THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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Approach

The Maintenance Team

–A MO's Perspective

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

Correction: The author of the article, "The Wheel Spun Freely," pg. 32 in the September-October 2008 issue was Lt. Mathew Olson. The photographer was Lt. Mike Donnelly of VP-8.

NTENTS

Departments

November-December Thanks

Thanks for helping with this issue…

Cdr. John Minners, CNATRA
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LCdr. Dwight Clemons, VAQ-130
Ltjg. Tim Hawkins, HSL-49
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Lt. Matt Mravlja, HSC-26
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Cdr. John Sipes, HSC-26
AMC David German
AT3 David Reeves

Front cover: Photo by Allan Amen, taken at HSC-26.

The Initial Approach Fix

In FY08, we lost six Navy and Marine Corps personnel and 17 aircraft in aviation mishaps. Each loss had causes, and every cause was preventable. Naval aviation can do better; we must do better. While the overall, long-term trend in mishaps continues to show improvement, we must stay focused on managing risks, and we must have engaged and proactive leadership.

This past year, we saw a trend where about a third of our mishaps involved aircraft hitting objects. Included were BASH, CFIT and midair mishaps. About 40 percent of our mishaps had some material failures; however, many of these could have resulted in hazreps, versus mishaps, if handled properly. Human error still ranks as our No. 1 problem, with 60 percent of all mishaps having some kind of aircrew error.

Using the human-factors analysis and classification system (HFACS), we started a historical-mishap analysis by community, and the preliminary results are being shared with aviation leadership. Also, the HFACS portion of the aviation module for mishap reporting nearly is complete. This information will allow automated, human-factors analysis of naval-aviation mishaps. The policy for investigating and reporting mishaps soon will shift from the "who, what, why" format to the HFACS model.

In addition to aviation-mishap rates, the statistics section of our website includes mishap data from on- and off-duty activities. Visit the site at: http://www.safetycenter.navy.mil/statistics/index.asp—*Capt. Ed "Clyde" Langford, director of aviation-safety programs.*

The Maintainer's Role in Aviation Safety.

This issue's lead story features an article by Cdr. Bert Ortiz, our aircraft-maintenance and material division head. His passion for aviation maintenance and support for the Sailors and Marines who work on aircraft makes him a solid advocate for junior officers to be a part of the maintenance team.

Safety Awards

Submissions for CY08 safety awards, including Admiral Flatley, CNO Aviation Safety, and Grampaw Pettibone, are due the first quarter of CY09 IAW OpNavInst 1650.28A. Contact your controlling-custodian safety officers for specific details of how to submit your unit's nomination. Grampaw Pettibone awards are presented to the organization and individual who contribute the most toward aviation-safety awareness through publications. Grampaw wants to remind aviators of the new element for these awards. Beginning with CY08, Grampaw will recognize individuals and commands who use digital and media resources to promote aviation safety. The use of videos, websites and presentations are a valuable tool to prevent mishaps, and Grampaw wants to recognize those contributors.

Bravo Zulu to the following commands for submitting Aviation 3750 hazard reports (hazreps) using WESS.

2nd Quarter FY08

Five or more hazrep submissions:

VAW-115	VAW-116	VAW-120	VAW-124	VRC-30	VRC-40
HSL-49	HSC-26	VFA-154	VP-1	VP-30	VP-46

Four hazrep submissions:

VAW-123	VR-56	HSL-48	HS-7	VFA-113
VP-45	VP-69	VT-7	VT-31	VT-35

3rd Quarter FY08

Five or more hazrep submissions:

VAW-112		VAW-113	VAW-120	VAW-121	VAW-124	VRC-30	VAQ-129	VAQ-131
VAQ-134	VQ-2	VQ-4	HSL-49	HSL-51	HSM-71	VFA-154	VP-1	VP-8
VP-45	VX-30	VT-6	VT-7	VT-27	VT-28	VT-31	VT-35	USNFDS-Blue Angels

Four hazrep submissions:

VRC-40	VAQ-133	HSL-43	VT-9	CMO-11

The Maintenance Department *and You*, the Aviator

Photo by Allan Amen

By Cdr. Bert Ortiz

"As the maintenance department goes, so goes the squadron." Sound familiar? If not, ask yourself a couple questions. Is your squadron struggling to keep aircraft up to meet commitments? Are the same old gripes commonplace?

If your maintenance department struggles to keep up with the flight schedule, you'll have a frustrating day of brief, debrief and schedule changes. If the same gripes repeat themselves, then missions aren't as effective, you second-guess maintainers, and you lose confidence in your machine.

Maintenance process and execution is the key


Photo by MCSA Matthew A. Lawson

to successful squadrons and touches everything in a command. Solid maintenance, without a doubt, is a challenge to keep running smoothly. Whether you've been in maintenance or are headed there, I want to offer some perspectives from the eyes of an old maintenance officer.

The Challenge

As an aviator, you understand challenges. Besides the training hurdles, flying uncooperative beasts through the air, or just stealthily navigating ready rooms and wardrooms, your first maintenance division or branch position may be your biggest challenge, or the easiest. If you've already had a job in maintenance, how effective were you? Did those problems we talked of exist? Why or why not? What did you do to help?

I have seen many good aviators grace the passageways of our ships and squadrons. Most aviators I know are eager, knowledgeable, skillful, and confident. Still others I have known are arrogant, self-centered and cocky—some would argue these are exactly the qualities required in combat-ready, steely-eyed purveyors of death. How will you react when faced with perhaps your first real leadership challenge: managing a maintenance branch, division or department?

After paying some dues and spending some time at an outfit, you may get that coveted maintenance ground job, and it could be one of the most meaningful jobs of your career. You'll be in a leadership role and interact directly with enlisted personnel. Until now, you may only have experienced contracted-maintenance departments in training commands. But when you finally get your new ground job, I'm confident you'll be ready when you bring an "I am ready to do this" attitude. Some young officers may be intimidated by perceived bureaucracies and the mountains of a new type of paperwork, but most will meet the challenge.

The Maintenance Bible

The maintenance "bible" is called the Naval Aviation Maintenance Program, known as NAMP. It is found in CNAF Instruction 4790.2A. NAMP not only identifies all the roles and responsibilities of the personnel within the maintenance department, but it guides all the maintenance programs and processes.

A maintenance department at a typical squadron contains about 80 percent of the command's personnel. In this large group are well-trained mechanics, technicians and artisans. Some may have entered the Navy with an extensive technical background, and may hold FAA and FCC certifications. All have completed technical training courses that are the best in the world. They get taught and live by a creed [*see back cover of this issue*] that is as important to them as anything else in their lives.

How can you improve maintenance at your command? Start with communication, which is key to maintenance department and squadron success. The surest way to fix a plane is to make sure problems are described well, so always write good gripes. Next, give good debriefs to the maintainers. Here are some examples of bad ways to communicate. These maintenance

actions were submitted by pilots, and the replies are from maintainers.

Problem: Left, inside main tire almost needs replacement.
Solution: Almost replaced left, inside main tire.

Problem: The autopilot doesn't.
Solution: It does now

Problem: Something loose in cockpit.
Solution: Something tightened in cockpit.

Problem: DME [*distance measuring equipment*] volume unbelievably loud.
Solution: Volume set to more believable level.

Problem: IFF [*identification friend or foe*] inoperative.
Solution: IFF always inoperative in off mode.

Problem: Engine No. 3 missing.
Solution: Engine No. 3 found on right wing after brief search.

Problem: Aircraft handles funny.
Solution: Aircraft warned to straighten up, fly right, and be serious!

Problem: Target radar hums.
Solution: Reprogrammed target radar with the lyrics.

While pondering what job to apply for as I entered the Navy, a wise old Army chief warrant officer told me, "Don't just learn how to play with something, learn how to fix it. If you learn that, you always will know how to play with it." Although simplistic, his words still hold that golden kernel of truth. Think about his words as you expand beyond NATOPS and into the realm of the Maintenance Instruction Manuals (MIMs), the other bible of the maintainer. MIMs provide step-by-step information and repair guidance to the maintainer; they also may help you write those discrepancies.

Ground Pounders and the Mess

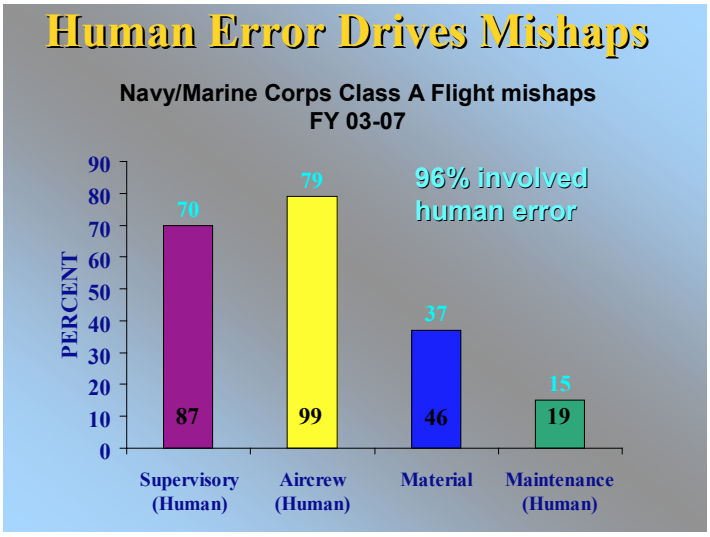
In every squadron, you will find several "older" folks who have instant credibility and respect among the troops. Almost by birthright, these "ground pounders" or LDO and CWOs are professional maintainers who have risen to the officer ranks through the enlisted-maintainer pipeline. They are your technical managers and experts. Maintenance is what they do and what they know. It is their primary vocation, like flying is yours. Seek them out; ask them questions. Although you may not always like the answers, they will give it to you straight.

Chief petty officers often hear the words, "Ask the chief." They have the experience to be your best advisor in terms of maintenance-department personnel, programs and efforts. Trust in the chief's mess.

Rely on these maintenance professionals; they are an invaluable source of information on how the maintenance machine works and plays. They will make your life easier. Don't be afraid to ask the "stupid" questions and learn the maintenance business.

The Strategy

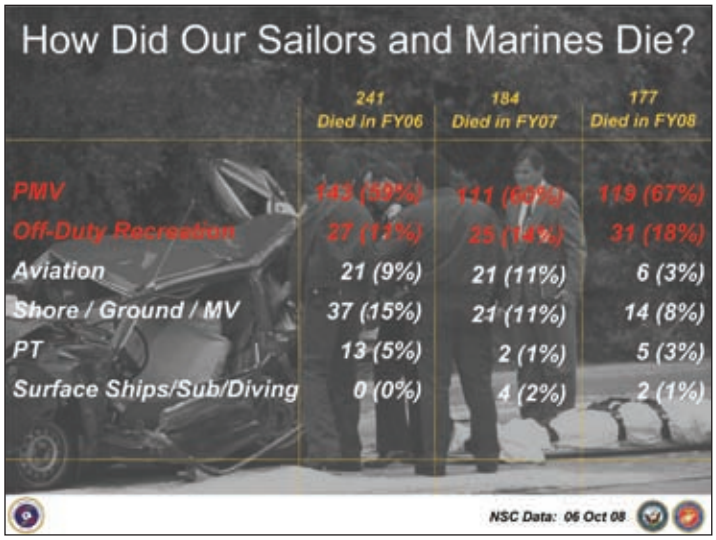
The Naval Safety Center's recent analysis shows that maintenance-error casual factors are roughly 15 percent of the total factors for class "A" mishaps.



When maintenance errors occur, they are often spectacular. Why is this number so low when compared to aircrew error? To put it simply, and in terms of ORM, maintenance has a lot of associated controls. Between the rigors of aircraft-maintenance publications, Naval Aviation Maintenance Program (CNAF 4790) efforts, quality-assurance inspections and many oversight inspections, we have lots of help in keeping ourselves on track.

Now, when I talk to junior officers and department heads on surveys or on culture workshops, I tell them our safety strategy involves leadership being intrusive with their folks. I often get quizzical looks: "Well, how

do we do that? Aren't we already intrusive enough?" Or they say, "That sounds like too much work or too hard to do. Besides, my primary job here is to fly." Intrusiveness, done with thoughtful intent, helps identify high-risk personnel, and affords an opportunity to mitigate potential mishaps. Why is this important? Look at the following statistics, beyond just aviation.



