up flight time on transits to and from NAS Oceana during our East Coast airwing's exercises. I got to fly one of these transits, so it was turning out to be a good month for flight hours.

After the large force exercise (LFE), my electronic warfare officer (EWO) and I planned to return to NAS Whidbey Island by three-legging it with stopovers at Whiteman AFB and Hill AFB. However, after we looked at the weather, our plan wouldn't work because of thunderstorms sweeping through the Midwest. We amended our route to take a more southerly path via Little Rock AFB. The weather report called for ceilings above mins projected to stay about the same if not slightly improve over the course of the day. Weather at our planned alternate of Columbus AFB was projected to be 1,800-foot ceilings with unlimited visibility – great. Also, the civilian field in Little Rock is only 12 miles to the southwest and would be a suitable field to land at case we couldn't go to the AFB for reasons other than weather.

A quick check of the NOTAMS showed no issues with either airport. However, we noted that there were degraded firefighting capabilities for big-wing aircraft at Columbus AFB. This didn't concern us, because we regularly see this kind of NOTAM at AFBs in Washington. It has never prevented the use of those airfields.

After completing the flight planning and getting our weather report, we gathered our pubs and briefed. Both of us were eager to get home, but we made sure that "get-home-itis" did not influence our decision-making. Our route required that we carry a lot of pubs. Because of space constraints, we couldn't fit two copies of each pub, so we took one of each less-likely required pub.

After briefing, we reviewed and signed the aircraft discrepancy book (ADB), dressed, then loaded the jet. On startup, we got an MU LOAD caution, which indicated a problem with our mission card. This was quickly troubleshooted by the ground crew, a benefit of

flying a common platform with our airwing. We thought this was probably our hiccup for the mission and happily pressed on home.

I've always enjoyed cross-country flights. You get a great view of the changing landscape traveling across different regions. As we flew over Memphis I reminisced about my time in T-45s flying cross-countries through there (good BBQ!). As we started to get closer to our first destination, we tuned up ATIS. The field reported 200-foot ceilings and 1.5 mile visibility. This wouldn't have been a problem had we been in one of the Growlers that have civilian ILS, but currently only the expeditionary squadrons are equipped with those.

We figured that conditions are the civilian field would be the same, but we verified it anyway. No surprise, they were calling for the same thing. Being about 80 miles from our destination we tuned up Columbus ATIS. The weather was 1,800-foot ceilings and unlimited visibility. We informed center of our intent to proceed to our alternate.

As ATIS continued to play in the background, it stated they were conducting instrument approaches to the field and to expect the ILS. They have multiple TACAN approaches, and (with the current weather) we figured the visual approach was also an option. We got into approach airspace and got the switch. They told us to expect the ILS, and we responded by requesting one of the TACAN approaches. They said they were unable, but their reason was unintelligible over the radio.

We then requested the other TACAN approach. They also denied that for the same unintelligible reason. After going back and forth a couple times with approach, my EWO and I still couldn't make out their

transmission. We decided not to press the issue and told them of our intent to cancel and proceed with VFR flight-following to the field.

As we got closer to the field the weather looked more like “few or scattered” at 1,800 feet than the ceil-

there. Based on our gas, we were not emergency fuel, but we were approaching min fuel.

I remember once stopping over in Memphis in a T-45. I had seen Rhinos there, so I was confident that they not only had contract fuel, but that they were also



*At about 10 miles from the field, we got a call from approach. “Rook 31, Columbus approach, we just got a call from base ops, you can’t land here.”*

ing they were calling, so we felt comfortable with our decision. At about 10 miles from the field, we got a call from approach. “Rook 31, Columbus approach, we just got a call from base ops, you can’t land here.”

Pucker factor skyrocketed. We talked for a second and concluded that the problem must have been that we didn’t have a PPR (since it was our alternate). My EWO responded by reminding them that we were executing our alternate flight plan due to our destination being below weather minimums. Apparently the PPR was not the issue, it was the firefighting capability. They responded that because of the degraded firefighting capability, base ops would not accept us landing

familiar with the F-18 platform. I immediately told my EWO that we should go to Memphis, and he agreed.

Since we were VFR, I quickly put in a turn toward our fourth field option. We contacted ATC and informed them of our intent to head to Memphis International. We decided it would be best for us to also declare “min fuel” to make ATC aware of our fuel situation. Another great benefit of flying a Growler is that I don’t have to fumble through four feet of chart in my two feet of space in the cockpit. My EWO and I had great crew coordination.

Through this whole process, we had to deal with the fact that each field was on a different chart/pub. Having

an EWO to quickly look up information allowed me to focus more on avoiding the scattered clouds. I could fly a fuel-conservative profile without having to worry about what page of a pub the approach is on or finding the correct frequency for Memphis ATIS. I had the Tennessee approach plate in the front, so I threw the plate to my EWO in the back. He tuned up ATIS and weather at Memphis: essentially VFR with showers in the vicinity. After receiving our center pick-up and listening to the weather at Memphis, we felt a lot better.

Memphis was landing south, and we were coming from the south. Not ideal, but the vectors we received allowed us to generate a radar map of the airfield. Since the large airport had three parallel runways, I wanted to drop a designation on the runway we were landing on as a backup. About the time we were abeam the field, we noticed a rain cell parked in the approach corridor. We also got a call from ATC saying the field just went IMC and to expect the ILS. Memphis only has ILS approaches which didn't matter in a T-45, but in our ILS-lacking Growler it became an issue. We could see the field. It looked like the cell, which we could just see through, was about three miles north.

We discussed that we were not yet at emergency fuel, but any deviation from our current course of action would put us in one. It's common knowledge in the community that when you're in extremis, an instrument approach (known as the Hornet-one approach) can be shot using an accurate air-to-ground designation and flying a calculated glideslope. We had already generated the map and were feeling comfortable with the designation. We decided that the risk of shooting this type of approach – should the rain cell be thicker than we anticipated – far outweighed the risk of deliberately putting ourselves in an emergency. If we needed to, we would fly the courseline from the designation, and we would mitigate the risk by complying with localizer altitudes. We would only do this if we could see the ground and no aircraft were on parallel approaches.

WE CONTINUED ON OUR PRESENT path and dialed in the appropriate courseline. As we started our turn back toward the field, ATC issued us clearance for the approach. Visibility to the field was obscured by the cell, but we could still see the ground.

In the cell, visibility continued to decline. However, by the time we were inside two miles, I could make out the field and soon thereafter I could distinguish the runways. We landed, but before we could breathe a sigh of relief, we

got slapped in the face with an ERASE PENDING indication. In our attempts to rectify our original MU LOAD caution, we had to reset our mission computers, which also restores many of the default settings in the jet. One example is the setting on whether the mission card and/or memory unit erases on touchdown (default) or when manually told to do so after holding the memory card. Boxing the HOLD ALL setting is a check usually done early on in startup, but after our troubleshooting, both my EWO and I failed to recheck this setting.

THIS FLIGHT TAUGHT ME MORE than I could list. You can never over-plan. I never would have thought we'd end up at an airport that was fourth on my list of options, potentially having to go to an unknown fifth.

Don't rely on NOTAMS for the whole picture. I never would have thought that degraded firefighting capability equated to us not being able to land at that airport. For a moment, we debated declaring an emergency and landing at Columbus anyway, but with having just flown over Memphis and having previous experience landing there, I felt more comfortable with that course of action.

