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Approach

There I Was

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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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Photo by PH1 Edward G. Martens. Modified.

The Green Light to Avoid pg. 26

The number of handheld lasers in the general public is growing rapidly, and some consider them little more than a toy.

September-October Thanks

Thanks for helping with this issue…

Maj. Jason Jolliff, VMFA-232
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Front cover: Photo composite by Allan Amen for the article, "A Matter of Survival," by Lt. John Goodenough, pg. 44.

The Initial Approach Fix

Since July 1955, this magazine has been the voice of naval-aviation safety—your voice. Back then, it was called "The *Approach, U.S. Naval Aviation Safety Review,*" and was introduced to the fleet during a time when the aviation-Class A mishap rate was 38.18 mishaps per 100,000 flight hours. We lost 225 aviators and destroyed 611 aircraft that year (1955), not bad when you compare this data to the year earlier. In 1954, we had a mishap rate of 50.54, and the toll was 263 aviators and 776 aircraft.

Today, we are the beneficiaries of advanced technology, proactive safety programs, and continued engaged leadership. But let's also include one more factor, one where you, the naval-aviation community, play a key role: this publication and our cornerstone "There I was" stories.

The following is a reprint of the foreword in that first issue of *Approach*. It was written by the Deputy Chief of Naval Operations (Air), VAdm. Thomas Combs. While published more than 53 years ago, his words still ring true.

"It is with a great deal of pleasure that I address you through the medium of the first issue of the Naval Aviation Safety Review.

"Naval aviation has progressed very rapidly during the past few years. To realize maximum effectiveness and combat readiness, it has been necessary to place strong emphasis on our aviation accident-prevention program. The excellent progress which has been made during the past year is most gratifying and has resulted in the saving of lives and the conservation of extremely costly equipment.

"The Naval Aviation Safety Review *will provide a medium through which all of us can benefit from the experiences of others. By bringing to light the mistakes, as well as the accomplishments of others who fly, we can reduce the number of instances in which pilots must learn the hard way.*

"The accident-prevention program is an all-hands evolution, and this publication is intended for the use of all who may contribute to the safety of our flight operations. We must all, individually and collectively, contribute to the aviation-safety program by hard work in our own particular specialty. By submitting ideas, articles, experiences, and photographs pertinent to the problems that we encounter for publication in this magazine, we can make a special contribution, which will help to keep the accident rate on its present downward trend."

Here is an expanded issue of *Approach*, showcasing more stories that keep this tradition going. Naval aviation is grateful to every aviator who takes the time to reflect on his/her experiences, write the story, and contribute to the safety mission. The benefits of your efforts were recognized at the beginning and are just as valuable today.

Current aviation-mishap statistics can be found on the Naval Safety Center's website at: http://www.safetycenter.navy.mil/statistics/default.htm.

The Gear Solution

By Maj. Carl Forsling, USMC

I was the MV-22B instructor on what seemed like a routine familiarization flight at a local civilian airport. My student was an Air Force major doing his transition training from the MH-53. In the back, I had a crew-chief instructor and two students doing their initial V-22 crew-chief training. We did the normal series of conversion-mode (helicopter-style) landing patterns, and my student was doing fine. We were ready to start the fun stuff: stretching it out to airplane-mode for some much quicker laps around the pattern. My student had the controls and ready for takeoff.

I turned around the forward-looking-infrared radar (FLIR) and saw my right gear fully down, with the left and nose gear still retracted.

"Sixty nacelle, on the go."

"Door's closed, all set in back."

"Torques matched, gauges green, continue… passing 40 knots," I said.

"Gear up."

"In transit," I replied. "That's taking a little while… aw crap, I've got a landing-gear-transition-abort posting… keep it in conversion," I added.

As we continued in the pattern, I broke out the checklist for the transition abort. The abort procedure merely described the condition and referred me to the landing-gear-fails-to-retract procedure. That procedure told me to keep the airspeed below the gear-transition limits and to command down the gear. After doing that step, I still had an unsafe-gear indication. I turned around the forward-looking-infrared radar (FLIR) and saw my right gear fully down, with the left and nose gear still retracted.

The next step took me to the landing-gear-fails-to-extend procedure. The scenario was getting very interesting. If the nosegear alone failed to come down, that was one thing; I could have mattresses stacked and tied down on the deck at homefield and just put the nose on those. Even if the nosegear was down and both mains were up, the reverse was doable. One out of three possibilities? That was a problem.

The landing-gear-fails-to-extend procedure called to cycle the gear. From previous briefings on the V-22's landing-gear problems, we were told that multiple cycles were approved, even though the emergency procedure (EP) just said "cycle." These briefings had focused on the possibility of a mechanical binding in the gear mechanism. In the V-22, this binding historically has been a problem with the nosegear. We tried numerous recycles of the gear.

Looking at the FLIR, the nose and left gear weren't even budging. When I'd had a previous gear malfunction on another aircraft, we could at least see movement on the nosegear doors and hot spots where the tires had tried to bust out. But, this time, we had nothing except the right gear going from fully extended to partially retracted.

After several attempts to move the gear, we entered a 1,000-foot overhead at homeplate and declared an emergency. We now were on the radio with maintenance reps, who offered some troubleshooting guidance. We also tried several techniques not in the book, but I was willing to try them to avoid having to, as the Godfather said, "Go to the mattresses."

The right main failing to retract fully had me concerned. NATOPS says that if you can't get a symmetrical configuration, retract the gear to land on an even surface. Because I couldn't fully retract all my gear, I couldn't do that step.

Maintenance recommended various combinations of circuit-breaker resets, securing and restoring the utility-hydraulic system, primary-flight-control-system (PFCS) resets, and cycling the gear handle. The CB resets were for the landing-gear-control unit (LGCU); that made sense to me. The utility-hydraulic system operates the gear, so that made a little sense. The PFCS reset is a mechanism in which depressing a button tells the elements of the flight-

control system to go to their originally commanded positions. In a fly-by-wire aircraft, it's a reset of the flight controls, not the landing gear. In the V-22, this is a step in many flight-control EPs but not for landing-gear EPs. This procedure is for good reason, as it has nothing to do with the landing gear. I should have been a little more cautious before doing this step. In the end, my action had no ill-effects, but pushing a button that resets the flight controls like a PEZ dispenser probably isn't the best move.

After many iterations, we finally got the magic solution. We brought up the gear handle, cycled the LGCU and the emergency gear CBs, did a PFCS reset, and immediately brought down the handle. The gear gave a satisfying three-down-and-locked indication. We landed the bird and had the gear pinned, just as we started to burn into our feed tanks.

What had happened? The safety wire holding one end of the maintainer strut that supports one of the right gear doors had come off. This problem allowed one end of the strut to spin in its housing, gradually unthreading it during flight. When we tried to raise the gear, the strut was unattached at the gear-door side, which allowed the strut and door to swing freely and obstruct the upward progress of the right gear. This situation made the gear unable to complete the upward cycle in its 30-second time limit, and the system declared an abort.

The EP for landing-gear-fails-to-extend states the first movement of the gear handle in the event of a control-unit failure is not a command but resets the logic. The next movement is the command. When we repeatedly cycled the gear, we did so with the mistaken idea we had to allow time for the gear to complete a full cycle. Because of this mistake, we always caused a cycle abort as we hit the 30-second timeout. If we just had cycled the handle up and down a little faster, the gear would have reset, using this reset function. As it turned out, the final set of CB cycles, using both the LGCU and EMER GR circuit breakers, reset the logic by turning the gear controller off and on. As it turned out, both of those CBs had to be pulled to remove power from the LGCU. When we did that step, followed immediately by bringing down the gear handle, the gear finally got the command they needed. However, this circuit-breaker dance would have been unnecessary, if we had applied the note in the PCL as intended.

Know your systems. Your PCL just gives amplifying information. It's up to the pilot to know the fundamentals underlying each system. If I'd thought more about how the system worked, I wouldn't have wasted time and possibly risked other system failures with PFCS resets. I would have known to cycle the gear faster to avoid another cycle abort.

NATOPS does not cover every contingency. There was no NATOPS solution for the gear configuration I had, so if the final attempt hadn't worked, and my emergency gear down had failed, I would have had no ironclad solution in mind for how to land. Don't just work the immediate problem; also work the next one. Fortunately, through good CRM, the right bit of advice, and a little skill, things worked out OK.

Maj. Forsling flies with VMMT-204.

Fly or Swim?

By Lt. Timothy Writer

Witnessing a mishap, or even a near-mishap, involving a fellow aviator can be a gut-wrenching experience. You get a certain feeling of helplessness when you see, from close range, aircraft come within inches of disaster. Your only response in such a situation may be a gasp of disbelief.

Detached aboard a USNS ship, I was the helicopter-control officer (HCO) during a vertrep to the carrier. We were having a busy day from a supply-ship's standpoint. Our ship was doing conreps and vertreps to the big deck, as well as to other ships in the strike group.

The event unfolded on an early summer morning in the Arabian Gulf, where conditions were, as always, hot, humid and hazy. This day also offered a less than desirable wind, because of the course the carrier had to maintain for operations. A two-bird evolution was shared between an MH-60S from our detachment and an HH-60H from the carrier's HS squadron. We were about midway through our deployment and had completed many vertreps. The HS helicopter-aircraft commander (HAC) was a former HC bubba, who had a lot of experience in the field. We actually had teamed up with the same HS flight crew on a few previous occasions during the deployment.

About two hours into the event, the HS bird refueled. Loaded with more equipment and carrying significantly more fuel than the sierra model, the hotel is more restricted on its external-load capacity. Knowing that, the HS HAC had been taking less than max fuel because of the extreme temperatures that day, as well as a very slight tailwind that kept a lot of the sea spray around the delivery ship's flight deck. I noticed that, after fueling, they had picked up and set down a couple of loads because of inadequate power margins. A pallet of soda was their last pick of the day. I watched as they lifted off the port side of the flight deck, and I turned to focus on the next inbound helo.

Next, I heard an abrupt, "Putting this down," over the radio, as I turned to see the first bird backing over the deck to lower the load on top of other pallets. At first, I thought it was nothing major. Likely, it just was another heavy load. While the deck crew might have a little difficulty digging it out, that was a minor consideration, compared to the safety of the aircraft. In the next moment, the nose of the aircraft turned right, toward the superstructure of our ship.

Before I knew it, the nose had passed, and the tail was on its way around. The yaw rate was not extreme but built slowly to a rate slightly faster than might be used for a clearing turn. The tail swung by the tower well beyond the foul line. The tail-rotor clearance couldn't have been more than a few feet from the hangar, and the crew managed to keep enough altitude to clear the loads on the deck. The loads drifted aft of the flight deck. As the nose came around again, I realized I'd been holding my breath while I watched.

I reached for the 5MC to call, "Clear the deck," but the LSE and deck crew already had instinctively scattered. The other HCO had her hand on the crash alarm as disaster seemed inevitable. The tail came around again. This time, a little more space was between the moving parts and the solid ship, but they were losing altitude. As the nose drifted clear of the deck edge, the tail still was over it and coming down. The helo cleared the last load by about six inches and then descended below the flight deck. I remember thinking afterward, if it had been a sierra model, the position of the tail-wheel probably would have snagged a load and likely flipped over.

They may have been clear of our flight deck, but the emergency certainly wasn't over. They continued to descend and tilt forward for airspeed, as the nose came around to its original heading. They were careful to proceed aft of the carrier, which still was in the CONREP position only 50 yards away. They scooped it

As the nose drifted clear of the deck edge, the tail still was over it and coming down.

out and appeared to regain yaw control about 15 feet above the water.

During the descent, I heard someone exclaim, "Why is that helicopter so low?" over our ship's radio. We had no need to reply because, at that point, "why" was not important.

All eyes were focused on their recovery. The pilot accelerated and climbed to a safe altitude. Shortly, the crew, no doubt slightly shaken, landed back aboard their ship to shut down and investigate. The remaining bird completed the mission.

I believe the crew displayed great situational awareness and responded to what may have been the only way to avoid a Class-A mishap. With the carrier directly in front of them and a fouled flight deck right beneath, they had few options. Lowering the collective for yaw control would have been dicey, because they had little altitude margin. It appeared that, when the aircraft turned into the rotation, the nose lowered enough to allow the tail to raise and remain clear of the deck. Also, forward cyclic for airspeed was not possible until they could point aft of the carrier.

Many factors may have led to this uncontrolled yaw. The additional weight of the load could have caused an excessive-power requirement. The aircraft had not topped off with fuel, and the load only was 1,400 pounds. Fuel weight probably was not the sole cause. However, it's important to point out the two dissimilar aircraft do not have the same external-load capacity. The indicated winds at the time only were 14 knots. We later learned the ship's anemometer had failed, so the winds could not be verified. Potentially high winds, paired with a venturi effect between the ships, may have caused some weathervaning and loss of translational lift during the forward transition. Crew discussions also revealed that, with the lingering salt spray that was not being blown aft, ingestion of the spray took place over time, and the engines degraded, albeit slowly.

Operating slow and low to the water, in hot and heavy conditions, is a risky proposition but necessary to accomplish our mission. This scenario can be a recipe for a mishap if the crew is not prepared. We never will determine if the actual cause was engine degradation, relative wind direction, or high gross weight, or most likely, a combination of these factors. As noted by the crew, recognition of changes in power required versus engine response (torque vs. TGT) should be made throughout this sort of flight to ensure safety. Good preflight planning should be checked continuously against actual performance.

If you think you need an engine water wash, then do it. Any Air Boss on any big-deck ship will sacrifice time for safety, so call the safety flag if you need it, and don't accept tail winds if they can be avoided. The difference between flying and swimming only may be a matter of inches.

Lt. Writer flies with HSC-23.

Training to Tactical

By Capt. Mitchell Kirkland, USMC

Flying in the Operation-Iraqi-Freedom (OIF) theater provides several challenges to squadrons. One of those challenges is the quandary between accomplishing training while keeping enough assets to support the combat mission. This problem led my squadron to use our strip-alert section of H-1s to conduct training in conjunction with our weapons checks, while we operated in Al Asad, Iraq.

We had a standard shift that night. Our ODO brief and the section-strip-alert brief were held at midnight. We planned weapons checks and an initial night-vision goggle (NVG), low-light-level (LLL) navigation X for my copilot. We'd then have a couple hours off until we launched to support scheduled joint-tactical-air requests (JTARs). My copilot recently had finished his NVG high-light-level (HLL) syllabus, and this would be his first experience flying in LLL. As all helicopter pilots with an OIF tour under their belt know, there is LLL, and then there is Iraq-varsity LLL. For those who have not flown in Iraq, it is very comparable to LLL operations off the boat, with marginal visibility. There are no 300-foot-tall power lines in the middle of the ocean, but the lack of contrast and depth perception is the same. Having completed two MEU deployments before this one, I felt qualified to make that comparison.

The flight started off well. Before we strapped into the aircraft, I talked to my copilot about the difference between HLL and LLL: The increased outside-to-inside scan needed to back-up yourself on the instru-

ments and the degraded visual cues, as opposed to what he was used to seeing under HLL conditions. I was in the left seat of the UH-1N; most initial Xs are done with the copilot in the right seat. The hand-control unit (HCU) for the forward-looking-infrared radar (FLIR) is located on the left side of the cockpit, but it can be used from both seats.

