THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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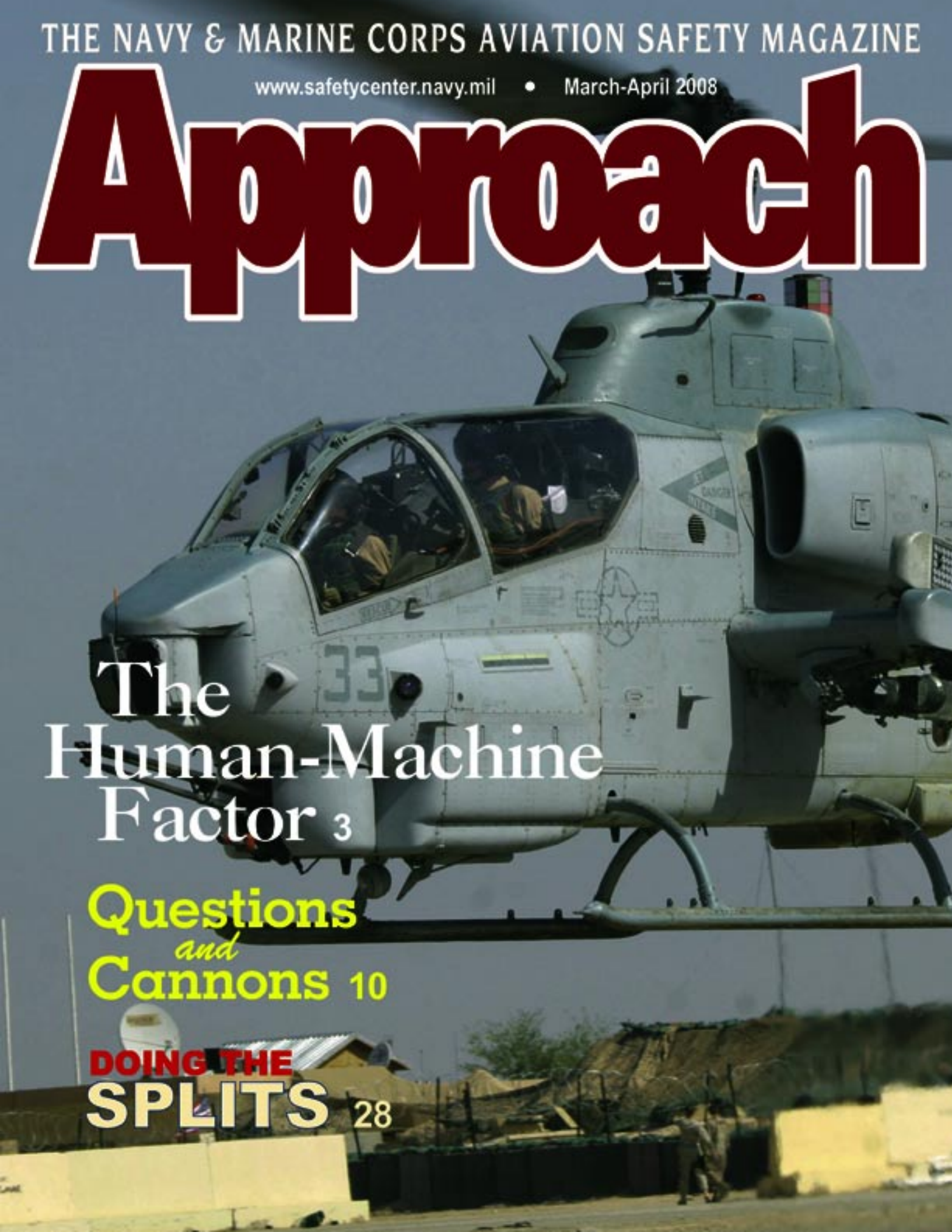
Approach



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

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Aeromedical

This issue looks at the human-machine factor.

