THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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Approach

FOCUS ON NAVAIR

The Navy & Marine Corps Aviation Safety Magazine

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Mishaps waste our time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness. This magazine's goal is to help make sure that personnel can devote their time and energy to the mission, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous enough; the time to learn to do a job right is before combat starts.

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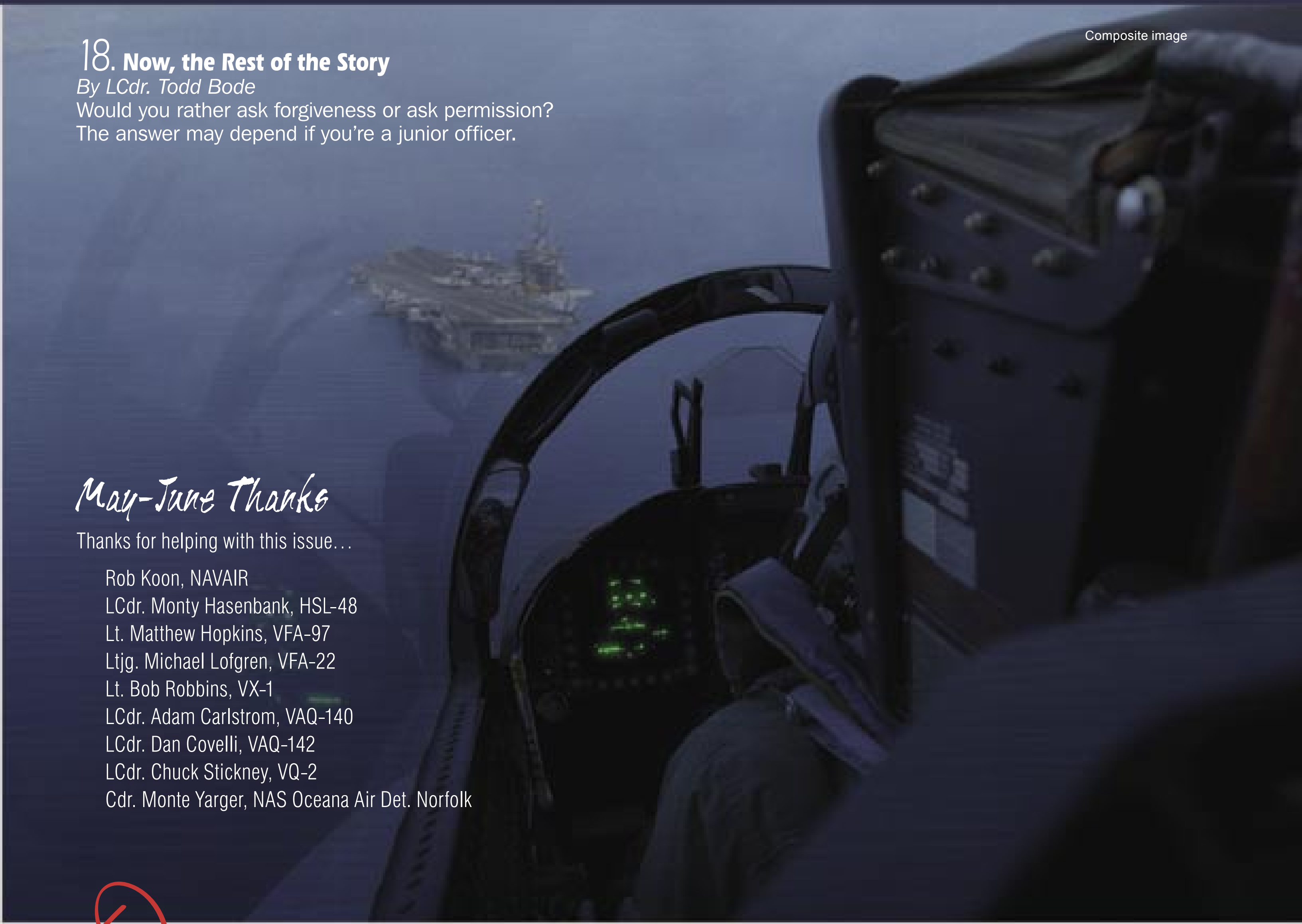
CON

Features

N T E N T S



Composite image

May-June Thanks

Thanks for helping with this issue…

- Rob Koon, NAVAIR
- LCdr. Monty Hasenbank, HSL-48
- Lt. Matthew Hopkins, VFA-97
- Ltjg. Michael Lofgren, VFA-22
- Lt. Bob Robbins, VX-1
- LCdr. Adam Carlstrom, VAQ-140
- LCdr. Dan Covelli, VAQ-142
- LCdr. Chuck Stickney, VQ-2
- Cdr. Monte Yarger, NAS Oceana Air Det. Norfolk

Departments

In memoriam

Cdr. Robert P. Brewer, USN (Ret.), managing editor of Approach magazine from the first issue through July 1957, passed away earlier this year in Henderson N.C.

The continued success of this magazine is in large part a result of his efforts. Cdr. Brewer, in an article in the July 1980 issue reflected, "I believe that our initial warm acceptance resulted from an editorial philosophy (which we defended rather fiercely) that included: never talk down to an aviator, but speak cockpit-to-cockpit, sharing good dope; avoid 'don'ts' and never forget, as we wrote of accidents and incidents, 'There, but for the grace of God, go I'; seek to use a light treatment vice the heavy approach whenever possible—no one knows better than aviators the vulnerabilities inherent to the business, so don't lace the message with ominous threats." He added, "Their work [investigators] was a constant reminder that, indeed, no accident is a complete loss if from it something can be gained to prevent another."

Front cover: An MH-60S from HSC-26 operating at low level. Photo by MC3 Kristopher Wilson.

Back cover: A Marine Corps MV-22B Osprey, assigned to VMX-22, waits to take off from the flight deck of the amphibious assault ship USS Wasp (LHD 1) while a second Osprey awaits clearance to land. Photo by PHAN Zachary L. Borden.

The Initial Approach Fix

From Our Aviation Directorate...

Focus on NavAir

In this issue of *Approach*, we are featuring information about the Naval Air Systems Command (NAVAIR). They are an integral part of the process to provide the finest and safest resources to naval aviation. A part of the process that is critical to NAVAIRs mission accomplishment is the continued reporting of hazards. The web-enabled safety system (WESS) is used to submit these reports and get the needed information to the NAVAIR team. Below is an update on WESS, and the feature on NAVAIR follows on page 4.

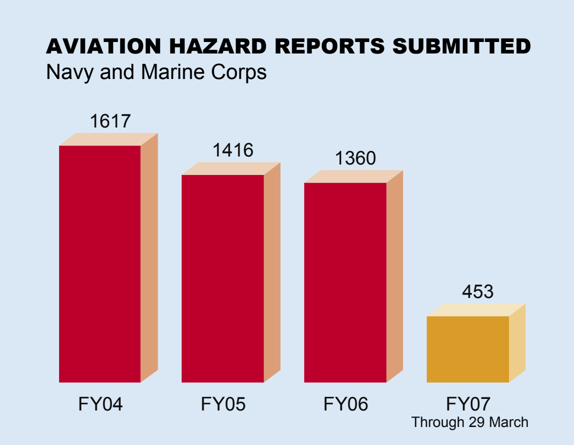
Web-Enabled Safety System (WESS)

Q. What is the goal of the Naval Aviation Safety Program (OPNAV 3750.6R)?
A. The goal of the Naval Aviation Safety Program is to identify and eliminate hazards before they result in mishaps.

Everyone associated with naval aviation has an obligation to report hazards. These reports are submitted through the web-enabled safety system, better known as WESS. The Naval Safety Center WESS website link is: http://www.safetycenter.navy.mil/wess/default.htm

What to report

When events occur that do not meet the criteria of an aviation mishap, a hazard report (hazrep) should, and in some cases, must be submitted. Even though you may have submitted a hazardous-material-report (HMR) or a quality-deficiency-report (QDR), you still may need to submit a hazrep. Your aviation safety officer should review all reports to make sure a hazrep is submitted, if necessary.



How to report a hazrep

Admittedly, the introduction of WESS had initial fleet-training requirements, which resulted in a significant drop in the number of hazard reports submitted. But, with fleet input, training and defects identified, WESS continues to improve, incorporating system enhancements that increase user-friendliness. The addition of online tutorials, downloadable worksheets, enhanced help screens, and increased user-proficiency, significantly reduced the amount of time it takes to input a report into the system. All WESS resources can be found at: http://safetycenter.navy.mil/wess/default.htm.

Quality of hazreps

The accuracy and benefits of the information we get from our safety database depends entirely on the accuracy and effort level of the personnel entering the reports. The more detailed and indepth the hazrep, the greater benefit it will provide to others to prevent the same from happening to them. Does it include all the human factors involved? Are the recommendations reasonable and actionable? Is the report routed through endorsers, who have the authority to take action on the hazard? In some cases, you may want to convene your aviation-mishap board (AMB) to investigate and report the hazard.

Command safety authority

Each command shall designate a safety authority, who is responsible for managing the WESS accounts for their command. These duties include:
- Approving or rejecting requests for WESS access for personnel in their UIC.
- Indicating the level of access each user in their command is allowed.
- Granting access for community-of-interest (COI) notifications and/or endorsement privileges.

Although the WESS aviation module is currently used for hazard reporting, within the next few years, it will include aviation mishap reports which deal with privileged information. Take this into consideration when selecting who will have an account. Do they need it to perform their duties?
The command-safety-authority billet is mandated by OPNAVINST 5102.2D/ MCOP 5102.1B, Navy and Marine Corps Mishap and Safety Investigation, Reporting and Record Keeping,

Community-of-interest (COI) notification

The COI notification essentially is the same as your previously used collective-address designators (CADs). They are named the same, such as,

Visit our Aviation Directorate website at: http://www.safetycenter.navy.mil/aviation/default/htm.

"all Hornet aircraft activities" and "all NavMarCorp air-station activities." Adding COIs to your WESS reports ensures other aviators will brief and learn from your hazard report to hopefully prevent it from happening to them.

Need help?

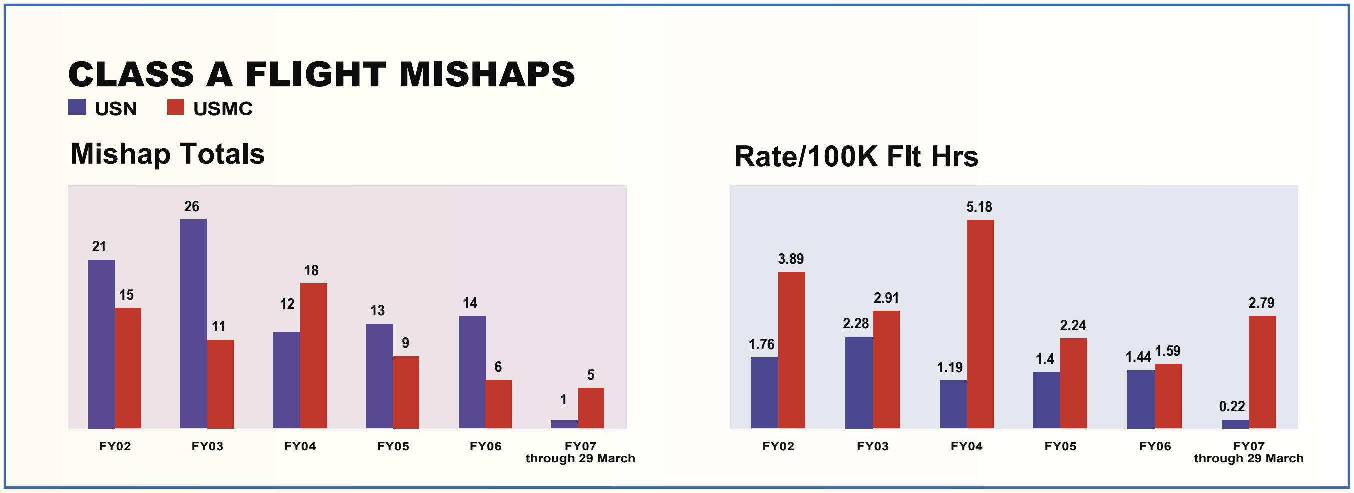
There are two primary methods for obtaining help for WESS. First, you can submit a feedback form. The link to the feedback form is always available under the activities link on the left of every WESS page. Second, is to call our help desk where you will talk with a live person for immediate assistance. The phone number is (757) 444-3520 Ext. 7048.