I was on the controls for the entire first portion of the flight, including weapons checks in the test-fire area and the first five checkpoints of the NAV route. After the fifth checkpoint, we conducted an SOP lead change with the AH-1W in our section and continued on the route. The AH-1W crew received proficiency training. Almost an hour into the flight, I gave the controls to my copilot when he had the visual reference of another aircraft.

We were actually nose down, and the correction made things worse.

Our NAV route made a counter-clockwise circle around Al Asad airfield and kept us within 10 miles of the airfield, in case an immediate mission needed our response. A curfew was in effect for all civilian-vehicle traffic while we were airborne.

At eight miles north of the airfield, we saw three sets of headlights in the open desert. Being the aggressive skid pilots that we are, both cockpits agreed we should confirm if the vehicles were military or civilian. The section lead briefed over the inter-flight freq how we would conduct the visual reconnaissance of the vehicles. He then told DASC what we were doing and where the vehicles were, in relation to the airfield. I had the deliberate and conscious thought we were leaving the training environment and entering a tactical one, however benign the situation was.

As we made our turn toward the vehicles, I noticed the FLIR screen was blank. I delayed my decision to take back the controls while I did some troubleshooting with the hand-control unit. The problem was a simple switchology problem and a quick fix; I probably had hit the HCU with my leg. Now the FLIR was working properly, and I already had the HCU in my lap. We were getting close to the vehicles. My copilot did a good job of staying in position, so I reversed my earlier decision and left him at the controls, while I went heads-down to acquire the vehicles.

After a couple of quick orbits over the vehicles, I broke them out on the FLIR. I determined they were not U.S. military vehicles. Then lead announced he would make a right turn for a better run-in heading for his FLIR. As the aircraft began to turn right, I knew something was wrong. We were in an unusual attitude. I don't remember if I dropped the HCU or threw it, but it was not in my hands when my head came up from the FLIR screen. Remember the spin-and-puke seats from flight school. That was what I felt.

Evidently the copilot had the same feeling. It felt like we were in a nose-up attitude, partly because I saw the lead aircraft through the greenhouse window above the copilot's head when I looked up from the FLIR. My copilot made a control input to correct the nose-up attitude. We were actually nose down, and the correction made things worse. That is when the seat-of-my-pants sensation told me we were screaming out of the sky. I spent a few futile seconds trying to look outside and access what was happening. Then I came to my senses with the aid of my senior crew chief, who yelled, "Pull up!" as I looked at the instruments.

We were at 1,000 feet AGL when we entered the unusual attitude. With the aid of an aggressive-control input, I recovered the aircraft around 100 feet AGL. I called, "Knock it off," and the section returned to base.

The first mistake I had made was not paying enough attention to my thought process as the mission changed from training to tactical. I should have taken the controls from my less-experienced copilot. He did not use an aggressive inside-outside scan and flew off of lead as if we were in an HLL or daytime situation. I did not back him up with my instrument scan because I was too busy with the FLIR. If that aircraft would have been planted in the desert floor, it would have been my fault as the aircraft commander and instructor. Good crew coordination from my crew chief and training (turning to the instruments when all else failed) saved the day.

Capt. Kirkland flies with HMLA-773.

Where'd Who

By 1stLt. Edward Lord, USMC

As I sat in the airplane on a peaceful early evening at NAF El Centro, with my Hornet shut down and my helmet off, I appreciated a quiet moment of reflection. Unfortunately, the only thing that came to mind was a nagging question: How did I come to be sitting in an aircraft off the side of the runway?

Photo composite image.

Go?

It was the first day of the FA-18, fleet-replacement-squadron (FRS) strike detachment, and I had flown that morning on the wing of an instructor pilot (IP). After touchdown, I had paid extra attention to my airspeed, with reference to the distance-remaining markers to make sure of good braking. At more than 9,500-feet long, NAF El Centro had plenty of runway, but we were used to the 12,500 feet available at NAS Lemoore, where brakes are used minimally. I noted the amount of braking required and put that info in my hip pocket for the rest of the detachment.

After I grabbed my luggage and checked into the BOQ, I headed to the squadron to get ready for my second flight of the day. The flight consisted of an IP and three replacement pilots (RPs) on a low-angle bombing and strafing pattern. We would drop high-drag inert bombs and fire the gun for the first time. The flight lead briefed the eager RPs, emphasizing local course rules, and then we walked on time. I would be Dash-3 for this sortie.

My first hiccup on detachment occurred as I taxied to the marshal area. In the middle of a turn, I lost my nosewheel steering (NWS) and had to come to a stop, blocking the taxiway. I engaged the emergency-high-gain NWS and headed to the line for troubleshooting. With an up jet, I headed to marshal a second time.

Because of additional troubleshooting by the IP, we lifted about 30 minutes late. The sky was turning pink as the sun descended in the clear California sky. The bombing went smoothly, except for my lead and I having a hung BDU-48. We transitioned to the strafe pattern for only a couple passes, as dusk quickly approached.

The flight joined up in fingertip formation over the target and made one final pass. Following squadron standard-operating procedures (SOPs), the flight configured for landing to see if the hung bombs would release; none came off, so we cleaned up and headed home. Because of the hung ordnance, the flight would split up and conduct individual, visual, hung-ordnance, straight-in approaches. As the flight turned toward home, I noticed lead had turned on his external lights. The sun just had set, and darkness rapidly approached. I followed lead's suit, but as I looked at Dash-2, I saw he still had his external lights turned off. I didn't say anything.

The target we had been using was less than 10 miles northwest of NAF El Centro, and we were landing to the east. As we exited the target area to the south, the flight nearly was established on a 10 mile, visual straight-in. Almost immediately after our final pass over the target, lead instructed Dash-4 to detach on a southerly heading, 90 degrees off the expected approach course. Lead kept the turn going until we were pointed toward the field; he then told me to detach. I realized we hadn't completed the turn until then, and I suspected Dash-4 still might be close behind me. The flight already was below gear speed, so instead of immediately dropping my gear and flaps, I looked behind me to see if Dash-4 was in formation. Not seeing him, I dirtied up and slowly decelerated to on-speed, in case Dash-4 still was near.

I observed Dash-2 detach in front of me with adequate separation, but during the remainder of the approach, I had difficulty seeing Dash-2 against the cultural lighting of the field. I had to look around the HUD to acquire him. Even though I had delayed reaching on-speed, I felt comfortable with my separation from him. Shifting my scan between the HUD, and then around it to see Dash-2, I continued the visual approach. I saw him cross the runway numbers and, feeling comfortable with my separation, soon afterward touched down.

Immediately looking to the side of the runway to pick up the distance-remaining boards, I applied the brakes to hit my line speeds. I easily hit them and looked ahead to see lead exiting the runway as I passed the 4,000-foot-remaining board. I do not remember focusing on Dash-2, but I felt confident he was at the proper interval in front of me. Slightly before the 3,000-foot-remaining board, I had decelerated to 55 knots. I suddenly focused ahead and saw the backend of Dash-2, larger than he should have been, and rapidly growing in the middle of the runway. I applied full brakes and quickly realized I could not stop in time to avoid a collision. I hastily engaged hi-gain NWS and gave a full boot of right rudder. The jet instantly responded and swerved hard right around Dash-2. I applied opposite rudder, and the nose initially tracked left, as I tried to regain control and stay on the runway. However, the jet continued to skid toward the right side of the runway.

I ran off the paved surface. The nosewheel finally gained traction in the soft dirt, and I turned to parallel the runway. I came to a stop about 300 feet down the side of the runway. After I shut down the engines,

...the jet continued to skid toward the right side of the runway.

I took off my helmet and waited for the emergency crews. Fortunately, there was little damage to the jet, and it was flying again several days later.

During the following days and the investigation that followed, I asked myself how I had gotten into a very dangerous—yet totally avoidable—situation.

Several lessons now are ingrained in my mind.

• When flying near dusk, always be ready to transition to night flying. Be ready with your external lights, and increase your scan as distances and rates of closure become more difficult to judge.

• Speak up. I had noticed Dash-2 had not followed his lead and turned on his lights after the flight was joined. I don't believe his lights would have gained my attention as I closed on him, but they are important and necessary.

• Following squadron SOP, move to the side of the runway once your speed is under control. As Dash-2 nearly learned the hard way, you never know if the aircraft behind you might need room to maneuver.

• Shut down the engines before leaving the prepared runway surface. Though I did not suck up any major debris, I easily could have FODed both engines, resulting in a more costly mishap.

• Most importantly, remember the flight still is together until you are parked back in the line. As I touched down, I focused far too much of my attention on stopping the aircraft in the runway remaining, and far too little on making sure safe separation from the other aircraft. Changing my braking game plan for the shorter and unfamiliar field was necessary, but not at the expense of maintaining situational awareness to my interval.

In case anyone was wondering, that pesky BDU-48 stayed on for the whole ride.

1stLt. Lord flies with VFA-125.

Photo by MCSA Anthony R. Martinez.

Electrical Nightmare *in the* Gulf

The fun immediately began following the cat shot.

By Capt. Zachariah Anthony, USMC

The FA-18 is an electrical jet. Nearly every aspect of its operation incorporates an electrical system. Coincidentally, the electrical system probably is one of the least understood by Hornet pilots. We all know the immediate action items, but sometimes that is not enough. I realized I needed to know more during an exciting night flight in the Arabian Gulf.

I was the flight lead for a night, close-air-support (CAS) mission in support of Operation Iraqi Freedom. My wingman already had launched off the carrier and was waiting 40 miles away at the rendezvous point. I was late and eager to get airborne to push in-country on time. The fun immediately began following the cat shot.

The first thing I noticed was I couldn't raise the gear. I made the airborne call on departure on climbout only to realize I couldn't transmit on comm 1. I tried to tell my wingman of my predicament on comm 2, but I couldn't transmit on that radio, either. I tried all the normal NORDO (no-radio) troubleshooting, with no go. I was NORDO with my gear stuck down. I squawked 7600, turned overhead the ship, and climbed as high as my aircraft comfortably would go in accordance with the air-wing SOP. In the Gulf, with my gear down, flaps up, and full of fuel, I climbed to 11,000 feet.

During my climb, I had an FCS, FC AIR DAT, NWS, and BINGO caution. The BINGO was erroneous, but I did have a channel 1 and 2 FCS failure. I broke out the pocket checklist (PCL) to check out the FC AIR DAT caution. It said to go to Gain ORIDE, so I did. With the immediate problems under control, my thoughts turned to recovery options. In the dirty configuration, I was burning too much gas to make the next recovery. I waited for someone to join on me and bring me in for the approach. Checking the bit page, I saw not only were my comms degraded, but my IFF was showing not-ready.

I couldn't be sure someone would join on me, so I had to figure out how to land by myself. I didn't have the squadron emergency-marshal altitudes and push-times, but I easily could see the marshal stack making its approach to the ship. So, I decided to head toward the emergency-marshal radial and make my approach after the recovery was complete. As I headed to marshal,

I had an L OIL PR caution, which wouldn't clear with the throttles at idle. Also, the engine instruments were frozen, so I couldn't check the actual indications.

By the book, I should have shut down the engine. However, with two channels already failed and the problem seeming electrical, I decided to keep it running. I scanned the cockpit for other malfunctions. The hook light, discharge light, and spin light were on. The aircraft controllability was a little rougher than normal, and I didn't feel good about how this recovery was going. Instead of dumping, jettisoning ordnance, and putting myself well below single-engine, dirty-divert numbers to recover on the ship, I decided to divert to Ali Al Salem, Kuwait.

A Super Hornet arrived to ID my aircraft just as I decided to divert (I wasn't squawking, and CATCC didn't know who I was). I now had a wingman to coordinate with ATC. I climbed to 22,000 feet for the transit and brought the left engine back to idle. Unable to hold altitude with only one engine, I decided to bring the throttle back up until my descent to land. My new wingman and I passed HEFOE (hydraulic, electrical, fuel, oxygen, engine) signals, and they coordinated for an arrested landing. When my wingman was told the gear wouldn't be ready in time, they tried to signal me by pulling up acute and lighting the blowers. I didn't notice their action, because I was focused on making a safe approach. Another thing I didn't notice was that I had failed to do my feet-dry checks. I planned to take the short-field gear if it was available. If not, I would use differential braking to track down runway centerline until I took the long-field gear.

I designated the airfield and performed a five-degree glideslope descent to runway 30. The approach lights were very bright, so I knew I was landing on the correct runway. As I descended, I checked controllability in half and full flaps. I noticed the trim knob wasn't working, and I would have to hold in considerable aft stick to fly on-speed. I decided to fly the approach about 10 to 15 knots fast just to buffer any kind of last-minute controllability issues. As I approached the landing area, I adjusted attitude to slow to on-speed before landing. After landing, it was obvious the approach-end gear wasn't rigged, so I left down the hook and hoped for the long-field gear. I checked my speeds as I tracked down the runway and realized I had forgotten to select antiskid.

Making a hasty decision, I cycled the antiskid switch to on, disregarding the loss of braking for 9.5 seconds. At the same time, I developed a slight left drift. I cycled the antiskid switch back to off and applied full right brake to counter the swerve. At about 45 knots, the aircraft engaged the long-field gear slightly off center and stopped on the runway. I shut down the jet. No damage to the aircraft, but it was by no means a textbook landing.

The maintenance inspection found that a grounding wire in the No. 8 circuit-breaker-panel assembly had broken off from the utility-battery-power contactor during the cat shot and caused a short in the 28-volt D.C. essential bus. It also had blown the utility-battery-current limiter fuze.

We brief NORDO every flight, but I definitely didn't consider having no radios as painful as it was. My wingman of opportunity and I didn't communicate as well as we could have. I was aware of the signal for me to follow him, but I didn't recognize it. With ample gas to circle overhead, I should have communicated to him that he had the lead and allowed him to line me up for whichever approach end had the gear rigged. I also should have done my feet-dry checks. And under no circumstance should I have cycled the antiskid switch, knowing I would lose braking. The Hornet can stop just fine without antiskid, so don't panic and cycle the switch during landing rollout; just exercise caution with the amount of force you apply. Surprisingly, the brakes still worked when I cycled the antiskid back to off. Otherwise, I would have had to use emergency brakes to stop.

Maybe it wasn't a lesson learned, but I realized that during blue-water ops I would have had a difficult recovery on the ship. Making individual decisions about landing weight, jettison considerations for gross weight, making a rendezvous with the tanker, controllability on the approach in gain override with no trim available, all would have been less than fun on a ship recovery.

The biggest lesson learned is to know your systems. If I had been more familiar with the electrical system, I would have realized these indications sounded like a loss of the D.C. essential bus. Most of the indications I had are listed on page E13 of the PCL. If I had recognized this and put the battery switch to ORIDE, it may have cleared all of my cautions and made for an easy recovery aboard the ship. While going to a divert was safe, it took away a squadron asset that could have supported combat operations. Now I know. And knowing is half the battle.

Capt. Anthony flies with VMFA-232.