How can we, or you, specifically, help reverse this trend, and save lives? Be involved. It's that simple.

Availability, Accessibility and Involvement

Over the years, from my young enlisted days, a couple of outstanding naval officers and aviators come to mind as the best maintenance officers I've observed. They all share the same qualities: availability, accessibility and involvement. They always were involved in what we were doing on the aircraft and what was happening in our lives. If we had to stay late to accomplish a major component change to support a critical event, they were there. If we had a problem, they always listened and provided words of wisdom, encouragement or direction. Although sometimes intrusive, they always had a sincere concern and appreciation for the job we were doing. They were a critical part of a team. When we were stumped by an issue, whether it was access to a component, dissecting technical instruction, or troubleshooting trees or wiring diagrams, they listened intently and subtly added a cool, affirming comment. By allowing the techs and mechs to be just that, it helped build respect. That same respect was paid to them, in return, as our leaders. Sometimes it was the little things that went a long way in our eyes.

Once, when we were knee-deep in a fuel transfer gripe on an aircraft, our division officer came in and joined our troubleshooting efforts. Any maintenance person will tell you fuel-related gripes can be some of the most challenging to work on with any platform. As we rolled out schematics and block diagrams, he helped by being involved in the discussion and analysis of the gripe. He tread a fine line by not sounding condescending and dominating the discussions. Instead, he gently coaxed, asked pointed questions, and led us in getting our arms around a very complicated problem. By team building and knowing how to use the strengths of each, we could fix any problem.

Another example occurred during an all-nighter on an FFG. While changing a transmission on a Sea Sprite helicopter, our detachment maintenance officer paid a special visit to the ship's baker. He managed to arrange a deal to bake cinnamon rolls. When we took a break, he had the baker bring us a tray of freshly made treats. He gave us a pat on the back and a shot in the arm. Those were the best cinnamon rolls I ever have eaten.

I am sure you've heard of "management by walking around," or MBWA. It's a basic leadership principle that works today. Leaders would come and just talk to us on the days between hops or during the down times. Stories of our wives, children, financial concerns, educational pursuits and dreams, off-duty recreation and leisure activities were all easy topics of conversation with them. They made that impression on us so indelibly that we wanted to be like them, and aspired to be officers as well.

Trust, Integrity and Leadership

The tenent of the culture-workshop process states, "Operational excellence exists on a foundation of trust, integrity and leadership, created and sustained through effective communication." Keep this principle in mind as you tackle the best job in the Navy, that of an aviation-maintenance officer. As you go forward in your ground job, remember these tips:

Maintain a visible presence.
Set a personal example.
Get out the word: Communicate.
Monitor work.
Monitor morale.
Represent your Sailors up the chain of command.
We are all watching and learning.

Cdr. Ortiz is the aircraft maintenance and material division head at the Naval Safety Center. He has more than 30 years experience in aircraft maintenance, working and managing both rotary-wing and fixed-wing platforms.

TO LAUNCH OR NOT TO LAUNCH

By Capt. Jason Vrable, USMC

It's 2100 on a Thursday night. The crews from Swift 11 and 12 are gathered in the squadron ready room at Camp Pendleton for a last-minute check of the weather before launching on the night's NVG, terrain-flight (TERF) training mission. As expected, the marine layer has rolled in from the Pacific Ocean. Station weather is calling visibility at 2.5 miles, with an overcast layer at 800 feet. Forecasters expect the weather to clear around 2300, so the section lead decides to wait a while before cancelling the flight. Per OpNav 3710, "Ceiling and visibility minimums… must be at least 1,000 feet and 3 statute miles," and prevail throughout a VFR flight. The weather begins to clear by 2300, but visibility still is below the required three miles, so the section lead cancels the flight. Chalk up yet another missed training opportunity because of weather.

Fast-forward 10 weeks. The squadron just has assumed the assault-support role in the Al Anbar province, Iraq, based at Al Taqaddum (TQ) Airfield. The squadron's primary mission is to transport personnel and cargo throughout the area of operations (AO). The night sections just have received their ODO brief and are preparing for their section briefs. Visibility is 5 miles, with dust and haze, a scattered cloud layer at 10,000 feet, and is forecast to remain the same throughout the evening. As the crews walk to their aircraft, the section leaders check the weather one last time and discover a tempo line from 2300 to 0300, calling for 2 miles visibility. This tempo line does not affect TQ or any of the planned destinations for these flights tonight, but it affects an area through which they are required to fly to complete the mission. To remain in compliance with OpNav 3710, "Existing and forecast weather must be such as to permit VFR operations for the entire duration of the flight." The crews wait it out once again, hoping the tempo line will lift, so they can complete their mission.

Our TACSOP requires a minimum of 1,000-3 for helicopter night-vision-goggle (NVG) operations, to include current and forecast weather, as well as honoring tempo lines. This night, the crews waited for the tempo line to lift, even though the weather remained clear all night. By

0430, the crew day had expired, and the flights were cancelled. Was this a missed opportunity to complete tasking? Perhaps. Could the crews safely have completed their missions and returned to base without incident? Probably. Did the section leaders make the right call by waiting for the tempo line to lift? Absolutely.

We easily can identify poor weather (especially degraded visibility) as a hazard, and we further can assess the severity of that hazard as serious or critical; the potential results of operating in poor weather (CFIT or a midair) rarely are survivable. Given this start at analyzing the weather issue, we have to make risk decisions: to launch or not to launch. We must look at the benefits and the risks.

There certainly are missions in a combat environment where the benefit outweighs the risk. Missions such as CasEvac and troops-in-contact (TIC) require immediate support. The level of priority requires you to accept greater risk because of the life-threatening consequences for the Marine, Soldier or coalition ally on the ground. Conversely, some missions, such as routine resupply and battlefield circulation, while important, generally will not result in a critical operational loss on the ground if delayed because of poor weather.

We make the correct decisions and mitigate risk using our standing-operating procedures (SOPs), which group missions into categories, and apply distinct weather minima to each one. We need to meet the needs of the grunt on the ground, while not accepting unnecessary risk.

The final step in making sure we get it right is to make the call at the correct level. We are fortunate to have sound SOPs, which clearly delineate minimum weather required for each mission precedence. Perhaps even more importantly, we have the latitude to let squadron COs and aircraft commanders make the final call, without pressure from higher headquarters. As we all know, the weather outside is not always the same as the weather on the board in the ready room, so the aircraft commander must have the final call.

The potential exists in Iraq for the weather to go from CAVU to 0-0 in minutes, and there are times when severe weather does not progress as forecasted. It is not uncommon for the current weather conditions, called by METOC, to be significantly different from what we experience at altitude. You may be in a situation where you launch, thinking the visibility is 5 miles, but it actually may be closer to 3 miles. When airborne, you may think the visibility is "good enough" and decide to press on with the mission. As I write this article, our squadron has a section of aircraft stuck in Camp Fallujah because of a dust storm. While the forecast looked promising this morning, the winds increased more rapidly than predicted, and visibility went from 3 miles to 1/16 of a mile in less than 30 minutes.

Operating in a tactical environment versus a training environment poses unique risks. While we always must honor the enemy threat, an examination of aircraft losses since the start of Operation Iraqi Freedom demonstrates the probability of losing an aircraft to enemy fire is far outweighed by the probability that an aircraft will fall victim to the "Blue Threat." Poor weather compounds the risk associated with flying in an already challenging environment. To mitigate the risks in an environment characterized by marginal weather and rapid changes in prevailing visibility, we follow rules and SOPs put in place by OpNav 3710 and higher headquarters.

We need to meet the needs of the grunt on the ground, while not accepting unnecessary risk.

In the training environment, the solution is simple: We do not fly if the weather is below minimums. In the operational environment, the solution also is simple: We do not fly if the weather is below minimums. As aviators, we never can neglect the use of our best judgment and governing doctrine to always accomplish the mission and bring our crews and passengers home, dust or shine.

Capt. Vrable flies with HMM-364.

The Blue Threat was the focus of the September-October 2006 Approach. *Many of our losses of life and aircraft are not the result of enemy action (Red Threat), but the result of our actions (Blue Threat). This issue can be viewed at: http://www.safetycenter.navy.mil/media/approach/issues/sepoct06/default.htm—Ed.*

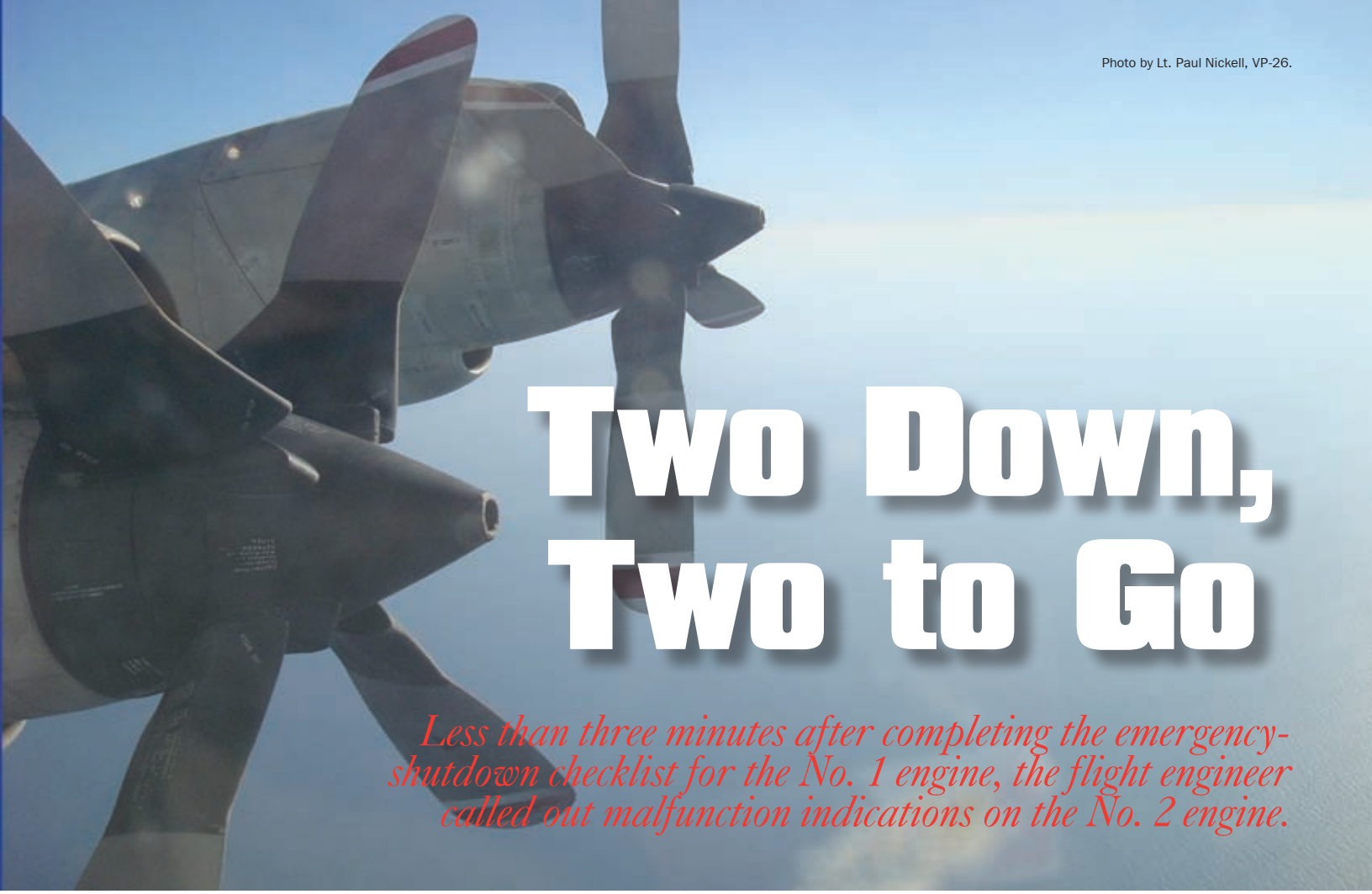


Photo by Lt. Paul Nickell, VP-26.

Two Down, Two to Go

Less than three minutes after completing the emergency-shutdown checklist for the No. 1 engine, the flight engineer called out malfunction indications on the No. 2 engine.