Take every pub you might need. We had packed every nook and cranny in the jet with all the stuff required for our trip. We had our bags for the week, JMPS laptops, hard drives, the cross-country pack, and the ADB. We almost hadn't taken a Tennessee approach plate because of limited space, and it was not our intended destination or alternate.

The Hornet-one approach, though not a real approach, is a great backup to published approaches. I am not suggesting substituting the Hornet-one for an ILS, but other articles have described how this procedure was used in combat during a sandstorm with successful results. Our circumstance was not as dire because we could see the ground, thus making a contact approach. Performing the Hornet-one, outside of a simulator, gave me a lot of confidence in the capability of the jet and my ability to fly the approach.

Crew coordination is key. My EWO for this flight was our XO; as a new pilot to a squadron, it can be intimidating. My squadron has a great command climate in that rank or position does not degrade our crew coordination. Once the motors start turning I'm just "pilot" and he is just "EWO." 

---

LT SANUSI FLIES WITH VAQ-137.

# Hydration and Fatigue: What's the Connection?

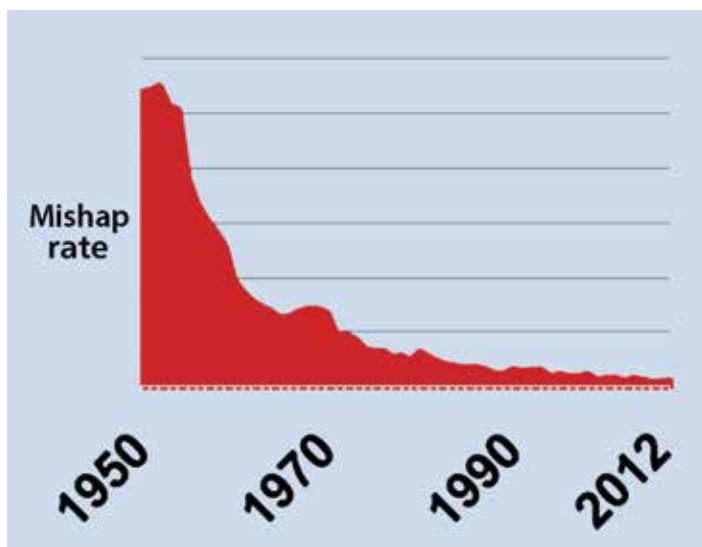
**BY LT PHILLIP S. DOBBS, MSC; LCDR THOMAS E. SATHER, MSC, CASP;  
AND LCDR DANIEL A. FOSTER, MC**

Since most of the human body is water, staying hydrated is critical for efficient mental and physical activities. Hydration may play a key role in mishap prevention through minimizing human error.

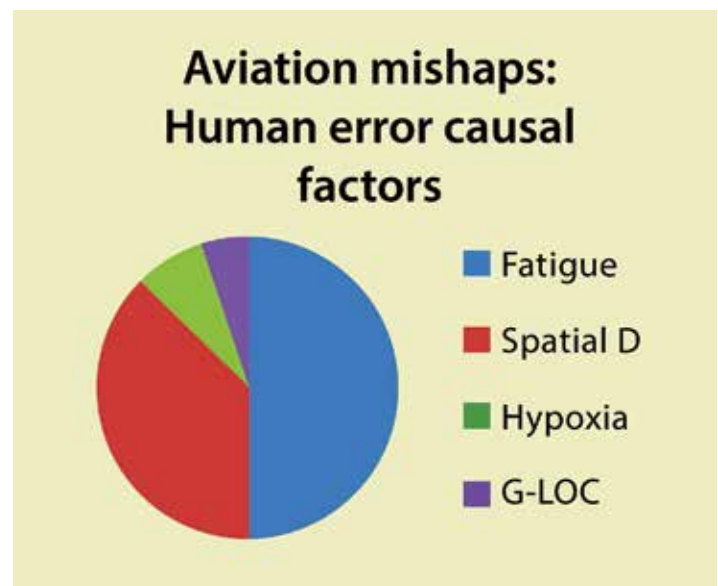
Our recent aviation mishap rates are the lowest in history. How is this possible? The men and women who perform jobs that support naval aviation are outstanding. From the aircrew who fly to the personnel (air traffic control, aircraft maintenance, life support systems, operations, logistics, training and aviation medicine) who support flight operations, all play a vital role in aviation safety.

Naval aviation hasn't always had such an enviable safety record, but over the last several decades, tremendous progress in aircraft technology, better systems for monitoring and predicting weather, improved communications, and the establishment and implementation of naval aviation safety programs have helped achieve drastic reductions in mishap occurrences. In 1954, 774 aircraft were destroyed. From 2002 to 2012, the annual aviation mishap average was 15 (Fig. 1).

Fig.1



Research has revealed that it's not mechanical failure but human error that is a causal factor in as much as 80 percent of aviation mishaps. A review of 40 Class A mishaps from 2004 to 2009 revealed four major human-related causal factors: hypoxia, gravity-induced loss of consciousness, (G-LOC), spatial disorientation and fatigue. Dehydration is the single physiological condition that can increase your susceptibility to all of them.



We've implemented crew-day and crew-rest rules. We hold quarterly safety stand-downs and provide annual and quadrennial refresher training. Nevertheless, fatigue remains one of the most prevalent human-related causal factors among aviation mishaps and hazreps. Often (and obviously), fatigue is associated with a lack of sleep.

The effects of excessive wakefulness has been equated to that of alcohol intoxication. As a result, a greater emphasis has been placed on ensuring crew are getting adequate sleep and being aware of the importance of managing their professional and personal lives

so proper sleep habits can be achieved. Could there be more to mitigating the threat of fatigue than managing your stress levels and getting at least 8 hours of uninterrupted sleep?

There are two common forms of fatigue, physical and psychological. Physical fatigue is when your muscles can't do things they normally could do because of weakness or a lack of strength. Climbing stairs or wearing flight equipment may be much harder.

Since much information related to hydration focuses on preventing physical fatigue, let's focus on the latter type, psychological (or mental) fatigue, when concentration requires more effort. Mental fatigue often appears together with physical fatigue, but not always. People may feel sleepy, have a decreased level of consciousness, and in some cases show signs similar to that of an intoxicated state.

For more than seven decades, the Aviation Selection Test Battery (ASTB) has been used to assess potential aviators. Results are used to select candidates with the highest probability of succeeding in the aviation environment. Positive traits are math and reading skills, mechanical comprehension, spatial perception and psychomotor skills. Numerous studies have observed that these skills are diminished when the body is low on fluids. Decrements in several kinds of performance occur with fluid loss.

How do you know when you're low on fluids? Should your urine be pale yellow? Does clear, colorless urine indicate proper hydration? There are many online websites and other various sources claiming that clear urine is a good sign of being hydrated. However, urine color depends on a number of factors that could lead you to a false sense of confidence regarding your condition.

First, if you quickly drink several glasses of water, the urinary system can get overloaded and the majority of the water will pass through to the bladder before it can be absorbed by body tissues. Your urine will appear clear but your body won't have had enough time to adequately absorb the fluid. Second, the consumption of supplements, caffeinated beverages, alcohol, and even some medications can cause your body to rapidly excrete large amounts of fluid – your urine will appear clear but your body will be grossly dehydrated.