Helmet Fire

By Ens. Aaron Metrick

The turnaround period between the T-6A Texan II and the mighty T-1A Jayhawk is relatively short for student naval-flight officers. As I stepped to the plane for my second flight (my first low-level, visual-navigation flight), my brain was about maxed out, running through the new procedures, techniques, and turn points. I finished my walk-around and started to set up my "nest," while the pilot completed his walk-around.

As I put on my headset, my ears felt hot. From my impressive 1.5 flight hours of experience in the T-1, I knew the headsets were not down-pillow comfortable, but this feeling was different. Not giving it much thought, I just assumed the headset was a little tight, and I was not going to complain about a slight nuisance to my comfort. I certainly had plenty of other more important things to think about.

We ran through the checklists, and I paid no attention to my headset or ears. I completely was zoned in and focused on getting airborne and onto the victor route. The very few seconds I wasn't busy, however, all I could think about were my ears. Again, I just attributed that problem to the headset being too tight, my ears being too large, or the headset incorrectly positioned. I was fully occupied with all my procedures and trying to apply them for the first time.

Applying turn geometry while figuring out the winds and putting in speed and time corrections for being early and

Little did I know, in this instance, the fire was literal.

late to my points, I certainly had some of the famous helmet fire. Little did I know, in this instance, the fire was literal.

After hitting the target and heading home without incident, the instructor was encouraging. He said for the first low-level flight, I had done well. "That's great," I thought, as I played around with the headset, trying to loosen it and put it in a less-painful position. As we came into the terminal area, course rules were shut down for weather, so I pulled out the good ol' approach plate, Volume 19, and briefed the low TACAN. Again, I was so focused on getting everything done, I ignored the headset problem.

As we finally taxied back and shut down the engines, I removed my headset with the anticipation of a child at Christmas. I immediately touched my ears and was welcomed with fluid. "My ears really must have been sweating," I figured. They still felt like they were on fire, but I paid little credence to that possibility.

Back in the student ready room, I realized something might be wrong. Everyone started to gawk at the identical, and rather unappealing, burn blisters I had on each ear. I went to the bathroom to check for myself, and sure enough, I had two large blisters. I still just figured it was something wrong with me; maybe I had worn the headset wrong, maybe I hadn't loosened it correctly, or maybe my ears just were too big.

Not until the next day, when I talked to my flight commander, was I convinced the problem wasn't me. She said there must have been a malfunction with the headset that had let me have such an "enjoyable" flight. I obviously should have recognized the problem and immediately spoken up. I had experienced nothing like that on my first flight (an observer hop), or during the introductory-flight syllabus (IFS) where you wear the same style headset.

Even on your first flight in a new plane, don't become so focused on any one aspect that you become oblivious to other problems, such as your ears burning. If you ever do feel something not quite right, it's best to speak up.

Ens. Metrick was a student at VT-4.

Naval aviation always has stressed the importance of a good aircraft preflight. But how many of us thoroughly inspect the gear we fly with and wear every flight, like flight suits and gloves. The headsets in this aircraft are "pool issue" and probably have as many flight hours as the aircraft. This incident proves it wouldn't hurt to spend the five seconds necessary to look over your headset before putting it on. The headset manufacturer had no other reports of similar incidents. The David Clark headset model H10-76, which draws less than .1 amps of power, is use extensively by the military.

Stress is part of the training environment, but this type of stress is not intended. This situation is one reason we discuss "training time outs" every brief. Don't try and override what your body is telling you. If it looks hot and feels hot, there is a good chance it is hot. Maybe it's just me, but I have a gut feeling, after this article is released, these ears will be burning for a long time.—Lt. Joe Huffine, safety officer, VT-4.

TO TEMPT FATE

By Capt. Ian T. Brown, USMC

Like all the pilots whose stories have graced the pages of this magazine, I never thought the day would come when I'd describe a mission where we tempted fate just a little too much. Still, I'd much rather write about our close call, than have someone else talk about us in a mishap report.

Our squadron had been flying CH-53E missions out of Al Asad Air Base for the last four months, and our task this day was no different from the countless other general-support missions we've flown. The helicopter-aircraft commanders (HACs) for our section were among the most experienced in the unit: Our section lead had 3,500 hours, and my HAC in Dash-2 had 2,100 hours. I was a new HAC with 720 hours, taking my turn in the copilot's seat, and lead's copilot only had 560 hours. Everyone had deployed to Iraq multiple times, but this time was the first pump to this part of Iraq for all four pilots.

Our flight was divided into two parts: a quick hop to a couple of zones just to our north, along the Euphrates, followed by a long leg southwest out to Korean Village (KV) and back. Our forecast had a TEMPO line calling for rain, blowing dust, and reduced visibility throughout the day, so we didn't expect to accomplish much tasking. However, the first leg went without a hitch. A little rain continued in the area, but we had good cloud ceilings and visibility.

We were well ahead of time, so we got lunch and checked the weather. The outlook for the next 72 hours called for poor weather throughout the AO, but the morning hadn't been as bad as predicted. So, we launched with the intention of turning back if we ran into significant weather.

At about the halfway point, we saw a line of rain showers stretching across the horizon. Our altitude was 2,000-feet MSL, and the clouds were level with us, but by dropping down about 300 feet, we got below the layer. We had better than three miles of visibility around us, and had no problem seeing the ground. We could pick out the individual shower cells ahead of us, so we decided to work our way around them, as the cloud line was only a few miles deep. Heavy rain started hitting our windshield, and we could see flashes of lightning in the distance. This weather quickly cleared up on the other side.

The fun wasn't over yet, though. A collapsing storm cell had stirred up a wall of dust to the west, so we skirted south a few miles before turning back on course. We made it to KV without any more weather games. After landing, I ran into my fellow copilot while we got refueled. I joked that the return trip would be "interesting" (I figured we just had flown through the worst of it). I mistakenly thought the conditions were all blowing away from us.

We took off, and almost right away, things got difficult. About 10 miles northeast of KV, we ran into blowing dust that was picked up by strong gusting winds from our tail. We tightened up our formation and flew lower and slower. We kept the local east-west, main supply route in sight, to maintain good reference with the ground. The dust cleared after a few minutes, and we trucked on. At the halfway point, we switched off from KV approach to the direct-air-support center (DASC). However, that

Photo composite image.

The rain wasn't just water; it was nasty, dirty, and mixed with dust as it seeped into our cockpit and started coating our instruments with slime.

same halfway point has a notorious "dead zone" for communications.

Because of our low altitude, we couldn't raise the DASC to give them a position report or to get weather for home field. We still had the forecast from before we left, which didn't call for anything worse than what we already had passed through. Conditions stayed clear until we made our turn northeast to head direct to Al Asad. About 30 miles southwest of the field, we saw dark clouds ahead of us, and thought, "Here we go again."

I gave up the controls to the HAC, who'd flown us through the initial garbage. We turned up our anti-collision and position lights so that Dash-1 could keep an eye on us—he did the same. This cloud was nothing like the first one.

We entered the cloud and it got darker, with brown-red clouds full of dust that the wind behind us had kicked up. We were at about 500 to 600 feet AGL, and still had a mile or two of visibility. The two HACs in the section were among the most experienced we had, so their "comfort level" was higher than ours. They felt confident pressing on, as long as we could see the ground around us and each other. The rain wasn't just water; it was nasty, dirty, and mixed with dust as it seeped into our cockpit and started coating our instruments with slime.

After 15 minutes, we saw lightning in the clouds around us. My spidey-sense was tingling: As a rule, we avoid lightning and thunderstorms to the max extent possible, and here we were unknowingly pushing deeper into a large storm cell. Lead asked us to try and

get ATIS; home field was calling seven miles visibility, with an overcast layer at 6,000 feet. At the same time, about 17 miles out, we broke into a lighter area and thought we'd have an easier time ahead. We'd only gone through one line of weather on the outbound leg. Conditions around us, combined with ATIS, led us to believe the weather would improve.

This clear area simply was a lull in the storm. The rain showers we'd passed through on the outbound leg were the tail of a larger, unforecast storm system developing to the north, and pushing down from northwest to southeast, toward Al Asad. We were headed right into the storm and didn't know it. At this point, we got our only positive communication with the DASC. We told them where we were and requested the switch to Al Asad tower. The DASC gave us permission to switch frequencies but didn't mention anything about the weather coming from the northeast. We didn't ask, because we believed we already had gone through the heavy stuff.

We started to get heavy rain, and it became increasingly difficult to see our lead aircraft, lights and all, through the water, clouds, and lightning.

We rolled to tower's frequency and called them but got only static. Switching to ground control, we asked for current conditions over the field, and they gave us winds and altimeter setting but no visibility info. We repeated our call, because visibility was what we were most concerned about. They replied with, "One mile to the west, seven to the east."

We were 10 miles out. The weather seemed to be coming down on the field, but even with one-mile visibility, we could land special VFR; we still had 500/1. At five miles, we were handed off to tower, whom we again had trouble raising. We started to get heavy rain, and it became increasingly difficult to see our lead aircraft, lights and all, through the water, clouds, and lightning. Two miles out, tower reported half-mile visibility. We then managed to arrive over the field at exactly the same time as the heart of the storm. We were within a mile of the runway when tower told us visibility was one-sixteenth of a mile. I saw two lights to our left, and that was the last time I had the ground in sight for 10 long minutes.

Lead had been reduced to a dark smudge with flashing lights on our rain-beaten windscreen, but he still was flying straight and level amid the roiling clouds around us. Our HAC was determined to hang on to Dash-1, because he was the one anchor we had left in the storm. But, with no ground reference, and heavy rain and lightning getting worse around us, lead no longer was confident we safely could accomplish anything together. He kissed us off and told us to divert to Al Taqaddam. We called back that we still had him in sight, but he repeated his order to dissolve the flight and to get radar vectors to Al Taqaddam.

Lead said he would stay at 2,000 feet MSL and turn east to head direct to our divert. We broke left to 330 degrees and climbed to 3,000 feet MSL, turned on all our anti-icing gear, and both aircraft switched to approach. We got an "ice detected" caution light—not a great sign. Approach heard our call first and told us to come to a southeast heading toward Al Taqaddam. However, we knew our lead was somewhere on that bearing to our right, and we had to make sure we were deconflicted with him, so we didn't run into him.

The controllers chewed on that for a second, as we continued our turn. At the same time, lead had completed their turn and was headed southeast. After two or three minutes, they broke out into VMC conditions and pressed to a local checkpoint to hold and wait for us. Our left turn took us into the strongest part of the storm. We were engulfed in angry, red-brown clouds, surrounded by flashes of lightning. The rain, which suddenly turned into hail.

Things then got about as bad as they could. Approach told us to "ident" ourselves on their radar screen. I just had hit the switch that pinged us on their scopes, when the HAC told me to push the speed-control levers (SCLs) full forward, because we

were drooping "turns" (this means the rotor is slowing down and losing its ability to provide lift).

Our rotor tachometer showed eight percent below its normal operating range. I ran the SCLs full forward and glanced at our vertical-speed indicator to gauge the effect. I saw we were coming down out of the clouds at about 1,000-feet-per-minute, even with full collective and increased turns.

Approach control said something over the radio, but the HAC cut him off and declared an emergency because we were rapidly losing altitude. He ordered the crew chiefs to strap in. Those are about the last words any aircrew wants to hear. Looking at our attitude gyro, I saw our nose was pitching up to 20 degrees. I then watched our airspeed bleed down to 60 knots, and it was getting even slower. Either we had stalled out, iced up, or hit a massive downdraft. Regardless, we were in the worst possible weather and in an uncontrolled descent. The HAC had the controls and tried to stop our plunge out of the sky.

I thought, "We're done, we're going to put this in the dirt."

I recalled a couple mishap reports: a grotesque combination of crashes two years ago that killed 30 Marines in a sandstorm, and another near-mishap where an aircraft entered stormy-icing conditions (like we had), iced up, and lost 4,000 feet of altitude in less than a minute of uncontrolled flight.

All of this had happened in less than 10 seconds, though it felt like an eternity. We lost about 650 feet of altitude, and then our descent stopped. We got our airspeed back up and finally completed the turn to the vector approach had given us. As we turned, I looked down through the clouds and glimpsed the lights on several barracks to the north side of the field. The temptation to try and drop down through that "sucker hole" and find a place to land was strong. But, with the gusting winds (we later learned that wind gusts of 57 knots were recorded on the ground), frequent lightning, and horrible visibility, trying to do so would have killed us more certainly than our tumble through the clouds.

The ground quickly disappeared again, and we were back in the monster that was doing its best to toss us out of the sky. But, we were under control and on the course approach had given us. After a couple of minutes, the sky got lighter, and we picked up the ground through the clouds. We finally broke out into the clear several miles east of the field, cancelled our radar coverage, and looked to rejoin our lead aircraft and head east to our divert airfield.

About this time, our crew chief piped up and told us to pull back the turns because we'd been running our engines at max power ever since pushing the SCLs forward. I looked at the instruments and saw the engine temperatures definitely were redlined. However, they are designed to operate at high temps long enough to give you emergency power when you need it. Well, we needed it, and we certainly would rather have burned the engines off the aircraft before putting it into the ground. We found Dash-1, joined up, and headed to Al Taqaddam.

We landed, shut down, and inspected the aircraft. Apart from shedding all of our blade tape (heavy tape put on the leading edges of all the main rotors to protect them from wear), the birds were fine. We now had to tie them down before the storm bore down on our divert field. It rolled in behind us, maybe 10 minutes after we'd landed. We started putting the blade ropes in just as the front edge of the storm hit, so we had to tie down the helicopters in a blinding sandstorm with howling winds. We then went to eat and to find a place to sleep. The trip home the next day was mercifully uneventful.

When everything had calmed down, the pilots discussed the events. Several times we could have thrown in the towel and turned around well before we got into the worst weather any of us ever had encountered. The experience and flying skills of our two HACs probably saved us from becoming another mishap, but we shouldn't have put ourselves in a position to have to use those superior skills.

We'd had the worst of everything: heavy turbulence, high winds, freezing temperatures, rain, hail, zero visibility, and lightning all around us. Lesser weather has killed people out here. We all have a new respect for the weather and TEMPO line in this AO. No longer does it mean "maybe it will, maybe it won't." In Iraq, a TEMPO line means that it is likely you will see that weather. Also, we learned to consider the limitations of ATC, communications, and weather-predicting capabilities in such a vast area.

Capt. Brown flies with HMH-361.

A Long Norwegian Night

By LCdr. Shawn Petre

Anti-submarine warfare (ASW) flights are few and far between these days for most P-3C squadrons. Over the course of a few weeks that fall, however, ASW missions were the only flights on the schedule for combat aircrew six (CAC-6) of the Fighting Tigers of VP-8. We flew several missions above the Arctic Circle in the North Atlantic, honing our ASW skills.

Our crew had to battle all the elements that make ASW challenging: high sea-state, strong low-level winds, blowing snow, and the sounds of snapping shrimp. Each sonobuoy was pushed to its limit, as the waves cut through the buoy strings like a knife through butter. Buoy washover from the strong winds prevented the crew from receiving consistent signals from the buoys, not to mention the rough ride for the crew while at low altitudes. After almost 12 hours in the air, and the deployment of more than 100 sonobuoys, we called it a night and headed back to base.