NTENTS

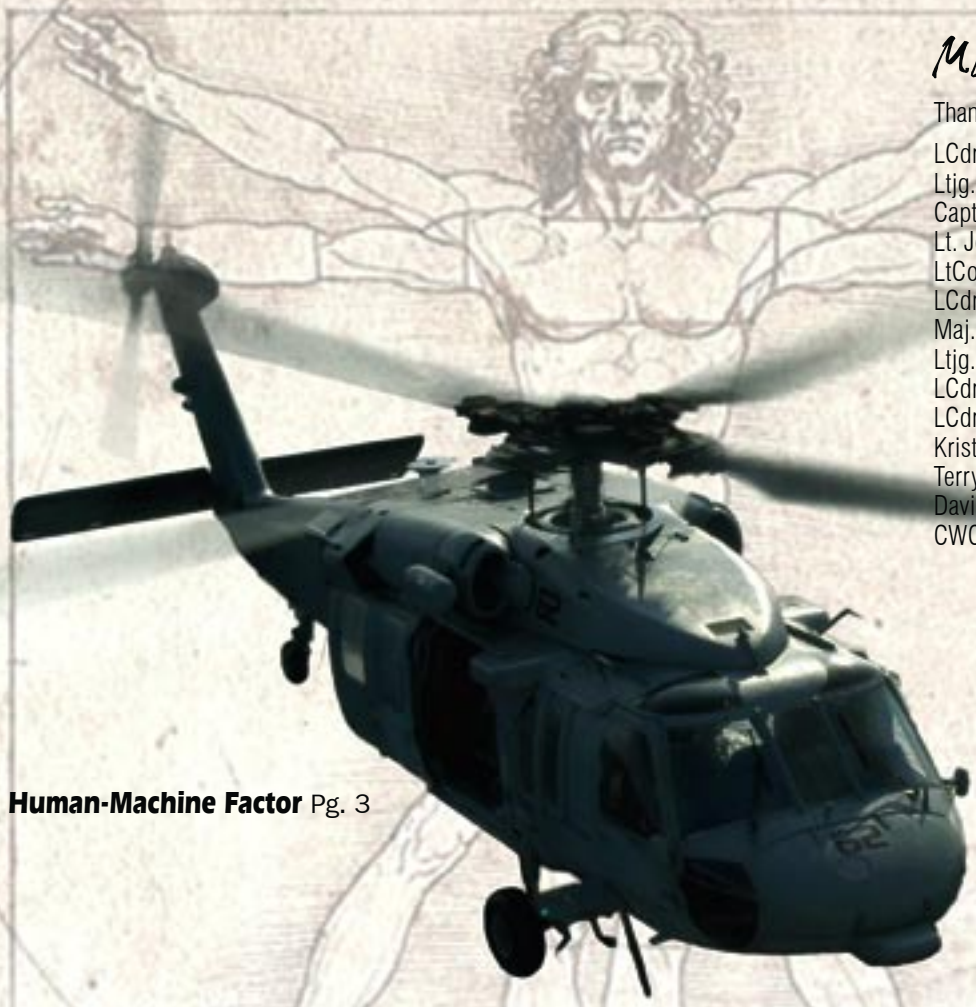

Photo composite image by Allan Amen.

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March-April Thanks

Thanks for helping with this issue…

LCdr. Jason Rimmer, HSL-49
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Lt. John Roath, HS-11
LtCol. Karl Brandt, USMC, VFA-106
LCdr. Matt Norris, VFA-137
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David Taxson, Alutiiq
CWO4 Ron Stebbins, NSC

Departments

Front cover: AH-1W
Back cover: Critical Days of Summer

The Initial Approach Fix

Human Factors

As I read a recent issue of *Approach*, I looked for some of the problems that prompted each author to write a "There I was" article. Here's a partial list of what I found: didn't follow procedures, communication broke down, lost situational awareness, didn't check NOTAMS, didn't speak up (lack of assertiveness), and poor visual scan for other aircraft. A common thread was the author's belief they could have or should have acted differently. The human factor is integral to each story.

When we identify mishap causal factors, we find more than 80 percent of mishaps are linked to human factors. Whether the aircrew made a poor decision, omitted a step in the checklist, or succumbed to fatigue, the key ingredient—also the adversary—is human error. We've called this self-inflicted condition the "Blue Threat."

This issue leads with an article by LCdr. Jeff Alton, our human-factors analyst, who examines a part of human factors that we seldom address. He looks at it from a functional viewpoint: switch positions, visual scans, and equipment shapes. This aspect of human factors is familiar to every aviator who has transitioned from one aircraft model to another. Following LCdr. Alton's article is one by Cdr. Mike Michel of HS-21, where "switchology" played a role in his story.

If we can identify and understand the relationship of human factors in aviation mishaps, we have laid the groundwork for mishap prevention.

Approach magazine dedicated the September-October 2006 issue to the Blue Threat, and how we may be our worst enemy. Read more about this concept online at: http://www.safetycenter.navy.mil/media/approach/issues/sepoct06/

Fly safe.—*Capt. Ed "Clyde" Langford, Director, Aviation Safety Programs*

Safety Award Winner Named for 2007

Commanding General Fourth Marine Aircraft Wing was selected as the winner of the Naval Aviation Readiness through Safety Award and the Order of the Daedalians' Adm. James S. Russell Aviation Flight Safety Award for CY2007.

These awards are presented annually to the controlling custodian who has contributed the most toward readiness and economy of operations through safety. The command selected must have an outstanding safety record, an aggressive safety program, and an improving three-year safety trend.

Grampaw Pettibone Award Update

Grampaw is announcing a new category for Grampaw Pettibone awards, beginning with CY2008. The new category will recognize individuals and commands who use digital and media resources to promote aviation safety. Videos, websites and presentations are valuable tools to prevent mishaps, and Grampaw wants to recognize those contributions. Grampaw will continue to recognize individuals and units that contribute the most toward aviation safety awareness through publications.

Bravo Zulu

The following Navy and Marine Corps squadrons submitted five or more aviation 3750 hazard reports using WESS during the fourth quarter of FY07:

HSC-26	HSL-44	VAQ-129	VAW-120	VFA-115	VMFAT-101
VP-5	VP-16	VP-30	VP-40	VP-46	VQ-1
VQ-2	VR-46	VR-56	VR-57	VRC-40	VT-2
VT-9	VT-27	VT-28	VT-31	VT-35	VT-86

The Human-Machine Factor

By LCdr. Jeff Alton

Human factors, which figure into more than 80 percent of our aviation mishaps, are more complex than most people realize. In the Navy, we refer to human factors as variables in someone's personal life that may affect mission performance: nutrition, stability of relationships, fatigue, finances, and so on. Outside the military, however, human factors are viewed on a larger scale: the science of evaluating the human-machine interface.

Too often, engineers design systems and expect the human to be trained to use them. Human-factor designers want to change this relationship. They seek to measure the limitations of human performance and design systems to fit within those limitations. The objective is to aid the human and enhance performance. They try to design systems to fit the people, rather than train the people to fit the system.

While gear-up situations rarely occur now because of better engineering, military and civil databases are full of such instances, which contributed to development of the human-factors field. In the latter days of World War II, when the Army Air Corps pushed as many pilots through the pilot pipeline as possible, they noted several incidents where pilots retracted the landing gear while on the runway after landing. Because of so many incidents, they tasked a psychologist to find the root of the problem. He found these occurrences were more prevalent when pilots transitioned from one airframe to another. This action led to what is known in the human-factors field as negative-habit transfer, or more commonly known as force-of-habit. This behavior happens when a well-learned and practiced behavior is applied in the correct situation but on an incorrect control.

Consider when you drive a rental car and turn on the wipers instead of the lights, because the controls are different from your car. When pilots transitioned from one airframe to another, they found some of the controls were in different places. This situation contributed to most of these mishaps (e.g., the controls for the flaps and the landing gear were reversed). Back then, aeronautical engineers designed aircraft, often without regard to what helped the pilots do their jobs or what designs were most logical, based on the job at hand. Aircraft were designed in a way that was engineer-driven. Gauges and controls were placed where the engineers could run the least amount of cable to save weight and for ease of manufacture. The result was a hodge-podge of instruments and controls, with no real logical arrangement, which allowed aircraft from different manufacturers to have different placements of gauges and reversed controls.