Remember, when you don't report a known hazard, aircraft systems aren't improved, people don't learn from other's incidents, and mishaps can occur. It is our responsibility to the future of naval aviation to report and track the hazards of today to prevent the mishaps of tomorrow.

Aviation-mishap-rate update

One of the missions of the Naval Safety Center is to track and analyze aviation data. As we enter the summer months, we continue to stress programs such as risk management, crew resource management, safety surveys, culture workshops, and command assessment surveys as key factors in driving down all mishap rates. The real measure of success lies in mishap prevention and saved lives.

Here's how we're doing in aviation:



Aviation statistics can be viewed at: http://www.safetycenter.navy.mil/statistics/aviation/default.htm.

Grampaw Pettibone Award Winners

The Grampaw Pettibone Awards are presented annually to the individual and organization that contributes the most toward aviation safety awareness through publications. The Naval Safety Center team congratulates and is proud to announce the 2006 winners:

Individual category winner: LCdr. Steven Kiggans, VT-22, Runner-up: LCdr. Gabe Soltero, HS-4.

Organization category winner: VFA-87, Runner-up: VAW-121.

Citation plaques for winners and certificates for runners-up will be mailed to controlling custodians for presentations.

FOCUS ON NAVAIR

Today, Tomorrow, the Future

By Dan Steber and Jack Stewart

Introduction

The editors of *Mech* and *Approach* met with PMA202 (Aircrew Systems) and PMA209 (Air Combat Electronics) representatives to learn more about several NAVAIR programs that make naval aviation better and safer. We discussed several aircrew-system programs currently in development with PMA202, and we received an update on the military flight operations quality assurance (MFOQA) program from PMA209. We want to provide our readers with an overview of these programs, and offer information to all aviators as to the NAVAIR process.

Fleet inputs are an important part of the process. Aviator and maintainer feedback on systems performance, innovations, and ideas for product enhancement passed to NAVAIR, and through WESS reporting, gives them the tools to initiate, develop, modify and produce the software and hardware necessary for the users to carry out the mission, today, tomorrow and in the future.

NAVAIR Vision

We exist to provide cost-wise readiness and dominant maritime combat power to make a great Navy/Marine Corps team better.

NAVAIR Goals

To balance current and future readiness. We need to ensure that we provide our naval aviators with the right products to fight the Global War On Terrorism and other potential future conflicts.

To reduce our costs of doing business. We need to pursue actual cost reductions, not so-called "savings" or "avoidance." We need to return resources to recapitalize our fleet for tomorrow. We must continue to introduce best business practices and remove barriers to getting our job done with greater efficiencies.

To improve agility. Our ability to make rapid decisions in support of emerging fleet requirements is essential if we are to continue to provide value to the nation. We must reinvigorate a solid chain of command that values responsibility and accountability in its leadership.

To ensure alignment. We have come a long way aligning ourselves internally; now it is time to ensure that we are fully aligned, internally and externally, with CNO's transformation initiatives.

To implement fleet-driven metrics. Single fleet-driven metrics will ensure we directly contribute to the Naval Aviation Enterprise.

PMA202: Aircrew Systems

Mission: Provide the Navy and Marine Corps with cost-wise aircrew systems by developing, integrating, fielding, and supporting aircrew safety, survivability and mission enhancement core capabilities.

The business card for Capt. CJ Jaynes, PMA202 program manager, says, "Service to the Fleet," and a visit with her team revealed it's more than just a motto.

This NavAir program office provides the Navy and Marine Corps with cost-wise and safe aircrew systems. They make sure personal equipment does what it's supposed to do when aviators or maintainers need it—lives depend on it.

Capt. Jaynes sums up her department's work with a simple statement: "If you're going to change anything on the human, see 202 first."

A big challenge for her team is their work on a wide variety of programs, including aircraft systems and aircrew, survival electronics, chemical-biological defense, and fleet-support systems.

Continually improving aviation gear, PMA202 focuses on getting users what they need. They not only rely on feedback reports but also visit with and talk to the fleet to ensure the right products are developed. This firsthand look, or "boots on the ground" effort, allows for valuable dialog and a better understanding of the fleet's needs.

Cdr. Tom Wheaton, who works the class desk, explained, "Warfighters look for tools to get the job done, and they want them now. But now is difficult to do. Developing, acquiring, fielding, and supporting take time. Quality takes time, and the gear needs to work the first time, every time."

Here's an overview of several programs and projects that PMA202 currently is working on:

Naval Air Systems Command

NAVAIR is a Navy command, headquartered in Patuxent River, Md., with military members and civilian employees stationed at eight principal continental United States sites and two principal sites overseas. NAVAIR provides unique engineering, development, testing, evaluation, and management capabilities to deliver airborne weapons systems that are technologically superior and readily available. Using a full-spectrum approach, the command delivers solutions at optimal costs and provides support for vital programs for the U.S. Navy. NAVAIR works effectively as part of a warfighting partnership, known as the Naval Aviation Enterprise (NAE) and the larger Navy Enterprise, through which interdependent issues affecting multiple commands are resolved on an Enterprise-wide basis. The NAVAIR commander serves as the NAE operations officer.

Aircraft-mounted systems:

Tracking aircraft- mishap trends, using reported incidents and information from the Naval Safety Center, is the foundation for many of our projects, according to Gary King of the aircraft mounted-systems team. This mishap data inspired development of the mobile aircrew restraint system (MARS), which protects crew members in the cabin during a hard landing or mishap. The system uses a modified inertial reel originally developed for crashworthy seats and integrated to the airframe and aircrew vest.

Another mishap trend indicated the need for a new crash-protection system, the common crash-resistant troop-seat system (CCRTSS), which PMA202 qualified in 2004. It is the best crash-attenuating passenger seat in the Navy today and is being fielded in all new production UH-1Y aircraft.

The premier ejection seat in use today is the Navy aircrew common ejection seat (NACES). To meet the needs of a new mission, the NACES modular design can be upgraded without a total redesign to the seat. This capability supports a wider aircrew population, including female pilots, and ensures safe ejection for both the smaller and larger aircrew. Phase II of its development included a new digital sequencer that controls critical seat functions to improve seat performance and reduce seat cost. Phase III is planned for 2009 and will improve high-speed ejection-seat performance through the NACES stability improvement program (SIP). This is done with a new drogue stabilization system. NACES upgrades will replace older escape systems in various USMC FA-18s.

PMA202 is developing an alternative oxygen solution for the E-2D, Advanced Hawkeye, with installation of an onboard oxygen-generating system (OBOGS), instead of LOX bottles. The transition to OBOGS across all naval aircraft eventually will eliminate LOX infrastructure and reduce costs.

See something you like?

If you see a commercial off-the-shelf (COTS) survival item or clothing article that you think would benefit the fleet and be an improvement over your existing survival equipment.

Want to get it?

Visit the PMA202 website and submit a request for new gear or contact the State of the Art Survival Items (SOASI) program manager, John Birtwistle at john.birtwistle.ctr@navy.mil. If the requested item qualifies, then local purchase will be authorized.

"People often can't appreciate the work it takes to get a product properly integrated to the aircraft and out the door," King said; for example, seat cushions that meet the requirements for extended missions.

King pointed out a Hornet mishap where an unauthorized cushion had been installed. He added, "You can't simply install a cushion in the seat. As a subcomponent of an ejection seat, these seats are complex systems that are sensitive to weight, center of gravity, or structural changes. The same analysis is being done to safely integrate the joint helmet-mounted cueing system (JHMCS) with current ejection seats.

POC: Gary King, 301-757-6985,
email: gary.king@navy.mil.

Aircrew-mounted systems:

An ongoing in-service program improves gear that aviators and maintainers currently use. "Fleet support teams," according to Dex Hansard, "work with the fleet users to identify deficiencies." With this information, the teams obtain funding and get the fixes in place.

All future aviators will fight with the next generation of helmet, the joint helmet-mounted cueing system (JHMCS), which interfaces with the aircraft's computers, weapons, and sensor hardware. It currently is flying in the Hornet. JHMCS boasts a man-mounted, ejection-compatible, helmet-display system that optically projects aircraft, weapons and target information on the helmet visor.

The flight-deck cranial and flight helmet are being redesigned. "If you include the other services," Hansard says, "27 different configurations of flight helmets are in use, with three display modules. The intent is to develop a common helmet and cranial, with two variations: one for rotary aircraft and one for fixed wing." Night-vision devices (NVDs) and noise-protection requirements are being integrated into the flight-deck cranial. The next generation of NVDs in development significantly will improve night visual acuity and the field of view. The JHMCS night-vision cueing and display (NVCD) will integrate image-intensifier capabilities into the existing day-capable system for night operations.

The proliferation of battlefield lasers requires protection against hostile wavelengths. Improved laser spectacles and the joint aircrew laser eye-protection visor (JALEPV) will provide day and limited night protection for tactical and rotary aircrew.

A specific PMA202 success story is the multi-climate protection (MCP) system. MCP is a multi-layered clothing ensemble made with state-of-the-art fabrics that insulate without being bulky or heavy. The program office expedited cold-weather ensembles for Marines in Afghanistan.

POC: Dex Hansard, 301-757-6972, email: derwin.hansard@navy.mil.

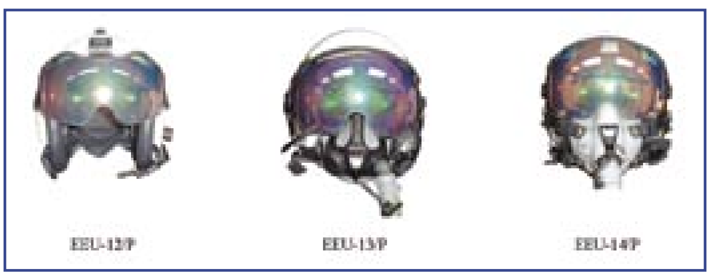
Survival electronics and equipment:

The PRC-149A and the URT-140 radio beacon replace legacy radios not compatible with the SARSAT system. New radios offer enhanced search-and-rescue (SAR) location and will operate on all three internationally recognized SAR frequencies.

PMA202 is developing a helicopter egress system for passengers (HESP). This system integrates inflatable flotation with an underwater breathing air bottle to make it easier for troops to escape from a sinking aircraft. HESP is being developed in cooperation with the Marine Corps Combat Development Command (MCCDC).

Ricardo Springs, program manager, also pointed out the state-of-the-art survival item (SOASI) program, which "fast tracks" the process to qualify items for use. SOASI items are usually commercial items currently available to recreational outdoorsmen, such as flashlights, knives, signals, and some high-tech clothing.

POC: Ricardo Springs, 301-757-6955, email: Ricardo.springs@navy.mil.



Chemical-biological defense:

This division works very closely with joint programs, which is important because the Navy has many unique requirements that must be factored into DoD programs. This division provides and services three types of equipment: individual protection, detection and decontamination.

Current programs include the joint protective aircrew ensemble (JPACE); joint-service aircrew mask (JSAM), which protects aircrew; joint chemical-warfare agent detection, for point detecting and identifying chemical agents; joint-service personnel/skin decontamination system (JSPDS); and joint material decontamination system (JMDS) to clean contaminated personnel and equipment. Future programs include standoff detection systems, which will detect and identify nerve, blister, and blood-agent vapors at significant distances.

"We hope the gear won't have to be used," said team member David Coughlin, "but we have to be ready to use it when needed." He pointed out that 21st century realities really bring the threat to focus.

The seriousness of CBR gear led to issuing a NATOPS for chem-bio. Team member Sam Frazier said of the manual, "It's available on our website and covers individuals, aircraft and organizations."

GySgt. Forrest Sibley, fleet liaison, pointed out a specific area where maintainers can help themselves. "Check the gear and size new arrivals ahead of time to build a database so equipment is ready to go." He added that this equipment could be tracked with SEATS.

POCs: Joe Marquis, (301) 757-6969, email: joseph.marquis@navy.mil; Sam Frazier, 301-342-3582, email: Samuel.frazier@navy.mil. David Coughlin., 301-757-6967, email: david.coughlin@navy.mil.

Fleet support:

NavAir's fleet-support team works with maintainers and aircrew. Six teams provide engineering and logistics support for new and modified equipment, and help investigate mishaps.