For those who have been on missions in the North Atlantic, it was routine to depart from Keflavik, Iceland, and refuel in Andoya, Norway, courtesy of the Royal Norwegian Air Force's 333rd Squadron based there. On our way to refuel this night, the predicted weather in Andoya was less than desirable, with blowing snow and near-zero visibility with fog—just what the crew wanted after half a day in the air. The next 30 minutes easily were the longest of the entire deployment.

I was sitting navigator-communicator, and I quickly learned the situational-awareness drills aviators receive in flight school are invaluable. With several 1,500-to-1,700-foot mountains about three miles from the field to the southwest, precise navigation and the execution of proper missed-approach procedures became critical.

On the first approach to runway 15, the crew descended to minimum-descent altitude (MDA). Without even a glimpse of runway lighting, the crew executed their first missed approach. With variable winds at the field, tower recommended trying to land on runway 33. Two approaches to runway 33 ended with the same results.

On the next attempt, the crew elected to try another approach to runway 15. This time at MDA, the flight station saw a slight glimmer of light from the runway but still not enough to see the asphalt. Upon executing their fourth missed approach, the disoriented pilots started to turn toward the mountains to the southwest. Simultaneously, the tower controller and I shouted, "No! Make a left turn!" Quickly, the aircraft reversed the turn to safer sectors for another approach. Twelve hours and 15 minutes into the flight, we gave it one more try into runway 15, without success.

Alternate weather at Bodo, Norway, 120 nautical miles to the south was VMC (visual meteorological conditions), three letters that were music to the ears. After an eternal 12.8 hours, the crew landed in Bodo.

No matter how comfortable we are flying, and with thousands of hours of experience, it's the one time we relax that the unthinkable always seems to happen.

LCdr. Petre flies with VPU-2.

Compared to the cold-war era, long ASW prosecutions in inhospitable corners of the world are now few and far between. Atrophy of these skills can lead to increased risk or even complacency. This article is a great reminder that the last 10 minutes of a flight (into a familiar airport) is just as critical as the first 12 hours, perhaps even more so after the fatigue of having everything but the kitchen sink thrown at them while on-station. Four missed-approaches later and a potential brush with terrain, the decision to press on to the alternate possibly was the best decision of the flight.–LCdr. Paul Wilson, P-3 analyst, Naval Safety Center.

The 2 Stupidest Things

By Cdr. Joel Jungemann

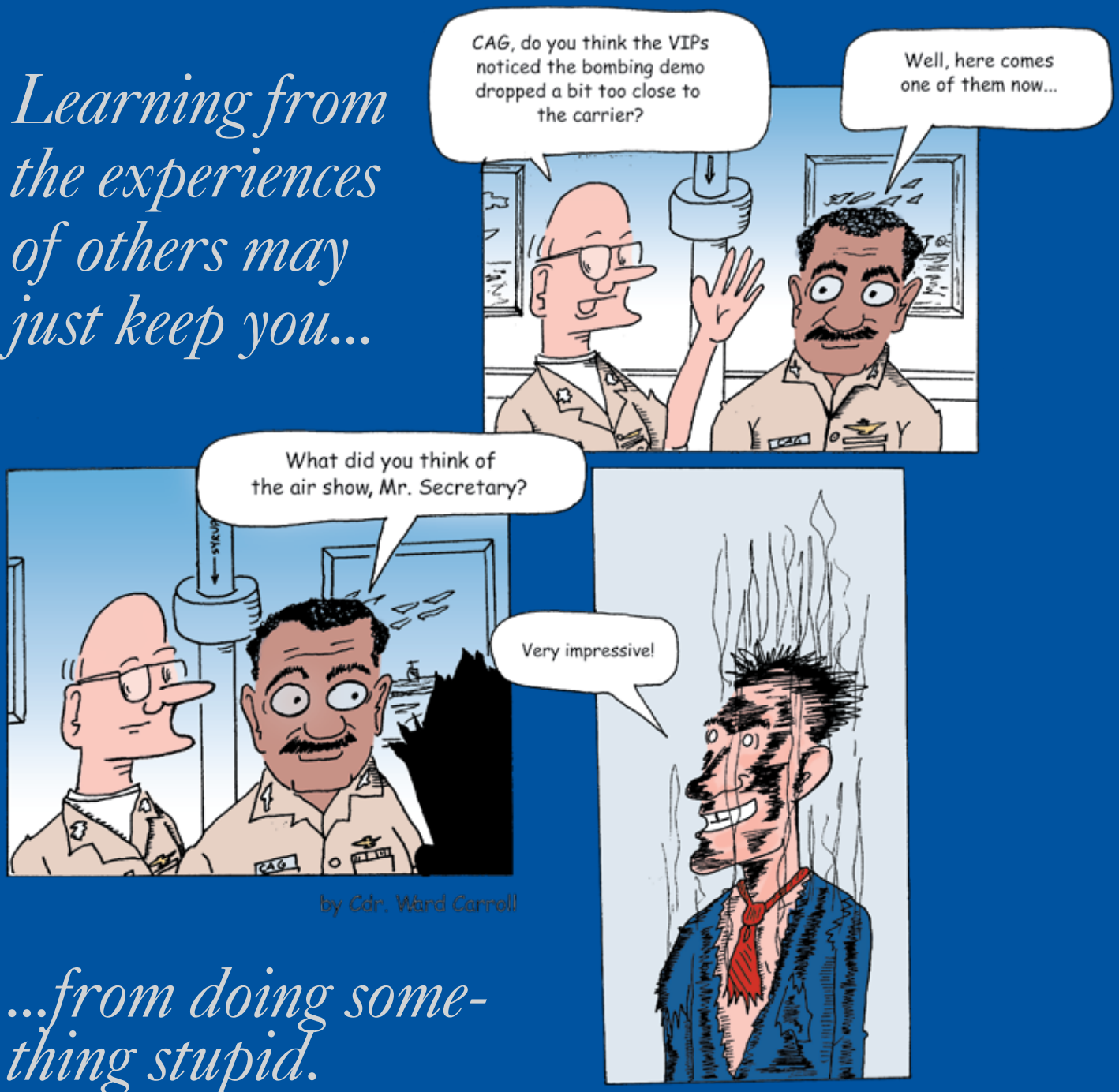
If experience truly is the best teacher, what do you rely on to keep you out of trouble while you get it? NATOPS procedures, SOPs, and common sense are a good start. You also can learn quite a bit from the experiences of others who may have made a mistake or two.

When I was a JO back in the early '90s, I read an *Approach* article that sticks in my mind to this day. The commanding officer of an A-6 squadron had asked all his aircrew to write down the two stupidest things they ever had done, intentionally or unintentionally, in a Navy airplane. Some of the responses were comical; some were downright scary. The inputs were a great read, and it made me stop and think about how I could avoid making some of those same mistakes.

I recently posed the same question to my ready room with the caveat that no names were required, there would be no recriminations, and it could be any Navy airplane they had flown. I even told some of the older folks (of which I am one) they could include more than two if needed. What follows are sample responses.

- On a 95-degree day in a 56,000-pound EA-6B, I inadvertently raised the flaps and slats, instead of the gear, at 100 feet after takeoff.
- We flew an approach to the wrong runway after mishearing ATIS.
- I thought I had a drop-tank-transfer failure and was working on trying to get permission to jettison, when I realized the external-transfer switch was selected to outboard.
- Halfway through a flight, I realized my shoulder-harness Koch fittings were not attached, even though I had called attached during the checklist.
- During a Case I recovery, with the weather socked in ahead of the ship, we were vectored by marshal and broke out right in the middle of the overhead stack, just in time to go left-to-left with a Hornet.
- Following a compound emergency because of a dragging flap in crummy weather, my pilot was having a night in the barrel with several bolters. After tanking and another bolter, we got a low-fuel light on final, and I let my pilot fly a low and dangerous pass, because I just wanted the night to end.
- During CQ, I jumped into a jet for a hot-pump crew-switch. With the right engine offline to take gas, I got a left CSD overheat light. Rather than following NATOPS and securing the left engine, I tried to game it and crossbled the right. Unfortunately, the CSD ended up uncoupling.
- I took off from Fallon on a low-overcast winter day. I thought the Pitot heat was on when, actually, it was off, because of a bent switch. The Pitot system rapidly froze, and the airspeed indicator dropped to zero.
- Leading a section into the break, I didn't look for Dash 2 of the section breaking in front of me. I broke my section into him, passing within 100 feet and nearly causing a midair.
- I drank too much the night before flying on for cruise. Despite the plan to fly on and shut down, they sent us to the catapult. Immediately after the cat shot, I grabbed a barf bag from my G-suit and threw up. It was hard to conceal that maneuver, with the skipper sitting in the right seat.
- After declaring a fuel emergency, I set up for a right downwind for runway 7. Unfortunately, the active runway was 25, and I was staring traffic in the face.
- In the A-6 FRS, we switched jets at the last minute, and I got focused on the navigation system. I forgot to attach my lap belts and flew an entire low-level without completely being strapped in.
- In a two-seat Hornet, with a civilian engineer in the back seat, I tried a low transition but raised the gear and flaps too soon. I came within a foot or two of settling back onto the runway.
- I didn't know I had to press the button on the relief tube and ended up urinating all over the back seat.

Learning from the experiences of others may just keep you...



...from doing something stupid.

• I drank too much on an overnight cross-country. Even though I stopped 12 hours before the brief, I still wasn't fully recovered. I spent the entire return flight focused on maintaining composure. After landing, I went behind the aircraft and threw up.

• As a brand new ECMO in the squadron, I took a night cat shot and then realized I had forgotten to attach my shoulder-harness koch fittings.

• During T-45 carrier quals (CQs), I did not call bingo on the ball and then boltered, turning my next time around into a blue-water pass. I flew through down for the taxi 1-wire as my first trap on a carrier.

• At 40 miles from mom, following a day Case I departure, we had a malfunction that required us to

land ASAP. Our rep wanted us to make the current recovery, so we hit the wing and fuselage dumps and bustered back. When the fuel totalizer read 8.0, we secured the dumps and came into the break. After the trap, I noticed we only had 4.5 in the main bag. I then realized we had trapped with 3,500 pounds of gas in the wings.

• We flew an airnav, and upon calling to safe the seats following landing, we realized we never had armed them.

• We weren't legal to fly that approach into a civilian field. We also didn't have good communications with the other civilian aircraft at the field.

• During a T-2 flight, I caught my snap-on visor cover in the ejection handle.

• While taxiing to the runway, we called to arm-up the seats. The flight surgeon in back, who had experience in Hornets, grabbed the emergency-restraint release handle and squeezed, which set off the CAD for the parachute withdrawal-line guillotine. We taxied back to the line, kicked out the flight surgeon, had the plane captain (PC) pin the empty seat, and took the jet flying.

• We attempted a co-altitude, night-section rendezvous (without NVDs)—the closest I ever came to dying.

• After troubleshooting a problem in the line, I restarted the T-6, with the troubleshooter still standing on the wing.

• I went flying without my leg restraints. I realized I had forgotten them just before taxi but was too lazy to stop and get them.

• On a cross-country, we neglected to check that our divert field was open. We ended up flying into a major metropolitan area, in crummy weather, to a field without a compatible approach. The result was scud running at night, below minimum-vectoring altitude, among tall buildings, while looking for our destination field, because we didn't have the gas to go anywhere else.

• I flew through a rain squall with the marshal stack on the other side, talking only to strike because the Hornet in front of us did it.

• After forgetting the defog on an especially foul-weather night at the ship, we went IMC in the cockpit on the ball but did not call "clara ship." Fortunately, the only damage was to my pride with a wave-off pattern.

• While flying FCLPs during a month-long break between deployments, we got a tow-link indication. Instead of breaking out the PCL, I immediately reverted to boat procedures and told my pilot to cycle the gear. There was no damage, except to my ego as a new mission commander.

• I decided to op-check a camera in the jet, and four AA batteries went everywhere.

• On a low-level at 200 feet AGL, I focused my attention inside the cockpit a little too long during a hard turn and unintentionally overbanked. I barely caught my error in time to recover well below 100 feet AGL.

• I flew on a cross-country while hung over.

• During my T-45 solo, I was taking off from a civilian field and forgot to complete my takeoff checks. I didn't put down my flaps and aborted at more than 100 knots. I went back to the end of the runway, took off, and kicked myself all the way back home.

• We dumped to bingo plus one because we didn't monitor the fuselage dumps.

• I took a T-38 down low and lit the afterburners while I pulled to 90-degrees nose up and commenced numerous aileron rolls. As I approached 300 knots, I programmed aft stick to get the nose to come down, but the nose didn't move. As I neutralized the controls and said a quick prayer, I went zero airspeed in full afterburner, and hoped I would not enter a spin. Fortunately, it did a nice tail slide, and after the nose-low recovery, the helo guy in the back said, "That was cool. Let's do it again."

I'm a big believer in learning from others' experiences, mistakes, and close calls, whether it's reading *Approach*, true confessions at an AOM, story time while lounging around the ready room, or horror stories at the O'club bar with your buds. The point is not to brag about the stupid things you've done and gotten away with but to share what happened and why. We all make mistakes from time to time and, unfortunately, there are very few "new mistakes." We just keep repeating the same ones. Learning from the experiences of others may just keep you from making a similar mistake.

Cdr. Jungemann is the commanding officer of VAQ-136.

The Green Light to Avoid

The number of handheld lasers in the general public is growing rapidly, and some consider them little more than a toy.

By LCdr. Daniel Kimberly

We enjoyed another typical fall afternoon at NAS Whidbey Island, in the Pacific Northwest. Our P-3C crew was scheduled for a four-hour bounce flight, and sunset was at 1636. The Prowlers had field-carrier-landing practice (FCLPs) at home plate, so we headed to McChord AFB, about 20 minutes away.

I was in the left seat to knock out my upgrading event during daylight hours. After completing my approaches and touch-and-goes, we did a seat swap. NATOPS allows two off-duty observers to stay in the flight station for safety-of-flight, so I grabbed a seat on the radar cabinet, which is behind the left-seat pilot. This position allows you to view the pilot's flight instruments and engine indications, as well as back up the crew by calling out traffic.

About three and a half hours into the flight, the sun had set, and the sky was pitch black. After the last touch-and-go, we began to climb, according to McChord AFB tower's instructions: "Fly runway heading to 3,000 feet, and contact Seattle approach control."

As we passed 2,000 feet, I saw and reported traf-

Please send your questions, comments or recommendations to: Cdr. Allen McCoy, Code 16
Naval Safety Center
375 A St., Norfolk, VA 23411-4399
(757) 444-3520, ext. 7266 (DSN-564)
E-mail: allen.mccoy@navy.mil

Photo by PH1 Edward G. Marten. Modified.

fic at 10-o'clock high to the instructor pilot. Because we were in a left-hand turn, it was a potential traffic factor for us. Immediately after my report, an extremely bright green laser from 10 o'clock low hit our windscreen and lit up the flight station. Everyone turned to look for the traffic. We now were two miles from the departure end of the runway. We estimated the laser to be about a mile to our left. As I looked away from the laser and across the flight station, the light was bright enough to see the stubble on the instructor pilot's chin. The flight station was illuminated for three to four seconds.