A human-factors engineer can mitigate such a situation in several ways. An engineer could, without excessive modification, change the shape or actuation of the particular control. This modification can be seen in most later-model aircraft. For example, the shape of the flap handle is a long, flat switch that is oriented horizontally to replicate the shape of the actual system.

A human-factor problem:

You've had another great flight, topped off with a picture-perfect three-point landing. After rollout, you retract the flaps per the post-landing checklist, only to find that the landing gear inexplicably retracted instead. There's nothing wrong with the plane; you've just grabbed the gear handle and have become a member of the no-so-exclusive gear-up club, comprised of members who either have inadvertently landed with the wheels retracted, or accidentally retracted them while on the ground.

The handle for the landing gear in most aircraft looks like a wheel and is oriented vertically to represent the orientation of the wheel with reference to the airframe. This design allows the pilot to tell which control he or she is grabbing, simply by feel.

Many landing-gear controls also have an interlock, which requires the pilot to pull the handle out before raising or lowering, or to include a thumb lock that must be actuated for the gear handle to move. In most cases, the flap handle can be raised with no such additional action. This solution requires little money and reengineering.

The cheapest of all solutions is to change the procedure under which the control is operated. This action can be done by adding to or modifying a checklist. These extra steps provide additional opportunity to verify the control before activation. In a multi-crew aircraft, responsibilities could be divided so that one pilot always operates the flaps, and the other operates the landing gear.

The best way to remedy the problem—also the

most expensive and difficult—is to standardize the controls and displays so that transition from one platform to another would incur minimal training. However, this fix is expensive because it would require manufacturers to rework their tools and jigs to fit the accepted standard. This fix also is difficult because no manufacturer wants to redesign a product to fit that of a rival company.

Most designs now have conformed to an arrangement of gauges known as the "basic T," which places basic-flight instruments to yield the most efficient scan pattern. In this arrangement, the attitude indicator (AI) is in the center at the top of the instrument panel, as it is the most important and should be sampled most frequently. To the right of the AI is the altimeter, and to the left of the AI is the airspeed indicator. Below the AI is the directional gyro. This arrangement allows the pilot to minimize eye movements when viewing all gauges and returning to scan the AI.

The information presented by this arrangement has been replicated on the HUDs of more advanced aircraft, with the possible exception that depending on the type of HUD or the phase of flight, heading information may be above the attitude information. Whether it is a basic or inverted basic T, this placement has become the accepted standard for presentation of basic flight information.

I can hear the T-34C drivers saying, "Wait a minute, our panel looks nothing like that." The reason is that the T-34 is late 1940s technology and was produced before any serious attention was given to efficient gauge arrangement or logical control placement. I am not denigrating the engineers at Beechcraft nor the venerable T-34, which has trained thousands of aviators. I have a great affinity for Beechcraft products, and most of my private flying time is in a Beech model.

The replacement for the T-34C is another Beechcraft model: the T-6A Texan II. While I have not flown in one, I hear from my Air Force colleagues it is an incredible thrill ride and is more sophisticated than many of our fleet aircraft. It has a glass-cockpit and faithfully has replicated the basic-T flight information on electronic displays. As the T-6 is a significant leap forward with regard to human-factors issues, we look forward to it launching the flying careers of thousands more aviators over the next few decades.

One footnote to the gear-up issue is, while it is no longer common, it still happens. Recently, we conducted a safety survey of a training squadron and found they had experienced some pilots who also had tried to raise the gear while on the ground. They apparently solved their problem procedurally, and it seems to have worked for now. My guess (and that's all it is, as we didn't have time to fully explore the issue) is that a contributing factor was a right seat-left seat transition. You folks know who you are; I'd like to hear from you, as that might make a great human-factors case study.

LCdr. Alton is the human-factors analyst with the Naval Safety Center. Contact him at: jeffrey.alton@navy.mil; (757) 444-3520 Ext. 7231 (DSN 564).

ORM Corner

Please send your questions, comments or recommendations to:

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ORM Brainteaser—Text This Out!

Risk mgmt S an impt lyf skill. aftr ll, n jst bout NEfin u DY wn2 maximize bS n minimize consequence. der r risks associatd W Ny action u cn taK n evry decision dat cums yr wA. bt by lerning a bit bout psych, sme bio, n takN d tym 2 lern a few strategies, u cn reduce d odds dat NEfin bad wl hpn, n evn reduce d severity of d outcomes. itz ll bout gud decision makin, whether doze decisions r seriS life-altering choices, md undR d str$ of comb@, or evn somit as simpl as wich car 2 buy. We r intro2ing a new tool 2 ur ORM trng n will feature it n ur nxt issue.

To break the code on this text message, visit our ORM webpage at: http://www.safetycenter.navy.mil/orm/Default.htm

Where's All That Smoke Coming From?

AEROMEDICAL

Photo by Matthew Thomas. Modified.

By Cdr. Mike Michel

My crew was hot-seating into an SH-60F for what was supposed to be a simple ASW flight. I sat in the left seat and got a good turnover from the previous flight's helicopter aircraft commander (HAC). He said the aircraft was systems up for ASW and gave us a good datum—about 60 miles away—for the sub we were playing with. He also said a P-3 was on-station and maintaining contact. As the HAC exited the aircraft, he also said isolated thunderstorms were between us and the datum. I looked in that direction and saw a wall of black clouds. I looked to the right seat and saw my excited copilot strap in.

My copilot was a fellow O-5 and the XO of the HSL East Coast weapons school. We knew each other from our PCO-PXO training track, and he was on board USS *Enterprise* (CVN-65) to observe our ASW exercise. I had told him the best way to do that was to fly in it.

Before our hot-seat into the aircraft, we had done an

in-depth NATOPS brief, covered ORM, and specifically addressed the differences between an SH-60F and the SH-60B. We also received an excellent ASW brief from the CVN ASW module. My copilot was an experienced SH-60B pilot, NATOPs-qualified, and just had finished the SWTI course but had not flown much the past six months. Although he was inexperienced in an SH-60F, I felt comfortable flying with him. Plus, the mission was straightforward: We were going to a datum where the sub would be on the surface.