Cdr. Joe Essex says his team is ready to "respond to problems with any system, provide training, and find a fix for any deficiency." These people are the link between their developmental team and the fleet as NavAir products hit the fleet. Cdr. Essex adds, "We want to visit every squadron, every base, every year." Their role is to take care of the fleet user, or as he says, "Adapting gear to the mission to meet changing mission." The six fleet-support teams are:

- Aviation life-support systems: survival vests, anti-exposure suits, torso harnesses, life preservers, helmets, oxygen masks, flight suits, boots, radio/beacons, and parachutes.
- Aircrew-escape systems: ejection seats, crashworthy seats, fixed aircraft seating, and ejection-seat parachutes.
- Aircrew-oxygen systems: regulators and related support equipment.
- Night-vision systems: night-vision goggles, operator and intermediate-level test sets.
- FAILSAFE: This program systematically introduces new or modified aviation life-support systems (ALSS) to fleet operators and maintainers—specifically targeting purpose, proper use, sizing, modifications, and

maintenance issues.

- Mishap investigations: Examine life-support and survival gear involved in aircraft mishaps. This team assists the Naval Safety Center in determining the possible causes of a mishap and possible causes of pilot, aircrew and passenger injuries.

POC: Cdr. Joe Essex, 301-757-6976, email: joseph.essex@navy.mil.

Aircrew systems discrepancies and maintenance issues:
Documentation of fleet-support discrepancies and maintenance issues should be completed in accordance with the Naval Aviation Maintenance Discrepancy Reporting Program (NAMDRP), as detailed in OpNavInst 4790.2 series.

Submit all NAMDRP reports to PMA202:
IAW OpNav 4790.2 series or via https://ei/navair.navy.mil website or via your Defense Message Dissemination System (DMDS)

Challenges abound in PMA202 to support the fleet. Capt. Jaynes said, "We need to be responsive and have a measured success. We measure success by cost, schedule and performance, and the ability to meet all aspects stated in the business plan."

Questions often arise about the length of delivery schedules, and what can be done to expedite a fix or implement a product for an urgent requirement. NavAir has the ability to purchase existing gear or COTS (commercial off-the-shelf) products. The acquisition process is accelerated, but, as always, the NavAir engineers examine the product and must approve it.

While it may be easy to be critical of how long it takes to provide some equipment and programs, it's important to understand that NavAir only approves gear that meet certain standards. "When changing gear or equipment, PMA202 can't respond without doing it the right way. We take a step-by-step process to make sure the solution is right, and we 'lean' the process," said Capt. Jaynes. As each program gets approved for development, milestones are set to track progress. While this entire effort may take from months to several years, the goal is to deliver a product that works when needed.

For more information about PMA202, visit their website at https://home.navair.navy.mil/pma202/.

Other key POCs within PMA202 are:
Martin Ahmad, Principle Deputy Program Manager, 301-757-9015, email: martin.ahmad@navy.mil.
Jill Moore, Aircraft Systems Tier II, 301-757-6932, email: jill.moore@navy.mil.
John Fabrizio, Assistant Program Manager for Logistics, 301-757-6978, email: john.fabrizio@navy.mil.
GySgt. Forrest Sibley, Fleet Maintenance Liaison, 301-757-7318, email: john.fabrizio@navy.mil

PMA209: Air Combat Electronics

Mission: To provide, integrate and support cost-effective, world-class, transformational airborne capability-centric solutions to enable common warfighter safety, connectivity, computing and interoperability needs.

MFOQA: Military Flight Operations Quality Assurance Program

The following scenario for aircrew may sound familiar: The mission is over, and the debrief begins. The LSO breaks out a shopping list of problems observed with your approach and landing. You listen to his sage observations as he critiques your airspeed, altitude, and even your dance with centerline. You often think, "Is he talking about the same approach I just nailed?"

In the past, you accepted the critical review. Now, you and the LSO can play back the approach, not just through a PLAT camera, rather with detailed information gathered from a flight-data recorder. Welcome to MFOQA.

NAVAIR is developing this program to provide timely feedback, not only for the aircrew debrief, but for the maintainers. The program will use new software with existing hardware, in multiple platforms, to record data and provide feedback to aviators and maintenance on factual performance.

Another after-flight exercise is the visit to maintenance control to write gripes. Was there really a fuel-flow split? Exactly how long did you have an EGT spike? No longer will there be questions about specific events occurring during a flight. MFOQA will show the aviators and maintainers exactly what happened and when. Specific aircrew actions (throttle and stick movements) and cockpit indications will be available for review, reducing miscommunication and improving fact-based troubleshooting.

Flight Data Analysis

This event is detected when the aircraft experiences high positive vertical accelerations that are greater than 6 g's.

Date	StartTime	EndTime	Duration	Min.	Max.	Avg.	Max. Exceed	Avg. Exceed
11/13/2002	00:26:45	00:26:47	00:00:02	6.01	6.84	6.44	0.84	0.44
11/14/2002	00:20:14	00:20:16	00:00:02	6.09	6.46	6.30	0.46	0.30
11/14/2002	00:24:31	00:24:34	00:00:03	6.34	6.71	6.50	0.71	0.50
11/14/2002	00:34:25	00:34:30	00:00:05	6.28	7.09	6.70	1.09	0.70
11/18/2002	00:16:24	00:16:26	00:00:02	6.09	6.22	6.17	0.22	0.17
11/18/2002	00:29:16	00:29:18	00:00:02	6.22	6.34	6.30	0.34	0.30
11/19/2002	00:27:03	00:27:04	00:00:01	6.22	6.59	6.40	0.59	0.40
11/21/2002	00:54:47	00:54:52	00:00:05	5.97	6.59	6.26	0.59	0.26
11/21/2002	00:55:34	00:55:40	00:00:06	6.09	6.46	6.27	0.46	0.27

MFOQA data records will provide feedback to aviators and maintainers.

Getting specific data to the aircrew on airspeed, altitudes, and headings will improve their learning curve and will result in increased proficiency—a better pilot. For maintainers, postflight information readily will be available to diagnose data on engine performance, fuel flow, navigation, G forces, and many other parameters collected on recorders.

PMA209's Director of Flight Operations, Bill Wescoe, says MFOQA will "give the aircrew and maintainers the tools to help troubleshoot discrepancies and improve performance. The postflight debrief will include data to give a snapshot of pilot and aircraft performance." This data won't be limited to helping just the aircrew and maintenance, but to the operations, safety and training departments. To reflect the broad spectrum of beneficiaries, Wescoe used the acronym "MOST," meaning maintenance, ops, safety and training. An operations officer could use the information to look for efficiencies in fuel usage, flight time, and mission profiles. Critical data could be sent fleetwide to notify other squadrons of maintenance mods, inspection requirements, or servicing.

"Several years ago, we did a study on Class A flight mishaps. For the five year period ending in the fall of 2003, we had more than 200 Class A mishaps, and we believe at least 21 of them (10 percent) could have been prevented had a tool such as MFOQA been in place," said Chip Brown, the program's lead engineer and former flight-data analyst at the Naval Safety Center, who initiated the study. The intent of MFOQA is to identify human factors and trends to head off potential mishaps. Perceived performance can be contrasted to actual performance through MFOQA.

Two squadrons, one FA-18C/D and one SH-60B, currently are doing a fleet demo or "bridge" program with MFOQA. The initial results have been very positive. The *Mech* Spring 2006 issue has a feature article on HSl-41's MFOQA's efforts and can be viewed at: http://www.safetycenter.navy.mil/media/mech/issues/spring06/pdf/hsl-41leads.pdf.

The *Mech* Fall 2003 issue also included an article that provides an overview and background for the program. View this article at: http://www.safetycenter.navy.mil/media/mech/issues/fall03/pdf/mfoqa.PDF.

MFOQA became a program of record last year with passage of milestone B. The program has full funding and will be introduced to the fleet in a staggered implementation scheduled in early 2010.

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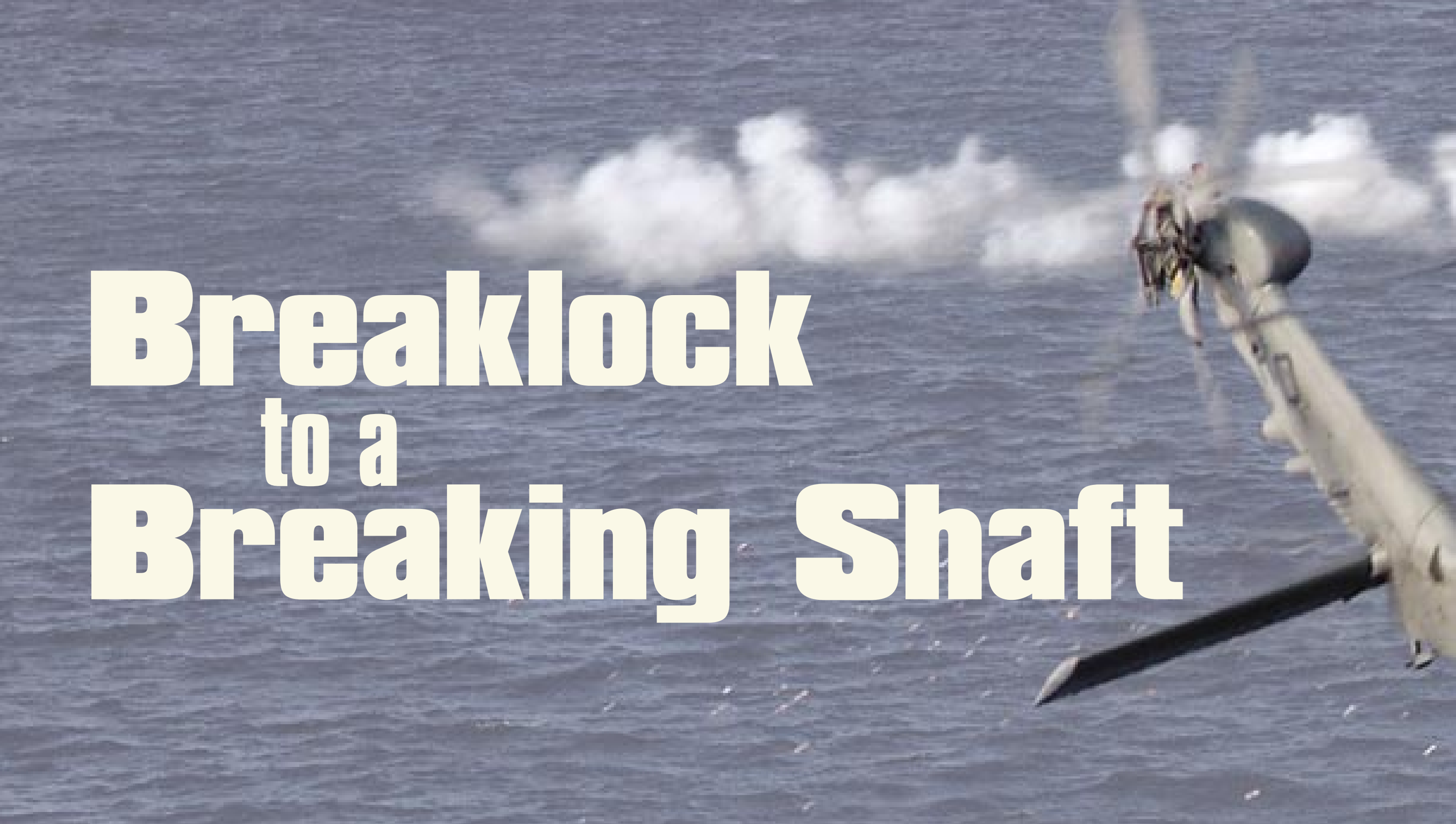

Breaklock to a Breaking Shaft

By Lt. V. J. Omundson

I was two months into my first long cruise as a pilot in the LAMPS community, and I gradually was settling into life as an H2P (helicopter second pilot) aboard USS *Elrod* (FFG-55). Flying to and from the back of the boat was just beginning to feel comfortable. Our mission for the day was a defensive-maneuvering training flight to rebase our breaklock currency, followed by SAR training for our quarterly requirements.

The helicopter-aircraft commander (HAC) and I had completed two breaklock maneuvers apiece. At the completion of my second one, we felt a distinct vibration as we climbed to 800 feet for the next breaklock. The vibration felt like it might be the start of retreating-blade stall, but we had not experienced this problem in the previous maneuvers. After all, vibrations in a helicopter are, to some extent, normal and the nature of the beast as we "beat the submission out of air." We had been flying this aircraft exclusively for the last couple of weeks and were very familiar with it. This vibration felt unusually pronounced, so our crew discussed the situation and decided to conduct controllability checks to determine whether to continue with the mission or RTB.

The HAC took the controls, gained some altitude, and tried different flight regimes to see if the vibration returned—it didn't. After more discussion, the crew decided to continue training but agreed to knock it off if the vibration came back. The HAC entered her third breaklock, during which I heard a high-pitched humming noise. I would have mentioned this to the crew, but the noise didn't seem out of the ordinary because we were in a high-power, high-speed, descending turn, and the noise disappeared as fast as it had appeared.