As we climbed, we used time-critical ORM to assess everyone's eyesight. Besides the instructor pilot seeing a few momentary spots, everyone seemed OK. We continued with our plan to return to NAS Whidbey Island. We told McChord AFB tower we had been lased and passed the location of the laser. After an uneventful full-stop landing back at NAS Whidbey, we went about our postflight duties and didn't think much more about our run-in with the laser. A couple of days later, a civilian airliner was illuminated from about the same location.

Our aviation-safety officer (ASO) happened to be in the squadron spaces during our postflight, so I asked him what we needed to do. He told me to submit a hazrep but said he would have to check into what else needed to be done. Because we didn't have a laser-exposure plan, our squadron ASO had to do some digging. He initiated a laser-exposure, pre-mishap plan,

but it was a couple days later before our squadron's flight surgeon let me know the entire crew was med down. We all had a full eye exam that afternoon.

Our ASO made sure the following steps were completed following our suspected laser overexposure:

1. Report laser incident to ATC.

2. Incidents involving suspected or observed laser eye injury require a complete medical examination. (BUMED 6470.23)

3. Call the tri-service, laser-injury hotline 1-800-473-3549, (DSN) 240-4784, for immediate expert advice. The hotline provides references for optometry exams, along with DoD notification of incident. (DODI 6055.15)

4. Send a notification message, reporting overexposure or suspected overexposure, to BUMED (CODE M3B4) within four hours of completion of exam via telephone, fax, message, or email. (BUMED 6470.23)

BUMED point of contact for laser is:

LCdr. Vince Hill

Email at vincent.t.hill@usmc.mil, phone (703) 614-2423 or (DSN) 224-2423, fax at (703) 695-3231.

5. Send a follow-on written report to BUMED (CODE M3B4) within 30 days of mishap, amplifying the effects of laser exposure. (BUMED 6470.23)

The BUMED mailing address is:

Bureau of Medicine and Surgery (CODE M3B4)

Attn: LCdr. Vince Hill

2300 E Street NW

Washington, DC 20372-5300

6. Report incident to National Air and Space Intelligence Center (NASIC) for operational tracking (operational and non-operational units). Refer to OPNAV Instruction 5100 series.

As laser incidents become more common on deployment and at home, it is important we don't reinvent the wheel. If your squadron has a laser incident or wants to get prepared for one, we recommend developing a laser-exposure, pre-mishap plan. Contact Lt. Pratt, our VQ-2 safety department representative, at Christopher.m.pratt1@navy.mil for a copy of our plan and any other assistance we can provide.

LCdr. Kimberly flies with VQ-2.

LASER is an acronym for
LIGHT AMPLIFICATION BY STIMULATED EMISSION OF RADIATION.

This event is a great example of "expect the unexpected," even on our home soil. When we fly in harm's way, laser safety is a standard threat we train against. But how many of us think about this threat on a routine training flight? The number of handheld lasers in the general public is growing rapidly, and some consider them little more than a toy. These "toys," however, can blind a flight crew with catastrophic consequences. This aircrew did absolutely the right thing in executing time-critical ORM to immediately evaluate everyone's fitness to fly home. A call to the squadron to have a flight surgeon meet the crew after landing would have been helpful. BZ to the squadron for instituting a laser-exposure plan of action and getting the word out to everyone. –LCdr. Paul Wilson is the P-3 analyst at the Naval Safety Center.

Almost a Fatal Lift

By AT1 (AW/NAC) Randy Witucki

As a C-130T loadmaster with seven years and 3,800 hours of experience, I was preparing for just another seven-day NALO mission. A week earlier, I had received the lift message: Pick up cargo at NAS Roosevelt Roads, continue to Andros Island, Bahamas, to pick up passengers, and return to NAS Pt Mugu, Calif. The message listed only the weight of the cargo, but during mission planning, I discovered our load was 10 AQM-37 target drones, which had "rocket motors with hypergolic liquids."

We don't carry rockets everyday, and I quickly had to get smart on them. Using the loadmaster's hazmat bible, the NAVSUP PUB 505 (known to us simply as the "505"), I learned these rockets contained two chemicals: inhibited red fuming nitric acid (IRFNA) and unsymmetrical dimethylhydrazine (hydrazine)—both extremely dangerous.

These two chemicals are so dangerous the 505 has a special section dedicated to transporting any rockets containing them. As a rule, each rocket has to be stored in its own container with a small disk indicator that alerts to chemical leaks. The disk indicators are normally white or off-white and turn yellow with an IRFNA leak or black with a hydrazine leak. What really alerted me this was nasty stuff is the dedicated emergency checklist in case of a leak. Also, transporting passengers is strictly prohibited when carrying rockets.

Before our arrival, I briefed the crew of the contents and reviewed the procedures. After we arrived at the air station, my trainee and I inspected the 10 rocket containers and reviewed the paperwork. The next morning, we loaded the rockets on the plane and carefully inspected each of the sight gauges one last time. With all the rockets on board, it wasn't until right before we started to taxi that I smelled rotten fish.

When I rechecked the disk indicators, two appeared blotchy. The disk indicators in the direct sunlight had looked white, but now in the closed aircraft, they looked almost yellow. I immediately stopped the aircrew from taxiing, informed the aircraft commander, and asked our flight engineer to come back and verify what I had smelled. The engineer confirmed the smell, and as a crew, we called for an emergency shutdown, evacuated, and waited for the fire department and explosive ordnance disposal (EOD).

After opening up the aircraft and performing a sniff check, EOD declared we were all clear and OK to proceed on our mission. The base personnel concurred, and they began to pressure us to get the rockets off the station; I still had a bad feeling about the situation. The crew respected my instincts, used ORM, and made the decision that an extra night in Rosey Roads was a small inconvenience when it came to our safety. We requested the rockets be removed from our aircraft and inspected, while we headed to medical for a checkup. We weren't too popular with station weapons.

While at medical, the ambulance was dispatched to station weapons for possible leak symptoms with weapons personnel. Of the four people brought back to medical, one was dizzy, two had headaches, and the fourth was sick to his stomach. All were held overnight.

During the evening, we received a call from the station medical officer, saying we were all down for 72 hours, and to report to medical first thing in the morning for a complete evaluation. We then received a second call from station EOD saying that, after a complete inspection, two of the rockets had verified leaks.

We monitored one another for the next 72 hours, as symptoms of exposure to IRFNA can be delayed. The doctor at the clinic told us if we had taken off with these rockets, the fumes in the pressurized aircraft might have killed us in 20 to 30 minutes from pulmonary edema, which is when the lungs no longer can put oxygen into the bloodstream. We were all granted a clean bill of health and soon headed home—minus the rockets.

Looking back, I'm glad this situation did not happen early in my career. An inexperienced loadmaster would have been tempted to take this lift. The paperwork was perfect, nothing in the 505 stated the indication of a leak is a rotten fish smell, EOD initially gave an "all clear," and the decision to remove and inspect the rockets caused extra work for everyone.

I used my experience and trusted my instincts that day. Equally as important, my crew used effective ORM and CRM to make a decision that was unpopular with others, but it was the right decision.

AT1 (AW/NAC) Witucki flies with VR-55.

Photo by PHA James R. Evans. Modified.

90 Days To Contemplate

By LCdr. Thad Johnson

By the time I came on the controls, the collective was coming to the stop. The helicopter was leveling out, but we were descending too fast to prevent hitting the runway. The sideward drift (that I had not picked up) caused the mainmount to depart, directly exposing the skin, as well as numerous antennae and other fragile components to the concrete. We bounced back into a hover, and I jammed left pedal to arrest the rightward spin that was developing because of the large amount of torque we had pulled in the recovery. We settled out and were flying again. It would be another hour and forty minutes to coordinate and affect a safe landing with a missing mainmount.

How had we gone from practicing autorotations in our SH-60B to becoming the mishap crew of a Class Bravo? An aircraft mishap board would convene to determine just that, and I would have a 90-day FNAEB process during which to contemplate what had happened.

It didn't take long for me to realize one of my biggest failures. I was on the way to the hospital for blood work, a mandatory long form, and interviews that evening, when it hit me: I was the aircraft commander, and I had stopped training. I believe most of the failures in mission planning and CRM, which were cited later, stemmed from this fact.

During my copilot's autorotations, I was uncomfortable because of the late, nose-high attitude he used to arrest groundspeed on each one. I took the controls from him on the first one and put my hands on the controls at least two other times. I felt a little foolish for taking the controls the first time and voiced as much because we recovered somewhat high. I talked with him about different ways of flaring and asked if anyone had told him his flare was aggressive. My comments were perceived only as academic discussion.

At no point did I communicate my discomfort or take on a directive or instructional approach. I was

having an internal conflict whether my comfort zone or his autorotations needed to be adjusted. I personally had not practiced in a while—more than 30 days since my last one and almost 60 days since I had done more than one. I monitored whether he was recovering within NATOPS-established parameters, but I failed to address my discomfort in a meaningful, productive way. What caused me to take such a passive approach to my copilot?

I should have been good at training. I came to my department-head billet after a successful stint as an FRS instructor. As it turned out, my disassociated tour had been cut short enough that most of the senior lieutenants in my new squadron were previous students of mine on one flight or another.

I no longer was an instructor, though. In fact, when I checked in to my department head tour, it actually was a goal of mine to shed what I perceived as a reputation I had developed at the FRS. I think I was considered to be a "hard" instructor (there probably are more descriptive, less-printable words). Back then, I was tacitly aware of this reputation, but I didn't really care. I sought to train, earn the respect of my peers, and the approval of my boss. A senior instructor who was a big part of my IUT syllabus once asked me point blank, "Would you rather be liked or respected?" It was a no-brainer, I thought at the time. But this fleet tour was different. This was the tour where I would lead a detachment, and I wanted to be the leader my detachment wanted to follow. Who wants to follow someone they don't like?

The mishap copilot was not a student. He was a qualified FRS graduate and H2P. This fleet aviator also was a full-lieutenant and had been in the squadron a little longer than me (almost a year). He really was a nugget, though. Never having been underway, he had the minimal flight hours to prove it. He also hadn't done autorotations in some time.

So, when the day of the mishap flight came, I did not do the things an instructor would have done. In preflight planning, I did not review my copilot's grade sheets or previous flight history. I didn't discuss him with any of my peers. I might have discovered that he had struggled with autos in the FRS. During the brief, we conducted the requisite ground ORM sheet, but when hazards (lack of experience and currency) were identified, we did not discuss a mitigation strategy. As an instructor with a student, I probably would have reviewed the auto profile, addressed specific verbal calls to expect from one another, and talked about minimum recovery and mandatory waveoff criteria. In flight, we would have started working on his flare technique after the first auto made me feel uncomfortable. I would have given clear direction to change the way he was flaring and demonstrated different techniques, if needed. Why didn't I?

Maybe I didn't want to step on my copilot's toes or offend him. I wanted to be liked a little more than I wanted to be respected, and I hadn't considered we can be both. Maybe I had gotten out of the habit of teaching, having flown almost nothing but department-head NATOPS check rides in the latter part of my time at the FRS. Maybe I was not proficient enough at autos at the time. Maybe I had gotten complacent. The "why" is not really as important as the "what." I had stopped training. Our NATOPS says, "A HAC shall demonstrate positive leadership ability and maturity of judgment to command and train flight crew members in all phases of the assigned mission."

If I had fulfilled my responsibility to train, and had had a more appropriate approach to my copilot, we would have had a little longer brief and done a few more autos in the pattern. Then, maybe none of them would have hit the ground.

Never miss an opportunity to train, and always be ready to lead, whether it is easy or not.

LCdr. Johnson flies with HSL-49.

Photos by Lt. Mike Donnelly, VP-8

The Wheel Spun Freely

By Lt. Mathew Olson

On an ideal "standard" day, when you fly out of your home field on a training mission or do a little dedicated field work, you take several factors into consideration on a normal takeoff. These factors include minimum control speed, refusal speed, rotation speed, lift-off speed, climb-out speed, three-engine rate of climb, decision speed, flap-retraction speeds, and center-of-gravity limits. Usually, these factors easily are covered and managed by our standard takeoff brief.

However, when you're thousands of miles away from home field, at an expeditionary airfield in a combat zone, things become more interesting. You have to consider the threat environment that surrounds the airfield. What is the best combat departure tactic for the assessed threat? How long does climb-scheduled airspeed keep the aircraft in the threat envelope? How will an engine failure affect the rate of climb? What are the options for an immediate return to the field, assuming a catastrophic failure? Even after all this contemplation, I discovered that emergencies don't always happen by the book.

As aircraft commander and pilot-at-the-controls for a mission over Iraq, I briefed the combat departure to my crew. Our takeoff gross weight dictated a rotate speed of 119 knots, with no refusal speed. The co-pilot called out 80 knots for the standard power and airspeed check. When my copilot called rotate at 119 knots, I felt a

strong vibration in the nosewheel well. We already were past rotate speed, so I continued the takeoff.

I asked my flight engineer if he thought we had blown a tire. When he said "no," I called for landing gear up and continued the combat departure. We received a good three-up-and-locked indication, and kept climbing while finishing the climb checklist.

I was focused on getting the aircraft safely out of the threat envelope. If we had been departing from a different field, I would have been more inclined to leave down the gear and return for an immediate landing.

Once we reached our operational altitude, we carried out our briefed task. The mission commander and I discussed our intention to quickly complete our assignment, so we could return and orbit the field to check the nose gear.

We returned to base and established a holding pattern over the field. Our sensor-three operator dropped the advanced imaging muti-spectral-sensor (AIMS) turret to do a visual inspection. We completed the descent and approach checklist. I called for the "gear down, landing checklist."

Our sensor three reported the nose tire was in shreds, the port taxi light was missing, and the steering cable appeared to have snapped. I swapped seats to get in the left seat for the landing. We selected the camera image on the pilot's color high-resolution display. I saw the port tire noticeably was smaller than the starboard; we assumed the tire was flat. We went over flat-tire-landing procedures in NATOPS and briefed 16.1, the emergency-landing checklist.

We then declared an emergency with center and requested tower to FOD sweep the runway to collect the missing pieces of tire and our taxi-light assembly. We contacted maintenance to have them wait for us on the taxiway, so we wouldn't have to taxi back with a flat nosewheel.

My flight engineer and I talked about how we would control the plane on deck with no nosewheel steering. Asymmetric thrust for rollout was our best bet, but we would try to use nosewheel steering at a slow speed to assess the damage.

I slightly modified the combat approach, flying at a slower speed than normal to avoid further damage to the nose landing-gear assembly. Our speed was 135 knots for the approach and 121 for the landing. I entered flare and kept the nose off the deck as long as possible. I slowed the aircraft and gently lowered the nosewheel to the deck. When I slowed to a normal taxi speed, I tried to use nosewheel steering, but the wheel spun freely, with no response. I shifted to differential power, cleared the active runway, and shut down the engines on the taxiway.

(FROM AFT FACING FORWARD) PORT TIRE ON NOSE STRUT COMPLETELY BALD, BUT REMAINED INFLATED DURING LANDING ROLLOUT

Maintenance was waiting to check the damage and change the tire. The retread completely had separated from the port tire. The impact of the rubber fragments had damaged the panels aft of the nosewheel assembly and the APU-intake door panel, taken out the taxi light, and snapped the nosewheel cable.