One way to judge your hydration is by the frequency of urination. If you are urinating at least once every 2 to 3 hours during the day, you are probably adequately hydrated. Urinating more or less than this can be a sign of a fluid imbalance.

Are daily weigh-ins and monitoring urine color really necessary? For accurate hydration, the answer is yes.

Many bodily functions affect your fluid balance. Lungs expel water vapor with each exhaled breath (12-20/min during rest). Digestion (breaking food down into useable fuel, 3-5 meals per day) takes water. So do sweating and shivering to maintain your core temperature, physical activity, and producing urine and feces.

Can't you just drink when you feel like it? No, because thirst is not a good indicator. The body is not sensitive enough to warn of fluid imbalances on such a micro scale.

Since dehydration can inhibit oxygen delivery, hypoxia (through a reduction in blood volume) can result. GLOC may occur from a decrease in muscle fatigue resistance during repetitive anti-gravity straining maneuvers. In some cases, this could lead to spatial disorientation (SD). The onset of SD could result from slowed chemical reactions, decrements in the vestibular system, and short-term memory impairment, resulting in slower decision-making, reduced situational awareness and increased task saturation.

HYDRATION REQUIRES PLANNING and making consistent, conscious decisions each day. The best way to stay hydrated is by drinking water. Sports drinks can be used to provide rehydration during physical activity; they contain a six-to-eight-percent carbohydrate solution and a mixture of electrolytes to allow maximum fluid absorption. Many sports drinks contain more sugar than needed and the sole reliance on these for hydration may lead to gastrointestinal tract distress (cramps). It's best to mix one part sports drink with one part water.

Do not confuse sports drinks with energy drinks. Energy drinks typically contain higher carbohydrate concentrations (usually nine or 10 percent) and other exotic herbal additives, which actually impedes fluid absorption and may lead to severe cramping and heart palpitations.

Don't wait until you're thirsty to start hydrating. When you're active or working in hot environments, hydrate early and often. Make sure your body weight is the same at the start of each day. Pay attention to the color of your urine (it should be pale yellow) throughout the day. This is the most practical way to make sure your hydration levels are appropriate for optimum physical and mental performance. 

---

LT DOBBS IS THE AEROMEDICAL SAFETY OFFICER WITH CTW-6; LCDR SATHER IS THE DEPUTY DIRECTOR OF THE NAVAL AEROSPACE MEDICAL INSTITUTE; LCDR FOSTER IS THE SENIOR MEDICAL OFFICER, CTW-6



# Nocturnal BASH

**BY LT MATT SUMNER AND  
LT JOEY GIORDANO**

I was flying my night-2, familiarization syllabus event with an instructor and a newly winged NFO. This was my second of only three night fam flights in the E-2C Hawkeye. We briefed and made all the normal preparations. Interestingly enough, one of the preflight discussion items on my grade sheet was a night field arrestment.

We launched 20 minutes ahead of schedule and proceeded to Patrick Henry Airfield (KPHF) in Newport News, Va. We planned to fly a couple of practice approaches for proficiency, which would allow time for the Navy Chambers Field (KNGU) pattern to clear. The KNGU pattern was congested because other squadromates also were conducting night familiarization events.

After completing the practice approaches at KPHF, we proceeded to the initial for the overhead at KNGU for runway 10. We were one of three aircraft in the pattern. Our training began with two 20-degree-flap landings. We were about to do a 30-degree-flap landing when the control tower reported that the arresting gear was out of battery. We stayed at pattern altitude to delta until cleared by tower to proceed with our training.

After 10 to 15 minutes, the tower cleared us as No. 3 for the touch-and-go. We did the 30-degree-flap touch-and-go and planned to fly a 10-degree flap one next. We were at the 90 position in the approach turn when we felt and heard a loud “thud.” I instinctively added max power on both engines and scanned my engine instruments.

The port engine rpm was rolling back. We saw 65 percent rpm, then 50 percent. Vibrations were coming from the port engine. The rpm rapidly decayed to zero. I told the instructor that it sounded like we hit something and lost the port engine. I had the power at max as I continued with the boldface procedures.

We raised the gear and waved-off to assess aircraft controllability. We also wanted to determine the reason

for the engine failure. Because the incident occurred at night with limited visibility, we weren’t sure of the damage to the port side of the aircraft. We also wanted to verify that the arresting gear was ready to be used.

We felt that keeping the aircraft airborne with one engine operating was the best option, rather than rushing procedures and getting it on deck right away. This gave us time to review all the checklists for engine failure, post shutdown, and single-engine landing. It also allowed time for the landing signal officer (LSO) to get on station. After three laps in the delta pattern at 2,000 feet, we’d reviewed all of the NATOPS procedures, and the LSO was on scene.

We held a detailed CRM discussion about the arrested landing. The instructor chose to fly it from the right seat. He briefed me to use nosewheel steering to maintain centerline on roll-out if necessary. We also discussed that if the hook skipped but the aircraft was controllable, we would keep it on deck. I would get the flaps up on rollout.

After the normal arrestment, the aircraft felt OK to taxi single engine. I used nose steering to assist with the taxi, while the instructor controlled our only operating engine and the brakes. On the postflight walk-around, we saw a bird (it turned out to be a black-crested night heron, a bird that averages about 2 pounds) in the intake. No other damage was done to the port side of the aircraft.

Many aviators have a false sense of security while flying at night, assuming that their chances of a bird strike go away when the sun goes down. Many birds are still active at night, especially over water near the shoreline. Although we could not see the bird to avoid it, it is a good practice for all aircrew to brief bird activity, even at night. 

---

LT MATT SUMNER AND LT JOEY GIORDANO FLY WITH VAW-120.

THE CREW OF STRAYHORSE 1-1 was conducting reduced-visibility landing training in the Grand Bara Desert of Djibouti, Africa. The engine in their MV-22 failed on takeoff from a landing zone. Because of the high ambient temperature and gross weight of the aircraft, there was insufficient power available to continue the climb out after takeoff.

The aircraft commander, Captain Philip Bies, and crew immediately executed the emergency procedure for engine failure in a hover. With visibility greatly reduced due to a brownout, the crew circumnavigated a tree line and undulating terrain, safely landing in a dry lakebed. In the few seconds prior to landing, Corporal Brett Hankins ensured that all crew chiefs were secured in crashworthy seats. The maintenance recovery effort, led by Sergeant Nicholas Tissandier, completed the engine replacement in the Djiboutian desert with great efficiency, allowing the aircraft and crew to recover less than 48 hours after the incident.



## VMM-263

Left to right:  
Aircraft Commander - Captain Philip Bies  
Crew Chief - Sergeant Nicholas Tissandier  
Crew Chief - Lance Corporal Kohl Butteweg  
Crew Chief - Corporal Brett Hankins  
Aerial Observer - Corporal Nicolas Pavez  
Copilot - Captain Joseph Raines

# BRAVO Zulu



## VT-10



LT COMER T. KNIGHT, a flight instructor with Training Squadron 10 at NAS Pensacola, was instructing a Student Naval Flight Officer on a T-6A basic formation flight. As they returned from the flight training area, the chip detector warning light in their aircraft illuminated, indicating an impending engine failure.