My aircrew in the back was very experienced, and we planned to dip actively on the contact. All my copilot had to do was fly; I would do all the navigation, communications and tactics. My crew in the back would handle prosecuting the contact with our sonar and buoys. As we took off from the carrier, I thought this flight would be easy—once we got through the thunderstorms.

We had good flight-following from one of the small boys in the vicinity for the 60-mile transit. We quickly reached our first rain squall, and because my copilot was a very good instrument pilot, we had no problems penetrating it. I turned on the pitot heat and saw the left pitot-heat-fail light; the previous crew had passed on this gripe. I felt comfortable continuing because the right pitot heat was working. I reached across the cockpit and tried to turn on the windshield wipers, but they didn't work, even though I tried all the different positions on the switch. I placed the switch back to what I thought was the off position and told my copilot the windshield wipers didn't work. A few moments later, I smelled something strange and asked the crew if anybody else smelled it—nobody else did. The smell went away, and we quickly flew out of the rain squall and were VMC to the datum.

I contacted the orbiting P-3 and got a good turnover. We soon made visual contact on the sub and immediately got into a dip to prosecute with our active sonar. My crew in the back worked an attack solution, and up front, my co-pilot and I went over some of the differences between doing ASW in a Foxtrot versus a Bravo.

We got off a simulated attack, and then one of my crewmen said over ICS they smelled something. I immediately thought we had a problem with one of the sonobuoys. I had the crew bring up the dome and told the P-3 we were breaking dip. As the dome cleared the water, my copilot departed the hover. During our transition to forward flight, white smoke billowed into the cockpit from underneath the instrument panel. As the aircraft accelerated, the amount of smoke increased.

My first thought was, "This can't be happening."

Then training kicked in. I immediately made a Mayday call, passed we had smoke and fumes in the cockpit, and requested a steer to the nearest deck. My copilot leveled off at 150 feet, and I did the boldfaced items for smoke and fumes in the cockpit. I turned off the ECS, then the battery, and got to the third step: Secure all unnecessary electrical equipment. At this point, I stalled. I had no idea what equipment would be unnecessary for the trip back through the rain squalls. All I could think was, "Where was this smoke coming from?"

The smoke kept pouring into the cockpit on both sides. It was difficult to breathe, so I tried to adjust the window scupper, but this effort did not help. My copilot and I looked at each other in disbelief and in unison asked, "Where is all this smoke coming from?" Meanwhile, my aircrewman came forward and manually released all the sonobuoys, thinking they might be the source of the smoke.

My first thought was, "This can't be happening."

The P-3 said a small-boy was 30 miles away and then gave us a steer and a TACAN channel. As my copilot made a turn toward the ship, I thought things couldn't get any worse, but they did. A black wall of thunderstorms was between us and the small-boy. My copilot climbed to 300 feet, and I continued to work my way through the pocket checklist. I became fixated on the left side, pitot-heat-fail caution light. I thought the pitot-heat tube was behind the instrument panel, where the smoke was coming from, and had to be the cause of the smoke. I turned off the pitot heat as we approached the thunderstorm. All I wanted was the smoke and fumes to stop. The smoke made it difficult to breathe, and the fumes made us lightheaded.

Unfortunately, the smoke continued. My copilot tried his best to concentrate on the instruments while he fought to breathe, and I was running out of ideas to stop the smoke and fumes. Pulling circuit breakers was

not an option, because I had no idea which breakers to pull. I backed up my copilot on the instruments as we flew in some awful IMC weather.

My copilot and I briefly talked about our options. We did not want to jettison the windows; that would aggravate a fire behind the instrument panel. We agreed if the smoke and fumes did not stop, we might have to ditch before we became incapacitated. After this brief discussion, I, out of desperation, reached up to secure one of the generators.

During our crew brief we had discussed which items in the cockpit required dual concurrence before securing; generators were one of those items. However, at that moment, all I told my copilot was I was turning off the No. 1 generator. I turned it off, but nothing happened. My copilot kept his eyes fixated on the instruments. I wasn't thinking clearly and did not realize when I secured one generator the other would pick up most of the remaining load dropped by the secured generator. I just wanted the smoke to stop pouring into the cockpit. I reached across the cockpit and said I was turning back on the No. 1 generator and turning off the No. 2.

Without waiting for my copilot's concurrence, I switched back on what I thought was the No. 1 generator. The cockpit immediately got dark and quiet. Something deep inside me said I just had secured the No. 2 generator. I also heard a loud "pop" behind my head. The aircraft pitched forward in the rainstorm, and before my copilot could say a litany of profanities, I turned back on both generators. I quickly turned on the AFCS and checked the stabilator position.

We leveled off at 200 feet, still IMC. I turned my head to see what had made the popping noise, and saw the windshield-wiper circuit breaker had popped. At the same time, I noticed smoke had stopped coming into the cockpit. Almost simultaneously, we cleared the thunderstorm and could see a small-boy on the horizon. We made an uneventful landing, shut down, and exited the aircraft. The HSL maintainers on the small-boy said we smelled like a burnt electrical wire. It was nauseating.

The maintainers found a burned-up windshield-wiper motor. I never knew such a small motor could make so much smoke. Apparently, corrosion had frozen the wipers. When we went through that first rainstorm, I had tried to turn on the wipers, but they did not work. I thought I had turned off the wipers, but I really had left the switch in the on position. The switch is above the head of the right-seat pilot, and it's hard to see the switch positions from the left seat. I evidently had left the motor fighting against a frozen wiper-blade controller.

We learned plenty of lessons from this experience. First, I had been given smoke-and-fumes on almost every NATOPs check and always had thought that emergency was silly. I never could imagine anything in the cockpit catching on fire. I had spent very little time thinking about this emergency, much less what circuit breakers to pull.