A P-3 may face a few situations that would require "fast hands in the flight station." Even a situation as dynamic as a malfunction during a combat departure can be managed by a tactically proficient and NATOPS-savvy aircrew. The key to handling time-critical malfunctions is before flight, through operational risk management.

If this scenario was presented to aircrews around the fleet, you'd get a handful of responses as to the appropriate course of action. The tricky variable is the severity of the vibration felt just before rotation. Was the threat of leaving down the gear and entering a downwind for the pattern greater than continuing the combat departure? This difficult question should spark some discussion in ready rooms.

With hindsight being 20/20, once the aircraft was out of the threat environment, I should have thoroughly investigated for damage. Had I done this, I sooner would have notified the airfield of the FOD danger. With knowledge of the damage to the nosewheel and aircraft panels, we might not have decided to continue the mission.

Lt. Olson flies with VP-8.

The High Cost of (Not Following) Procedures

By Adria Markowski

Aviation mishaps are the most expensive category of mishaps tracked by the Naval Safety Center. Given the cost of aircraft, this information comes as no surprise. From FY03 through FY06, aviation mishaps made up 87 percent of the total Navy and Marine mishap costs. This percentage equates to $2,977,181,814 (Figure 1) for that four-year period. Reducing this cost by just one percent would have yielded a savings of nearly $30 million.

If all the mishaps that occured because of improper procedures were prevented, what would the Navy and Marine Corps have saved? With this line of thought, I will discuss the "woulda, coulda, shoulda" considerations for all models of FA-18s and H-60s with Class-A flight mishaps in FY03 through FY06.

Nine mishaps were the result of improper procedures. While nine mishaps might not be a breathtaking number, $265,018,417 is. This figure includes $4,401,782 in total injury costs, which would have been avoided if the personnel involved had followed the proper procedures. This cost equates to 8.9 percent of all aviation mishaps. When considering all mishaps (Figure 2), not just aviation, the cost is 7.75 percent of all mishaps ($3,420,588,222) during this period.

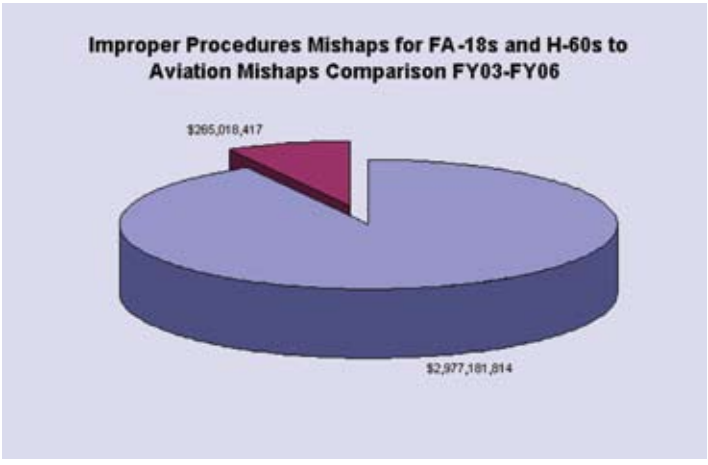


Figure 1

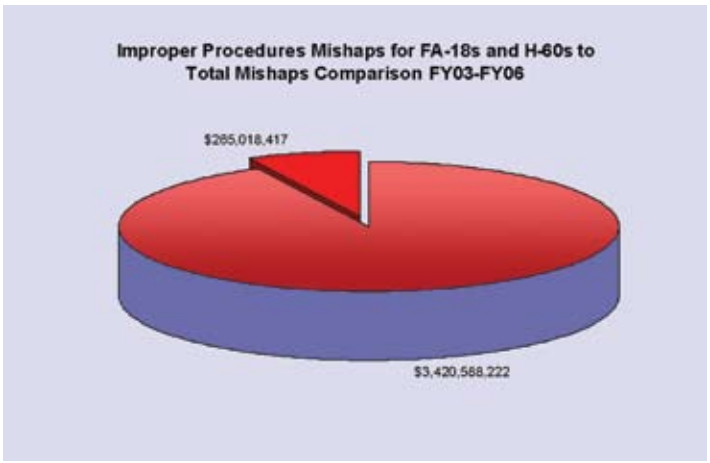


Figure 2

The red slices in these figures may seem small, compared to the whole pie; however, the totals are close to and more than $3 billion, respectively. These dollars are even underestimated because they are not procurement dollars or what it would cost to buy the aircraft in today's dollars. These results show that following procedures in even a few cases can significantly reduce the total costs of aviation mishaps. Here are a few examples from the nine mishaps, along with analyst comments and the costs involved.

Scenario No. 1
The Bad

The pilot at the controls (PAC) of an HH-60H failed to recognize the loss of tail-rotor drive. With this type of emergency, the chances are excellent it will end badly, no matter what you do. Your intention is to

survive, and if you are fortunate and skilled, maybe you can save the aircraft. This pilot, though, did not recognize the type of emergency, or he chose not to execute the correct emergency procedure (EP). He rode an uncontrollable aircraft into the ground.

All the steps in the tail-rotor-drive-failure procedure are critical-memory items—you have to do them without referring to the pocket checklist. By recognizing this EP and completing the correct procedures, the pilot would have entered the aircraft into an autorotation. During this autorotation, he could have checked to see if he had lost tail-rotor drive. Upon confirming his suspicion, he is committed to the autorotation. In the best-case scenario, he would have landed smoothly, saving the aircraft and crew. In the worst-case scenario, he would have been off the recommended profile and maybe incorrectly performed the autorotation. These options open the possibility to numerous scenarios, the worst having catastrophic results.

By following procedures and entering an autorotational profile, a pilot creates a situation where he has had a great deal of training. This action increases the likelihood of a favorable result. By riding an uncontrollable aircraft into the ground, he risks whether he and his crew will have any chances at survival.

Cost: $1 million

Scenario No. 2
The Worse

A Hornet pilot inadvertently deactivated his nosewheel steering (NWS) while troubleshooting a flight-control problem, then reengaged NWS after beginning the takeoff roll. With fully deflected rudder pedals, the sudden deflection of the nosewheel made a bad situation worse. This scenario could have been avoided by adhering to the takeoff checklist, which should be completed immediately before takeoff. It also should be completed a second time if troubleshooting, configuration changes, or excessive delays occur before takeoff.

The eighth step on the takeoff checklist is to make sure NWS is engaged in low mode. The presence of an NWS cue in the heads-up display (HUD) verifies this condition. Had the pilot completed this step, the mishap would not have occurred. A second opportunity to prevent the mishap would have been when the lack of directional control was detected. Had the pilot used the loss of directional-control-during-takeoff procedure, he could have stopped the aircraft with normal brakes, before excessive speed made the situation dangerous.

Cost: $34 million

Scenario No 3
The Worst

Two aircraft coming to the merge at high speed violated one of the air-combat-maneuvering (ACM) training rules by not communicating their intentions as to which side they would pass each other. The result was a midair collision. The ACM rule states: "Maintain established trend; if no trend established, give way to the right to create a left-to-left pass; when in doubt, broadcast your own intention." The two pilots assumed the other was going to pass on the opposite side.

Another pilot transmitted on the wrong frequency, which "stepped on" the "knock it off" call. This radio call caused the rest of the flight to miss the vital communication.

The lead pilot who transmitted the "knock it off" call did not retransmit after hearing his wingman call "turning in" to engage. Had the two pilots communicated their intentions, this incident would not have been a mishap. Rather, it would have been a hazrep about the dangers of poor communication.

Several instances in the chain of events could have prevented this mishap, but due to assumptions by both pilots, not adhering to the ACM training rules, and fouled-up radio calls, the Swiss Cheese model lined up for a catastrophe.

Cost: $148 million, four lost lives

All nine mishaps could have been prevented by following established procedures. Understandably, the nature of aviation mishaps are complicated and are the result of a series of events. In these cases, the mishaps were linked to the difference in following procedures. In 20/20 hindsight, these mishaps were preventable and are examples of "woulda, shoulda, coulda."

Ms. Markowski is an operations research analyst with the Naval Safety Center.
Scenarios provided by Lt. David Williamson, Maj. Mark Budde, USMC, and Lt. Brad Loftis

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

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New Guys Can Talk, Too!

By AW2(AW/NAC) Joseph A. Rosbrough

My story starts on a warm September day in Korea. We were on an SH-60B weapons detachment, operating with Hellfire missiles and Army Apache helicopters. Our goal was to integrate with the Army to become a more efficient team. It was my first time playing with Apaches or shooting Hellfire missiles, so you can imagine how excited I was. Our day would start with a 0400 wake-up.

We completed our standard flight brief and preflight, then loaded our helo with missiles and went flying. I was in my glory. We were at the FARP (forward arming and refueling point), watching the Apaches load their helos and launch.

Their crews amazed us by the way they conducted routine operations: much different than the way LAMPS crews are used to doing business. We thought it was real cool to watch them flare on takeoffs and landings, seemingly without a care in the world. An Apache is a much more maneuverable aircraft than the SH-60B. My pilot was a newer H2P, and I noticed the look of awe on his face as the beehive of fully loaded Apaches flew in and out.

That morning was going to be the time where my timid and submissive "trust the pilots" attitude, also known as "new-guy syndrome," forever would go away.

Just after takeoff, we were told the range was fouled with little Korean fishing boats. We sent one of our helicopters to try and clear the range, then got the frustrating instruction to sit on the taxiway until further notice. So, there we were, sitting directly in the rays of the rising sun and bored out of our minds. We were on the sidelines, watching everyone else flying.

The Air Force launched all their stealth fighters and F-16s, while a slew of Apaches came in and out. We sat on the taxiway so long we burned a full bag of gas. For all you LAMPS bubbas out there, you know that's about three hours of gas if you are flying and nearly double that amount if you are sitting on deck. The delay was horrible. The HAC then called tower and requested permission to go back to the FARP and refuel. We received clearance, the HAC passed the controls to the H2P, and told him to take us there.

The H2P pulled up on the collective, and that's when the fun all began. He transitioned to forward flight and settled out at about 100 feet AGL. He kept us nose-down at an aggressive angle, which accelerated the aircraft. I, being the new guy, noticed something just didn't feel right.

Photo by PHA James R. Evans. Modified.

But, I kept my mouth shut, thinking it was the way you fly in the fleet.

I sat, looking out my window, and watched us rip down the runway. The pilot then tried to show off for everyone in the FARP. Once abeam the refueling point, he rolled right. When taking right rolls in flight, the crewman is looking straight down at the ground through the cabin door. But this roll felt like a lot more than 45 degrees, our NATOPS limit. I remained silent as the aircraft started to fall toward the ground. The H2P froze, realizing he was about to fly us into the ground, and the only word I could blurt out was "Sir!"

I glanced out the window, and, still today, I have a permanent image embedded in my head. I saw about a hundred Navy and Army personnel running for cover; it looked like we were about to crash into the ground. I quickly focused on one Army guy who threw down a Zuni rocket and ran. Everyone was convinced they were about to witness a crash. While in a large, right-hand angle-of-bank and headed for the ground, the HAC finally came on the controls and buried the collective in her armpit. Mind you, she never said anything during this whole evolution. Without a doubt, she saved us from an imminent mishap. She regained control of the helicopter and sat it down.

When I got out of the aircraft, people rushed us asking if we were alright. I considered myself fortunate. I learned three very important lessons that day. One, God still wanted me to live another day (and that is a good thing). Two, always speak your mind in the aircraft, no matter what your rank or whom you're flying with. Third, people can and will make mistakes. No matter whether you're flying with a HAC with 2,000 hours in model or a new guy, you can't always count on them to make the right decisions.

When we hear, in CRM classes, to be an assertive crewman, we should listen and realize no matter who you are, you can make a difference. Sometimes those differences can determine whether you go home at night. I believe if I had spoken up a lot sooner, when I first realized something didn't feel right, I wouldn't be writing this story. If I had said something in the aircraft, I'm sure I would have made my pilots realize they were about to do something stupid. The new guy has a voice and can save lives, too!

AW2(AW/NAC) Rosbrough flies with HSL-51.

Business-Class FOD

By LCdr. Paul Lanzilotta

We began airways-navigation planning for our cross-country flight. Our Hawkeye crew needed to reposition to support an exercise 2,000 miles away. The exercise timeline required a transit on a federal holiday, which meant all the Air Force bases along the way were closed-up tight. Our crack group of ops planners found an appropriate stopover point at a fixed-base operator (FBO), a civilian business dedicated to hosting transient and local aircraft.

These places can be a great deal, with friendly hosts meeting aircrew with a smile and a credit-card reader. They're undoubtedly ready and willing to charge Uncle Sam the contract rate for fuel. The experience at an FBO usually is much more customer-service oriented than at a military transient line: courtesy vans, wireless internet connectivity, and gourmet geedunk—top-notch stuff.

Thorough trip planning culminated with our intimidating E-2C taxiing into the ramp area of this particular FBO on a beautiful, crisp, fall day. We parked, got out of the aircraft, and observed the toy-like chocks the line personnel had placed around the nose gear. We then started to put the ground locks on the landing gear and tailhook. Our aircraft, even with its shiny NADEP paint, admittedly looked a little bourgeois, compared to the nearby shiny Gulfstream and Citation jets.

I anticipated the lineman would ask the inevitable question, "What's with all those propellers?" Instead, as I walked around the aircraft and assessed its general condition, something shiny on the ramp asphalt about five feet behind the aircraft caught my eye. I walked over to the object and picked it up.

My treasure turned out to be a steel bolt, complete with a nut rusted onto the threads. I found our plane commander and showed him the bolt. We conducted a FOD walkdown of the immediate area and found about five handfuls of FOD: metal pins, more bolts, cotter keys, chunks of asphalt, even a pinecone.

We've all been doing FOD walkdowns and spending our precious mornings with shipmates, looking for tiny rocks and safety wire, since the first days of primary flight training. Many of us have participated in FOD walkdowns on the aircraft-carrier flight decks in tormenting conditions, high winds, rain, snow, sleet, even the blistering heat of the summer Arabian Sea. We've spent mornings in the ready room, listening to safety videos about FOD and its potential impact on combat effectiveness. Some of us may have observed a FOD incident that resulted in a downed aircraft, or worse. How many of us have paused during cross-country flight planning and thought to ask the hosting unit about the condition of their flight line?

We have been integrating operational-risk management (ORM) into our normal routine more and more over the last few years. FOD should be a recurring bullet on each preflight list, particularly when our destination is an unfamiliar field.

Our cross-country was uneventful. We inspected the aircraft and found no discrepencies. We did another walkdown the next morning as we prepared for our final leg. We found another bundle of rocks, asphalt, and pine cones but no more metal. The airfield manager must have seen us poring over his ramp, because he came over and apologized profusely for the condition of the asphalt, explaining that it was scheduled to be resurfaced in the spring for $12 million. We thanked him for his concern and promptly shifted another item from our "luck" bag into our "experience" bag.

If FOD at a field other than home isn't part of your ORM scan, introduce it. Be a little more diligent about FOD lookout during taxi. Perform a combat-FOD walkdown before launching for the next leg. Pass along your cross-country lessons to the type-wing and air-wing staffs. They should have the resources and leverage to get the word out, as well. We have the tools available to mitigate the risks associated with FOD, even if it is a hassle. Nothing is more frustrating to professional aviators than a sweet mission and no up-aircraft to fly.