LT Knight executed the NATOPS emergency procedures and turned towards Jack Edwards Airport, the closest available runway. Nearing the airport, he discovered ground fog obscuring the airfield. He quickly decided to proceed back to NAS Pensacola and subsequently coordinated with air traffic control for a straight-in approach.

He used the instrument landing system to penetrate a low layer of clouds, flying the approach high and fast in the event the engine failed. At 400 feet, the aircraft emerged from the clouds and LT Knight made an uneventful landing.



## VQ-1

CWO3 MICHAEL KUMM, one of the Navy's few flying chief warrant officers, is the Electronic Warfare Aircraft Commander of Combat Reconnaissance Crew 2, currently deployed to VQ-1's AFRICOM detachment site. During preflight of an EP-3 for an operational mission with a 21-person aircrew, CWO3 Kumm made his normal exterior inspection of the aircraft. He noted a discoloration on one of the five flap-carriage assemblies that attach the starboard flap to the aircraft. Upon further inspection, he discovered that the discoloration was dirt that had accumulated in what seemed to be a small crack.

Airframers were called out and chipped off paint around the crack, revealing a nearly 3-inch long fracture that had spread half-way through one side of the flap carriage assembly. The aircraft was quickly repaired and returned to service.



## VT-6

LT CASEY D. SCAMEHEORN, a flight instructor with Training Squadron 6 at NAS Whiting Field, Florida, was awaiting takeoff in his T-6B. Holding short of the runway at Whiting Field, he observed a T-6B aircraft take the runway under tower direction. As the aircraft waited for takeoff clearance, an airborne student flying solo commenced his landing approach turn to the same runway.

Tower directed the solo to continue but did not issue a landing clearance. As the solo descended through 200 feet, LT Scameheorn realized the student intended to land, evidently not seeing the aircraft positioned for takeoff. Without waiting for action from the runway duty officer or air traffic controller, LT Scameheorn keyed his radio and directed the solo to execute an immediate waveoff. The solo complied and the aircraft on the runway subsequently made an uneventful takeoff.



# First Flight

**BY LT ROBERT DELUCCA**

**T**his was my first flight as a patrol plane commander (PPC). I'd been given a five-hour ASW training flight, with an experienced crew, including a senior instructor flight engineer (FE) and an experienced second pilot (2P). Despite an engine-start malfunction and trouble with ATC, we were ready to go on time. The next five minutes would test everything I had learned throughout training about CRM and NATOPS.

After a normal taxi and takeoff, I called for gear retraction. I immediately moved flaps from takeoff to maneuver position. At 500 feet, my FE noted a complete loss of all pressure and fluid quantity in our primary hydraulic system. We completed the NATOPS procedure for the hydraulic malfunction, consisting of securing the 1 and 1A hydraulic pumps. We prepared the flight-control, booster-disconnect handles for the possibility of losing our backup hydraulic system. As this malfunction seemed to only affect the flight station, we did not tell the tactical crew in the back what was taking place – a mistake I would soon regret.

The tactical crew saw a cloud of smoke in the middle of the aircraft and smelled fumes. They bolted out of their seats and began to search for the source in accordance with NATOPS procedure for a fire of unknown origin (FOUO). The fumes they smelled in

the tube were caused by the hydraulic leak, a possibility identified in NATOPS. A simple ICS call would have ensured they knew exactly what was taking place. Instead, the flight station and the tactical crew were each executing emergency procedures with no idea what the other was doing. This breakdown in CRM added to the confusion.

As I continued to fly the departure, the 2P cancelled our IFR flight plan and coordinated holding. We noticed the fumes in the flight station, and the FE told me of the FOUO procedure the crew had initiated in the back. As expected, the fumes began to dissipate once the hydraulic pumps were secured. We directed the crew to strap back into their seats and explained to them what occurred with the hydraulic system on takeoff. This action brought everyone back onto the same sheet of music and allowed us to work together to return to base.

BASED ON OUR NATOPS KNOWLEDGE of the hydraulic system, we knew that we couldn't hydraulically extend the landing gear or use nosewheel steering, and that we had a limited number of brake applications (my XO had simulated this malfunction as part of my PPC check ride two days earlier). After dumping what little fuel we could, we coordinated a return to the field for a delta pattern, where we manually extended the landing gear. We then completed the emergency and landing check-



*... we did not tell the tactical crew in the back what was taking place – a mistake I would soon regret.*

lists and calculated our landing ground-roll distance for our current weight.

Manually extending the gear was simple, but deciding on flap configuration was not. We couldn't ascertain the exact cause of the lost hydraulic system, but we knew it was isolated to the hydraulic service center (HSC). So far, the only demands we had made on the backup system were from the flight-control booster packages, so we were concerned that moving the hydraulically-controlled flaps could make cause lose the backup system as well. On the other hand, leaving the flaps in the maneuver position for landing would force us to remain in the air longer to achieve a safe landing weight. We chose a middle ground of selecting approach flaps instead of a land-flap or maneuver-flap landing. The extension of flaps

to the approach position at 3,000 feet was uneventful, as was our landing.

The first takeaway was that our pilot-training program did a great job preparing me to become a PPC by making sure I was ready to handle a challenging malfunction on my first flight as a plane commander. The other takeaway was the importance of CRM not only amongst the flight station, but also between the flight station and the tactical crew. Our initial CRM breakdown was a large barrier to overcome as everyone saw only their own piece of the malfunction. It took a concerted effort between the pilots, FE, and the rest of the crew to force communication flow to improve our situational awareness. 🦅

---

LT DELUCCA FLIES WITH VP-47.

# DifferentMantras

BY LT ANDREW HORVATH

**I**t was early spring at VQ-1's detachment site in EUCOM. One glance at the news gave the impression that things were heating up in the region. Having recently changed detachment sites from Southwest Asia (SWA) to our current location, our crew was excited to operate in the new AOR.

Twice, the all-too-common chips light had prompted three-engine landings in SWA, and a bleed-air-related power loss had caused another long transit three-engine landing, all over the course of just three months. Handling these hazards had given us a well-earned sense of proficiency.

We had a full crew on board our EP-3E that day, with a nearly full fuel load. EP-3E flight stations fly with two NATOPS: one for the P-3C and a shorter supplement for the EP-3E. The flight characteristics and operating procedures are largely the same. Preflight went as scheduled, and we were on track to be on station at our fraggled time. With my junior copilot (3P) making the takeoff, we took the active, set power, rolled and rotated. My 3P called for maneuver flaps at 160 knots. Moving the handle, I noticed the flaps indicator tracking normally to the selected position. As the indicator arrow settled over MANEUVER, the FLAP ASYM light illuminated.



The FLAP ASYM light is brought on by an asymmetrical condition of the flaps. It triggers the flap-asymmetry system, which, in theory, prevents further travel of the flaps, minimizing damage and further loss of controllability.

Knowing that how we should proceed depended on my interpretation of the flight characteristics, I took the controls as we passed through 500 feet. Slightly more than normal right rudder was required to center the slip indicator, and the aircraft tended to roll right. I determined that the FLAP ASYM light was accompanied by a change in flight characteristics. NATOPS then directed us to execute split-flap procedures, which ask the question, "Is the aircraft controllable in its present state?" Because the aircraft was indeed controllable, we opened NATOPS for reference. I sent my senior copilot (2P) to visually assess the flaps through the windows of the port and starboard overwing exit hatches.