Second, when you are having a tough time breathing, in the middle of an emergency, thinking clearly becomes challenging. The left side, pitot-heat-fail light threw me off. I was confident once I turned off the pitot heat, the smoke would stop. When it didn't, I was lost for ideas about how to stop the smoke. I have no idea what finally made me decide to turn off the generators one at a time. Maybe it was desperation. In hindsight, it was not a good idea, and I violated the dual concurrence portion of my brief and our squadron SOP. However, I am convinced the interruption of electrical power caused that circuit breaker to pop. Had the smoke not stopped, I am certain our next step would have been to jettison the windows, and if that action had not provided some relief from the smoke-and-fumes, I am sure we may have ditched. Fortunately, we never reached this part of the decision tree.

Cdr. Michel is the commanding officer of HS-11.

Mishap-Free Milestones

VP-47	200,000 hours	34 years
HSC-28	53,049 hours	9 years 3 months

Hazreps

Hazreps Can Happen to You

By Ltjg. Brett Carstens

We all know the standard training-day routine is not complete without hazard-report (hazrep) debriefs. As you head into the discussion, invariably you think, "What am I going to learn from another hazrep? This never will happen to me." VP-46 recently had a situation where hazrep debriefs prevented us from taking an aircraft flying with a potentially dangerous malfunction

The P-3 community has had two recent incidents where windshield-heat capacitors failed and leaked oil onto electrical circuits, causing cabin fires in flight. In one case, the aircrew isolated the affected equipment, pulled the circuit breakers, and continued the flight. In the other case, the crew couldn't isolate the affected equipment. They stabilized the situation by systematically shutting down buses in accordance with the fire-of-unknown-origin checklist. But, when they reenergized the equipment in preparation for landing, the fire reflashed. They landed and emergency evacuated the aircraft. The postflight inspection revealed a windshield capacitor had overloaded, spraying oil over other electrical components, causing smoke in the cabin.

The hazreps stemming from these incidents were briefed to all VP-46 aircrew and maintenance personnel.

Soon afterward, a maintainer was working in the forward electrical-load center, where the capacitors are located. He found residual oil on a component, and armed with knowledge of the hazreps, he investigated the source. He found the windshield-heat capacitors were spraying oil, the same situation that had caused the earlier fires. The capacitors were removed and replaced. His action most likely prevented an in-flight fire.

Until this incident, hazreps had not played such an obvious role in our squadron's safety posture. Knowledge of the previous two hazreps was instrumental in this case. Also, the affected capacitors were retained for analysis of failure modes. We published another hazrep to help document the trend.

This hazrep was analyzed by NAVAIR, and replacement capacitors are on order. An aircraft bulletin detailing this deficiency and mitigation efforts is forthcoming. I now look forward to hazrep training every week; it just may prevent a mishap.

Ltjg. Carstens flies with VP-46.

This article reinforces the utility and necessity of a robust hazrep program, especially in a community of aging aircraft. How many trends such as the one discussed here have yet to be discovered because the unit did not deem something significant or important enough to submit a hazrep? Worse yet, what malfunctions or emergencies have become so routine that a unit forgoes reporting altogether? This squadron took that necessary step and went further by incorporating hazrep discussions into its training regimen, potentially averting a much more serious incident.—LCdr. Paul Wilson, analyst, Naval Safety Center.

Questions *and* Cannons

By Ltjg. Kristopher J. Nastro

Gun day is certainly a pinnacle moment in the Rhino FRS syllabus for a rookie replacement pilot. Following an evening of strafe planning, I was ready to head out to the NAS Fallon ranges to go "hammer down" for the first time on the 20 mm Vulcan cannon.

Following a detailed brief by the lead, I was given an opportunity to pose any questions I had about the upcoming flight.

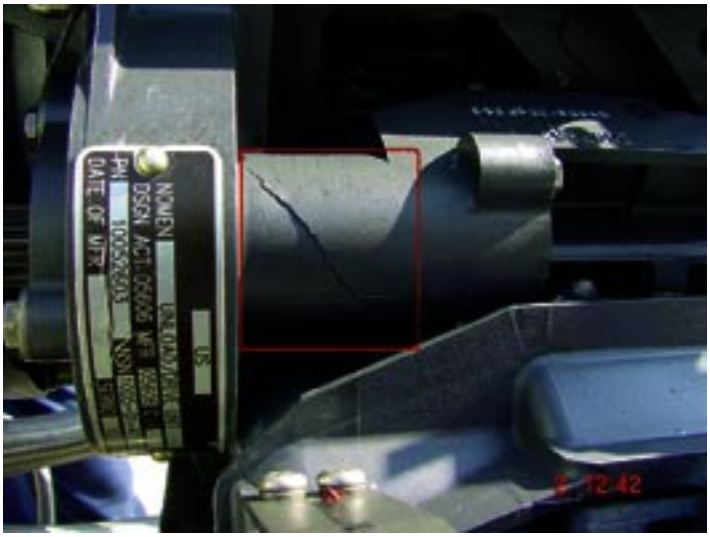
Standard practice for the FA-18F, at that time, was to secure the 10 gear pins in a heavy-duty canvas and velcro bag inside door 6L (the access and inspection door for the cannon). Having inspected this bag and door on every preceding flight, it occurred to me the bag might not be stored in that location on events when the gun was to be used. I took advantage of my position as an inexperienced student and asked the question.

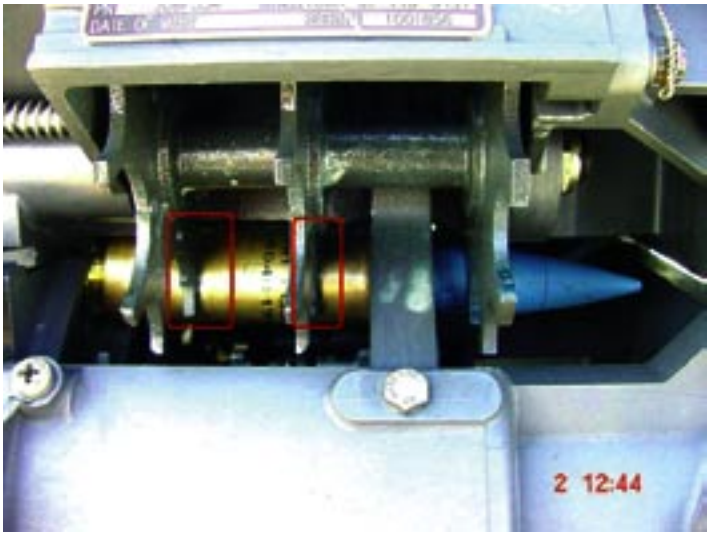
I was assured that keeping the bag in its place was standard practice, and I should expect it on my preflight. With all my questions answered, the IWSO (instructor weapons-system officer) and I walked for the flight and conducted a thorough preflight. Everything seemed in the right place, secure as it should be. (Note: This is where your "hindsight seeker head" should be giving you a screaming tone.)