LCdr. Lanzilotta flies with VAW-121.

From Four Engines to Two

By Lt. Michael Winters

After three hours on-station off the coast of Nassau in the Bahamas, we finished our fourth attack of our TorpEx. We started a climb to 10,000 feet, with the 2P and I in the seat. It was a beautiful day, and we looked forward to a smooth 60-minute transit home to NAS Jacksonville.

As we passed through 5,000 feet, the No. 4 fire-warning horn sounded, and the light illuminated. We silenced the horn, pulled the emergency-shutdown handle, and completed the emergency-shutdown checklist through alternate high-rate-discharge (HRD) bottle. We then restarted the No. 1 engine, which had been loitered throughout the on-station period. After No. 1 was online, and the emergency-shutdown checklist was completed for No. 4, I directed the copilot to head home and to declare an emergency with ATC.

Though I was aggravated with the current situation, I still felt comfortable landing with three engines. We started our one-hour transit to Jacksonville, and I was thinking about diverts and three-engine procedures when the aft observer called the flight station to look at the No. 1 engine. It had been running for only five minutes, but we saw a pool of fluid sitting on the exhaust pipe. After much discussion, we determined it probably was not condensation but oil.

I started to think about my upgrading days and vaguely remembered reading about an uncontrollable oil-fed tailpipe fire. I discussed the situation with the pilots and flight engineers. The No. 1 engine-oil quantity and temperature were within limits, and we had no other abnormal indications. I considered leaving the engine running but thought differently after more discussion of oil-fed tailpipe fires and catastrophic turbine failures. I was concerned that if we got a tailpipe fire, it would be impossible to extinguish with the HRD. With that in mind, I had the copilot call to shut down the No. 1 engine.

I could feel a lump in my throat when the flight engineer said, "Sir, we need to land this plane."

Photo by PHA Jacqueline Hall. Modified.

Immediately after the shutdown, white billowing smoke poured from the engine. I could feel a lump in my throat when the flight engineer said, "Sir, we need to land this plane."

Multiple questions flew through my mind. Is that the oil burning off of the tailpipe because of the lack of airflow? Did the oil ignite at the exact moment the engine was shut down? Do I have a fire I can't fight with HRD? With all these thoughts and doubts, I swapped seats and prepared for our emergency landing. We turned directly toward the Florida coast and the closest airfield, which was Homestead AFB. At 11,000 feet long and 300 feet wide, no cloud ceiling, and unlimited visibility, I couldn't have asked for a better landing site. The remaining 20-minute transit with max power on the remaining engines, at 10,000 feet and 200 knots, gave us time to review two-engine procedures, checklists and communications with ATC and home plate. We discussed restarting one of the engines.

My crew relayed our situation to our squadron on SATCOM. Our senior pilot asked us if we had considered restarting one of the engines for landing.

Ultimately, though, we rejected an engine restart because of the uncertainties of what had caused the fire warning on No. 4 and the effects of restarting No. 1. We radioed back our intentions and completed the remainder of our short transit to Homestead. Our vectors to final and a full-stop landing were uneventful.

Postflight inspection found the scavenge section of the No. 1 main oil pump had failed, causing the loss of about six quarts of oil. The No. 4 engine had no indications of a fire but had developed a bleed-air leak that allowed hot air to be directed toward an adjacent fire-warning element, most likely causing the fire warning.

Times of adversity help you grow as a pilot and professional. Not only did I learn a lot during this winter day, I have learned a significant amount in the last couple months. At the time of the incident, I believed we had used the best CRM possible and the most effective time-critical ORM to give us the best advantage to land. Looking back, I should have reconsidered my decision to shut down the engine with the oil on the tailpipe based on decreased oil quantity and no change in oil pressure. Also, the possibility of an oil-fed fire in the tailpipe section is extremely remote because of ignition temperatures for oil. Even if I had decided to shut down the engine for the oil on the tailpipe, I definitely should have restarted one before landing. At the very least, I could have preloaded one of the shutdown engines in the event of a malfunction to another operating one.

We should have given much more thought to single-engine performance and wave-off contingencies; we were fortunate to have had ideal weather and runway conditions.

The decision to shut down or restart engines with multi-engine malfunctions is the most difficult one I ever hope to make in a P-3. For everyone reading this article, all I can say is never to stop training and reliving other flight-station experiences. As often as possible, study and discuss past mishaps and hazreps with senior pilots and flight engineers, in and out of your squadron. Never accept a malfunction without looking at every contingency, backup plan, and possible course of action.

Lt. Winters flies with VP-5.

A great deal of community discussion was generated as a result of this incident (this was the second two-engine landing in the past year). These events rarely occur, so as time since the last such incident grows larger, so goes the mentality that "this doesn't happen very often any more." I remember going through the motions of the "usual" single-engine shutdown during training flights and NATOPS checks in which the IP pulled the second engine (snickering), and you found out if your legs were in shape. This scenario usually was run in the pattern, in rapid fire.

How many of us actually got this kind of training over the Bahamas, or worse yet, on a trans-ocean flight? In the pattern, we train to get control of the aircraft, put the engine to bed, and land the aircraft, usually in quick succession. However, this time, the flight crew had an opportunity to discuss terminal area options while transiting, one of which is the oft-overlooked option to restart an engine.

Revisiting this scenario is good for the community. I believe that Lt. Winters' conclusions are spot on.—LCdr. Paul Wilson, P-3 analyst, Naval Safety Center.

Photo by MCS2 Joshua J. Wahl. Modified.

When Competing Ideals Collide

By Lt. Jason Gelfand, USCG

We had been on the LHA flight deck for more than an hour. Behind me stood several CH-46E Phrogs full of grunts and a couple of AH-1W Cobra escorts, all of us turning and listening intently on the squadron frequency to the weather bird.

I had taken a couple sips of hot gas to try to keep my UH-1N topped-off for the flight. I had the infantry-battalion XO in the back of my command-and-control aircraft. He was the raid force commander for this visit-board-search-and-seizure (VBSS) mission, which was part of our predeployment certification and evaluation process. The battalion XO got more irritable as we waited for the weather to clear to at least 500/1. Not surprisingly, we heard little chatter on the ICS. The weather bird that morning was a CH-53E, which was inbound to the boat from homeplate. Because the 53E carried so much fuel, it could orbit the boat and provide weather reports for hours. At no time that morning was the weather ever 500/1 or better on the flight deck.

After about an hour, the squadron representative in the tower called on squadron frequency and said my squadron CO directed me to go ahead and launch. I glanced at my copilot, Beaver, and he returned a puzzled

look. I asked the tower flower if the CO was aware all the weather-bird reports were below the briefed go/no-go weather of 500/1. He said not only had the CO heard the reports but that he now was in the tower and ordering me to launch. This action seemed to be an extraordinarily poor risk-management decision. He made no sense to disregard briefed weather limits for a multiple-aircraft maritime assault, with planes full of grunts, simply to complete training. I was amazed, but given our CO's behavior over the preceding months, perhaps I shouldn't have been.

Months before, when our Huey and Cobra detachment reported for duty to the Phrog squadron, our new CO had greeted us in the squadron ready room at homeplate. I distinctly remember him saying, "We're going to break some planes ["have some mishaps"], and that's OK."

I never had heard another CO say anything similar, before or since. Most aviators understand that breaking airplanes too often means breaking people. In the late 1990s, as a Marine officer, the most likely cause of death was a naval-aircraft mishap. This introduction with the CO foreshadowed events I would not have believed if I had not experienced them.

The CO was focused on flight time, and to cancel or delay training for any reason was to risk a heated counseling session. Two examples come to mind. One Cobra friend of mine, Gimp, visited us from our home squadron and was directed to fly an instrument flight in support of our Cobra detachment. Gimp, now a commercial pilot, recommended canceling the flight because of icing conditions in the PAR pattern. Despite the icing, the CO insisted that Gimp fly, although Gimp wisely declined. As a guest from our home squadron, Gimp could drive home with no repercussions.

Another Cobra friend, Zog, did not want to face the CO's wrath if he returned early from a flight. The weather was too horrible to actually fly a normal pattern, so Zog backed up and down short final to the practice LHA pad. He stayed VMC and logged flight time for the CO. We had about 50 percent more flight time than a comparable squadron, but, apparently, this statistical irregularity raised no eyebrows.

Eventually, the CO's risk-management position and refusal to listen to any safety concerns from the ready room caused one of the officers to submit an "Anymouse" safety complaint. The Anymouse went not to the CO, not to the group (O-6) level, not to the wing (O-8) level, but to the Marine Forces Pacific (O-9) level. Not surprisingly, the CO was livid and called us into the ready room at the squadron one fine Saturday morning for a group-therapy session. "Bloody Saturday," as we later called it, consisted of the CO berating all of us and using terms like "Nazi discipline." He declared the unit had no safety issues, and he forced all of his department heads to stand up and make similar declarations. Of course, one of his department heads turned out to be the author of the Anymouse, but that tidbit wasn't known until months later.

After the group-therapy session in the ready room, we were divided into our shops for shop therapy. I was the Huey and Cobra standardization officer, so I worked in safety. My boss was ineffective as the aviation-safety officer (ASO), so the CO decided I would have the job. I was a graduate of the Aviation Safety Officer course at Monterey, and had served as ASO at my home unit, where my program passed the commanding general's inspection with no discrepancies. More importantly, despite only one prior WestPac deployment, I already knew far too many Marines who were dead or injured because of poor risk management. I told the CO the job required close communication between us. Because communication between this CO and any subordinates always was one-way, I was unable to accomplish the ASO's mission. While I braced for impact, the CO let the matter go, or so it seemed.

Over the next days, my detachment OinC made it known the CO thought I was crazy. What else but insanity could explain my differences with him in terms of aviation safety and risk management? The following Tuesday, the CO was to lead a flight away from home for urban training. I could hear the Phrogs turning on the line and looked forward to a week without him. My detachment OinC then ordered me to report immediately to the CO's office. In the office was the CO in his flight gear, along with the XO, my detachment OinC, and the safety department head. Apparently, my inability to serve as the ASO bothered him so much he had decided to hold up the launch of his aircraft to counsel me.

He said not only had the CO heard the reports but that he now was in the tower and ordering me to launch.

The good-cop routine came first. I repeated to the CO I was unable to serve as his ASO because two-way communications were nonexistent. I didn't refuse the order, but I made it clear I was unable to accomplish that mission.

The XO, who had done nothing to shield us from the CO and improve our chances of surviving the deployment, said, "Jason, you're obviously intelligent and well-spoken. You can do the job."

I turned to the XO and said, "Sir, you openly mock safety awareness and safety paradigms. You are part of the problem."

The bad-cop routine quickly began. The CO started calling me "captain," to emphasize his rank, and told me how it was going to be in his squadron. I told him that I was very familiar with the relationships of COs and subordinates, but that did not change the fact I was unable to serve as the ASO.

The CO was getting more livid with each passing moment. Exasperated, he told me there were no safety problems in his squadron, and as evidence, he cited the statements of his department heads to the ready room on bloody Saturday. I told him that the department heads reminded me of Jerry Denton in Hanoi, blinking T-O-R-T-U-R-E for the cameras. I didn't believe the department heads, and I certainly didn't think they believed what they were saying, either. More agitated, the CO said no one stood up on bloody Saturday to bring up safety issues, so, therefore, there were no safety issues. I countered they didn't say anything because the pilots were all "crouched in their emotional fighting holes, with their 18 inches of emotional overhead cover, hoping that your artillery didn't land on them." With that, the CO completely lost his bearing and sent me out of his office.

Life that spring was filled with anxiety for me. I used to go on long runs to help numb me to what was happening. I found that if I ran far enough, it was difficult to get anxious about anything. I was certain someone would be put in unnecessary danger and possibly killed because of reckless decisions. The film of the Phrog that caught the net on a USNS replenishment oiler and rolled was only a few months old. A mishap seemed likely. My home squadron CO, the best one I ever had, called me at work one night and talked to me for about an hour. He knew the whole story and was behind me 100 percent. While he couldn't relieve the pressure on me in the other squadron, I'll never forget his encouragement and support.

Back on the flight deck, the Air Boss, the commander in charge of air operations for the boat, came on the tower frequency and said, "Rider, I need you to launch or shut down and slash." Slash is to park the aircraft on the forward area, clear of the helicopter spots.

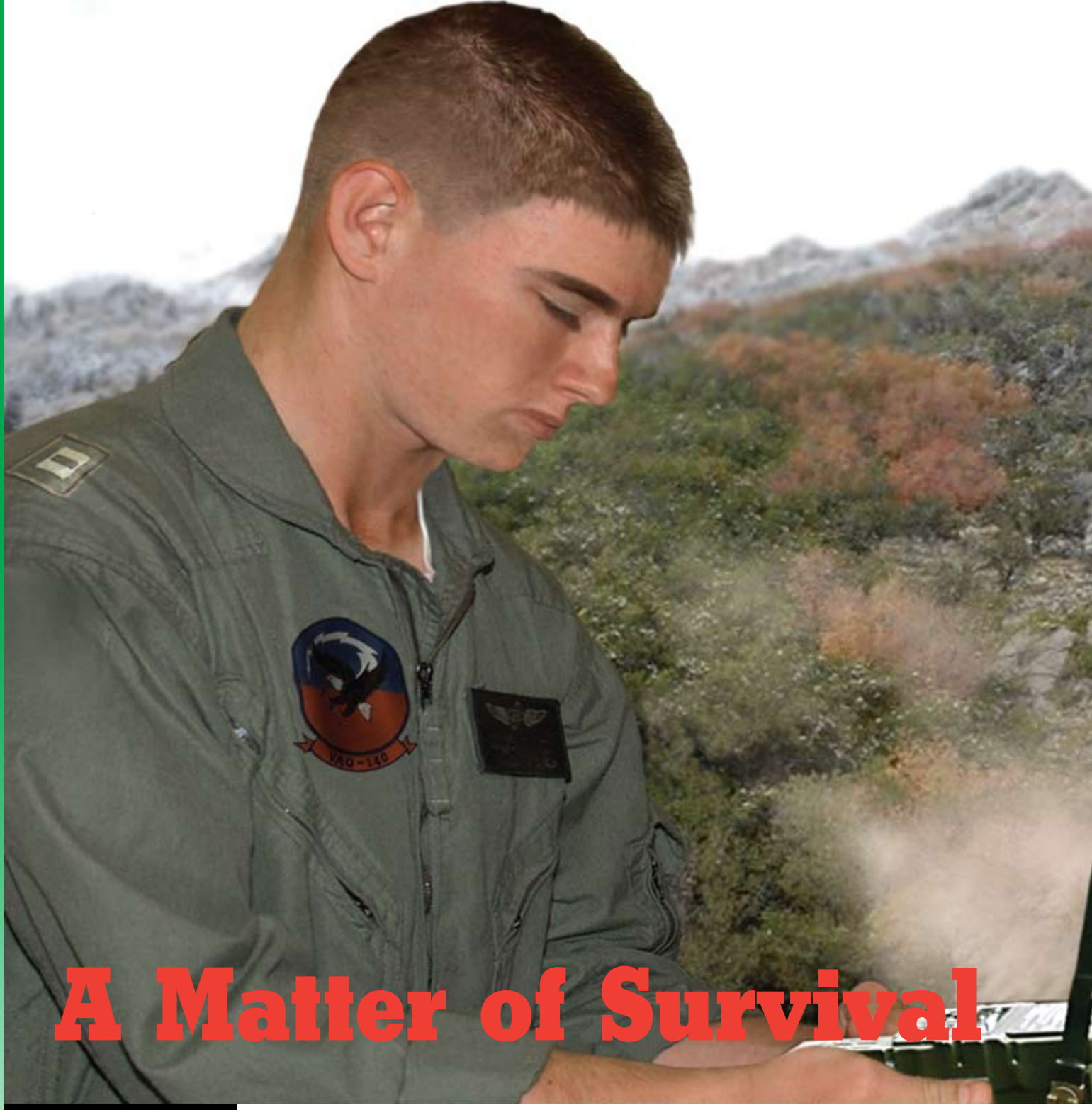
"Roger. I'll shut down and slash," I replied.