Completing her breaklock, the HAC climbed to 800 feet and passed me the controls. Our crewman called out a simulated threat, and I initiated my third

A breaklock maneuver is a hard turn that may be accompanied by deployment of countermeasures in an attempt to break the lock on of a radar-guided missile.

PH2 Peter J. Carney. Modified.

breaklock. I leveled off at 300 feet, rolled out, and began jinking to evade the simulated threat. The HAC announced we had defeated the threat, so the simulation was complete. I rolled out and was about to begin a cyclic climb when we heard a loud bang on the right side of the aircraft. It felt like the aircraft moved about a foot to the left. I immediately looked out the right window, a difficult move because I was in the left seat, thinking another aircraft had hit us.

(Author's note: Afterward, on the ground, the aircrewman and HAC said they felt the aircraft yaw, which probably is what actually happened.)

I heard my HAC call out, "I have the controls."

I responded, "Roger, you have the controls."

She began to execute and verbalize the engine-malfunction-in-flight procedure. As briefed, the flying pilot handled all immediate-action items requiring flight-control input, and I, the nonflying pilot, handled all immediate actions not requiring flight-control input. We still had not completely diagnosed the malfunction. We had about 150 knots, and because we were at such a high power setting, Nr immediately drooped, and we began to lose altitude. As the HAC lowered collective and traded airspeed for altitude, our descent came under control, and I continued to back her up on the instruments. The HAC later told me that she thought she had been flying the whole time and had no recollection of taking the controls. Score one for training, standardization and habits.

Our crewman did an excellent job calling out altitudes and kept us aware of how low we were throughout the emergency. Only later did we realize he had his helicopter-aircrew-breathing-device (HABD) bottle in his hand and was ready to go into the water because he thought we had lost our transmission.

Once safe, single-engine conditions were met, we began to identify the malfunction. This task was challenging because we never before had seen these engine indications. Nr had drooped but was controlled, Np was overspeeding, and torque was low. The HAC called for the engine-high-side procedure to get Np under control. I placed my hand on the No. 2 engine's power-control lever (PCL) and waited for her to concur. As I did this, the aircrewman called Mayday over the radio.

Our controller asked, "Are you kidding?"

The HAC responded, "No. I need emergency-flight quarters and the OinC in combat—now!"

She then confirmed I had the correct PCL. I began to pull it back to the 6 o'clock position to set torque 10 percent below the good engine. I noticed torque already was at four percent, and Np was at 106 percent and coming down as I decreased the PCL. The OinC came on the radio and asked what was going on. The HAC explained we had heard a loud bang and were going through the engine high-side procedures. As she flew the aircraft and explained the situation to the OinC, I continued to troubleshoot, trying to make sense of the conflicting engine indications. I concluded we had a high-speed shaft failure on the No. 2 engine.

Left to right: AW2 Jesse Kennett, Lt.Kylen Dau, Lt. V. J. Omundson.

When she finished talking to the OinC, I told her what I thought, and she immediately agreed. She told me to break out the checklist and to go through the procedures. We currently do not have a procedure for a high-speed shaft failure in the checklist, but we do have procedures for an impending high-speed shaft failure. With that procedure being closest to what we had, we continued through this emergency checklist.

I began the process of flipping through multiple checklists. The first step was the engine-malfunction-in-flight procedure, so I reviewed it to make sure we had not missed any steps. As we continued, we eventually had to shut down the No. 2 engine, leading to a single-engine landing. The ship did a great job setting emergency-flight quarters and closing our location at maximum speed. We dumped fuel to get light. Once we had completed the myriad checklists, we discussed our approach to the back of the boat.

The HAC explained she was going to fly the approach by the book, erring to the steep side, but to back up her for a standard approach by the numbers. The HAC shot the approach and completed a clear-deck landing. We finished the shutdown sequence and gladly climbed out of the aircraft. The maintainers removed the engine-intake cowling and found the high-speed shaft completely split in two.

It wasn't until about two hours after the flight I remembered the humming noise on the second to last breaklock. Because I didn't mention it during the flight, I began to second-guess myself and wonder if the EP could have been prevented. I asked the crewman if he had heard anything. He said he had heard a whine, but it was consistent with sounds he had heard on other breaklock flights. He had not heard anything unusual during our flight. I also asked the HAC, but she hadn't heard the noise.

The NATOPS description for a high-speed shaft failure talks about a "howl" that may vary with collective as the shaft is failing. That was not what I heard, and I am not convinced the sound I heard was related to our EP. Is it possible I heard the sound of impending failure from the opposite side of the aircraft, when neither the HAC, nor the aircrewman, who were both closer to the engine, had heard or recognized it?

We frequently simulate EPs, but the EP I had that day cannot be simulated in the aircraft or simulator. The pocket checklist has no procedures listed, but there is a "High-Speed Shaft Failure" section in the NATOPS manual. We experienced none of the indications the NATOPS manual describes with this EP. In fact, even after the high-speed shaft had sheared, the engine still ran with all normal indications, except torque and Np. It was only because of our understanding of systems that we correctly diagnosed the problem and proceeded with appropriate action.

As aviators, we make a habit of reviewing our emergency procedures and systems. This EP amplifies the importance of studying systems and being prepared for any emergency. Don't assume that NATOPS or the pocket checklist have procedures for every situation you may encounter; they are not a substitute for sound judgment.

Lt. Omundson flies with HSL-48.

Composite image.

Traps Are Free

How does a good Approach *article begin? There I was, in the goo, single engine, on fire, with no navigation equipment, but I managed to find my way back to the ship and make the LSO's eyes water with an OK 3-wire, single-handedly saving all that is good. Well, my article, starts with, there I was on a CAVU day, flying a good deal JOPA flight, when I suffered from acute rectal-cranial inversion and took an FA-18C off-road. How did I get there, you ask?*

Lt. A. Leavitt

My squadron recently had began its deployment with MAG 12 in Iwakuni, Japan. MCAS Iwakuni has a single, 8,000-by-150-foot runway. Our home base is Lemoore, Calif., which has 13,500-by-200-foot runways—this information later will come into play. This flight was my first local one out of Iwakuni. We briefed to take off, join as a section, transit into the working area, and do an area fam in addition to simulated roll-ins. The flight would conclude with a section breakup to individual PARs. Everything went as briefed until the individual approach.

The approach end for MCAS Iwakuni's runway 2, the normal duty runway, is over water. Runway 20 has an industrial complex at its approach end. The course rules prohibit overflight of the industrial complex, which can lead to a wrapped-up approach turn. Also, the only instrument approaches are for runway 2; the landing pattern is flown at 1,000 feet, instead of the normal 600 feet. Runway 2 also has short, mid, long, and overrun arresting gear.

Back to my flight. The PAR turned into an ASR for runway 2, with a circle-to-land runway 20. This was the first time I had had to fly a circle-to-land outside the simulator, but it was fairly straightforward. I would fly to 1,000-foot-pattern altitude and offset east; it essentially was a downwind entry. No problems yet. At the abeam, tower cleared me to land No. 2, behind a P-3 on a short final. I was figuring out how to stay clear of the industrial complex and work in behind the P-3 when tower cleared me No. 1 inside of the P-3.

I immediately started my approach turn to avoid the industrial complex and tried to descend to 450 feet by the 90. I was setting myself up for an overshoot, so I kept on the power and wrapped up the turn. I drove myself to a high, overshooting start. But, I soon was back onto the sight picture I was used to at Lemoore—more on this later. Runway 20 does not have a fresnal lens, only a PAPI (precision-approach-path indicator). I touched down at the 6-board. I then performed a technique, often used by many Lemoore pilots, of touching down, testing the brakes and releasing them, extending the speed brake, and, as you approach 100 knots, getting back on the brakes. This technique allows for less wear on them. Keep in mind, stopping never is an issue on a 13,500-foot runway. Unfortunately, on my 8,000-foot runway, I'm now at the 4-board, and the first thoughts of a roll-and-go enter my head.

During all this, tower waived off the P-3, and I was unsure if the Orion would have been a factor for a roll-and-go. That indecision kept me on the runway. Now, I am at the 3-board, wondering if I'm going to stop and asking myself several questions:

"Do I have failed brakes?"

"Can I still stop?"

"Can I take off safely?"

"What arresting gear do I have left?"

To my surprise, I just had passed the long-field arresting gear. I asked one more question, "Do I have any gear left?"

At this point, I am desperate. I'm literally standing on the brakes and running out of ideas. I decided my only option was to go into the overrun and ground loop the jet. As I go into the overrun, I see the overrun gear but fail to get my hook down. I offset to the right side of the overrun and ground loop left, performing a 180 and ending up in the grass alongside the overrun. As I turned, I saw my starboard wingtip skimming the grass. The jet came to a halt about 150 feet from the water. I secured the engines and made a normal egress. Out of the jet, I realized I had been seconds from ejecting from a good jet and sending it into the water.

Ultimately, the jet was fine. I didn't even pop a tire. Maintenance performed the necessary inspections and replaced the brakes and tires as a precaution.

Lt. Leavitt flies with VFA-97.

Blue Threat Analysis

Traps Are Free

The lessons learned were many

Don't accept a bad situation from tower. I should not have accepted turning inside of the P-3, especially at the last minute.

Don't press a high overshooting start on a short runway. This move caused me to land long, which used up valuable runway.

Be familiar with arresting-gear locations. I knew we had short, mid and long-field gear, along with overrun gear, but I had not "chair flown" their significance, specifically, how much runway remained past each gear.

Realize that if you're used to a 200-foot-wide runway and your landing on a 150-foot-wide runway, you can get a false impression you're higher and farther away from the narrower runway.

Don't be an optimist. I recognized the jet was not slowing normally. Rather than getting the jet off the ground and regrouping, I chose to keep pushing a bad situation, with hope that the jet would stop.

Don't talk yourself out of a good decision. I convinced myself a roll-and-go was not an option, because of a potential conflict with a P-3. In retrospect, any potential conflict could have been avoided by a simple radio call.

Don't overanalyze the situation. We all know the emergency procedures (EPs). My mistake was delaying the actions of the EP until it was too late. I chose to delay action in hopes I could stop the jet. The decision should have been binary. If there is a doubt of not stopping, for whatever reason, go around.

Line speeds... line speeds... line speeds.

It's never too late to drop the hook. NATOPS says to drop the hook 1,000 feet before the gear, not that you must have at least 1,000 feet. Inside of 1,000 feet, you may not have enough time to get down the hook, but if you don't try, you will not get the hook down. Traps are free, ground loops are not.

Ground looping a jet in the overrun surrounded by water is not a situation you want to be in: It's a last-ditch option. I believe it was a better option than ejecting from a good jet and sending it into the water. Having said that, ejecting isn't without risk. After 90 degrees of turn, the starboard wing was skimming the ground. Had the ground been softer or the external wing tanks not been there, the jet could have rolled. A successful ejection would have been unlikely if the jet had rolled.

I failed to assert myself to tower, and I accepted a landing clearance that set me up for failure. I recognized I was creating a bad situation and failed to take action to reverse it. I failed to implement the procedures I knew to be applicable. I overestimated my abilities and the capabilities of the aircraft. I easily could have prevented the incident by waiving off, performing a roll-and-go, and finally making a field arrestment.

Whatever you do, do not depart the runway with your hook up.

Situational Awareness

Assertiveness

Decision Making

Communication

Leadership

Adaptability/Flexibility

Mission Analysis

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Running Out of Runway

By Lt. Eli Burleson

Bagram Air Base isn't exactly the most hospitable place for aviation. The Afghanistan airfield elevation is just under 5,000 feet MSL, and the runway is just over 9,800 feet long. In the summer, the temperature routinely exceeds 105 degrees, and the temperature in the winter often drops below zero.

Although the base now has a new 11,821-foot asphalt runway, we still were using the old, Russian-built, concrete runway. Nobody knows exactly how long ago the latter was poured by the Soviets, but softball-sized pieces break off every day. Takeoffs and landings are so rough it can be difficult to read your instruments; although, the east side of the north-south runway is a little smoother than the west side. Also, if you trundle off the end of the runway, you come to rest in the middle of old Soviet minefields.

Our adventure occurred four months into a six-and-a-half-month deployment in support of Operation Enduring Freedom (OEF). Our brief that day was standard, and we were all comfortable with our mission, including crew responsibilities and abort criteria.