Shortly after completing the NATOPS procedures, my 2P returned to the flight station. The flaps on the P-3 are marked with lines corresponding to degrees of deflection so that anyone inside of the aircraft can roughly estimate the position of the flaps. What my 2P told me matched what I expected him to see based on the flight characteristics of the airplane. The port flap was at 10-degrees deflection (exactly MANEUVER position), while the starboard flap had traveled farther up to eight degrees — a split-flap condition. I posted observers at the overwing hatches to watch for further movement.

After stabilizing the aircraft, taking care of checklists, and stopping below an IMC layer at roughly 4,000 feet, we proceeded to a known functional checkflight (FCF) VFR flying area and dumped fuel. This is a standard procedure to lighten the aircraft resulting in decreased approach airspeeds and shorter ground rolls. OPNAVINST 3710.7 prescribes a minimum altitude of 6,000 feet for dumping, but a time-critical ORM analysis dictated that we not fly through IMC in our current condition.

EP-3 crews usually find that after dumping they are still heavier than our heavyweight landing speeds prescribed by NATOPS. All landings below 103,880 pounds are normal and unrestricted. Landings above 103,880 pounds and below 114,000 pounds require documentation in the aircraft discrepancy book (ADB); after ten landings, inspection is required. Above 114,000 pounds should only be done in an emergency; it risks scrapping one of the few EP-3s in the fleet and requires inspection each time.

Any number of things can result from landing over-

weight, including fuel leaks, landing-gear structural cracks, and blown tires. These discrepancies can down the aircraft at single-aircraft detachment sites for days and even weeks, costing the squadron numerous missions. EP-3E crews usually burn down to 114,000 pounds or 103,880 pounds (depending on the nature of the malfunction) for this reason. The only time to land above those weights, as discussed in our wardroom, is if remaining in the air puts the crew in greater danger than landing.

THE CONCEPT OF A NO-FLAP LANDING in the P-3 may lead one to conclude that we did not need to make that type of landing with our flaps around MANEUVER. But, with the flaps "at any position above the APPROACH position," you have to make a no-flap landing. NATOPS continues, "No-flap landings are not recommended at gross weights exceeding 103,880 pounds." This recommendation highlights the criticality of no-flap landings in the P-3 series. Speeds are high, ground roll distances are long and the impact on the airframe from the nonstandard AOA-style touchdown is harsh. "Not recommended" does not fit into the classic verbiage from OPNAVINST 3710: "may," "should" and "shall."

Our tactical evaluator, an NFO currently assigned as the starboard observer, called me over ICS. He reported that the starboard flap was slowly moving upwards. In what cases would a crew land no-flap above 103,880 pounds in a P-3? We found one that morning.

Continuing to fly the aircraft was accepting unnecessary risk. With the airfield's location on a peninsular cliff, winds can be unforgiving, especially on short final. I was unwilling to attempt a landing with one flap completely up while another was stuck at MANEUVER if I didn't need to. We thought about putting the ailing airframe on the deck at its current gross weight. My crew and I began preparations to land at below 114,000 pounds.

A controllability check was the next item of business. Because we actually did have some flap deflection, I knew it was highly unlikely for us to hit any sort of stall buffet. Also, the effects of the asymmetrical-flap position would be attenuated as the aircraft slowed. We decelerated slowly toward our no-flap landing speed and made some control inputs; the controllability check was uneventful.

Any delays at this point were unfavorable. Our emergency-landing brief was completed as we turned toward home.

With our anticipated landing weight at 111,500 pounds, we declared an emergency with control and

notified them of our intentions. We reviewed what we had talked about in the emergency-landing brief, and I impressed upon my 2P to call me out on the slightest deviations from prebriefed parameters. We concurred on the necessity of being on terra firma without delay, but I wasn't going to land if we weren't adhering to what we briefed. We needed to get this right, for the safety of my crew and the integrity of the aircraft. I confirmed our ground roll of 5,900 feet. With a 10,982-foot runway, we needed to touch down in the first third. We would take a wide downwind with long final. The VSI at touchdown needed to be less than 500 fpm. To achieve this, it was crucial to have a flatter-than-normal final and be solidly stabilized and trimmed at my landing speed.

It was game time. On parameters off the 180, the mainmounts touched concrete at the 9 board, and we were at taxi speed after a 6,000-foot roll.

**M**aintainers did some troubleshooting but reached an impasse. Mechs put the aircraft back together, and I signed for it two days later. On takeoff roll, eight knots before rotate, the FLAP ASYM light struck again. I immediately took the controls and executed a high-speed, four-engine abort.

Our detachment maintainers again couldn't get the problem to replicate on the ground at zero knots. The aircraft was released safe-for-flight. Trying my hardest to not insult our maintenance professionals, who do a fantastic job maintaining an aircraft that was first flown in 1959, I voiced my suspicion that we would be in the same position again if we went flying. I insisted that we load up with minimum crew and minimum fuel for an inflight evaluation. My decision to do so was ultimately supported by maintenance, our detachment officer-in-charge and skipper.

Stepping to the bird for our evaluation, my flight station discussed a made-to-order FCF deck. We'd take the active, set takeoff power, and cycle the flaps under the air load of the props. If no problems were noted, we'd fly to the FCF area, pushing the flaps to each airspeed limitation at least two times, and cycle them up and down.

We didn't get that far. The FLAP ASYM light illuminated with takeoff power set in the brakes with no flap-position change. What happened next made me more certain about our decision to not try a mission flight. We taxied back to the line and fuel-chopped three engines (1, 3 and 4) for an external-power shut-

down. With the parking brake set, the aircraft began to creep forward. Our No. 1 hydraulic system then read zero gallons, and both of the system pumps gave us low-pressure-advisory lights. I guarded the emergency-brake handle, ready to use it if necessary, and pulled No. 2 into reverse to slow our forward advance. My FE quickly fuel-chopped the No. 2 engine, and the aircraft came to a stop on the fortuitously flat tarmac.



The lineman chocked the plane. We completed the secure checklist and stuck our heads out the side of the plane. It looked like a slasher horror-movie scene behind No. 2. The swivel joint on the brake system had burst, releasing almost all of the 16.2 gallons of hydraulic fluid in a matter of seconds. We were without brakes or nosewheel steering, a situation that, coupled with a FLAP ASYM in-flight, could have been catastrophic on the runway.

Two weeks after the original problem, and after several maintenance turns, in-flight evaluations, and FLAP ASYM lights resulting in high-speed aborts and normal APPROACH flap landings, the problem had been finally solved. We had lost a lot of missions, but everyone came away unscathed.

Since my time in VP-30 until now, I've heard different mantras regarding the condition of the aging P-3. One is that the P-3 is old, and we must accept small problems with the aircraft and deal with them. I believe this is a dangerous and illogical approach. My personal guidance, the one that I believe saved us from even more trouble, is that, because the likelihood of compound malfunctions is greater, aircrews should not accept degradation as just part of doing business in this plane. 🦅

---

LT HORVATH FLIES WITH VQ-1.

# Fighting Complacency

## One Autorotation at a Time

BY LT CHRIS KRUEGER

**T**he rewards and excitement of training student naval aviators in the advanced helicopter curriculum at NAS Whiting Field are often tempered with monotony and repetition. Lots of flight hours and numerous maneuvers help mask the dangers that exist in everyday operations.