The transit to the area went as briefed. We checked in with the T-34C low safe, callsign "Dawg," and broke off into the strafe pattern. After more than a few "Abort" calls from Dawg, because of my lousy pattern parameters, I finally was given the coveted "cleared hot" call. I armed up and continued my 15-degree dive toward my solution.

Hammer down. The jet shook with a tremendous fury as I delivered rounds down range. I had about a tenth of a second to think about just how awesome that was before I executed the safe-escape maneuver. I broke left, back into the pattern, for another pass. Although completely missing the target center point, I managed to expend roughly 50 rounds on that pass.

Pass two was crisper, and I again was given the "cleared hot" call from Dawg. I felt a bit more comfortable this time and tried to fly to a more precise solution. I went hammer down for the second time, only to feel that now familiar shake for a mere split second, followed by what felt





like a train wreck, then the sound of nothing.

I was confused coming off target as my IWSO threw questions at me.

"What happened? Did the gun just stop firing?"

Master arm went to safe, and SIM (simulation) was boxed as we sorted through the confusion. We noted that only a handful of rounds were expended on that pass, and we suspected a gun jam. The decision was made to RTB.

Talking with the IWSO, lead, and base on the way home, we concluded we would roll to the end of the runway on landing, de-arm, and taxi back to the CALA (combat-aircraft-loading area).

Landing and de-arming were uneventful, and we shut down in the CALA. The IWSO beat me out of the cockpit and down the ladder, and headed right for door 6L. The expression on his face was priceless, and I knew then just what had happened.

Initial inspection of the gun revealed one main-landing-gear pin wedged quite firmly in the aircraft-interface adaptor. Another two pins were stuck in the rotor assembly, along with confetti of "REMOVE BEFORE FLIGHT" flags. The remaining seven pins and bag were unaccounted for, later to be found at the bottom of the gun bay. We had a FOD nightmare.

Mechs dropped, disassembled and inspected the guns for unsafe rounds. Though several fail-safes were in order (master arm safe, SIM boxed, weight-on-wheels), the discovery of a chambered round by Gunner during inspection left most of us a bit uneasy about the decision to taxi back to the CALA, swinging our nose in all directions.

Lessons learned that morning were numerous and led to a Hornet community-wide hazrep. First, even when everything is done right, things can go wrong. The plane captains that morning did everything by the book; there was no reason to change a procedure that had been successful for years.

Second, solid crew coordination is an invaluable asset. That morning, we used several sources to aid us in making all the right decisions, keeping a potentially bad situation from becoming worse.

The last learning point is not just for the students, but for everyone who steps across the foul line onto the ramp on a daily basis. In our business, questions come up frequently—ask away. Take the minor harassment in the ready room or shop with a grain of salt—it is all part of the job, the community, and the experience. It is far better to clear up what you may not understand while you are at one G, than to light the cans and take a question flying. You never know when the question you ask will end up wedged in the gear of a 20 mm Vulcan cannon, and if it does, you will be glad you asked first.

Ltjg. Nastro flies with VFA-137.

A Bad Sine

By Lt. Chris Tabert

We've all heard the phrase, "Don't get complacent on admin portions of the flight." Here's some more documentation.

We had been on cruise for four months and operating in Operation Enduring Freedom (OEF) for almost three months. The admin part of the brief was standard, but I fully realized I had to think about it each flight. Although I was a nugget, I felt more confident going in-country. This day seemed no different than the rest, with three big-wing tankers scheduled for our time over the beach.

Midway through the flight, my lead checked us off-station to head to our mid-cycle tanker; we were scheduled for a KC-135R. On our rendezvous with the tanker, instead of the usual "iron maiden" or short hose coming off the centerline boom, our tanker had a wing-mounted pod next to the port outboard engine. The hose is colored to help the pilot tell when enough hose is retracted to start refueling. However, being sunset, it was difficult to see the colors on the hose, and I had to rely only on the pod lights. While not yet dark enough for NVGs (night-vision goggles), we rendezvoused without incident.

The KC-135R tanker was in a left-hand turn, with some light turbulence, when my lead was cleared to the port wing. Without a right-wing pod, I had to wait until my lead had finished. As he headed back to our previous kill box, I was cleared into the left pod. The basket seemed to dance around more than normal because of the turbulence, but I managed to plug. The hose was very slow to retract, but eventually I got flow and took about 1,000 pounds before seeing the yellow light. I couldn't tell how much hose was taken up, and with my momentum, I fell out of the basket.

Cleared back in, I got into the basket but ended up low with the hose not retracting. This situation, in turn, created a large, C-shaped bend in the hose. Instead of recognizing a bad situation and working to straighten the hose, I got impatient trying to get it to retract. The hose started to retract but then suddenly stopped, which sent a large sine wave my way. I really did not have time to react and only could remember thinking, "This is not good!" as the wave made it to my jet. The large bow in the hose gave the wave a lot of momentum and ripped off my probe tip. I was told this situation has happened a lot with the wing pods because sine waves are so unpredictable and fast.

After I told the tanker my probe was gone, I thought of where to divert. I had several options. I did not have the gas to make it back to the boat, but I could make it to Kandahar with 2,000 pounds above bingo. By now, lead had joined on me, and we turned for Kandahar air base.

I was certain my probe tip still was in the basket, so I was not worried about a possible FOD of my right motor. I also had no indications of fuel ingestion or overtemp. My lead let the tanker know he most likely was sour and that my probe tip still was in the basket. I elected to stay at our altitude of 20,000 feet.