We waited in the ready room for a jet to come up. When it was assigned, we read the book, dressed and walked. Start-up was uneventful, but after taxiing to the hold short, we returned to the line to troubleshoot vibrations in the control stick. After sitting in the line for 20 more minutes and finding nothing wrong with the jet, we decided to taxi again. We were cleared straight on to the runway for a back-taxi, position-and-hold, but we still hadn't decided if we would take the jet flying or not. Once in position, we decided the stick vibrations most likely were caused by an over-serviced nose strut, combined with the extremely rough concrete taxiways and runway. We decided to take the jet airborne.

With thoughts of land mines and fireballs dancing through my head, I pulled back on the stick and hoped for the best.

After sitting in position-and-hold for a moment, we were cleared for takeoff and switched to departure frequency. After completing my engine and flight-control checks, I released the brakes, and off we went. It was a cold day, so we had very good engine performance.

Everything felt and looked normal, but I concentrated on the control-stick shudders, trying to decide if I should abort the takeoff or not. After a moment, I decided the stick was fine and began my normal takeoff scan. The first thing I noticed was the airspeed indicator didn't come off the peg at the normal spot during the takeoff roll. Instead of realizing the first indication of an airspeed-indicator failure, I mistakenly chocked it up to having started from an imposed 300-foot displaced threshold at the Bagram airfield. We had been using this threshold because of construction at the south end of the runway for the last several weeks.

When we reached the 8-board (our calculated line-speed check), the needle was off the peg and showed 80 knots; I had briefed I would abort if the line speed was not 85 knots. I called this information over the ICS but decided to press on with the takeoff, again mistakenly thinking the displaced threshold was responsible for the slow start. Shortly after passing the 8-board, the airspeed indicator slowed its rate of climb. For a split second, the indicator seemed to stop at 95 knots. Part of my brain decided to abort, but as I got ready to call abort over ICS, the indicator jumped to life and quickly rose. I should have aborted but allowed myself to continue, and no one else in the crew called for the abort. After all, it's not uncommon to see Prowler airspeed indicators momentarily stick, right?

Somewhere around the 5-board, the airspeed indicator slowed and paused again at about 125 knots, instead of reading the required takeoff airspeed of 157 knots. The only thing I said over the ICS was an expletive, which quickly was answered with a similar expletive from the senior mission commander sitting in ECMO-3. Fixated on the airspeed-indicator issue, I immediately started to look for the distance-remaining markers, which are made out of plywood and are very difficult to see, especially when the wind has blown over half of them. In my world of time compression, I couldn't find any of the markers, but I did manage to immediately shift my focus to how far down the runway the long-field arresting gear was.

About 1,000 feet before the arresting gear, I remembered to cross-check our ground speed. As we scooted along at a mere 210 knots, and before I could say, "Don't drop the hook, or we'll rip the gear out of the ground," we were beyond the arresting gear and staring at the end of the runway.

With about 1,500 feet of runway left, I took one more look at the airspeed indicator (140 knots—still not enough to go flying), and one more look at the ground speed (220 knots—45 knots more than our rated tire speed). With thoughts of land mines and fireballs dancing through my head, I pulled back on the stick and hoped for the best. There's no worse feeling in the world than staring at the end of a runway with an airspeed indicator telling you that there's no way you're getting off the deck, and there's no way you are keeping it on the paved surface.

We all breathed a sigh of relief as the jet quite literally leapt off the ground. Flying now, I could feel the adrenaline subside. I also realized I'd been white-knuckling the stick grip.

You have to remember this scenario all took place in a matter of seconds. Still not fully comprehending the situation, I didn't touch a thing. The jet was flying, and I wasn't going to do anything to jeopardize it.

Still dirty, we turned downwind and switched back to tower frequency. We told them we had lost our airspeed indicator, and we were going to orbit overhead the field. Finally, using some CRM, we discussed what we saw on the instruments and what our options were. Having dumped down to an acceptable gross weight, we climbed to 10,000 feet AGL, and performed a slow-flight check to make sure our AOA was fairly accurate, compared to our pitch attitude and groundspeed. We decided we would trust AOA, but we also planned on flying faster than normal. Groundspeed and AOA were used to approximate our indicated airspeed.

After telling tower we would be making an arrested landing (remember the field elevation, and therefore the much faster approach groundspeed), we ran through the descent and landing checklists and turned to final. The aircraft touched down with 173 knots groundspeed, and we uneventfully rolled into the short-field arresting gear.

During the debrief, we realized we had missed plenty of opportunities to abort the takeoff. However, several unfortunate factors led us down the path we chose. We never factored the displaced threshold into our line-speed check. Losing 300 to 400 feet of runway when you calculate your line speed 1,800 feet down the runway makes it unlikely you'll get a good check. Also, the distance to which we calculated our line-speed check was too short. Our calculated line speed, minus the allowable 10 percent, was 85 knots, a speed at which the EA-6B airspeed indicator is not very accurate. In hindsight, we should have used a 2,800-foot versus 1,800-foot line-speed check to allow for performance deficiencies in the airspeed indicator. We had seen airspeed indicators come off the peg a bit late in earlier flights, and I will abort slow-to-come-off-the-peg: takeoffs for an airspeed indicator, that is.

We were focused on troubleshooting a flight-control gripe while on the takeoff roll. As it turned out, an over-serviced nose strut had caused the stick vibrations. Rough taxi-takeoff surfaces had contributed to the problem, causing the horizontal stabilizer to move up and down. We have a standardized takeoff scan, and I should have focused on it or aborted for the oscillating control stick. We had been lulled into a state of complacency over the previous several months by good jets and simple, cookie-cutter missions. We hadn't been exposed to any insidious failures or severe systems losses in months, and it caught each of us by surprise. Having emergency-procedures simulators or the occasional minor airborne failure is definitely underrated—they may have kept us on our toes just enough to abort when it still was safe to do so.

Our CRM simply broke down. Each of us in the jet that day kept quiet when we knew something wasn't quite right. While busy trying to figure out specifically what was wrong, we should have been calling for an abort. Each of us had considered an abort at various times during the takeoff roll, but the indicator seemed to correct itself each time just before someone said something. We never talked to each other, besides the initial line-speed check and a couple of expletives, until we were airborne.

Each crew member in the Prowler has access to an airspeed-indicator gauge and also a separate groundspeed reading. We were amazed we took the jet airborne without anyone calling out the failure or calling out a groundspeed cross-reference. We thought we were a very good crew when it came to communication and exercising good CRM. Aborting a takeoff at Bagram is not as safe as at most other airfields. The altitude, runway length, runway conditions, temperatures, mine fields, gross weights, and likelihood of a hook skip, tempt aircrew into taking jets flying when they normally wouldn't, given the same scenario at a different locale.

I want to reemphasize three things every aviator learns in flight school. First, CRM is the most important aspect of flying safety, whether you're single seat, with a wingman, or in a multi-seat Prowler. Most aviators tend to nod off when they hear the acronym DAMCLAS, but pay attention next time you get your annual ground training; it just might save your life some day. Second, pre-mission planning is extremely important. You never can account for every possible scenario, but having the most detailed administrative plan possible makes it easier to flex tactically. Having a thorough brief and sticking to it, as best you can, will help keep you out of trouble. Finally, if you doubt something, there is no doubt. If something just doesn't look or feel right, take immediate action. Don't paint yourself into a corner with only one way out. Everyone loves options, and the only way to make sure those options remain available is to make sound decisions from the start.

Lt. Burleson flies with VAQ-142.

Composite image.

Now, the Rest of the Story

I'll argue this was one of those golden moments that warranted asking forgiveness, rather than permission;

although my JOs would argue every moment is a golden moment. If a room full of O-4s, O-5s and O-6s don't have the authority to avert imminent disaster, then give me a job with more responsibility: managing the night shift at a fast-food restaurant.

By LCdr. Todd Bode

Good on these young whippersnappers for not diming out their chain of command, but I believe Grampaw Pettibone would ask just how it is that our antihero found himself waving off a smidge below that hallowed fuel state we call "bingo."

Arguably, the last pass never should have happened. With 302 on downwind, Sting One called for the divert on the grounds our nugget, fresh from the FRS without his night-tanking qualification, was not qualified for blue-water operations. The communications machine had churned to get permission from the captain to divert him. In hindsight, this time-critical-decision loop would have gone a lot smoother if we had made sure the captain had been pre-briefed on our young exception to the blue-water standard.

In the meantime, CATCC prepared to hook him in early and squeeze in one last attempt before bingo. Our pilot didn't hear the attempt to turn him in at four miles—more on this later—but responded at six miles. With permission still not received for the divert, a dubious sentiment prevailed: "He's almost there. We might as well give him one more shot."

I'll argue this was one of those golden moments that warranted asking forgiveness, rather than permission; although my JOs would argue every moment is a golden moment. If a room full of O-4s, O-5s and O-6s don't have the authority to avert imminent disaster, then give me a job with more responsibility: managing the night shift at a fast-food restaurant.

Back to that four-mile hook. Trying to hook in a nugget at four miles on his first night sortie in the fleet, and in the North Arabian Gulf (NAG), is paramount to missing the forest for the trees. The overarching goal was not to get him to the ball call above bingo, but to get him on deck by setting him up for a successful pass or by diverting him at or above bingo state. In the NAG, where we regularly experience HUD-limiting winds at the pushover, a nugget who gets turned in at four miles likely will use the first three miles inbound trying to find lineup. And let's face it, he wasn't on his A-game to begin with.

One slice farther back in this Swiss cheese, we should have asked whether NATOPS bingo numbers were conservative enough in this case. By using the book answer, we counted on a perfect bingo profile from a brand-new nugget, and we accepted a best-case, on-deck fuel state of 1.5, in spite of the odds against him: an unfamiliar field, foreign controllers, and a poor grasp of geopolitical boundaries. On top of that, we blew off (no pun intended) upper-level winds, a 200-pound-fuel miscalculation.

Gramps also might question the decision to send a level II pilot, who was on his first night-tanker mission, to run down a nugget on his first night sortie in the NAG when there was another viable option. The primary tanker, who had been hawking 302, was a seasoned JO with enough fuel to escort him to Ali Al Salem, but not make it back. In choosing our notably less experienced secondary tanker, we put the cart before the horse: convenience, one jet diverted (instead of two), over safety.

Our antihero no doubt should have been flying with his divert field selected as the steer-to waypoint, but the buck doesn't stop there. When he requested to know which waypoint it was—a knowledge deficiency for which we must assume some responsibility—our CATCC rep knowingly referenced the waypoint in the Operation-Iraqi-Freedom (OIF) standard load. Because of a recent change to the OIF standard-waypoint load, this load differed from the Sea-Dragon load, which our nugget was using, and sent him drilling toward the infamous "black line," which defines the border of Iranian-claimed airspace.

Lest I've violently stepped on any toes, I'll offer up that there was enough collective buffoonery for all of us to claim a share. Our carrier and air-wing team has been rockin'-and-rollin' in support of our troops on the ground in Iraq, and, admittedly, the recent influx of FRS grads didn't peg our collective ORM meter as it should have done. Since the adrenaline and cortisol rush of this night's events, the squadrons, air wing, and CATCC have been operating like a well-oiled and, appropriately, risk-aware, machine.

OK, who put the McDonald's job application in my mailbox?

LCdr. Bode flies with VFA-113.

I Thought I Had It Nailed

By Lt. Brian Merritt

In-flight refueling (IFR) is an essential part of today's missions. If correctly done, it's a quick break from the action, and you've got a full bag ready to go. When the refueling doesn't go as planned, however, you can be in for a very bad day.

Such was the case in month one of Operation Iraqi Freedom (OIF) for my wingman and me. We had been in the gulf long enough to have the basics figured out, and as we pulled up to the KC-10 (sweet, right?), we figured it would be IFR as usual. I led us on the night tanker rendezvous, about 60 miles to the northeast of Al Asad. Everything was on track with a safe join-up and move to precontact.

All the standard comm was completed with the KC-10, and I acknowledged the "no more than three-knots-closure" request. The night was smooth, and the probe contacted the basket with, I thought, no problems. Instead, the contact was more like a Pinto being tapped by a runaway shopping cart; the rodeo that ensued quickly got my attention. The takeup reel in the KC-10 didn't absorb the shock of the probe contacting the basket, which caused a sine wave to go from the basket to the tanker and come back at my jet like a whip.

Once I saw the wave develop, I tried to get out of the basket, but idle/boards just wasn't enough. It's hard to guess just how fast it happened, but I'd say somewhere between "Wtf?" and damned fast.