### The Set Up

During the first flight of the day, I took off with my new on-wing on a fam 4 via course rules to work the channel and practice emergency procedures at altitude before heading to Navy Outlying Field (NOLF) Spencer. It was the middle of the summer: hot and humid, with high density altitude (DA). Ambient air temperature was 32 degrees Celsius, DA was +1,700 feet, and winds were calm. We transitioned outside the NAS Whiting Class C airspace and set up for our first simulated engine failure at altitude. When students are learning how to autorotate after a simulated engine failure, set-up is critical because the margin for error is low when maneuvering the heli-

copter to make the intended field.

I was on the controls and demonstrated the first simulated engine failure of the day. Rainbow Field is an unprepared piece of farmland that we use when teaching students how to set up and conduct emergency procedures. The first simulated engine failure was a 180-degree autorotation. The maneuver, waveoff, and engine response were all on the numbers and per the book. Confident in the aircraft's performance, I let the student conduct the next four simulated engine failures. He understood the basic mechanics of the maneuver and the field geometry involved.

Because this was the student's first time doing these intense maneuvers, I was riding the controls with him and making inputs to keep the aircraft in a recoverable profile the entire time. My student progressed with each pass, maintaining Nr, airspeed, and sight picture more precisely and confidently as the flight went on. With each attempt, I took controls before 400 feet per Wing SOP and initiated the waveoff by bringing the twist grip to full-open with the collective full-down. After all five passes, the engine spooled up correctly within one or two seconds when the twist grip was brought full open, and the waveoffs were benign.

## The Outlier

I decided to test my student's ability with a straight-in, simulated engine failure to a different unprepared field, known as Texas Field. The student handled the entry well and the maneuver was going as planned with the helicopter descending at a controllable 65 knots. At about 450 feet AGL, I took controls from my student and initiated the waveoff by ensuring the collective was full-down and bringing the twist grip full-open. This time I heard no engine spool and got zero response from my gauges. My scan first stopped on my torque gauge – it read 5-7 percent (where it remained). This by itself wouldn't indicate a slow spool, especially if Nr was above 100 percent, but it prompted my scan to continue to diagnose.

I observed no trend or change in Ng or turbine outlet temperature (TOT), indicating no engine response. I then shifted my scan to my Nf/Nr gauge. Nr was reading about 95 percent. I gave the collective a slight pull, and observed Nr decrease slightly, and I momentarily caught the rotor-low RPM light on the caution panel. Fearing an unresponsive engine at this point, I immediately brought the collective full-down, took the twist grip back to flight idle and then back to full-open in the hope that something would reset and the engine would spool up. No dice.

## Deciding

While this was happening, we were passing through 400 feet. I tried to keep my composure as I scanned my cockpit and continued to fly into the field. Because we had a little extra altitude to lose before making the field, I widened the entry into the field slightly for a soft 45-to-60 degree approach to guarantee our entry. As we passed through 200 feet, I noticed my reattempt at getting our engine spooled up had no effect.

I remember thinking to myself, "This is actually happening, I'm committed to this field."

I left the twist grip full-open, still hoping the engine would spool up. I quickly called, "Mayday" over Spencer traffic radio frequency. My student had the presence of mind to squawk 7700 on the transponder. I then focused on my full autorotation: 200 feet, on course line; 150 feet, collective full-down; 100 feet, flare. Between 50 and 75 feet, I heard the familiar sound of an engine surging to life and saw movement on my gauges in my peripheral vision while continuing my flare. As I hit 10 to 15 feet and began my pull-pause-level, I noticed some power and completed what I compare to an "underspeed" landing profile, a sliding landing with limited power. The entire ordeal had lasted only seconds.

After landing, I radioed some of the aircraft at Spencer to let them know we were OK and to notify our duty office at Whiting of our situation. I would need to answer a lot of questions back at home, so I passed controls and started writing down everything I could think of, including times, gauge readings and ambient air temperature.

We then shut down, got out, and took stock. After making sure we still had our composure, we assessed the aircraft and environment. The aircraft looked fine with no damage. We put all the plugs and covers on the aircraft, because the grass was 1-to-2 feet high and lots of insects were beginning to swarm the aircraft, attracted by the heat. After calling our squadron and arranging for a maintenance recovery, we looked at the field around us. We noticed we had landed in a largely dry area, but we were surrounded by a shallow marshy area on three sides. A dense tree line was to the east. There was a dirt road with gated access from a paved road, which was the obvious entry point for the truck to recover the aircraft, but the shallow marsh was a concern. We had water bottles with us, and although mine had been more than half full before launching, we were facing several hours in high heat. We found shade to wait it out.

When the maintenance-recovery team arrived, they confirmed they were unable to bring their heavy truck through the 100 feet of mud. One option was to spin the aircraft up and hover-taxi it to where the truck could get to it. The other option was to have the aircraft wait several days, possibly a week, for the ground to dry enough to drive on. I considered that there was no damage to the aircraft and that I had a slow spool issue, not a power issue. If I lost power for some reason,

I could do a taxi cut gun to the deck easily and safely, even in the marsh. I called back to my squadron and my CO approved it, so we spun up, hover-taxied the 100 feet and shut down. The aircraft was loaded onto the truck, and we went back to Whiting for debrief.

I did want to engender a healthy respect of the aircraft and of flying. I wanted them to appreciate that wrong procedures, erroneous control inputs, or poor judgment can have consequences. I think they got it — so did I.

This event highlighted the importance of making



Since the start of FY12, TH-57s have had seven "slow to spool" events.

### Lessons Learned

Always be prepared for the worst, just in case. With my onwings, I emphasize that an aircraft will kill you if you let it. Training, following procedures, sound judgment and good CRM is what will keep you alive. That being said, little prepared me for this situation.

I sat down with my onwings and used the event as a teaching point. I didn't want them to be scared by this situation, of the aircraft or aviation in general, but

sure the aircraft is in a safe condition prior to initiating any simulated emergency. If we hadn't been in a proper autorotational profile, or if we didn't have the field made before I took the engine to idle, my student and I would not be here today, and you would be reading a Class A mishap report rather than this *Approach* article. 🦅

---

LT KRUEGER FLIES WITH HT-28.

# Two More Minutes?

**BY CAPT CHRIS SCHWAMBERGER, USMC**

**E**very time that I walk out of the FA-18C flight simulator after practicing degraded approaches in the night carrier environment, I always have the same thought: I hope that stuff doesn't actually happen to me. Single-engine approaches without a heads-up-display and with leading-edge-flap issues are no way to go through life. However, simulated situations like this prepared me for a day when things didn't go as planned.

We'd spent a few months doing combat sorties in support of Operation Enduring Freedom (OEF). I'd started to feel comfortable operating around the ship in day and night conditions.

I launched off the front of USS *Harry S Truman* (CVN-75) with a couple hours of daytime left and a six-hour mission in front of me. The mission itself was uneventful, if you don't count the pleasure of night KC-135 tanking over Afghanistan. Traveling back down the boulevard, my wingman and I reported two up aircraft and we split up to prepare for the CV-1 recovery.

"211 commencing, state 6.5, altimeter 29.83."