By Lt. Mark Yedlowski

Just before 0600 on a January day, our crew departed our home base for a SAR operation 200 miles off the coast of Oman. We were the third in a series of P-3C maritime patrol and reconnaissance aircraft launched to aid in the search. Because it can stay airborne more than 10 hours and search large areas of open water, the Orion is one of the most capable platforms for this mission.

Arriving on-station shortly before 0800, our crew quickly began the SAR mission. Our efforts were coordinated with the surface ships and helicopters in the vicinity to ensure complete coverage of the search area. While we kept an eye on our fuel state, we spent the next five-and-a-half hours fervently searching the water with all our sensors, including electro-optical and infrared cameras, radar, and observers. We covered hundreds of square miles of water, with no positive sightings.

The sad call to secure SAR efforts came at 1336, a little less than eight hours into our mission and minutes before we had burned down to our go-home fuel. As we turned toward home and began climbing to our transit altitude, we restarted the No.1 engine, which had been shut down to save fuel. Shutting down an engine in-flight (also called loitering) is a normal operation to conserve fuel at low to moderate altitudes. Ten minutes later, our controlling unit requested we return to investigate an object spotted in the water. Now below our go-home fuel, we would have to coordinate a stopover field for refueling. On our way back to the search area, we soon discovered getting gas was about to become the least of our problems.

At 1346, with the aircraft at 6,500 feet inbound to the datum, the flight station was alerted by two intermittent activations of the fire-warning horn and light on the No. 1 engine, shortly followed by a steady indication. While executing the immediate actions of pulling the emergency-shutdown handle and activating the fire extinguisher, we turned and climbed toward our nearest suitable divert airfield, about 250 miles away. For about 15 seconds after the engine was shut down, the flight station continued to receive intermittent fire indications, but there were no signs of smoke or flames. The

P-3 has a second fire bottle available on each wing, but without a confirmed indication of a fire, we didn't discharge it. With a fire watch posted in the aft-observer window and the aircraft stabilized, the flight station started discussing options. The tactical coordinator (TACCO) and navigator-communicator (nav-comm) relayed the situation to our controlling unit and the tactical-support center (TSC).

The discussion of how to handle our three-engine situation was a short one. Less than three minutes after completing the emergency-shutdown checklist for the No. 1 engine, the flight engineer called out malfunction indications on the No. 2 engine. We had an oil-pressure-low light for the engine-driven compressor, zero oil pressure in the reduction gearbox, zero indicated rpm, a master-oil-pressure-low light for the No. 2 engine, and a chips light (indicating pieces of metal in the oil system). Recognizing these were signs of an idler-gear failure in the reduction gearbox, we immediately added power to the Nos. 3 and 4 engines, while completing the emergency shutdown checklist for the No. 2. The TACCO and nav-comm continued to update our controlling unit and tactical-support center (TSC) as events unfolded.

Flying with one engine shut down isn't overly alarming for a P-3 crew, because loitering is part of normal operations, so the crew is used to seeing an engine secured. While simulated three-engine landings and waveoffs are a staple of our upgrading syllabus, a growing number of our pilots unfortunately are gaining experience with it outside the training environment. While two-engine contingencies are also an integral part of the syllabus, only a handful of multiple-engine shutdowns have occurred in the last 20 years.

During pilot-training events, we simulate dual-engine failures by reducing power to idle on the affected engines. This setting allows the instructor to advance power on the "failed" engines if a problem should arise during the approach and landing. We don't practice two-engine waveoffs in the aircraft. In our situation, neither failed engines was turning, and the possibility of restarting either was questionable. We were in an extremely uncomfortable and tenuous position, with 200 miles of water between our malfunctioning aircraft and a suitable runway.

With the aircraft now stabilized at 10,500 feet and heading toward our divert airfield, we discussed options. The main topic was the decision between making a two-engine landing or restarting one of the shut-down engines to make a three-engine landing. We agreed the No. 2 engine was not a candidate for restart, because of the severe nature of the malfunction. The focus of the conversation turned to the likelihood of restarting the No. 1 engine.

We had no secondary indications of a fire on the No. 1 engine, which led the flight station to consider the possibility we never had had an actual fire. This belief was supported because the fire-warning indication intermittently remained on, even after the engine had been secured. Both of these signs indicated a fault in the warning system. This knowledge, coupled with the protection offered by the portside fire bottle that we could use, should a fire ignite or reignite, led us to decide the No. 1 engine was a candidate for restart.

We used ORM to compare the risks associated with restarting the No. 1 engine to those of executing a two-engine landing. The likelihood of an actual fire having occurred on the No. 1 engine was small, so we weighed the hazards of a potential engine fire on the port side against those associated with performing a two-engine landing with minimum waveoff capability. We decided that restarting the No. 1 engine was less hazardous. As the aircraft still was stable, we elected to wait until we were in the terminal area before restarting No. 1. This decision allowed us to mitigate some risk by placing us near our divert airfield in case we had problems during the restart.

The flight station set the aircraft for a left base to the active runway at our divert airfield. Two minutes before turning final, we restarted the No. 1 engine. After receiving indications of a successful start, the aircraft was configured for the approach, and we made a three-engine landing.

Our community recently experienced two 2-engine landings. Hazard reports (hazreps) were written for both events, and squadron wardrooms around the community were able to hangar-fly each scenario. According to the naval-aviation safety program, hazard reporting allows us to analyze and observe near-mishaps and incidents in order to detect hazards before a mishap occurs. By having these lessons learned available from other Orion crews, we were able to use the ORM principles of probability and severity and determine a prudent course of action. Our wardroom discussions definitely aided in our decision-making process. The hazrep system works.

Lt. Yedlowski flies with VP-26.

Whether you agree or disagree with this crew's decision to restart the No. 1 engine, hats off to all for using time-critical ORM exactly as it was intended.—LCdr. Paul Wilson, P-3 analyst at the Naval Safety Center.

BRAVO Zulu

Capt. Patrick Eldridge, USAF, flew as a primary, flight-training instructor pilot assigned to Training Air Wing Six, NAS Pensacola. He was flying a midshipman-orientation flight as part of TW-6's ProTraMid detachment at NAS North Island. After completing a series of standard aerobatic maneuvers in the T-6A, the master-warning light illuminated, with an associated chip light.

He completed the immediate-action items for the emergency. Using the GPS, he located and flew to the nearest suitable airfield, Borrego Valley. He flew a precautionary-emergency landing (PEL) to runway 08. The chip light came on intermittently throughout the PEL recovery. He exited the runway at the earliest turnoff and shut down the engine on the taxiway.

The maintenance investigation revealed metallic debris in the severely contaminated engine-oil system. Also, the propeller did not unfeather when maintenance tried to restart the engine.

Lieutenant Junior Grade Andrew F. Murtaugh, a flight student at NAS Whiting Field, Fla., was flying his second T-34C solo flight. When he reached a visual turn point 17 miles from Whiting Field, he saw intermittent indications of an engine-fire light. He completed the engine-fire procedures and determined the engine had an unconfirmed fire.

He immediately turned back toward base and climbed to a safe dead-engine glide altitude for the runway in use. After notifying air-traffic control of his malfunction, he received a vector and handling to runway 14. He completed the landing checks and flew a precautionary-emergency landing. With only 46.5 hours of flight experience, Ltjg. Murtagh used his NATOPS knowledge, airmanship, and decision-making ability to calmly deal with this emergency.

Cleared on the Left, Starting the Left

By Ltjg. Robert Stochel

I was in the left seat of Liberty 604, preparing for the first launch of the day for a surface-surveillance-and-control (SSC) mission. The flight schedule was light, and we walked early enough to avoid rushing our 1445 departure.

Our plane was placed in the "six pack," the area located a few yards behind jet-blast deflector (JBD) No. 2. The electrical-power station was under the port engine, and the cords were routed under the fuselage. The pneumatic-air cart was about seven feet in front of the port engine and, like the cords, was routed under the fuselage to the starboard engine for a "standard" engine start.

Normally during field operations, the electrical-power cart and huffer are placed on the aircraft's right side, which was the only configuration I had been exposed to so far. This shipboard configuration appeared nonstandard to me for two reasons: I never had started with the cords and pneumatic-air hose routed under the aircraft, and it was my first start on the carrier from this particular spot. One ground lock still needed to be installed on the main-landing gear as a precaution, so we had to make sure that was removed before we taxied.

After completing the prestart checks with the carrier-aircraft plane commander (CAPC), I asked him and the command combat-information-center officer (CICO) if everyone was ready to start the right engine. The mantra usually is, "Check me chocked, plugged, manned, and clear."

After that sequence, both pilots concur that the left and the right sides are clear for start. The plane captain will signal he is ready, and the pilot will start the engine. The start of the right engine went exactly as briefed, and I was ready to start the left motor. After running through the checks, I briefed the second engine start.

I saw the huffer still was inside the "safety chain" but figured that position was part of the normal shipboard procedure—my first mistake. I asked the CAPC and CICO if they were ready to start the left engine, and they agreed. I thought—my second mistake—the plane captain, who was under instruction, made a signal to start. He raised his hands in the direction for a start but really did not give the start hand signal. I then placed the condition lever into run and toggled the engine-start switch. Two seconds after rotation, we were signaled to secure the engine. We did so without lighting off the engine.

I asked the CAPC what happened, then saw the huffer with the driver in the cart, and realized the cart was not supposed to be inside the safety chain. The CAPC explained to me exactly what to do for these starts (which we should have discussed during the brief). No one was injured, and we carefully again went through the checklist to start the left engine.

I was shaken by the event that just had happened, and it already had started to affect my performance. For the first time in my life, I had made an egregious mistake that could have killed someone. Meanwhile, I had forgotten about the ground lock that still was installed on the main-landing gear and almost had the

I saw the huffer still was inside the "safety chain" but figured that position was part of the normal shipboard procedure—my first mistake.

main-entrance hatch closed without getting it. Eventually, we had the ground lock brought into the command-information center (CIC) and taxied to cat 2. A few minutes later, we were "hooked" by the shooter, ran-up the engine, and received the turn-up signal for the cat shot. Ready to go, our first cat shot was suspended because of deck problems, which delayed our takeoff for a few more minutes, and added to my frustration. All I wanted to do was get airborne and get on with the flight.

After the cat shot, I made a left clearing turn when I should have gone to the right. I had briefed the right clearing turn but did not execute it. After a little help from my CAPC, we got out of tower's airspace and headed to station. After a couple hours of flying our mission, I calmed down and brought 604 back to the boat for an uneventful daytime recovery.

It's not easy being the only 3P in a well-oiled E-2 squadron. You are not as fast or smooth as some of the seasoned 2Ps or CAPCs, whether it's briefing a flight, checklist management, or using good CRM. I was not expected to know everything in the squadron or to know all the ins-and-outs of what goes on around the boat. However, I felt self-inflicted pressure that day: I wanted to perform at the highest level with the rest of the aircrew. I forced myself to rush through procedures that risked the lives of the men and women working on the flight deck. The plane captains were instrumental in preventing this situation from becoming a mishap. Both of them were recommended for several awards for their responsiveness and time-critical decision-making.

I may not have 3,000 hours of flight time, but I've flown enough to know if I don't feel comfortable, something probably is wrong. I should have questioned the positioning of the equipment around the aircraft during my preflight, and I should have discussed the start sequence with my CAPC before engine starts. If I had taken my time and asked questions when the start configuration looked different to me, I would have avoided the incident all together, and I would not be writing this article today.

Ltjg. Stochel flies with VAW-115.

WHEN PIGS FLY

Cdr. Pete Wechgelaer MD, MPH

Have you ever felt that you're rolling backward while stopped at a traffic light? That is spatial disorientation (SD). You weren't moving, but you slammed on the brakes because it felt like you were. How does this happen?

SD is a failure to correctly sense a position, motion or attitude of the aircraft or oneself within the fixed coordinate system provided by the earth and the gravitational vertical. It's your ability to tell which way is up. Sounds simple enough, so why do we frequently get it wrong? It might have something to do with the fact we were not born with wings. Flying applies all kinds of novel inputs into your brain-housing group, and what you perceive is not always what's really happening.