This cruise was my second as a JO, so I had some reasonable experience, though OIF is a far cry from my first WestPac pleasure cruise with jets. The KC-10 retracted the hose, and I told my senior wingman the problem was fixed. No dice, Chicago, as I heard him call on the radio the same thing had happened to him; both of us were on our way to Al Asad.

Fortunately, we were close to that base, and we appropriately had padded our gas.

What did I learn from the first of two probes being ripped off? Know your bingo and stick to it, watch for takeup reel issues, and respect the KC-10.

The next time a probe came off the jet was a little more traumatic. About a month after my first trip to sunny Al Asad, I once again was pulling up to the KC-10 for a good deal (daytime) tank before the RTB. Did I mention you should respect the KC-10?

Here's a quick history lesson. The Rhino is notorious for not accepting centerline fuel during in-flight refueling. This problem is frustrating because there seems to be no rhyme or reason to when you'll get fuel or when you won't. On any given day, you can pull up to the tanker and get a full centerline, go do your vul, then return to the exact tanker and not get a drop. Without the 3,000 pounds in your centerline tank, you're fighting ladder for the vul you're working, which can be even more frustrating as you're trying to support the troops on the ground.

You can try a few voodoo fixes to get gas into the centerline: Put the tank switch to "stop" after the centerline is done transferring, drop the hook, cycle the centerline-transfer switch while in the basket, or rub a chicken claw on the probe. We have limited success with most of these fixes, but I'm guessing the chicken claw is about as helpful as anything.

I was in the KC-10 basket that day, and once again, I was not getting fuel into the centerline. This lack of fuel can be a bit problematic for the RTB leg when you factor in timing and how many people need to cycle through the tanker. So began my one-man-marching-band show to get fuel in the centerline.

I decided to take the basket, and a chunk of hose completely came off.

U.S. Air Force photo by Staff Sgt. Gaddis. Modified.

Oh, by the way, I'm still in the basket at this point, which was my first mistake. Your job while tanking isn't troubleshooting in the cockpit. If you need to work some switches, then come out of the basket, work the issues, and replug.

I also should mention this situation occurred at about our two-month point in OIF. By now, everything was standard, and KC-10 tanking usually was no problem. As I cycled my head up and down in the cockpit while moving the fuel switch, I slowly began to slide out of the basket. As I glanced up, I saw the KC-10 getting smaller and threw on a handful of power. At 26,000 feet, I didn't think this action would create the reaction it did. I saw a very familiar sine wave develop as the takeup reel couldn't quite absorb all the power. I was off to the races.

I decided to take the basket, and a chunk of hose completely came off. (Side note: If you take a basket with you and want to keep it, you'd better give the Air Force an airtight alibi for the basket's whereabouts.) The situation was worsened by the basket and hose slicing into the top of my right vertical stab, and the KC-10 fuel hose spraying gas down my No. 2 intake.

In about three seconds, I had ripped off the basket and hose, lost a good portion of the probe arm with it, damaged the vertical stab, heard "Engine right, engine right" cautions with momentary engine stalls, and breathed JP-5. Yes, it was a bad day, and this time, I didn't have a takeup reel to blame.

Having pieces of the jet fall off in flight never is good, and it's infinitely worse when pilot error is the cause. I was fortunate, once again, because I was close to Al Asad, and they had my usual quarters waiting for me. After the flight, I realized complacency is an insidious beast for all of us to fight. I thought I had OIF nailed and that nothing could happen in such a simple evolution as in-flight refueling with a KC-10. I was wrong; IFR can be dangerous.

No task is too simple for aviators. Always respect the jet and the dangerous nature of our job. If you think you've got it all figured out, think again. You just might find yourself walking around the Iraqi desert, and believe me, you'd much rather take IFR more seriously.

Lt. Merritt flies with VFA-115.

THUNDERS

By Lt. Zane Stickel

I was scheduled to instruct a new pilot on his first flight in the squadron and another one who was learning defensive positioning before designation as an aircraft commander (AC).

As I reached the "identify hazards" portion of the ORM process, I considered that new replacement pilots tend to develop a little rust after the long layoff between the FRS and their first flight in the squadron. As a result, they usually require a more active defensive-positioning posture. I also considered I had to put the EP-3 into unusual predicaments to properly instruct the soon-to-be aircraft commander. Both events had plenty of associated hazards, and we discussed many of them before launch. If only I had focused on the most significant hazard of the day: the unpredictable February weather in the Pacific Northwest.

Please send your questions, comments or recommendations to: Cdr. Allen McCoy, Code 16
Naval Safety Center
375 A St., Norfolk, VA 23411-4399
(757) 444-3520, ext. 7271 (DSN-564)
E-mail: Allen.McCoy@navy.mil

TRUCK

Within 30 seconds of turning on the radar, our two radios dropped off-line, and a fireball appeared outside the aircraft.

The event started without a hitch. We crossed the Cascade Mountains and found clear skies and a dry 12,000-foot runway to bounce on. The new student came prepared and had little rust to work off. He had no problems recalling his procedures or putting the aircraft on deck. The AC-in-training did a great job keeping a close eye on me and maintained a sound safety posture. Overall, it was a solid training event for both students; all that was left was a quick trip across the mountains to NAS Whidbey Island.

Our weather brief had forecast no convective activity, and the transit back started out in clear, smooth sky. We crossed the mountains and picked up ATIS about 50 miles out. I heard nothing too serious on the ATIS recording, just a layer of nonthreatening clouds in the area. I made a quick scan of the horizon and decided the report seemed to match what I saw. I began my descent into the cloud layer, and things started getting a little bumpy—nothing major, just enough for me to remind the crew to strap in.

We leveled off at around 8,000 feet and hit a fairly heavy pocket of precipitation. I decided it was time to throw the rosy weather forecast out the window and get some info for myself. I had the copilot turn on the color weather radar, and we searched for the red don't-fly-here blotches that forecast impending thunderstorm doom. We saw green and yellow at first look, but that was the only look we would get. Within 30 seconds of turning on the radar, our two radios dropped off-line, and a fireball appeared outside the aircraft. We heard an explosion, and my first thought was something must have blown up on the aircraft. I looked at my copilot, whose eyes were about as wide as mine.

After the initial shock, I was relieved to discover the aircraft still was flying, with no obvious holes in the airframe. Our FE then shouted that we had been hit by lightning, and we agreed. It was time for me to get us out of the weather.

I recently had been a part of a discussion with the fleet NATOPS team about implementing lightning-strike procedures into the P-3 NATOPS manual. Because it wasn't in the book yet, I would have to use my brain and try to remember what we had agreed on at that discussion. First step, fly the plane; that part was easy. However, I still needed to get out of the weather, and I had no working radios. Second step, set Condition 4 to ensure a complete inspection of the aircraft for damage. As I made the PA announcement to set Condition 4, my FE said he smelled smoke. Unfortunately, smoke wasn't part of the new, not-quite-ready-for-prime-time procedure. I figured activating the fire bill would take care of the positional inspection, and it seemed like the most conservative approach. I didn't realize at the time that communications with my aft observer were confusing to him; we weren't clear him clearly informed. I was about ready to descend without clearance when the radios popped back on, and my copilot quickly coordinated a lower altitude. The weather was much better down low, and we completely were out of the clouds within a couple of minutes.

We located the field and no longer detected any fumes, so I had the crew secure the fire bill and prepare for landing. I briefly considered performing a slow flight check because of the possibility of damage to the control surfaces. However, I had not experienced any initial change in flight characteristics and determined that staying out of the weather and quickly getting the bird on deck was my priority. We got lined up on final and landed without a hitch.

Postflight revealed the lightning had hit the nose radome and exited at the starboard horizontal stabilizer, blowing a chunk out of the outer edge of the stab just beyond the elevator. The damage resulted in a Class C mishap.

So, what did I learn from my experience as the mishap aircraft commander? Regardless of the perceived risks of an event, the basics always should be an integral part of any ORM assessment. It doesn't get any more basic than weather. If you want to get the "X" in the winter in Whidbey, you probably are going to have to fly through a cloud or two, but that doesn't mean the weather risk can't be mitigated.

A Dash-1 without forecast convection and an ATIS recording certainly are no guarantee for smooth flying. A quick call to the weather shop before picking up ATIS might have alerted us to the possibility of lightning strikes in the area, and we could have altered our decision-making. I now always call the weather shop before entering clouds on my way home to Whidbey.

We weren't the first aircrew to be hit by lightning that winter, and a discussion of the previous incidents might have better prepared us for our lightning strike. We could have walked through the proposed procedures and alleviated confusion between the flight station and the aft observer. Also, if a procedure for a NATOPS change is being discussed at the fleet NATOPS level, it probably is good to get all aircrew in on the discussion. I was the only person on the crew who had seen the proposed procedures or knew they existed. I saw firsthand that lightning can remove large pieces from your aircraft. Had the lightning exited a little to the right, we might have had a major control problem. Short final is not the time to find out how your aircraft will perform at landing speed, with control-surface damage.

Lightning strikes are extremely dangerous and produce unpredictable consequences. They happen fast and unexpectedly. Although you can't outrun lightning, thorough ORM can help you avoid it or at least prepare for it. They say lightning never strikes the same place twice, but I have no intention of putting that bit of wisdom to the test.

Lt. Stickel flies with VQ-2.

Dave and Apple Pie

By Lt. Chris Conlon

Our plan was to take an MH-60R from NAS Patuxent River to the Dayton airshow. We would fly two legs, with a refueling stop in Morgantown, W.Va.

Our DD-175-1 showed the current weather conditions in Morgantown as 7,000-foot ceiling and 10-miles visibility. The en route minimum ceiling was forecast to be 5,000 feet, with winds 270/15. The briefed forecast for Morgantown at ETA was 5,000-foot broken ceiling, with seven miles visibility. On radar, a cold front was moving east and would pass north of the city. The MH-60R only is TACAN-equipped, and Morgantown does not have a compatible approach. So, we filed IFR and planned to cancel it to shoot a visual approach.

With a great weekend ahead of us, we took off Friday morning on our first leg. When we were 30 miles out, the weather was as forecast, so we told approach we were cancelling IFR and proceeding VFR. We descended to 1,000 feet AGL. As we passed a small ridgeline, it started to rain. Because it wasn't briefed, we figured it was an isolated shower. As we approached the next ridgeline, the rain increased, and the visibility rapidly was decreasing. We decided as a crew to turn around, climb, and call ATC for vectors to the field. When we turned around, we no longer could see the first ridgeline. We tried to call approach but could not climb high enough to establish comms without going into IMC conditions. The cockpit hurriedly became very quiet.

As we began an orbit to assess our situation, an opening appeared over the ridgeline in front of us. We aimed for the opening and continued toward Morgantown but not for long. The same thing happened to us on our way toward a third ridgeline; however, the ceiling was now about 500 feet, and the visibility was about one-half mile. We had set a hard deck of 300 feet and were now at it. We also only had about 20 minutes of fuel to our NATOPS on-deck limit. We just could see the bottom third of the hills around us—we were trapped. At this time, my copilot spotted a pasture. Our crew discussed the situation, and we decided the most prudent action was to land in the field and wait out the weather.

Most helicopter crews brief that if you inadvertently go IMC you will do one of these options:

1. Try to reverse what you did which caused you to get into IMC.

2. Call approach to obtain a squawk and vectors to VMC.

3. If all else fails, land. We are a helicopter after all.

So, we did what we had briefed. It got interesting as we landed and saw a trailer in the tree line. Just as the dueling banjos began to play in our heads, an older gentleman, named Dave, and his wife came out and offered us some beers. The cold ones looked tempting, but something in 3710 wouldn't allow it. They invited us into their trailer, and we waited three hours for the weather to clear. Dave's wife even baked us an apple pie—I'm not kidding. We eventually made it to Morgantown, refueled, and landed in Dayton late that afternoon.

Our crew learned the importance of a good NATOPS crew brief that day. We never think emergencies will happen to us, but we brief them for that slim chance they might. I think most of us have been on a flight where the actual weather differed from the forecast. That's why our crew was prepared for inadvertent IMC, and it saved us. We all had a powerful case of "get to the airshow-itis," so it was difficult for us, as a crew, to believe that landing in a pasture with no definite departure time was our best option. However distasteful at the time, our crew made the right decision, and we all came away more experienced aviators.

Lt. Conlon flies with VX-1.

Oops, We Sheared

By Lt. Brian Loustaunau

We just had returned from a "good deal" day flight in the eastern Mediterranean. As we flew overhead mom, waiting for the deck to open, I saw the master-caution light on our Prowler's brow panel. I immediately looked down at the caution-light panel and saw the low-fuel light, which indicated a land-ASAP emergency.