The field was about 150 miles away, so I had time to break out my airwing smart pack, which contained approach plates for the field. Lead gave me an airborne inspection for any other damage and to look at my probe. I had left the probe out, but after the airborne inspection showed just the tip was gone, I retracted the probe and continued to my divert.

Once switched to Kandahar approach, they did not want to clear me to land because of a lack of a PPR (prior permission required). I declared a fuel emergency, which took care of the PPR issue, and was cleared for a straight-in on runway 23. By this time, the weather was very dark but completely VFR for the straight-in. My lead loitered overhead until I shut down, and he then returned to the ship.

Here I am, a junior nugget wingman at some field in Afghanistan having little clue what to do. I was parked at an offramp, facing out of range of any building because of the hot gun and AIM 9X. After shutting down, I learned no one there ever had dealt with Hornets, so I de-armed the aircraft.

At base operations, I broke out the smart pack and called the ship. The numbers were good, and I quickly got in contact with operations. Because I couldn't tank

The large bow in the hose gave the wave a lot of momentum and ripped off my probe tip.

and still was carrying more than 1,000 pounds of ordnance, the ship had me stay overnight and fly back for a daytime pattern. This plan also would let the ship maneuver to have a bingo field available just for me; at the time we were working blue-water-ops tank states. While I got a place to stay and something to eat, two Dutch F-16 pilots came by to help me.

The Dutch maintainers took a look at the jet and confirmed the probe was broken—they couldn't fix it. I had to have the jet towed because I was parked in a heavy FOD area. Again, because of their lack of Hornet experience, I had to help the tow guy hook up the jet. Once my jet was parked on a nice new ramp with the F-16s across base, I realized communications would be a problem because the Dutch phones couldn't dial DSN. To get in touch with the ship, I had to go across the entire base to base ops. After dinner, I called it a night, but I was worried about my plan for the next day.

In the morning, I checked on the jet and answered some questions from the morning crew of Dutch maintainers. Fortunately, the combined-air-operations-coordination center (CAOCC) took care of all my flight planning with an air-tasking officer (ATO) call sign and a recovery time back on *Ike*. All that was left was to get gas. Once again, the fuel-truck driver never had fueled a Hornet before, so I had to help him. The Dutch said they would launch me and asked if I had anything special to be done. I decided not to arm anything, so I just briefed them on the standard start-up. The weather was great. I did a thorough preflight that included a good diving of the ducts. Everything started up fine, and the Dutch did a great job launching me. I took off and worked the time-distance problem to arrive at the ship at the briefed time and fuel state. I trapped without incident.

I learned a lot from my overnight stay in Kandahar. I was thankful I had all the divert info to look at. This preparation made it much easier to land at a foreign field. Being comfortable with the procedures for getting into and out of country also helped, especially on the solo return flight. I was able to work the time-distance-fuel problem, so I could make it back on time and max trap.

My earlier experience on a cross-country in the Hornet was a huge help. Although de-arming by myself was a first, knowing where to safe the weapons was calming. All the necessary parking precautions were taken. Having all this experience was important because nobody at Kandahar had dealt with Hornets.

Finally, my biggest lesson learned was to concentrate on the task at hand and do it to the best of my ability. I was complacent while tanking and tried to remedy a bad situation when I should have backed out and reset.

Thank you to Maj. Henk "Bull" Bakker and the rest of the Dutch Viper pilots that helped me get back to the boat.

Lt. Tabert flies with VFA 131.

BLUE THREAT STORY

You're Going the Wrong Way!

By Lt. Daniel Moroney

During our cruise, my squadron conducted split-site operations, with half of our squadron on the ship and the other half on shore. Just as I was getting comfortable with carrier operations, I was sent to join some of my squadronmates at a forward-operations base in Iraq.

This assignment was my first rotation off the ship, so I still hadn't learned the procedures for flying in and around this particular base. Fortunately, an advance detachment from my squadron already had been put in place to get familiar with the area operations. Their local course rules called for some unusual procedures, but they still were relatively basic for experienced aircrew. The approach required a rather steep descent because of towns and possible surface-to-air threats close to the airfield. Another concern was the possibility of nonstandard right-hand breaks to staggered parallel runways. These breaks are a problem in the EA-6B because the pilot has to look over the ECMO in the right seat to gauge lineup.

On this day, two of the advance-det aircrew were on board our Prowler. The brief was thorough and covered all parts of the mission, with no questions left unanswered. As we took off, we felt confident we had enough experience to handle the situation.

Our mission included some rather benign flying not far from the base. The flight profile was consistent with our training in the months leading to deployment, so the stress level was rather low. Although I was a relatively new mission-commander pilot, I did have experience operating out of unfamiliar bases. The rest of my crew consisted of a rightseater, who was relatively new to the Prowler, but had completed several cruises in an S-3 squadron; a relatively new JO riding in ECMO 2; and a senior lieutenant commander sitting in ECMO 3. ECMOs 1 and 3 had been part of the early det.

The missions and tanking went as briefed, and our aircrew got needed experience. With our mission complete and our bodies sore after six and a half hours of flight time, we were ready to come home. After our last orbit, we went jammers off, checked out through the appropriate agencies, and checked in with approach.

The field was landing to the west, with the pattern open, but haze had limited the visibility. As we started our descent, expecting a standard overhead arrival, the base controller said we needed to do a straight-in because of possible FOD. So, we planned to descend east of the field but still relatively close because of the surface-to-air threat. We intended to complete a right-hand turn, and fly a straight-in to the southern runway.

The visibility up high had been good with the runways easily in sight, but as we descended, the haze quickly built, which made the field difficult to pick out from the surrounding terrain. Keeping up our speed on the descent at five miles east of the field, I started our base leg and slowed down. The haze had dropped visibility to about one mile. Because of the sight restrictions of the cockpit, I had to rely on turn calls from ECMO 1 to line up on the runway during the right-hand turn. I also was busy with trying to slow the aircraft, dirty-up, and getting on glideslope, so I only heard part of the tower calls.