Let's go back to the traffic-light experience. No motion was involved, so we can't blame those tricky semicircular canals. It was your peripheral vision that caught a glimpse of movement and alerted your brain to that movement, and it felt like you were moving. The emphasis is on "felt like" because, even though your eyes only saw, you felt motion. Your eyes and brain misinterpreted what was happening, so what you felt wasn't really what was happening.

Consider what happens during every motion-based simulator flight. What you feel is not what actually is happening. The illusion is called vection, where the movement of something else, even an image, makes you feel like you are moving. Some people are more susceptible to it than others. Just looking at movement makes you feel like you are moving. It's easy to get fooled, and we haven't even discussed moving about and accelerating in three dimensions.

Why is this information important? The Naval Safety Center has identified SD and fatigue as the top two aeromedical-causal factors of mishaps. I plotted the trend for SD mishaps and consistently found a horizontal line, meaning there is no change to the rate of SD mishaps. The Air Force has the same graph: another

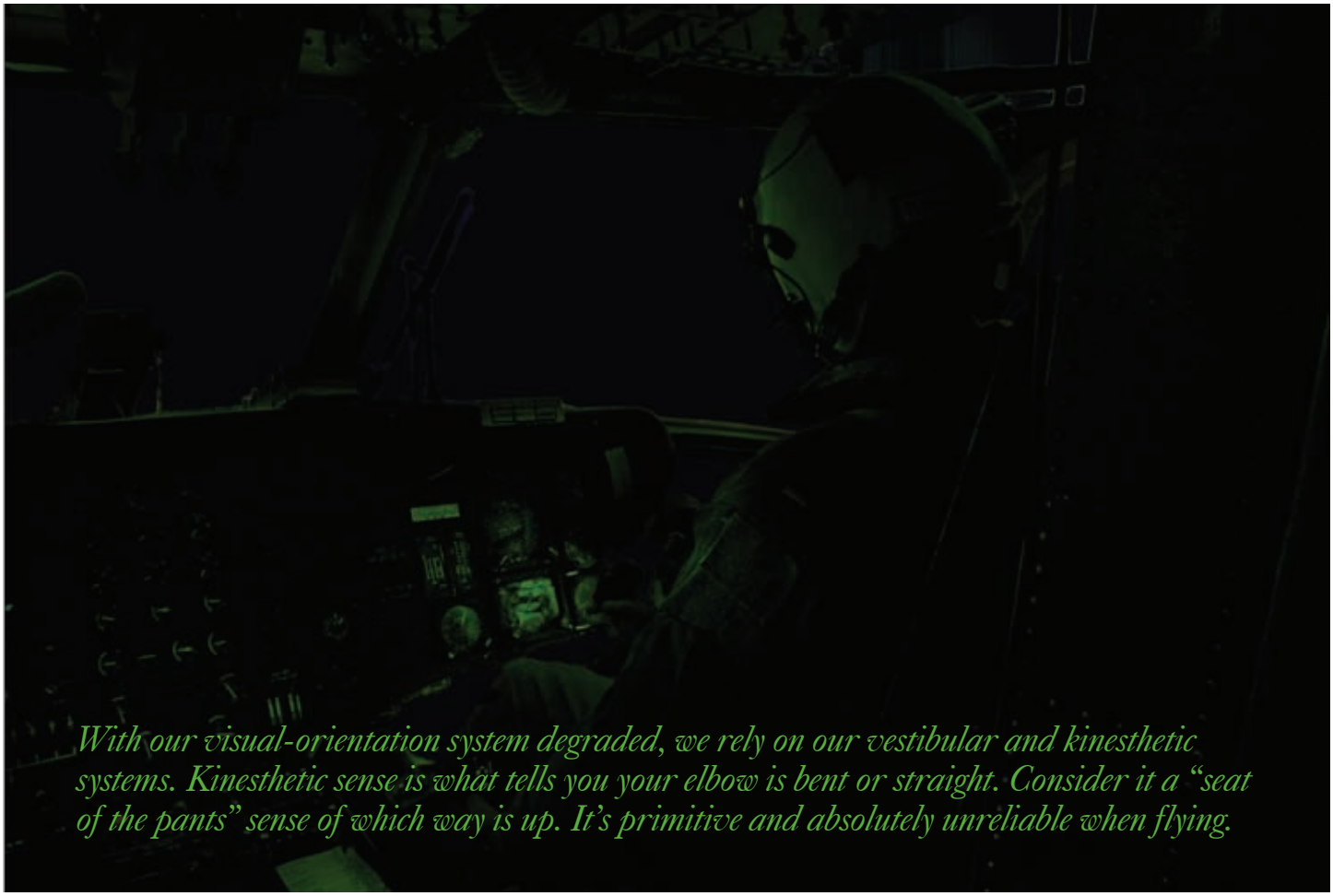
When you don't have the overwhelming visual cues like on a day CAVU flight, think of it as relying on more primitive methods of feeling oriented.

horizontal line. Whatever we are doing to combat this situation isn't making much difference—OK, maybe a little difference. At least, it isn't getting any worse. Another factoid about SD is it's much more likely to result in a fatal mishap.

SD does not occur in isolation. In the car example, how does SD occur? Does it ever occur when you are at the peak of your game, keenly aware of the cars next to you, vigilantly scanning for pedestrians, or traffic flow? Or does it occur as you are trying to find a CD, something on a map, or while you're otherwise preoccupied? Peripheral vision is largely responsible for orientation cues, so even though you aren't paying attention, movement gets sensed. If you were paying attention, there may be a fleeting sense of movement, but the high level of SA squashes it.

The same situation occurs when flying. While your attention is directed to orienting cues and scanning, you are relatively protected. Ever hear of SD on a CAVU day? Probably not. But, how about at night, over water, with no horizon, three miles visibility in haze, and no moon? A little more possible? Do you think it helps to add night-vision devices (NVDs)? Although peripheral vision helps to keep us oriented, vision with NVDs is restricted. What's the difference? The conditions should be easier at night, fewer distractions, less to look at. Well, when you don't have the overwhelming visual cues like on a day CAVU flight, think of it as relying on more primitive methods of feeling oriented.

Your body was designed to function on the ground in a 1G environment. Eyeballs are our primary orienting tool, for good reason: They are hard to fool in the natural world. Eyes also are such a powerful influence they can make you feel movement, even when there is none—as already mentioned. Flying adds three-dimensional acceleration and takes away the horizon. We are expected to rely on small flight instruments, instead of the entire earth, with its natural horizon. With our



With our visual-orientation system degraded, we rely on our vestibular and kinesthetic systems. Kinesthetic sense is what tells you your elbow is bent or straight. Consider it a "seat of the pants" sense of which way is up. It's primitive and absolutely unreliable when flying.

visual-orientation system degraded, we rely on our vestibular and kinesthetic systems. Kinesthetic sense is what tells you your elbow is bent or straight. Consider it a "seat of the pants" sense of which way is up. It's primitive and absolutely unreliable when flying.

Think of spatial orientation (SO) as a hierarchy. Vision is the supreme sense; vestibular and kinesthetic are more primitive. Even the supreme orienting-visual sense can be fooled and cause problems. Here is where fatigue comes into play. Spatial disorientation is not an isolated problem. When we are fatigued or distracted and not gathering orienting clues as we should be, the more primitive senses take over. You may feel like everything is fine, until you hear "Pull up, pull up" from a nice automated voice, which disturbs the comfortable feeling. Fatigue is a particularly nasty problem because, when fatigued, you tend to fixate on items, or even accept things you ordinarily would know are not right. A fatigued aviator may find it is easier to ignore or not be disturbed by the instruments and to feel comfortable.

Have you flown aircraft with different size attitude gyros, or a different size HUD? Which one was easier to fly in IMC? For those of you who haven't, HMT-302 at MCAS New River had a Navy detachment with a few MH-53Es parked alongside the CH-53Es. For instrument checks, there seemed to be a preference for the MH. Why? Probably more than one reason, but the attitude gyro in an MH is huge. Is it easier to be precise with a 10-inch-wide attitude gyro, or a one-inch-wide gyro? How many of you have started to roll the aircraft in the wrong direction while on instruments, trying to level the wings? Is it easier to think of (or feel) the "artificial" horizon on the gyro as real, or stationary compared to the (moving) aircraft on a big attitude gyro? I'm sure you answered yes.

Apply this logic to NVGs, where the world is smaller (field of view), and your peripheral (orienting) vision is taken away. The frequency of errors, such as rolling the wrong way, is increased, and also related to field of view or "gyro size." Bigger is better; looking through a straw makes it harder to orient yourself. Similarly, what happens on NVGs when your peripheral vision picks up the inside of the aircraft and wants to make that image stationary and level in your mind? Is this act more likely if there is a really blurry or absent horizon in the goggles?

What happens when there is no horizon, limited

ground references, and you still are trying to fly VFR? The FAA has a category devoted just to this problem—"Continued Visual Flight Rules (VFR) Flight into Instrument Meteorological Conditions (IMC)." It is one of the larger categories for civil-aviation mishaps. With our instrument ratings, and IFR-equipped aircraft, it is less of a problem, but we are not immune. It all gets back to feeling oriented when you aren't. Just because the eyes are the primary orienting sense doesn't mean you can't be oriented without them. On the ground, you do not have to think about standing when you close your eyes. But while flying, if visual reference is taken away, you don't get an internal alarm that tells you there aren't any reliable orienting cues. You do have orienting cues, but they have a poor chance of being correct.

I have investigated a few SD-related mishaps, and in the rare cases that a pilot survived, I haven't found one who recognized that the reason for the unexpected swim was SD, at least until well after the event. Even with training, the trend for SD mishaps is not improving. However, we are getting better at investigating.

As I read old mishaps, SD tended to be underreported as a causal factor, as compared to the narrative account of events. This situation is improving. While education is working for investigators, it is not reducing SD mishaps. You may think the rate is going down, but because we are better at reporting the SD events, it does not appear that way. The rate on the graphs was not from the AMB determination but from researchers assigning mishaps as SD-related. Because SD is a significant cause of death and expense, what are we going to do to fix it?

Lectures have been the mainstay of SD training, but maybe they aren't effective. If you don't feel disoriented, it is hard to conjure up the memory of a lecture to help you. Simulators may be a solution, but how is something designed to keep you disoriented going to help? Simulators do play a role in keeping up SA, working on maintaining a good instrument scan, and preventing task fixation and distraction. With the proper scenarios, simulators should help, but how can we actually demonstrate your susceptibility?

Flight profiles (demo flights) have been developed to illustrate SD, but they aren't widely used; there is no valid way to evaluate whether they work. They are expensive, as they "cost" flight hours. Pilots like demo flights and feel it is better to be fooled than to be told that you can be fooled. Not a novel concept, we do that in the devices for initial physiology training. Maybe it just doesn't get through that these same things happen in flight without the devices.

While gathering flight hours during my aerospace-medicine residency, I spent a lot of time in the back seat of a TH-57, parroting "clear right" during basic-instrument (BI) hops. The syllabus has an item called "SD demo," and it was usually dumb. The instructor would fly, exceed BI parameters, and see if the student would call him on it. The scenario had nothing to do with SD but was more a lesson in assertiveness. One day, an instructor did something very simple. He had the student at the controls close his eyes and, with a trimmed aircraft in level flight, fly "by the seat of the pants." All he did was ask the student to fly a 10-degree, angle-of-bank turn for a while, then reverse it to 10 degrees in the opposite direction. The student was asked to comment as the maneuver progressed and to give a running narrative of incorrect information until he opened his eyes and got a truly eye-opening experience. The aircraft was not where it was supposed to be, because the seat of the pants lies. Those vestibular thingies didn't help, either. In fact, the vestibular organs contribute to the problem. Keep in mind, this scenario occurred in the lowest performance aircraft in the inventory. Imagine how easy it is to get scrambled in a high-performance aircraft.

How about technology? There is a tactile-situational-awareness system (TSAS) created by Capt. Angus Rupert and the Naval Aerospace Medical Research Lab (NAMRL) in Pensacola. It uses an array of tactors, which are like little buzzers against the skin to get your attention. Consider it a gyro-stabilized, accurate edition of "seat of the pants" flying. Using TSAS, you can hover a helicopter with your eyes closed, or fly aerobatics blindfolded. The system has been around for quite a while now. It is potentially the solution to SD mishaps, and it isn't being used.