I started the approach, double- and triple-checking the checklist, making sure the hook was down and the radar altimeter set. I reached three miles with all my ducks in a row and began the final descent.

2.5 miles. 2.0 miles. Then, "Bang! Bang! Pop! Bang!"

In the darkness, the jet lit up with each loud report, as if I had started firing flares in the landing configuration 800 feet above the ocean. The sounds and flashes appeared to come from directly underneath the airplane from both sides. Instruments appeared normal. My first

thought was that I'd be spending the rest of the evening in the ocean awaiting a helicopter rescue, and then processing a pile of paperwork once rescued.

The next sound I heard was, "Engine right, engine right." Strangely, I felt relieved that the problem might be isolated and solvable.

Admittedly, the easiest action in the book for the FA-18 is the first step of an engine issue: Bring the affected throttle to idle. Check. Still descending at 1.5 miles from the ship, I planned to continue flying the approach and land as soon as possible. I was close to mom, and I didn't want to be airborne for one extra second. Landing on the ship at night with two FA-18C engines is scary enough if you get underpowered. Landing with only one good engine was a risk I wasn't willing to take with such short notice.

I decided to wave off with the right throttle at idle. The explosive engine stalls subsided. As I was above glide path and climbing, I realized it was probably a good idea to do the remaining step in "aviate, navigate, communicate."

"211 going around with right-engine stalls."

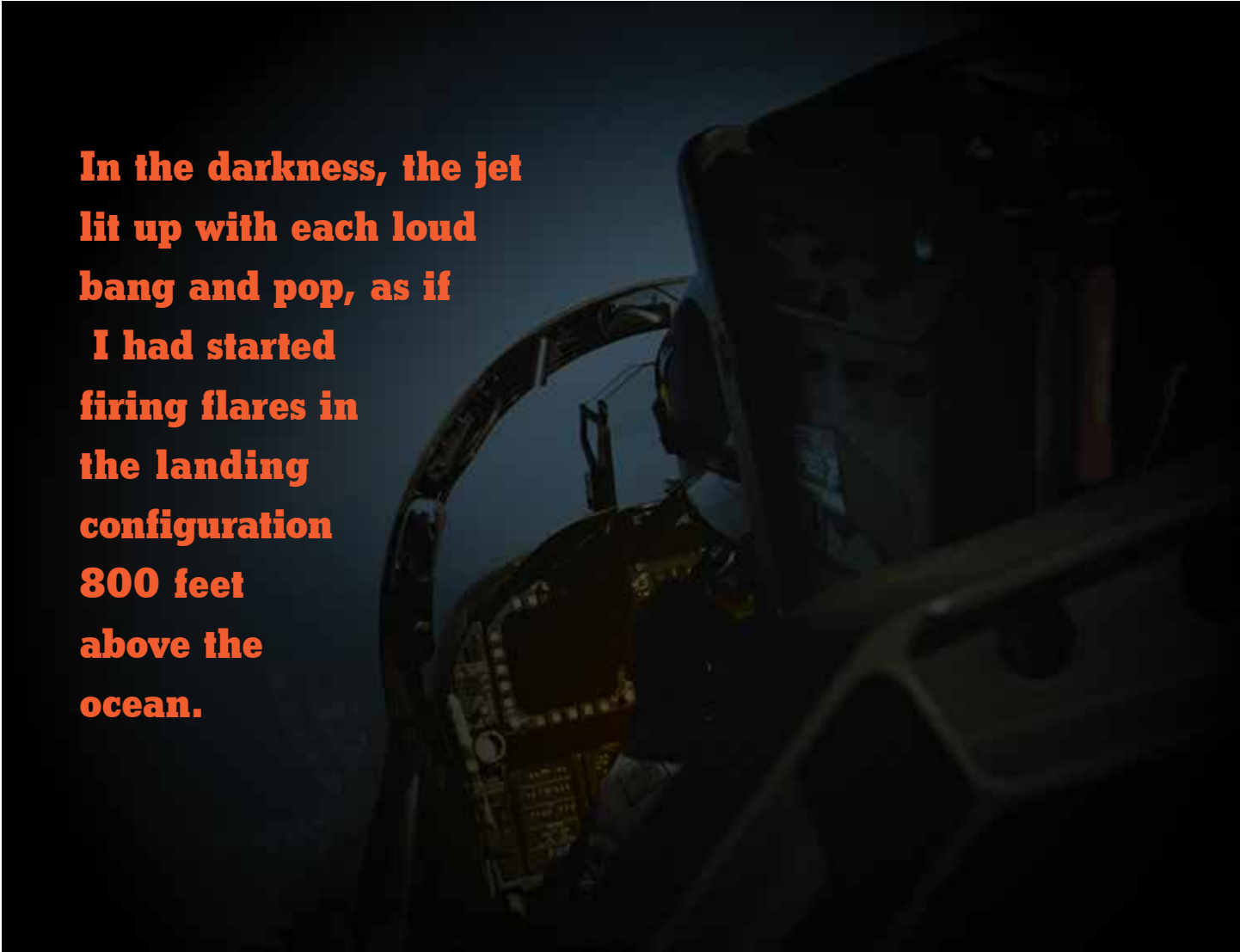
I felt relieved as the stalls cleared, but the feeling faded as I flew away – it was the right engine and the right side's respective components drive the hydraulics for the landing gear, refueling probe and the hook. I kept the gear and flaps down because I was worried about losing the right engine and having to rely on extra procedures and backup systems to get the gear back down. After a discussion with the squadron's operations officer on the auxiliary radio, it was apparent that the gear had to come up.

The engine indications were stable at idle, and the stall was cleared. The fuel wasted on fighting the drag of the landing configuration around the pattern would have soon driven me into a corner. The Hornet burns roughly 800 pounds of fuel during one cycle in the bolter-waveoff pattern. On the upwind, my fuel was 4,600 pounds, meaning I would have around 3,800 on the next approach (I ended up having less because the high burn rates on the left throttle and the two 500-pound bombs still on my wings from OEF slowed me down).

In the pattern, about one minute after I brought the right throttle to idle, I slowly pushed the right throttle up to see if the problem had cleared. I wanted to know if I could use both engines on the approach. The stall

quickly reappeared, and I put the throttle back to idle for the rest of the flight. With the operations officer still on the radio, we discussed waveoff characteristics and how usable the right engine would be on a bolter or waveoff.

I thought the right engine would still produce a little thrust despite the stalls, and I might be able to use it to help in the case of a bolter and a major settle. We discussed the half-flap approach and the precautionary single-engine procedures. During the flight, we never discussed what would happen if I bolted or didn't land. Would I tank? Would I bingo? Would I jettison my ordnance? To be honest, my game plan was to focus every ounce of energy on flying the best approach that I could, and then worry the other issues.



**In the darkness, the jet  
lit up with each loud  
bang and pop, as if  
I had started  
firing flares in  
the landing  
configuration  
800 feet  
above the  
ocean.**

Later, I would learn that my operations officer was keeping the chatter only to the necessary items to allow me to focus on the task at hand. He was having a behind-the-scenes discussion about the next phase of flight, if it came to that.

I finally got the call to turn left and intercept final bearing. I overshot the initial turn and fought my way to a good start at a mile behind the ship. I held my gear until about two miles to save fuel in case I needed it. I told myself that it was no big deal and that I'd done this dozens of times in the simulator.