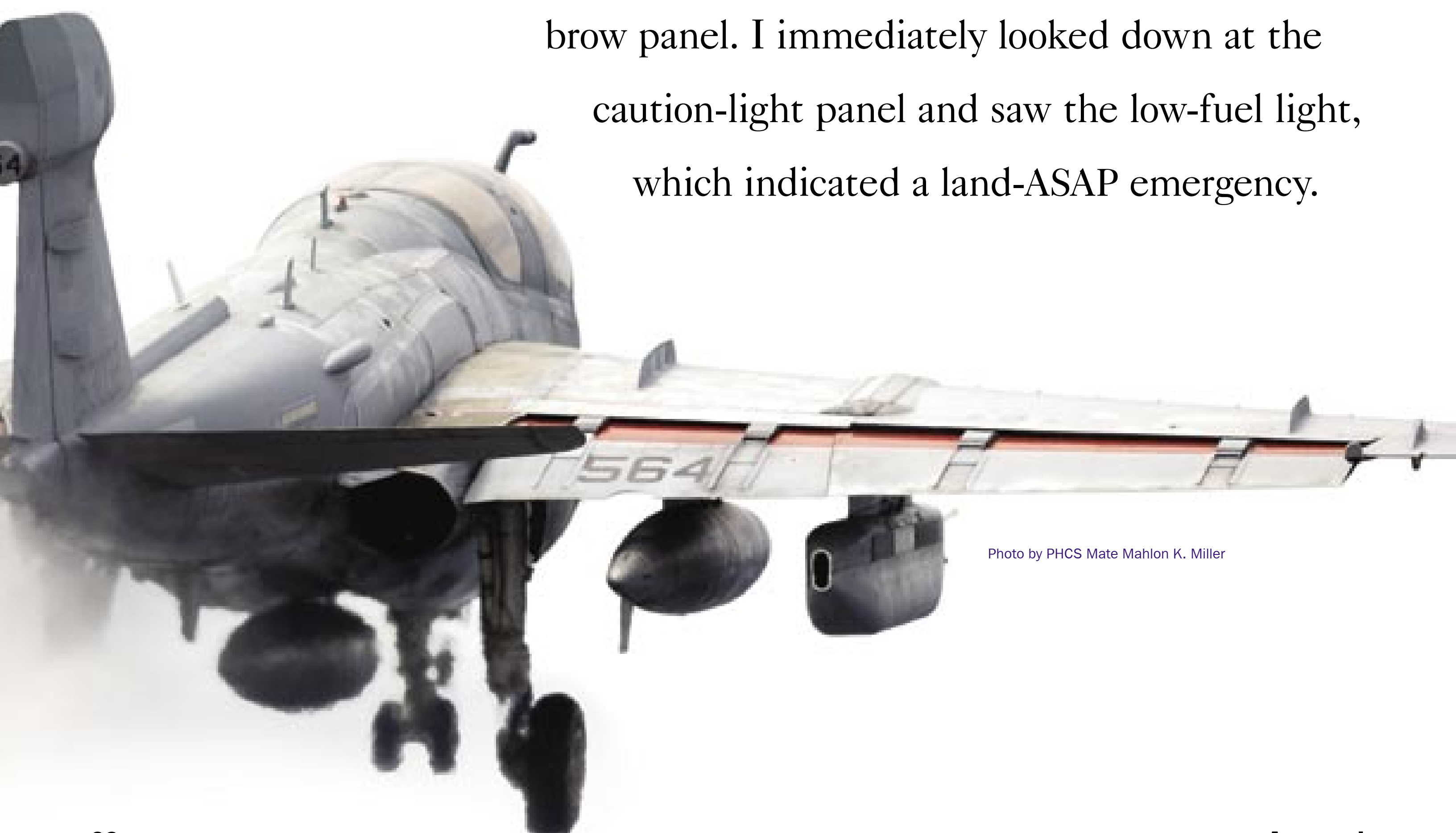

Photo by PHCS Mate Mahlon K. Miller

the CSDs

My first reaction was to cross-check with the fuel gauge; I was certain we had had plenty of fuel just a minute earlier. Then ECMO 1 noticed we had no engine tapes, indicating an electrical problem. He and the backseaters pulled out their PCLs, quickly flipped to the partial-electrical-failure checklist, and began reading. Based on other indications in the cockpit, we determined we had a complete AC-essential failure.

We already were in holding, so we took our time and decided against "fast hands in the cockpit," instead discussing exactly what we wanted to do. We knew if we pulled the ram-air turbine (RAT) to restore electrical power, we would lose all electrical power in the wires. It, however, would give us engine tapes, trim, automatic-flight-control system (AFCS), oil-pressure gauges, and make the low-fuel light go out. As far as bringing the aircraft aboard, I was most concerned with the AFCS and trim systems. However, having good indications of engines and oil pressure sure would make us feel better. We decided to pull the RAT, which worked 4.0, and all electrical power was restored.

Meanwhile, the backseaters were talking to our tower rep. The rep needed to know we would lose all electrical power in the wires, which subsequently meant we would be NORDO (no radio), and would need to be towed out of the wires. In hindsight, we should have been more specific and thought through the situation a little more. We knew our newest aircrew was our rep that day, and, although he had been in the squadron for about six months, he didn't have much experience. The comms between us were very quick, and he said he understood what was going on. We just left it at that.

Trying to compartmentalize and fly a decent pass, it still came as a bit of a shock to me that we would lose all power when we trapped. I went through my usual routine. Once we were stopped, I throttled back and tried to raise the flaps as everything in the cockpit shut off. I quickly realized the flaps wouldn't move, and we couldn't raise the hook. Our discussions while airborne focused on needing a tow and being NORDO once on deck, so the hook issue came as a surprise and added to the problem.

Assuming I already had cleaned up, the yellowshirt indicated he was going signal to fold the wings but stopped once he realized the wings were dirty. The yellowshirt also gave the hook-up signal. We tried to convey to the director we had lost all AC power, were unable to perform the configuration changes, and would need a tow, not to mention a hook-down tow. They seemed reluctant to bring out the tow truck until they got us configured. The flight deck seemed very unprepared for us to be stuck, stiff wing in the wires. In retrospect, we should have stressed to our rep the extent of problems our loss of AC would have. Our lack of radios fueled the confusion and left us sitting in the wires much longer than the Boss would have liked.

Something else we hadn't really discussed was a loss of ICS. It's easy to communicate with the guy sitting next to you, but it can be difficult throughout the aircraft. We could yell back and forth for things like safing ejection seats, but overall communication was limited.

Finally, we were pulled out of the landing area and parked, stiff wing, on the finger. Once chocked and chained, our AEs arrived to troubleshoot, so we kept both engines turning. After trying to reset some circuit breakers outside the cockpit and pinpointing the problem, the plane captain gave us the signal to shut down.

What we didn't realize was the lack of electrical power caused the constant-speed drive (CSD) air-ejector valves to remain closed. This situation, in turn, caused the CSDs to overheat and eventually shear. Normally, we would have gotten a caution light in the cockpit, but with no power on the jet, we had no indication. It never crossed any of our minds this could have been a potential problem, and it is not included anywhere in the PCL.

An emergency does not necessarily end once you are on deck. As far as the CSDs shearing and causing maintenance a headache with more problems to fix, a NATOPS change is being submitted to include a caution on the checklist. Even a good basic knowledge of the system is not always good enough to preclude unnecessary damage to an airplane.

Lt. Loustaunau flies with VAQ-140.

Save the Drama

Being unable to control our emotions in a professional manner is similar to a skunk's odor: foul and offending.

By Bruce J. Green

I received a phone call the other day from an irate airfield manager. He felt there was too much "chatter" on the ground FM net, which is primarily used for vehicle operations. Not beyond blowing a gasket myself on occasion, I let him continue uninterrupted, until finally he suffered a compressor stall. Sensing a "Dr. Phil" moment, I asked him to tell me what really was wrong.

The airfield manager quietly admitted the real "rub" was that the ground controller had issued "traffic" on a taxiing airplane that clearly was in view to him. The inference was that the airfield manager, with his 20 years of experience, needed to have his hand held while driving around the airfield. Because of this, the airfield manager began to focus less on maneuvering his vehicle, and more on his emotional response to the controller. This phenomenon is known as "emotional jet lag," and none of us are immune from its grip.

After explaining to the airfield manager that he was being too "sensitive" about the whole ordeal, the airfield manager promptly performed a suborbital ballistic maneuver, and terminated the call.

Later that day, I decided to stretch my legs by taking a walk up to the tower cab. I barely had cleared the top step when the guys unloaded on me about "some controller" at our parent approach-control facility that had "copped" an attitude. I listened and reflected back on those times when some faceless voice in my ear, be it a controller or pilot, had pushed my emotions throttle to the hilt. I believe we focus more on a perceived attitude and less on separating and sequencing aircraft; we have too much emotional jet lag.

As emerging technologies continue to drive the migration of automation, one limiting factor continues: human to human communication. Communications over radios or telephones add a unique dimension to message transfer and interpretation. Emotional reactions such as irritation, anger, and even boredom easily can be detected. Who among us hasn't worked opposite of some grouchy controller or irate pilot who seemed intent on making everyone around them miserable?

Being unable to control our emotions in a professional manner is similar to a skunk's odor: foul and offending. It sabotages our fellow controllers and teammates by giving them a case of "emotional jet lag," causing them to lose focus on the task at hand. Being consumed by an irrelevant comment or attitude, real or imagined dramatically can degrade your situational awareness.

How can we unscramble this egg? Talk to a fighter pilot. Fighter pilots are legendary for their coolness under pressure. They operate in an environment that requires perceiving, reasoning, and projecting, all at 600 knots with a bogey on their tail. Good pilots don't saddle their wingmen with emotional drag; they save it for the debrief, and that's were it stays. So, until technology unplugs us from the console, I suggest we practice a little professional swagger ourselves by adopting a page from the fighter-pilot community: "Save the drama for your momma."

Mr. Green is an air-traffic manager for the 178th fighter Wing at Springfield Municipal airport, Ohio.

Air Traffic Controllers Creed

I am a professional air traffic controller dedicated to the service of my country. As such, I will endeavor to provide the best possible service to all users of the ATC system.
I will constantly strive to improve my proficiency.
I will endeavor to reason logically and accurately and avoid making decisions based on emotions and accept accountability for my actions.
I will work constantly and tirelessly to achieve a professional level in my performance.
I will always keep abreast of new developments in the air traffic control field through study and research.
I will insist upon high standards of professional performance from my subordinates, and will practice self-discipline and set an example regardless of the position I may occupy.

NAS Oceana Air Det Norfolk

AN Kevin Powers was the transport aircrewman on a UC-12M passenger-transport mission that just had landed and shut down at a Midwest Army airfield. After dropping off the passengers, AN Powers took the initiative to do an aircraft walk-around before engine start. During the walk-around, he saw fluid dripping from one of the engine's lower cowlings. He returned to the cockpit and asked the pilots to unstrap and take a look at the leak. A major oil leak was discovered, coming from the starter-generator area on the back of the engine. The oil level was low enough that if the aircraft had taken off, it most likely would have had a complete loss of oil pressure on that engine and propeller. At worst, an oil-fed fire could have resulted in loss of the aircraft and crew.

BRAVO Zulu

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Mishap-Free Milestones

VAW-121	40 years	6,000 hours
HMLA/T-303	25 years	190,000 hours
HMM-161	12 years	55,187 hours
HMH-362	23 years, 9 months	67,000 hours
VR-61	24 years	100,000 hours
VAQ-138	25 years	42,900 hours

Helo IFR
(I Follow Roads)

I told my copilot I had vertigo and to stay on the instruments with me. His response was less than inspiring, "I…I… don't know where we… are."

By LCdr. Travis Peterson

As many a helo driver has heard, IFR means "I follow roads."

While there is some truth to this meaning, when you're in the middle of the ocean, on a black overcast night, 100 feet off the water, your instrument-flying ability will be tested. However, on a beautiful, clear day, during a VFR low-level trainer, you are not thinking about needing those instrument-flying skills—you always just can follow the roads, right?

Composite image.

I was inbound to Kuwait in the mighty HH-60H, on a beautiful July day in the Northern Arabian Gulf. Sure it was hot, but the weather was CAVU. I was taking one of the newer pilots for a low-level TERF trainer around the Kuwait desert. As we entered the training area, we descended to 100 feet, the normal altitude for these routes. I casually also noticed the sky to the north looked a little odd. We continued, hitting our checkpoints as scheduled. I mentioned the next checkpoint was near an "armor graveyard" of sorts, left over from the first Gulf War. All the shot-up and captured equipment had been dragged into three large junkyards (for lack of a better word), one full of armor, one of artillery, and one full of all other types of vehicles. Needless to say, the newer pilot wanted to see it.