Think of the definition of insanity as doing the same thing over and over but expecting different results each time. The SD mishap rate is not declining. Maybe it is time to try something different. I've offered a few suggestions to get started. Awareness through information flow is only a start; we need to demonstrate the ability to be fooled, as humbling experiences usually are good learning experiences. Technology also is a good place to look for ways to overcome the problems inherent in taking terrestrial animals flying. Get to work; the mishap rate isn't going to decline from watching it.

Cdr. Wechgelaer was with MAG-29, currently with Naval Safety Center.

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

Christine's Last Hurrah for Mayhem

By Capt. Christopher Larson, USMC

As a newly qualified EA-6B functional-check-flight (FCF) pilot, it only took two days before I was scheduled for my first FCF. We had the resident troublemaker of our squadron, aircraft 03, nicknamed, "Christine." She had been down for a broken slat actuator, and maintenance control was champing at the bit to get her up and flying. My crew consisted of two very experienced aviators, which made me the new guy of the bunch.

The planning and brief were uneventful. We walked to maintenance control to read the ADB and got our FCF brief from QA. The QAR assured us all was well, so we assumed this would be a standard

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"C" card FCF. The check flight should take a grand total of 30 to 40 minutes. I was excited to be conducting my first FCF, and more excited once I saw we were lightly configured with no jammer pods.

After preflight and startup, I needed only a few tries to get the wings spread and locked. We got clearance and taxied to the active runway. Takeoff and transit to our working area went smoothly, and we started the FCF checks. We had to reduce our fuel load to get light enough to slow for the gear and flap checks, so we decided to do a little cloud surfing. After maneuvering around a few small clouds, we completed the rest of the FCF checks and headed back to MCAS Cherry Point in VMC conditions.

We took the overhead to a full stop because the jet had passed the card so far. Things then got interesting. From the backseat, the XO made the 10-minute-out call to base.

Base acknowledged, and maintenance control asked, "Is the jet up?" We told them the jet was up, as we headed to the initial for the break.

At the numbers, we broke left, and I gave a little cross-cockpit banter to the pilot for being so conservative on the Gs. We slowed through 250 knots to lower our gear and flaps. Once both handles were dropped, I said over the ICS that we had three-down-and-locked on the gear, and I had visual movement of the slats on my side. I referenced the instrument-position indicator (IPI) to get confirmation of the flaps down and stabilizer shift. But to my shock and surprise, the flaps indicated up, the stabilizer remained clean, and the slats were extended—not good.

I asked the pilot if it felt like the flaps were down, and he replied, "Negative."

Uh, what now, new guy?

The XO and I broke out our pocket checklists, and I told tower we needed to climb to the delta pattern to troubleshoot. Tower, in a complete loss of situational awareness (to be magnificently corrected later) cleared us to 2,000 feet, right in the middle of the clouds. We gently informed them that altitude would not work, and we would continue climbing to 4,000 feet overhead the field.

"Um, roger, um, climb VFR to 4,000 feet and hold," tower directed.

"Roger that, Gunslinger, Jester 23 in the climb," we replied.

We decided, as a crew, the best course of action would be to leave down the gear and cycle the flaps to correct the problem.

The pilot raised the flap lever, and I said, "Moving on the right and moving in the windows."

"OK, take a deep breath, and let's try that again," I thought, trying to calm myself.

The pilot once again lowered the flap handle, and I went through the same verbal dance I had before. Once again, to our great dismay, the slats moved down and locked, while the flaps stayed up, and the stabilizer remained clean.

We made the ultimate mistake of cursing the aircraft while we still were in it, and she made us pay for it.

Illumination of the master-caution light, accompanied by the "hyd sys" light and a loud expletive from the pilot, prompted me to check our hydraulic gauges. I hadn't felt very concerned up to this point, but when I saw the combined hydraulic needles drop to zero, I wondered if my SGLI information was current.

Loss of the combined-hydraulic system in a Prowler means you lose all sorts of handy items that are good if you want to land and stop the aircraft: normal brakes, antiskid, nosewheel steering, speedbrakes, and flaperon popups. Optional, yes; good to have, definitely. The only ace we held was that our gear already was down, and we still had the emergency method to lower the flaps and slats. The pocket checklist runs through a number of steps to come to the logical conclusion that you should (a) lower the flaps and slats electrically, and (b) take an arrested landing if available. We tried to lower the flaps and slats electrically, and after what seemed like hours, the flaps indicated down and in the 30-degree position, the slats were out, and the stabilizer shifted. Giddy up.

The runways at Cherry Point are configured in a sort of X, with an offset point in the middle, known as the

center mat. Normally, if you need more distance to get an aircraft stopped, you can race across the center mat and jog slightly left or right to essentially double your remaining runway. However, today's events were nothing close to normal, and that trend would continue. A number of civilian workers also were doing repairs on the center mat, which meant we would have precious little space to stop. When you consider these conditions, you can deduce that a short landing roll was not an option. We had to catch that wire for the arrested landing, or else we could wind up barreling into the center-mat construction, the tower, the SAR helos, and you name it.

While we contemplated and discussed our limited options, I told tower we had a hydraulic issue, and we would need the arrested landing. My bucket was full at this point, and I forgot to mention we now were an emergency aircraft. The tower controller began playing for the varsity at that point and got the crews working to get the arresting cable rigged for us. He notified the crash, fire, and rescue (CFR) guys that we were in trouble. They sounded the charge and took their posts on the side of the runway. However, much to our dismay, "Pedro," the SAR unit, also called over tower radio and said they were turning in the line and were ready to assist. Great. Thanks for the initiative, but, up to this point, we all were thinking this would be an uneventful arrested landing. The crash guys arrived, and they brought their downed-aircrew-rescue buddies with them to play.

We discussed the best way to execute the arrested landing and decided to follow the PCL and conduct a rolling arrestment into the gear. The pilot said, even though the flaps and slats indicated down, and the stabilizer had shifted, the aircraft still didn't feel like it was flying right. We decided not to fly on speed but rather maintain a minimum of 150 knots until touchdown. This plan would ensure we still would be at a controllable airspeed, and we would have enough go on the jet to take it around if we missed the wire.

We extended long on downwind and set up for a straight-in. I fed the pilot lineup, airspeed, and precision-approach-path-indicator (PAPI) info, and everything looked good. We touched down well short of the gear and rolled over it. We anticipated the tug, indicating our hook had done the job.

"Nothing, right, here we go," I thought.

The pilot brought the throttles to mil power, and I told tower we were going around. The pilot replied with a hearty, "Bolter, bolter, bolter." Thank you, Captain Obvious.

One more pass yielded the same result, and we were on the go again. About this time, the CFR guys said it appeared our hook wasn't down all the way. Having lost the combined hydraulic system, we had no way of cycling it. I elected to pull the hook handle as far out as I could, hoping that would correct the problem, and apparently it did. We decided this next pass would be for all the marbles, as we were running out of gas and options. We would keep it on the deck and blow both main tires trying to get the jet stopped on the runway if that's what it took. Fortunately, we caught the wire on the third and final try, and the cavalry arrived to get us out of the wire and out of the jet.

After surrendering our patches to the CFR guys per tradition, we hitched a ride back to base to succumb to the ribbing of our squadronmates. Little to our surprise, there already was a top-10 list in the ready room as to why we had to try for the wire three times. Thanks, guys; sympathy noted.

Several days later, I asked around maintenance to see if they had discovered the cause of our adventures. I had to rephrase my questions as most of the maintainers I talked to offered theories as to why my fearless pilot had to bounce twice before he finally caught the wire. The conclusion of the maintenance-control chief was the hydraulic line had "bursted" (that was his term). The airframes chief finally offered up the rationale that a No. 6 flaps-extension-hydraulic line, coming off the flap-selector valve, had a chafe mark on it from rubbing against one of the wing ribs. When 3,000 psi hydraulic fluid suddenly was directed through it, the line burst because the chafing had weakened it.

We learned crew-resource management (CRM) is essential in any sort of emergency. We talked about everything and decided, as a crew, what the best course of action would be at each step. CRM does not have to be confined to the cockpit. Had it not been for the quick actions of the tower, CFR, and airfield-operations crews, things could have gone decidedly different. Although tower gave us priority handling, the fact I never declared an emergency could have proved disastrous. We were operating over a busy military airfield, and simply declaring an emergency might have served to clear the airspace should the need have arrived. Instead, tower continued with normal operations, in spite of our situation.

I trust Christine's lust for mayhem was satisfied by the events of that day.

Capt. Larson flies with VMAQ-2.

Faces That Always Will Remain

By LCdr. Ryan Dunn

I'd like to share a recent experience I had involving a humanitarian-assistance, disaster-relief (HADR) operation.

The USS *Ronald Reagan* (CVN-76) Strike Group provided immediate relief supplies to Filipinos affected by Typhoon Fengshen (or Frank, as it was known around the islands), which had struck June 20. The Philippine government requested we assist the Armed Forces of the Philippines (AFP). Our efforts were directed to one of the hardest hit areas, the Visayan region, which includes the provinces of Iloilo, Aklan and Antique on Panay Island. Also included are the North and South Gigante Islands.

Outside of the Navy and the Philippine media, this operation was not publicized widely. You probably didn't see it on the front page of any .com or newspaper.

I was the pilot-in-command of Red Stinger 104, one of two HSL-49 Det 4, "A Team," SH-60B helicopters embarked on USS *Chancellorsville* (CG-62). We landed our Seahawk at Santa Barbara Airport, a small, newly-constructed international airport located on the southern end of Panay, just outside the island's major city of Iloilo. My copilot, Lt. Troy Leveron, and I were given GPS coordinates on a piece of scratch paper by the EA-6B squadron XO, who was coordinating helicopter HADR operations. We were loaded with boxes of water.

As we approached the tiny island of Tambaliza, situated just northeast of Panay Island, it looked like a ghost town. We saw several shacks edging the water, some bulls in a small pasture, a couple of dogs, and two locals next to a shelter waving a white flag at us. We flew over them and landed in a clearing just east. When we were 60 feet above the landing zone, more than 100 local residents appeared. Men, women and children came out of the surrounding areas and descended on our intended landing spot. These folks seemed to have no fear of our aircraft. Our presence was their first sign of help, and they were desperate.

As we continued trying to land, the rotor wash blew into the gathering mass of curious people and forced them to stop in their tracks. But, the moment we finally landed, they had no regard for the 20,000-pound helicopter with almost 2,000-shaft horsepower. The local residents ran straight under the rotor arc to the cabin opening, where they saw my aircrewman, Aviation Warfare Systems Operator 1st Class Nathaniel Watts, with boxes of water.

When I saw everyone rushing to accept our supplies, my heart skipped a beat. I had that funny feeling

The coast of Panay Island in the Philippines that was hit hard by Typhoon Fengshen receivied assistance from the Ronald Reagan Carrier Strike Group.

in my chest few other feelings could beat. OK, I admit I was a bit choked up, but it was by far the greatest moment in my career. I just wish I had had my maintainers with me, because they were also responsible for that surreal moment. I wanted the flight-deck guys on *Chancellorsville*, who gave us gas and launched us, to see those faces. I wish the ship helo-hangar techs could have experienced the expressions of appreciation. That's who I wanted there, those folks behind the scenes who made all this happen.

These unfortunate islanders were suffering from some of the most extensive flood damage they'd seen in recent history. They literally were fighting over our supplies; they pushed, shoved and reached. One guy even started to climb on top of the helo, but Watts quickly pulled him down for his safety. I was concerned about the safety of everyone; I didn't want anything to happen.

A guy who spoke decent English approached Petty Officer Watts and said he'd help slow people down and make it a bit safer if we saved him a box of supplies. After the guy had helped, we gave him his box.

A little girl was knocked down as she tried to get water. Our aircrewman shielded her and gave her three bottles of water, then cleared a path for her to escape the mob. As we pulled power, the 100-plus crowd waved to us in unison—a sight I'll never forget. We flew away and talked among ourselves about that moment in time, the moment that forever will stay engrained in my heart and mind.

I also was worried about our aircrewman. I called back, "You OK?"

"Sir, I'm fine back here," he said calmly.

I recalled the two women who had begged for food next to my window. The only thing I had was two granola bars, so I opened the door and gave them the bars. They were most gracious. After eating the granola bars, they rubbed their stomachs and pointed to their mouths, asking for more. I began to feel bad as I remembered I'd just eaten steak and crab legs for lunch. I thought about how much food I and others waste in a day. I even get care packages from home. "Gosh, I'm pretty lucky!" I thought.