Beaver and I shut down, and the raid force commander disembarked in a huff. Everyone monitoring the radio heard this series of events, and shutting down the Huey was hard to miss for those on the deck and in the tower. Yet, despite the weather and my refusal to launch, the Phrogs, led by the "Anymouse" pilot, launched on the CO's order. Full of grunts, they immediately went inadvertent IMC at less than 300 feet. The mission was aborted, and all aircraft returned to mother.

Later in the predeployment training cycle, our CO was relieved of command. We embarked and completed our deployment without any loss of life.

I often think about this time in my military career when competing ideals collided. This situation forced me to think critically and carefully about ideas such as leadership, duty, discipline, loyalty, and risk management. As an officer candidate, I was taught painfully well about my duty and responsibilities. I decided during training my greatest responsibility was to the Marines entrusted to me. Squandering their lives and service simply was not an option. As my father wisely told me in 1994, when I left for The Basic School, "Part of the job of the military officer is telling people, both above and below you, things they do not want to hear."

Lt. Gelfand flies with the USCG Aviation Training Command.



A Matter of Survival

By Lt. John Goodenough

When walking to a jet, most aviators aren't mentally preparing to spend the afternoon camped out on a mountain 200 feet below the freezing level. However, that mountain is where I found myself after I was chosen to participate in a squadron-wide mishap exercise to test what would happen if a Prowler went down.

My crew of three was kidnapped as we walked to preflight our aircraft. My safety officer told us, "Your plane has gone down, and you have what you walked to the jet with to survive."

We were driven by van to the local SAR helicopter and flown to the lower-Cascade mountain range, where we were dropped off with our flight surgeon and corpsman. Our parachute riggers had switched the radios in our flight

Photo-composite image by Allan Amen

gear to the PRC-112, and the flight surgeon provided a few items that we "recovered" from a seat pan.

We were dropped off on the side of a mountain, on a small outcropping of rock just beneath the snow line. The first thing I noticed as I watched the helicopter fly away was the cold. We quickly were put to work as our doc pointed to one of my compatriots and said he was injured in the "ejection," had a gaping chest wound, and a severely broken leg. Our survival skills kicked in. First-aid training from years ago rushed to the forefront of our minds. We grabbed plastic from the seat pan and taped around the chest wound. We used our leg restraints to create a splint for the broken leg.

Our thoughts then turned to fire and shelter. We prepared a shelter, using the parachute provided by the flight surgeon, and gathered firewood. Unfortunately, the weather decided not to cooperate any longer. The skies opened up, and the rain poured down for a few minutes, wetting our firewood. Fortunately, the doc broke out some lint with petroleum jelly, we found some fairly dry wood, and we got a fire started. The fire substantially improved our morale and general comfort. In our parachute-tent, we were comfortable with our ability to survive overnight.

We established radio communications with an EA-6B crew from our squadron who had been scheduled to fly the same time as us. They relayed our coordinates to the helicopter crew, who then came to pick us up, ending our survival exercise after only a few short hours.

Though we did not spend a significant amount of time in the woods, we did learn a lot. First, never assume you will not have to get out of the aircraft. As we walked to the jet, only one of us wore a long-sleeve shirt under our flight suit. In cold-weather conditions, everyone should be prepared to spend time outdoors.

Second, everyone should know their gear and preflight it. When we patted down our gear, we felt our radios, but none of us had taken the time to check them to make sure they worked. If we had, we would have known something was up because of the switched radios, but more importantly, we would have known our gear worked. Also, none of us had anything in our gear, with which to start a fire. The petroleum-soaked gauze one person had turned out to be too saturated with petroleum to work with the flint fire starter included in the seat pan. Each aircrew should take a good inventory of what they have when they walk to the jet. We get an extra five pounds of gear that should be customized to the flight environment, whether it's summer or winter, mountains or over water.

Overall, this mishap exercise was a good experience and left us with the feeling that, should it become necessary, we could survive after an ejection. We were pleased with our reaction when the emergency occurred. Our first-aid skills were exceptional, as well as our use of the PRC-112. Good review of these topics at AOMs and aircrew training had prepared us well.

Lt. Goodenough flies with VAQ-140.

BRAVO Zulu

Left to right, SSgt. Jason A. Davis, Maj. Robert J. Augugliaro, Sgt. Christopher Novak and Capt. Keith L. Friesen.

VMMT-204

The crew of Crossbow 31 was lead on an Osprey formation-training flight in eastern North Carolina. Their aircraft's conversion actuators for the nacelles failed during movement from airplane to conversion mode.

During a level turn at 500 feet AGL and 200 knots, the flying pilot and tiltrotor aircraft commander (TAC), Capt. Keith L. Friesen, USMC, began the conversion. The nacelles stopped moving upward with an associated critical conversion actuator fail posting, leaving the nacelles and the entire prop-rotor system frozen at 44 degrees (90 degrees is up full VTOL; 0 is level airplane mode).

Capt. Friesen, also a section leader, leveled his aircraft and made a radio call for the flight to discontinue the turn. After climbing, both pilots tried to move the nacelles, with no

VT-27

Marine 2ndLts. Christopher Stoddard and Kyle A. Maschner of Training Squadron 27 were on their initial T-34C solo flights from NAS Corpus Christi. When low, unforecasted cloud layers moved into the local training area, the pilots received a recall order from the operations duty officer. They promptly started their recoveries.

As they turned toward the visual entry point, neither pilot saw the visual checkpoint because of the building cloud layers. Each reported to approach control they couldn't maintain visual contact with the surface and requested altitudes and vectors to return to base. Second Lieutenant Stoddard was No. 2 in sequence behind 2ndLt. Maschner. While on vectors, each pilot had the situational awareness to use the GPS to determine his position relative to the field, while maintaining 120 knots as assigned.

When given vectors to final, they still were above the clouds. The controller gave each pilot instructions to descend through the cloud layer to 500 feet. Second Lieutenants Stoddard and Maschner, with 40 and 34 hours, respectively, of military-flight experience, used their fledgling basic-instrument skills to descend through the layer. Second Lieutenant Maschner broke out over runway 13L at 500 feet but didn't have enough maneuvering space to configure and land the aircraft straight-in. He decided to circle and landed without incident. Second Lieutenant Stoddard broke out over runway 13L. He was slow enough and had sufficient maneuvering space, so he configured the aircraft and made a straight-in landing.

Both student pilots demonstrated exceptional airmanship, situational awareness, and decision-making under hazardous flying conditions.

response. They decided to fly the seven miles back to New River Air Station and give communication responsibilities to the Dash 2 aircraft. Troubleshooting steps began en route. Copilot Maj. Robert J. Augugliaro, USAF, and crew chiefs SSgt. Jason A. Davis, USMC, and Sgt. Christopher Novak, USMC, ran the emergency procedure per NATOPS. They realized the primary and backup conversion actuators indicated red (signifying inoperative state) on the status page. They attempted a primary flight-control-system reset, which appeared to fix the problem.

As the aircraft approached a downwind for landing, the crew tried to bring up the nacelles to the landing configuration. After two degrees of movement from the nacelles, the critical conversion actuator fail posted again, leaving the nacelles at 46 degrees. Capt. Friesen declared an emergency and dissolved the section.

While circling the field in the overhead pattern, the crew coordinated their actions with the squadron. Discussions about the system and possible solutions continued for almost an hour. They also discussed landing configurations and reviewed the fixed nacelle landing and controllability checklists. With the aircraft behaving as an airplane and a helicopter at this nacelle angle, the electronic flight-control laws were mixed and didn't respond as the pilots' training had led them to expect. Therefore, the crew experimented with the aircraft's flight characteristics to determine its minimum controllable airspeed.

NATOPS minimum landing nacelle is 75 degrees and 100 knots, but the crew agreed the prop-rotors were about a foot above the bottom of the fuselage and would allow a landing without striking the prop-rotors. Fuel was considered, and they quickly realized daylight was more of an issue than the ability to remain on station. After reviewing the options with the squadron and exhausting all troubleshooting efforts, they decided to fly to MCAS Cherry Point for a fixed-nacelle landing on a longer and wider runway.

The crew completed two traffic patterns at Cherry Point to evaluate winds, landing hazards, and the landing-sight picture. After reviewing checklist and NATOPS procedures a final time, the crew set up for a fixed-nacelle landing. The crew chiefs strapped in, reviewed egress procedures, and deselected external communications. The aircraft touched down on runway 5R at 100 knots. The pilot kept the aircraft on runway centerline, using the remaining flight-control authority. The aircraft decelerated as soon as the wheels touched the ground. Because wheel braking is not authorized above 60 knots, and heavy braking is not authorized until 20 knots or less, the crew relied on runway length to stop.

Although the V-22 has had other fixed-nacelle events, this was the first time it hadn't been remedied or corrected before landing. The crew handled the emergency in a professional and safe manner by using good ORM, headwork, and CRM throughout the situation.

Left to right, 2nd Lts. Kyle A. Maschner and Christopher Stoddard.

BRAVO Zulu

While Lt. Ryan D. Merrell, a T-45 strike-flight instructor from VT-21 based at NAS Kingsville, stood CNATRA duty landing-signal officer (LSO) at NAS Key West, he was notified that a student naval aviator (SNA) was diverting from USS Theodore Roosevelt (CVN-71). The student pilot's T-45 had two blown main tires. Lieutenant Merrell was driven to the duty runway in a radio-equipped vehicle.

As he began his operational checks, Lt. Merrell could not establish radio contact with the tower. He noticed the antenna wires leading to the back of the vehicle's ultra-high-frequency (UHF) radio had pulled free of their connector. With the emergency aircraft approaching the field, he held the wires in place but only had intermittent success talking to tower. He switched to the "CB" style radio in the vehicle and asked tower to relay his instructions to the student pilot. Lt. Merrell asked the pilot to make a practice approach to gauge his reaction time to the LSO instructions as relayed through tower. Judging that the student was reacting well to his instructions and using the Fresnel lens cut-and-waveoff lights as a backup, Lt. Merrell guided the student to a successful field arrestment on the first attempt.

After instructing the student pilot to shut down in place, Lt. Merrell personally made sure the aircraft was secured before ground personnel towed it off the runway. Lt. Merrell and the NAS Key West driver then went to ground electronics and had the duty vehicle's UHF radio repaired.

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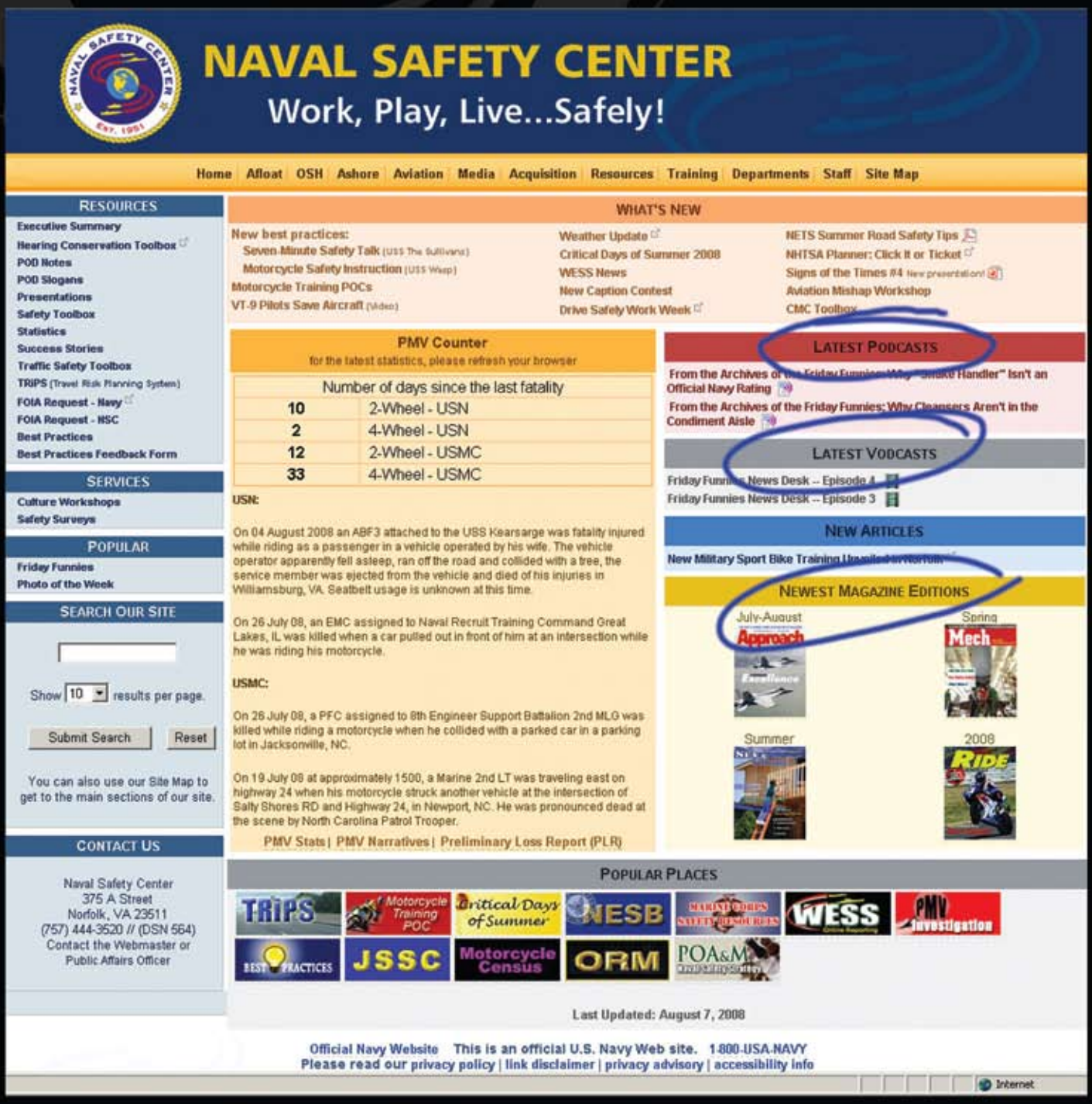

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