We hit the next checkpoint, a road intersection confirmed by GPS, then took a little detour along the road toward the junkyard. This point is where I had noticed the sky beginning to change color from blue to a yellowish-gray brown, and it had become slightly darker. I said it looked like a dust storm was coming in from the north. As we followed the road, little did we realize how fast the visibility was deteriorating.

In the next five minutes the visibility decreased to about three to five miles. The sky definitely became darker, too, but only as dark as a lightly overcast day. I knew we were approaching the junkyard. The GPS coordinates confirmed it was just ahead, but we couldn't see it. Had we been looking to the side, instead of ahead, straight down the road, we might have had a clue as to what really was happening.

The road was about to end, and much sooner that I had expected. What I had estimated to be about three to five miles visibility 20 minutes earlier quickly had deteriorated to about one-half mile in blowing sand.

I said, "We should have seen the junkyard by now; visibility rapidly is going down." If nothing else, I am master of the obvious.

When the road ended, I suddenly realized everything looked the same. I saw the ground, and I was just looking at the road. With all the blowing sand, though, the ground looked exactly like the sky: If any terrain features existed, they were invisible. Even the light level between the sky and ground looked the same.

Still not thinking IFR, 100 feet over land, in the middle of the day, I began a 180-degree turn to find the road and to regain my visual reference. I remember noting my heading and the reversal heading, then shifting my scan back outside to look for the road. Guess what? I never saw that road again.

Within 30 seconds, the radar-altitude alerter went off; it was set at 50 feet. I scanned the radalt and saw it rapidly descend through 40 feet. During the next minute or so—I'm guessing, because survival mode kicked in, and time compression went into overdrive—I went through numerous episodes of vertigo and denial.

Events happened so fast. My mind was racing, filled with thoughts about survival, the fact that the ground approaching rapidly, and that I needed power. I pulled collective about three quarters of the way up, However, I still was in denial about what was going on. Reversing radalt, I now was climbing. Thinking all was well, I shifted scan back outside; I needed to find the road.

The radalt went off again, so I shifted scan to see we were at 40 feet again and descending rapidly. I knew we needed more power because experience told me we should be climbing with the collective in that position, and the torque near max.

For the first time, I scanned the attitude indicator and RMI. I completely was lost and confused. I was back near my original heading. RMI continued rapidly left, with nose up, right wing down, zero airspeed, and descent with lots of power.

What I just wrote may make sense to you. But, when I was in the middle of the scenario, I had to decipher what the instruments were telling me, and the last hour of VFR seat-of-the-pants flying I had been doing didn't help. My body said we were in a lefthand turn. No one else in the aircraft had a clue. The two crewmen in the back were on the lookout for a road or junkyard. My copilot now was with me on the instruments, but as he had been navigating from the chart and visually, not at the controls, he was more confused than me.

I went back to the basics: Survival, more power, stop the rate of descent, level the wings, airspeed, I need some, altitude bottomed out at 20 feet.

If I still had been nose-high, I likely would have stuck the tail in the dirt. I nosed it over, and after what seemed like minutes, it began to register. The instruments looked better, and I was fully engaged. I was IFR, and the VFR training was over. Before long, I was at 50 feet, slowly climbing, accelerating and maintaining heading. Vertigo had set in bad, though, and I was beginning to fight myself. Trust the instruments, I kept telling myself, as I waited to hit the ground. The instruments told me that we were in good shape, but my head still was spinning.

I told my copilot I had vertigo and to stay on the instruments with me. His response was less than inspiring, "I…I… don't know where we… are."

As the gyro in my head began to cage, we were at 300 feet, 40 knots, accelerating and climbing. I asked my copilot if he was with me. He asked where we were going. Again, I scanned the instruments to see if I was messing up something else. I asked him to read off the instruments one by one and to tell me what he saw. He slowly caught back up with the aircraft and helped me confirm what I saw. The climb began to pick up as I felt the aircraft go through translational lift. OK, things were beginning to make sense again; all was returning to normal, although painfully slow.

He then asked me what was wrong. I wasn't completely sure, so I asked him if he knew what had happened. He said the radalt went off; now he was "Master of the obvious."

I asked if anyone in the crew had seen the road again; everyone said no. We were at 1,000 feet, 130 knots, and direct to the ship. I finally had time to think, and the vertigo essentially was gone. Still, I had no visual reference to anything, but there was a noticeable difference in light level from high to low. After some deep breaths and a little time, I was able to more accurately analyze what had occurred.

I asked the copilot if he knew what just had happened, besides the radalt going off. He said, "During your turn, you either descended, or a dune rose up to set off the alerter."

I replied, "I probably descended."

I then asked if he had realized we had stopped turning right; stopped forward flight, with the nose going left with a right bank; descending tail first toward the ground; and most were likely flying backward. I could see his eyes get wider through his dark visor, and his mouth was hanging open. His look indicated he may not have known of our predicament.

I really am not quite sure what had happened. The only way I can explain what all the instruments were telling me was, when I first looked at them, my brain did not process everything. I knew we probably were going to hit the ground hard, and it would be my fault. It's easy to second-guess what I should have done and when, after the fact. I was younger and less experienced. However, I have seen the mentality that led me into this trap result in many more mishaps since then. We, as naval aviators, continue to press, even when things are not going our way. Call it the desire to get the X, get-there-itis, or just not having the intestinal fortitude to call it off when you know you should.

There are times when you need to bring the "A game" and get the job done, but on this day, and on many others, a need just doesn't exist. Wait until another day to get the X. I'm just glad we're still around to see those days.

LCdr. Peterson was flying with HS-2 when this occurred; he is currently the VR-1 safety officer.

What's That **Smell?**

By Lt. Gabriel Tonozzi

Imagine finishing a two-hour workout, then setting fire to your pair of dirty wool socks. The putrid, light smoke almost would be transparent as the moisture starts to evaporate, then the cloth starts to burn, and the smoke becomes more pronounced. I would not recommend burning your new Zeilinger's for effect, but this is the only way to describe the peculiar smell TACAMO, VQ-3, crew 9 experienced on departure from Travis AFB.

After a normal three-hour preflight, and having checked all our emergency equipment, we were ready to take off. After an uneventful start and taxi, the engines roared to life as the engineer set takeoff thrust. All systems appeared to be normal as we sped though decision speed. A few seconds later, we rotated into the clear, northern California sky and began a climb to our initial altitude of 6,000 feet.

Passing through 5,000 feet, the aforementioned smell became apparent throughout the jet. I asked the rest of the crew if they could smell anything, and moments later crew members from the back of the aircraft piped up on the interphone that they smelled the fumes. We leveled at 6,000 feet, activated the fire bill, and notified departure control we were planning for an emergency return to Travis.

Everyone donned their oxygen masks and carried out their fire-bill duties, while air-traffic control provided vectors to enter downwind for runway 21R. To compound our problem, the pilot and copilot's oxygen-mask microphones were not working properly because of a faulty switch discovered on postflight. We could hear departure control, but we couldn't respond; the controller reported hearing interference only when we transmitted.

Within two minutes, the flight engineer reported the air-cycle machine, compressor temperature abnormally was high, and he was unable to take over manual control. The bypass valve was stuck in the full-cool position, and the valve could not be opened, which made it impossible to control the temperature in the air-conditioning system.

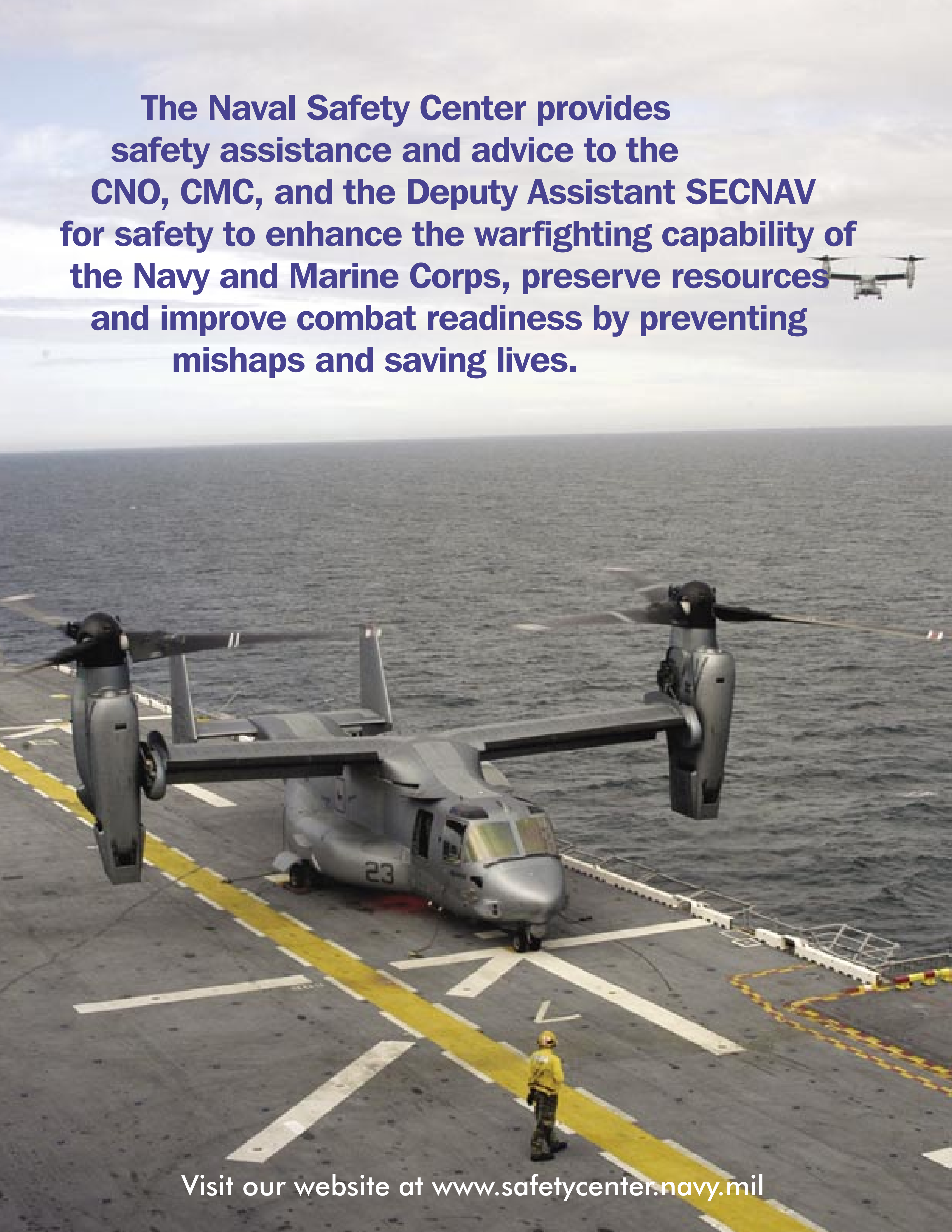
The quick-thinking flight engineer shut off the bleed-air supply from all four engines, eliminating the air-conditioning air source and eliminating the source of the fumes. With the smoke and fumes under control, the crew removed their oxygen masks and restored two-way communications with departure control.

As the smell started to dissipate, we began to weigh our options. As we climbed, the flight engineer concluded the air-cycle machine would cool, and we probably would develop icing in the water-separator. Conversely, as we turned on the bleed air for pressurization and cabin-temperature control, we would encounter overheating of the air-cycle machine.

Using crew-resource management (CRM), we decided the emergency return no longer was necessary. However, continuing the eight-hour mission was not an option. We could fly below 10,000 feet for four hours to reach landing weight, or dump the fuel, land, and fix our stuck bypass valve to resume our line of alert. Considering the priority of our mission, we elected the second option and told air-traffic control we needed to adjust aircraft gross weight. ATC gave us holding instructions, a climb to 10,000 feet, and clearance to commence fuel-dumping operations.

The fuel dump and subsequent landing occurred without incident, and, once on deck, our suspicions about the stuck bypass valve were confirmed. A greater mechanical malfunction, aircraft depressurization, or possible fire had been averted because of solid CRM and technical knowledge of the environmental system. The crew was well-prepared for activation of the fire bill because multiple drills had been run during previous flights. Experience from crew-coordination drills, simulator events and training flights proved invaluable while handling the situation.

Lt. Tonozzi flies with VQ-3.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