I grew up in a good home, with a supportive family, and I had plenty of opportunities. Seeing a guy walking outside the helo barefoot and wearing a flight suit that another crew probably had given him put things in perspective for me. Most of us never consider the possibility two-thirds of the world live with severely limited resources and very few opportunities. We delivered one of the most basic resources, clean water; yet, the local residents were so grateful. It makes me realize that taking the little things in life for granted can allow one to lose the big picture.

We have the greatest nation on earth, as well as the most opportunities of any country in the world. If you think you're having a bad day, you're not. If you think other people have it better than you do, some do, but the majority don't. People who live in these unfortunate circumstances are just not visible to you; they're not in your face. Well, they were in my face during this experience, and they always will remain.

LCdr. Dunn flies with HSL-49

Left to right: Lt. Troy Leveron, AW2 Nathaniel Watts, and LCdr. Ryan Dunn.

Please send your questions, comments or recommendations to:

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One Bad Decision, One Fortunate Outcome

Decisions you make today may affect you for the rest of your life.

By LCdr. David Rauenhorst

Like most young aviators, I felt bigger than life and always looked ahead, but one morning in Corpus Christi, I didn't take the time to see what was happening around me.

I had finished a flight the night before. Eagerly awaiting the next day's event, I went home to study but instead watched TV and made some phone calls. By the time I got around to preparing for the next day's flight, it was 2300. I went to my room, studied until about 0100, and then hit the rack. My flight brief was at 0900, and I wanted to get in a workout, so I set the alarm for 0530.

I woke up at 0530, got dressed, and headed for the base. I planned on taking my time at the gym, showering, and then heading to the hangar. Once I arrived at the gym, I realized had I forgotten my helmet bag back at the house. No worries, though; I decided just to cut short my workout. I started with a run but tired a little faster than usual. I should have realized it was because I only had had 4.5 hours of sleep, but I was focused on my flight.

After the run, I went to the weight room to start my chest and tricep routine. Because of the time and needing to get back to the house, I decided to go with just the chest workout. I felt good at first and started off with my usual reps. I increased weight on each set and was on the last one. I hadn't had much trouble up to this point. I looked for someone to spot me, but the gym was empty. I took one more look at the clock and decided to press.

Time was a factor now as the brief time approached. I was on rep four of five when I hit the wall: my arms gave out. The bar came crashing down on my chest and knocked the wind out of me. My arms were like mush, and my chest felt like a bowling ball had dropped on it. I couldn't get out any loud cries for help, and I struggled to push the bar to the side. I started to panic and felt like passing out. Just as my vision was fading, two workers saw me and took the bar off my chest. I lay there for a minute just thankful someone had helped me. After sitting up, the pain in my chest increased, so I headed off to medical. The flight surgeon just shook his head and told me how fortunate I was. I walked out of medical with only a bruised sternum and a missed flight.

We often get ahead of ourselves and lose focus of what is at hand. We apply ORM to every flight, but very often we discard risk management is discarded when we're away from work. The red flags started the night before, and I ignored them as they piled up the next day. For most people, it takes one situation for them to apply ORM principles; unfortunately, some people only get one chance. Fortunately for me, everything worked out.

LCdr. Rauenhorst flies with VAW-77.

Old Tales

By Cdr. Dana R. Gordon

As a squadron XO, and now CO, I periodically dig through my old files to find questions and stories to share with my ready room, or to ask during those all-important helicopter-aircraft-commander (HAC) board scenarios. I have promised every one of my prospective HACs that, during their board, they never will have the same questions asked in previous boards. So, the education process for them continues to challenge me and keeps me on my toes, even if it means digging up old tales from the crypt. After all, we know what happens to your memory as you begin to get older. "It only gets sharper," should be your answer.

The story below is an article I wrote about 14 years ago. I was a lieutenant on my first underway period as a junior HAC. Even though the event happened more than 20 years ago, the education and lessons learned are invaluable and still relevant.

from the Crypt

Here it is:

What Does It Mean To Be an Aircraft Commander?

I recently finished my first long cruise as an H2P, flew more than 300 hours, and gained a wealth of knowledge and experience. During preparation for our aircraft-commander boards, my fellow H2Ps and I heard many stories of what had happened to other HACs and their crews. Getting the chance to hear about the mistakes and misfortunes of others was an eye-opening experience. They also showed me how much responsibility the title of helicopter-aircraft commander holds.

The many discussions, scenarios and facts thrown at us by fellow pilots, our chiefs, and the maintainers all helped the three of us with our boards—we all did fine.

My LPO told me this story from his days as an LSE in H-2s.

The ship was conducting pax and cargo transfers to several different decks, and we were in a "need to get it done in a hurry" tempo. The crew landed on deck and requested fuel to continue operations. Their request was met with a refusal by the detachment's OinC. The crew was told they had plenty of fuel and time was of utmost importance. Has this scenario ever happened before? I know it's difficult to tell your OinC otherwise, but, as we learned in flight school, if it makes you feel uncomfortable, you should 'fess up, so as not to make an error in judgment later.

The crew decided to take the OinC's word and turned down available fuel. However, to conserve fuel, they decided to place one engine in idle, while waiting on pax and cargo to be loaded. Does placing an engine in idle really help you conserve fuel?

Once the aircraft was loaded and ready for takeoff, the flight-deck crew broke down chocks and chains, and the pilots requested a green deck for takeoff. With permission to lift, they pulled power and got about five to 10 feet off the deck before they realized, as they headed for the water, the aircraft was in a single-engine configuration. They got caught up in the nets, which slowed their descent and probably saved their lives. Pulling power in an effort to break free from the nets, the aircraft reacted with 360-degree spins, because of loss of tail-rotor authority induced by having only one engine on line. As they headed for the water, the crew got the idle engine into "fly" and managed to climb.

All seemed fine until they discovered that, in their haste to get upright, they had damaged one of the main-landing gear and rendered it useless. Once the crew regained their composure, it was time to get the aircraft back on deck. The LSE and deck handlers set up the flight deck with several stacked mattresses to compensate for the loss of the landing gear. The helo was brought back and landed.

What do we, as junior aircraft commanders, learn from this experience? Well, I'll let you make up your own conclusions. I have been told by my OinC that, as a HAC, you'll learn more in your first 100 hours than at any other point in your flying career, short of your first few flights during flight school.

I am currently underway in the Haitian oparea in support of a major operation. The pace is fairly low-stress down here, so I've gotten a chance to absorb many of the intricacies of being an aircraft commander. I'm learning the things that can't be taught but must be experienced as a HAC at sea to fully understand my aircraft and the full use of its systems. I'm starting to get the big picture.

One of the things I've learned in my short time is that the checklist still is the same whether you're a HAC or H2P, so use it. This story is a prime example for establishing good checklist habits. Because you are new, no one is going to fault you for taking your time and doing things the right way—it should be expected. Another important point is making sure you're comfortable with what is happening. If you have to climb on the aircraft a second time to make sure all compartments are closed, then do so. You are responsible for the aircraft. Your comfort level is very important. You make the final decision on the operations of your aircraft, and you'll definitely want a clear head to make good decisions.

Remember the three major duties of a HAC: safety of your crew, accomplishment of the mission, and training of junior personnel. That's the main reason I decided to reproduce this story.

Cdr. Gordon is the commanding officer of HSL-42.

Special thanks to AMH1(AW/SW) Robert L. Bell for the story.

ROLLIN' ON RIMS

Photos by AM1 Thomas Beverage

By Lt. Melanie Swords

Wednesday was a clear, gusty autumn day as our E-6B crew of 14 (LANT crew 3) took off around midday for a flight from Tinker AFB to Offutt AFB. We landed and dropped off most of our crew, except for the third pilot (3P), flight engineer (FE), flight-engineer trainee (FE-T) and myself (aircraft commander, instructor pilot). We planned a one-hour bounce event in the VFR pattern to complete a second-pilot (2P) upgrade qual. After 20 minutes on deck, we were ready for takeoff.

About 45 minutes into the flight, the 3P flew a 14-degree flaps, touch-and-go on runway 30. The landing slightly was left of centerline but otherwise uneventful. About halfway down the runway, however, we felt a strange shudder and vibration. We were too fast to stop and committed to the touch-and-go, so we continued to rotate. We don't troubleshoot below 500 feet AGL, so we followed normal touch-and-go procedures: We raised the gear and accelerated to 170 knots. At about 300 feet, tower called and said smoke was pouring out of our right wheelwell. Although we saw no indications of a problem, the crew immediately suspected a wheelwell fire.

As the aircraft commander, I took controls and brought down the gear to position the jet for an emergency return. On downwind, tower called again and said the smoke had dissipated but added that one of the tires on the right mainmount appeared blown.

We continued to the base turn and decided to do a low approach, so Offutt tower could make a closer inspection of our gear. We flew down runway 30 at 200 feet AGL. Tower again reported all four tires were blown on the right mainmount, and significant debris, including one of our antennas, was all over the runway.

We were at decision time. We entered a delta pattern over the field and evaluated our situation. We checked our hydraulic quantity to make sure debris from the tires hadn't ruptured our lines. The quantity was holding, so we talked about the landing. With all four tires blown on one side, and having to stop on just four brakes, we wanted to be as light as possible on a long runway. About 35,000 pounds of fuel remained, so we decided to get clearance back to Tinker AFB. We flew back at FL280, gear down, at 250 knots. The one-hour flight gave us time to review the data and NATOPS checklists.

We reviewed the landing-with-flat-tires procedures. We wanted to line up slightly left of centerline, on the side with good tires, and use nosewheel steering and rudder to

keep the aircraft straight on the runway. Next, we broke the safety wire on our pneumatic brakes and reviewed those procedures in case the four remaining brakes didn't stop us. We looked at landing data for brake energy and landing distance, but our numbers only accounted for as few as six of eight brakes operating, not four, so we knew the numbers wouldn't be perfect.

Also, the flight gave us time to collect our thoughts and to thoroughly brief the approach and landing. The FE was the most experienced crew member, with 11 years under his belt in the Mercury. He told us to keep our heads in the game and to stick to NATOPS standard-operating procedures (SOPs) for best results. We agreed to stay calm and to talk through the situation. I was in the right seat and would make the landing. This presented a unique challenge because there only is one tiller on the left side. Therefore, the left seat exclusively controls nosewheel steering; however, with only two pilots onboard, a seat swap was out of the question.

With no accurate data available, I decided to burn down to less than 20,000 pounds of fuel and use 50-degree flaps for the slowest possible approach speed. Upon touchdown, the 3P would deploy speedbrakes at my command, while guarding nosewheel steering. The FE-T would make standard thrust-reverser calls, as I deployed all four thrust reversers (TRs). Once the jet stabilized, I would pass controls to the 3P, who would steer, using nosewheel steering and rudder, if required. Meanwhile, I would guard the pneumatic brakes, while the FE guarded the antiskid switch and the 3P gently applied foot brakes. If the 3P's brakes didn't work, I would try to brake from the right side, while the FE stood by to turn off the antiskid if pneumatic brakes were needed. The crew briefed the same approach and landing three times to make sure everyone was on the same page in this completely nonstandard situation.

I chose to take the longest runway at Tinker: runway 17 at 11,100 feet. Winds were 160 degrees at five knots, and skies were clear. We did a low approach by tower and teardropped back around, so they closely could inspect the integrity of both mainmounts, as well as the nosegear. Tinker tower confirmed all four tires on the right side were shredded, while the left and nose tires looked normal.

After a third low approach to burn fuel, we entered the downwind for the final pass. The before-landing checklist and safety checks were complete, and the jet touched down slightly left of centerline as planned. On touchdown, the jet immediately began to settle and pull to the right. The crew performed all procedures as briefed. The foot brakes worked, and the airplane rolled to a stop, with four degrees of bank to the right.

As the crew stared at the crooked horizon, fire trucks rolled up. We told them to hold position while the FE chocked the nosewheel. He also put in the T-handle to prevent the nosegear from collapsing. This step was taken because our auxiliary-power-unit (APU) fire box was damaged by rubber and shrapnel, and we would not have power or hydraulic pressure once we shut down the engines. Once these actions were complete and five minutes of cool-down had passed, we shut down and took a deep breath to prepare ourselves to inspect the damage.