I was relieved that this night emergency review was finally over. I was also in complete disbelief that after six hours of running flawlessly in combat, the right engine decided to destroy itself from the inside out with less than two minutes left in the flight. "You couldn't give me two more minutes?" I thought.

Although a simple emergency, the location and situation easily could have painted me into a corner. I should have had a better game plan for a go-around, bolter or waveoff. My select jettison was not set up to get rid of my ordnance immediately after a bolter. Should I have selected jettison or emergency jettison, dropping my two



Photo by MC3 Karl Anderson. Modified.

"211, Hornet ball, 3.7."

Paddles answered, acknowledging my precautionary single-engine approach. With the left engine high on the power, I noticed the ball creep up one cell from centered at the "in the middle" position.

"A quick power-off correction will fix that," I thought. It fixes it every other time I fly the ball. As my hand almost subconsciously moved slightly aft to recenter the ball and return to glide slope, the jet quickly adjusted back to glide slope against my intent. The only problem was that I was on the other side of glide slope. The left throttle was parked at military power, with the ball not responding in a positive manner.

One ball low, two balls low. The LSO called, "Little power" as he noticed the settle. Do I go to afterburner? By the time I decided to hold off on selecting afterburner, the jet hit the deck and slowed to an abrupt halt.

empty fuel tanks as well? This is something that would have been worth a quick radio transmission, even if it only got the ball rolling as I flew the approach.

I was inadequately prepared for the emergency-gear extension if the right engine had failed in flight. The FA-18 emergency-gear-extension system is simple and works well. However, with a limited hydraulic backup supply, I might not get my refueling probe out after an extension. This isn't ideal considering my fuel state was rapidly approaching a divert state. I was already below a dirty bingo if I couldn't raise the gear. Next time, the book reader may not be there to assist.

You aren't always going to get an extra two minutes of problem-free flight – be ready for the worst-case scenario. 🦅

---

CAPT SCHWAMBERGER FLIES WITH VMFA 312.



# Guide. Educate. Train. Motivate. Advise.

**Become instrumental in shaping safety cultures Navywide.**

We're looking for motivated Chiefs to join our team. A tour at the Naval Safety Center will provide you the opportunity to:

1. Travel worldwide and influence aviation, afloat and shore/ground safety and risk management programs.
2. Serve as an instructor at our Schools of Naval and Environmental Safety and earn Master Training Specialist certification.
3. Increase your knowledge of naval safety programs and management systems and pursue a variety of safety certifications.
4. Pursue a degree through college or online courses.

**Job Specialties:** AB, AD, AF, AM, AO, AS, AT, AZ, BM, DC, EM, ET, FT, GM, GS, HM, IT, LS, MK, MM, ND, PR, SO, YN

**If you're interested in joining our team, contact our Command Master Chief at (757) 444-3520, ext. 7012 or email [safecmc@navy.mil](mailto:safecmc@navy.mil). You may also contact your detailer.**



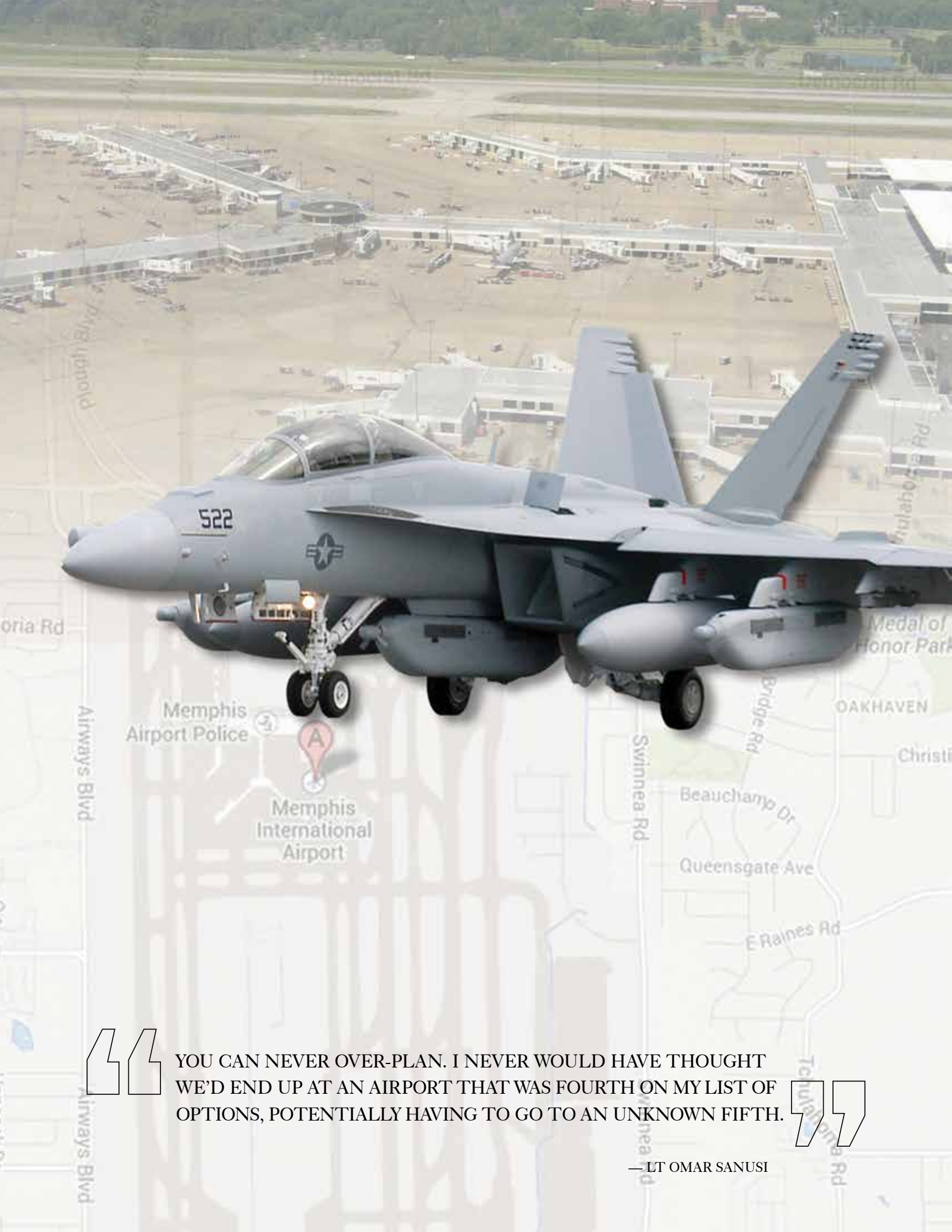
## Naval Safety Center

**We prevent mishaps to save lives and preserve resources.**

Naval Safety Center  
375 A Street  
Norfolk, VA 23511-4399  
(757) 444-3520 DSN 564

[www.public.navy.mil/comnavsafecen](http://www.public.navy.mil/comnavsafecen)





“

YOU CAN NEVER OVER-PLAN. I NEVER WOULD HAVE THOUGHT WE'D END UP AT AN AIRPORT THAT WAS FOURTH ON MY LIST OF OPTIONS, POTENTIALLY HAVING TO GO TO AN UNKNOWN FIFTH.

”

—LT OMAR SANUSI