The rubber on all four tires completely was gone, with the exception of a few tiny shreds around the center of the rims. Large strips of rubber were wrapped around beams in the wheelwell, and a small puddle of hydraulic fluid was forming under the fuselage. The No. 3 engine rested just five inches above the deck. The runway was striped with deep grooves and scratches, where metal from the rims had cut into the concrete.

The crew used NATOPS and the fundamentals of crew-resource management (CRM) to bring the jet home. By following SOPs, keeping our cool, and working together, the jet suffered no additional damage, and we all walked away.

Lt. Swords flies with VQ-4.

Tahoe Pucker Factor

By LCdr. Matthew D. Menza

A few years ago, I attended USAF Test Pilot School, where I flew 26 different aircraft. Before this, I had had a modest amount of flight time in civil aircraft; I also had had a tour in the EA-6B Prowler. Flying the latest and greatest Super Hornets, with the AESA radar and other assorted goodies, put me on top of the world when I began my test tour in China Lake. When my squadronmate and good friend was chosen to fill a seven-month individual-augmentation (IA) billet in Afghanistan, he gave me the keys to his very plush 1986 Mooney M20J aircraft.

My wife and I were thrilled to have our own magic-carpet ride. We used it often, taking trips to the coast or to Las Vegas for the proverbial $100 hamburger. We quickly got comfortable flying the Mooney and decided to plan a trip through the mountains to Lake Tahoe for a camping trip.

We would load up the Mooney with our daughter, dog and camping equipment, fly into South Lake Tahoe airport (KTVL), camp for the weekend, and fly back. The weather forecast called for an occluded front to move into the Sierras Sunday afternoon, the day we were to fly back to China Lake. I did some preflight planning, found diverts along the route, double-checked our fuel ladder, and decided the trip would be no problem. The terrain was mountainous, but we could navigate around the tall peaks, with little deviation to our flight plan.

My father regularly flies into Tahoe in jet and turboprop aircraft. I called him to talk about the trip, and he cautioned me about taking a 200-hp Mooney into Tahoe during the summer, during questionable forecasted winds. He said I'd better have the winds to take off to the north, the departure heading that takes you over the lake. He said taking off to the south puts you into a bowl, with rising terrain in every direction.

We flew into Tahoe and had a great camping trip. We then needed to beat the weather forecast of strong westerly winds, mountain wave, and turbulence. The bad winds were forecast for the afternoon, so we were going to be smart and leave early in the morning.

Wrong. Mother Nature changed her mind. The time came for takeoff, and the windsock was pointing straight out from the south at 30-plus knots. I could hear my dad saying, "Don't take off to the south." But, I assessed the situation and deduced a strong wind down the runway would give me a decent climb rate to clear the tree line. I would turn north to climb over the lake before pushing southeast toward Ridgecrest, Calif.

After takeoff, once we reached the tree line, the stall-warning horn started to scream. The aircraft settled and would not climb—we had leveled off with the tree line. I scanned instruments; the engine was performing normally. I considered setting it down, but there wasn't enough runway in front of me. I pushed the nose over slightly and cleaned up the aircraft. I needed five knots more to start another climb, but I had to get it before the large trees at the end of the runway became friendly with the front end of the Mooney. I got those five knots, slightly pulled up the nose, and the stall-warning horn started screaming again. As a bonus to our situation, I was hit with a 40-knot, right crosswind that rolled me to 60 degrees angle of bank.

The stall-warning horn was located on the left side of the aircraft wing. The winds were stiff from the opposite side, blanking out the horn and causing it to activate. This noise didn't help my concentration. I now had a problem because of a lack of climb rate and rising terrain. I couldn't turn into the wind because of a large mountain to the west. If I turned left or east, I ran the risk of losing altitude in the turn and becoming roommates with the squirrels and birds in the trees. I had to react quickly because the terrain was rising quickly to meet the aircraft. I used my rudder to make a left crosswind turn and used my ailerons to keep the aircraft from over-banking from the heavy winds. It took almost full aileron deflection to keep control of the aircraft.

I essentially was in a flat turn. Any other maneuver would result in a settle toward the trees or an uncontrollable left roll because of the 30-knot, gusting-to-50-

After takeoff, once we reached the tree line, the stall-warning horn started to scream.

knot, crosswinds. I had two goals: not to lose one more foot in the turn and to get wings-level headed north. Once we rolled out heading north, I scanned the cockpit and discovered that everyone, including our dog, were maxed out on the pucker factor. This situation was one of the most uncomfortable experiences I've had in my aviation career. On top of it all, I had all the people I love in the aircraft with me.

Our journey home was horrible. We were stuck in mountain-wave turbulence the entire way. I couldn't climb past 12,500 feet because of no oxygen on board and a lack of power. I couldn't fly lower because of the terrain. For almost two hours, we got beat up by the turbulence.

After landing, our 8-year-old daughter jumped out and kissed the ground; meanwhile, my wife hurried to put the aircraft to bed, and I had a moment to reflect. I wondered how I just had put my family through this dangerous situation.

My wife and I have decided flying will be a permanent part of our lives; we simply love flying. We also agreed, however, never again to experience a similar situation. I had two choices: to get rich and buy a turbo prop or jet, so we'll always have an excess of power to get out of trouble, or to wise up to a few important lessons.

My experience as a tester and tactical aviator is myopic, with respect to the entire aviation spectrum. I'm good at what I know, but I never was taught how altitude affects manifold pressure at high-density altitudes (up to 40-percent power loss), or how mountain winds and flying can be dangerous to your health. My father, with more than 6,000 flight hours, warned me; but, my subtle overconfidence pushed his warning aside as an ancillary fatherly concern. I didn't heed his call to reassess my plan.

What I learned will carry over to my civil flying, as well as my military flying. Although our experiences as military pilots may be exceptional and dynamic, they don't account for unanswered variables in other aspects of aviation. Flight plan thoroughly, listen carefully, don't be overconfident, and always understand your machine and the environment in which you're flying.

LCdr. Menza flies with VAQ-130.

Photo by MCS1 Michael R. McCormick.

The Importance of Switchology

By Lt. David Gentner

Everyone who has flown a Hornet knows the airplane can be smarter than the person flying it. One of the assumptions, however, is that the jet gets properly programmed by its human operator. I'm talking about what is known throughout the fleet as proper "switchology," one of the most important skills an FA-18 pilot must possess. With that thought, here's my story of how a simple switchology error almost killed someone.

It was my first underway as a nugget, and we were conducting tailored-ships-training availability (TSTA) aboard an East Coast CVN. I was up for a good-deal, section, low-altitude pop hop with two live 500-pound GP bombs and 250 rounds of 20mm bullets. The bombs were built-up with BSU-86 fins, which can be employed in a high-drag (Ret.) or low-drag (FF) configuration. Depending on pilot selection in the cockpit, one of the functions of the stores-management system (SMS) is to provide the appropriate ballistic-release calculations for a given weapon configuration. For this flight, we had planned to employ only the bombs in high-drag mode, so, in accordance with current tactical recommendations, the ordies wired the fin-release lanyard to the positive-arming latch on the aircraft-weapons station. With this setup, if the ordnance came off the jet, the high-drag fins would deploy, regardless of pilot selection in the cockpit.

My flight lead briefed a going-in game plan of two runs, releasing one bomb per pass. We also briefed a backup plan for releasing both weapons on a single pass. During the planning process the night before, as well as several times during the brief, my squadronmates stressed the importance of selecting "Ret." on the SMS display to make sure the ballistics calculated and displayed by the jet would be the same as the actual ballistics of the bomb to be released. As I waited to taxi for launch, I set SMS PROG 1 to release a single bomb by selecting "1" under "QTY," along with properly selecting "Ret." ballistics. I then set up PROG 2 as QTY 2 for the backup plan.

The one option that fell out of my scan was, you bet, the drag option. I left PROG 2 on the SMS default value of FF, which would cause the SMS to calculate the release cue based on free-fall ordnance, regardless that my bombs physically were wired to come off in the "Ret." configuration.

As with many near-misses and mishaps, events from the start began to conspire against us. I launched about five minutes before my lead and orbited at our high-holding altitude, while I waited for our tanker to get airborne. My flight lead lost one of his two radios during the catapult launch, so we couldn't talk on our briefed tactical frequency. After our flight rendezvous, the tanker said he had to jump in a spare and couldn't launch until the current recovery was complete. The tanker finally launched with about 40 minutes left in our 1+15 cycle. We now were way behind timeline, especially because the ship was operating almost 150 miles off the coast. My flight lead arranged for the tanker to drag us to the west, we got our gas, and then hurried inland to drop our bombs.

To make our scheduled recovery, lead audibled to the backup game plan. I switched to the PROG 2 I had set up during my on-deck checks. We dropped down to 500 feet AGL and drove toward the target. At about eight miles, my flight lead called "action," my cue to initiate the prebriefed separation maneuver that would ensure we'd avoid the frag pattern of lead's bombs. On my first roll-in, I noticed my preplanned no-lower-than (NLT) release altitude rapidly coming up, without any SMS-generated release cue in sight.

Starting the first day of strike training in the training command, we were taught to come off the pickle as soon as you know you can't get the bombs off before this critical altitude. As such, my brain stem kicked in, I came off the pickle, executed my safe escape, and radioed, "Cat 22, off safe, no drop."

My flight lead decided we had time for one more pass to get off our bombs, so we drove back out to the IP and came back in for another run. Lead turned in first, and I maneuvered to build separation between us. Almost eight miles from the target, while I still was at 500-feet AGL, the range radioed a "cleared hot" for the section.

During the maneuver to build separation, aircraft heading dropped out of my scan. I offset too far to the west, which put me more than 40 degrees off the bomb-release-heading restrictions specified for the target. I didn't realize how far off heading I was. When I saw the release cue come down as expected, I executed what, in real-time, seemed like a valid release. As I performed the safe-escape maneuver, my scan shifted to the forward-looking-infrared radar (FLIR) in search of the two big booms that surely were to follow.

The late launch of our tanker, a bad radio, and my poor attack geometry were just a few factors that lined up to compound the situation.

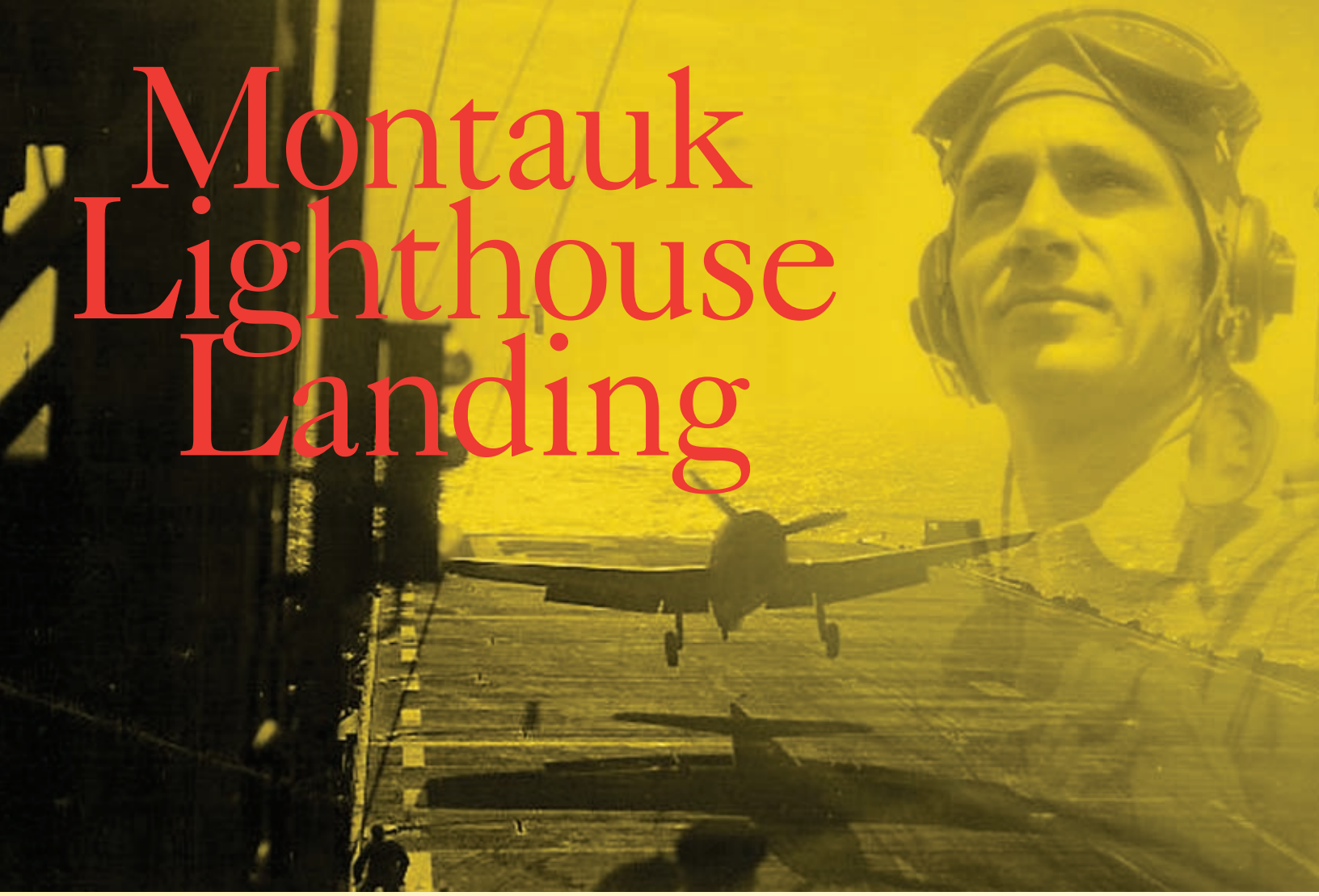
After my time-to-impact counted down past zero with no booms, I looked outside to discover my bombs had hit about 1.5 miles short of the target—outside the live-impact area and just barely inside the range-complex boundary. After talking with the range, I learned a manned spotting tower was only 2,000 feet from where the bombs had hit.

It amazes me that, despite how idiot-proof the Hornet is, I still almost killed someone because of my failure to push one button on the SMS page: the "DRAG" button that toggles between FF and Ret. The late launch of our tanker, a bad radio, and my poor attack geometry were just a few factors that lined up to compound the situation. I had had ample time to recheck my SMS while holding overhead for 30 minutes waiting for the tanker to get airborne, but I did not do so.

This experience taught me that, checklists are put in place to save your life and, when you're dropping bombs, the lives of those on the ground.

Lt. Gentner flies with VFA-131.

Montauk Lighthouse Landing



By Jim Tobias

(as told to Jerry Tobias)

The winter of 1944 was typical for New England: cold, snowy, icy, and miserable. We were on our last week at the Navy training base at Groton, Conn. Our unit would head west to rendezvous with our new home, the recently repaired aircraft carrier USS *Lexington* (CV 16).

Our last Saturday at Groton was a training day. I had an early morning aircraft-recognition class, and then was scheduled to fly an F6F Hellcat gunnery-training flight in our target-towing area southeast of Long Island. The aircraft-recognition class ran late, though, so I arrived at the flight line just as the other five Hellcats in our six-ship flight took off.

A maintainer met me on the flight line and said my assigned aircraft was "down" for maintenance—not a surprise, because many of our training airplanes were battle-weary Hellcats that had returned from the fleet. I was told, however, the F6F parked in the next spot also had been "down" but now was "OK" and ready to go.

I prepared the substitute Hellcat for flight and soon was airborne in pursuit of the others. I just had joined the formation when one of my squadronmates broke radio silence to tell me that I was trailing smoke.

Simultaneously with his call, oil began to wash over my front windscreen, and I began to lose engine power. I had to get the airplane on the ground as soon as possible.

My first thought was that Groton, on the south shore of Connecticut, was not a good recovery option. First, it was located 32 miles across the water from the north shore of Long Island. And second, the south end of the runway sat on a bit of a cliff, which, in my ever-decreasing power situation, was not a comforting thought.

The nearby south shore of Long Island was all rocks and sand dunes, which also ruled out an attempted beach landing. Most concerning, though, was the thought of ditching. The Atlantic was frigid that time of year, and we had been warned our survival time in such

waters only would be about 26 minutes. The likelihood of a rescue within that time period, of course, was nil. The only decent emergency-landing option that remained, therefore, was the road that ran along the south shore of Long Island toward the Montauk Point lighthouse.

My engine problems had started at an altitude of only about 6,000 feet, which was our normal target-practice altitude. At that low level, and the rate my plane was losing power, I knew I had very little time and or margin for error. I initially put down my wheels to expedite my descent, but the pilot of the patrolling Douglas SBD Dauntless that followed me down suggested (correctly) I make sure my wheels were up for landing on the narrow road.

My approach worked out well, although I was nearing a total loss of power. By this time, oil covered so much of the windscreen I couldn't see forward. I looked sideways out of my open cockpit canopy, lined up on the road, and held the airplane in a near-normal, nose-high attitude to touch down as slowly as possible. The airplane skidded on its belly and rapidly decelerated. Shortly after touchdown, however, I slid across a bridge that spanned a small ravine. The bridge's guardrails tore at the bottom side of the wings and spun my Hellcat around backward. I came to a stop about two blocks west of Montauk lighthouse, quickly secured the cockpit, and exited my still aft-facing Hellcat. From leaving the formation to leaving the cockpit only had taken about 10 minutes.

Men from Montauk lighthouse arrived on the scene shortly after I got out of the airplane. They took me back to the lighthouse and graciously offered me a cup of coffee. I'd always thought I could drink anyone's coffee, but the concoction they gave me was the strongest and foulest coffee I'd ever tasted.

After calling my base to let them know I was OK, I was given a ride 10 miles or so west to a Coast Guard facility. After lunch (corned beef and cabbage), I was taken even farther west to an Army base, where I could wait for a flight back across the water to Groton. Because the Army airplanes were all out on training flights, it was more than two hours before I could hitch a ride. When we did leave, the pilot of the Army trainer flew over my landing site. By then, the Hellcat's wings already had been folded, and they were preparing to hoist the airplane onto a trailer, presumably, to be taken to the Grumman facility on Long Island for repairs. I never heard if that F6F ever flew again.

I learned several valuable lessons from this experience:

1. Never delay your response to a deteriorating situation. If I had delayed my attempted recovery by even a few minutes, I might not be here to tell this story.

2. Evaluate all possible options as thoroughly and quickly as possible, then choose the option that appears to provide the greatest likelihood of success and/or survival, even if it's only the best of several poor choices. In my scenario, the road along the coast, even with its unknown bridge, was the only reasonable option available.

3. Use the best possible procedures and techniques for the given situation (from all personal knowledge and experience and the collective input of others). The SBD pilot's advice to make sure I brought my wheels back up for the emergency landing, for example, was very valuable input.

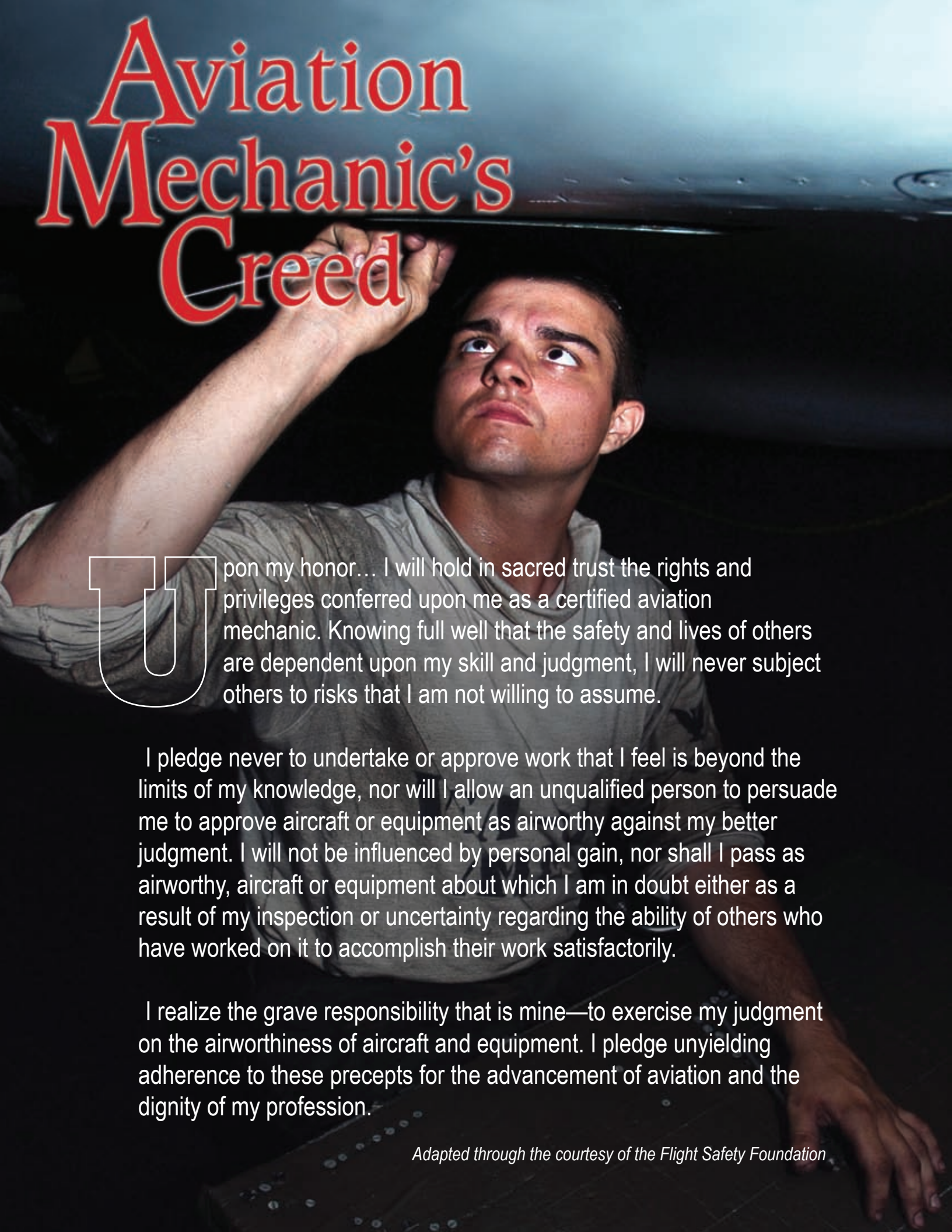
4. Emergencies often are accompanied by ingredients not covered in training, such as my oil-covered windscreen and continuing loss of power. Creative improvisation may be required.

5. Finally, after successfully recovering from any incident at an unfamiliar facility, even if it's offered, never drink the coffee!

Montauk lighthouse is now a museum and historical site. I understand it is well worth visiting if you ever have the opportunity. To me, though, it is more than just a lighthouse; it is a towering monument to how blessed I was to walk away without a scratch from this potentially disastrous incident.

About the author: Jim Tobias is now 86 years old. After the war, he returned to central Kansas and never flew again. His son, Jerry, flew for the U. S. Air Force, Alaska Airlines, and Mutual of Omaha.

Aviators always have relied on risk management and the elements of crew resource management; we just hadn't formalized the programs in 1944. ORM, CRM (notably situational awareness in this case), and systems knowledge are a part of Mr. Tobias' story. As you read this article, the familiar "nothing changes" concept should have been apparent. Mr. Tobias made decisions and took actions to prevent a mishap—a different name and a different aircraft is all that's changed in today's aviation.—Ed.



Aviation Mechanic's Creed

Upon my honor… I will hold in sacred trust the rights and privileges conferred upon me as a certified aviation mechanic. Knowing full well that the safety and lives of others are dependent upon my skill and judgment, I will never subject others to risks that I am not willing to assume.

I pledge never to undertake or approve work that I feel is beyond the limits of my knowledge, nor will I allow an unqualified person to persuade me to approve aircraft or equipment as airworthy against my better judgment. I will not be influenced by personal gain, nor shall I pass as airworthy, aircraft or equipment about which I am in doubt either as a result of my inspection or uncertainty regarding the ability of others who have worked on it to accomplish their work satisfactorily.

I realize the grave responsibility that is mine—to exercise my judgment on the airworthiness of aircraft and equipment. I pledge unyielding adherence to these precepts for the advancement of aviation and the dignity of my profession.

Adapted through the courtesy of the Flight Safety Foundation