After receiving directive calls from ECMO 1, we were lined up on the runway with only the end of it in sight. During the final turn, tower had cleared an aircraft for departure on the right parallel runway. As we approached the field, tower cleared us to land on the left but stated they did not yet have visual on us. In response, I turned on the taxi light and continued the approach.

As the rest of the field slowly came into view, I realized the sight picture did not look right. Tower still did not have a visual on us, the parallel runway still was not in sight, and the buildings did not match up with what I expected. I asked ECMO 1 which runway we were cleared to land on, and he clarified we were cleared for the left. At this point, I realized we were lined up on the right, confirmed by the runway numbers I now could see. We were about one-quarter mile from touchdown. We immediately waved off, looked for the departing traffic, told tower we were taking it around, and climbed to pattern altitude. We came around and landed on the correct runway.

Upon landing, we informed tower of the incident and conducted a thorough debrief. We found several factors had contributed to the mistake, which easily could have been avoided.

Among the contributing factors was the weather. While the haze significantly had reduced visibility, we initially were lulled into a more confident approach by the views at altitude, which prompted us to take a more aggressive approach. Another factor was the perceived surface-to-air threat. While this threat did exist, its probability was very low because the base had not been attacked for several months. We should have realized the level of threat, been less aggressive in the descent, and focused more attention on correctly flying the approach. While the limitations of the EA-6B-cockpit visibility cannot be changed, its effects should have been better recognized. I had extended our downwind leg to provide more time for the turn to final. I also had told ECMO 1 he needed to talk me through the turn for lineup, but I had not anticipated how the haze would contribute to misidentifying the correct runway. Combining this situation with my inexperience at the field, I failed to realize the mistake early enough.

Our crew developed several measures to avoid repeating this problem. While studying the course rules is a must, having a thorough understanding of the airport layout also is important. If I had had a better understanding of what visual cues existed at the airfield, I would have realized that if I could see the approach end of the left runway, I also should have been able to see the aircraft hangars to the south and the parallel runway to the north. While this knowledge may not have prevented the problem, it would have prompted a quicker response.

We can help ourselves by making the approach and departure ends of the runway active-navigation waypoints, rather than the midfield point. This action will allow the pilots to line up on the correct centerline, even without visual cues—GPS is a beautiful thing.

While it was combat operations, it was not combat that could have killed us. We needed to realize the actual threat level, our personal and crew-experience level, and responded appropriately.

Lt. Moroney flies with VAQ-140.

The vast majority of our aircraft damage and losses are not the result of enemy actions but from our actions, which we identify as the Blue Threat. We are our worst enemy when it comes to causing mishaps. Lt. Moroney points out that combat wasn't the problem, but rather their crew's actions. Two recent issues of Approach *(September-October 2006 and November-December 2006) have discussed the Blue-Threat topic; they are available online at: http://www.safetycenter.navy.mil/media/approach/default.htm. —Ed.*

Strip Alert—
Speed Versus Accuracy

Pressure is

"a compelling or constraining influence... on the mind or will."

—The American Heritage Dictionary

By Capt. Brian Stempien, USMC

While deployed in support of Operation Iraqi Freedom (OIF), crews experience the unique pressure induced by standing daily strip alerts. At the beginning of each shift, pilots and aircrew prepare their aircraft and flight equipment for launch at a moment's notice within the next 12 hours. After they man their aircraft and conduct flight- and crew-coordination briefs, the pilots and aircrew return to their workspaces to carry out their daily tasks. They remain ready, though, to drop everything and head to the line when called.

From this strip-alert posture, the most common missions we support are close-air support (CAS) for engaged ground forces and escort of assault-support aircraft on casualty-evacuation (CasEvac) missions. When the squadron operations-duty officer (ODO) receives a launch order, he activates an aural signal. Pilots meet outside the ready room for a ride to the flight line in one of the squadron's Gator all-terrain utility vehicles. By the time the pilots reached the AH-1W, the ground crew already has removed the aircraft's securing gear and is preparing the aircraft for engine start. The aircrew rapidly don their survival vests and get on board. The pilots start and arm the aircraft, complete preflight checks, and normally begin their taxi for launch seven to eight minutes after receipt of the initial launch order. In a scenario where every minute might mean the difference between the life and death of another Marine, soldier, or coalition force member, the pressure to move quickly is powerful.

Much of a professional aviator's efficiency and execution is a product of correct habit patterns; this is why cockpit simulators and repetition are effective training tools. When these habit patterns are disrupted, modified, or rushed, mistakes can result. Whether it's an unfastened harness or a failure to recognize the omission of a critical checklist item, actual and perceived pressure can alter habit patterns and increase the likelihood of a mishap. Aircrew are not the only ones susceptible. When pilots come running, ground crew are subject to the same sense of urgency to make the launch. They also have a strong desire to quickly get the aircraft in the air, which makes them subject to more mistakes.

OIF squadrons have executed strip-alert missions safely and effectively for several years. However, the time-critical nature of these missions can cause a pilot to rush and be susceptible to errors, especially early in deployment. This type of rapid launch is not practiced often by aircrew until arrival in-country. Some squadrons have tried to simulate these scenarios in predeployment training, but rarely often enough or with all

essential personnel. Typical aircrew habit patterns are not initially well-developed for this tight timeline and can be broken in a pilot's attempt to meet some perceived critical time limit.

Certain missions clearly require a quick launch to succeed. Actual pressure does exist. We are in a real war, and it's critical we provide timely support. With practice and rigid adherence to procedures, launches consistently can be made within the seven-to-eight-minute time frame described. Pilots, however, often confuse a requirement to launch in a specified amount of time for a requirement to go as fast as they possibly can. This distinction is important and leads many to cut corners or rush, because they feel they have to be faster. This situation can be caused by overly aggressive individuals and commands, who honestly are trying to improve the overall situation in any way they can. For most, the intentions that create this perceived pressure are good but display a failure on the part of the individual to accurately assess the risk added versus the reward gained by trying to save that few extra seconds. Any process eventually will reach a point at which it has been made as efficient as possible, while remaining safe. A fine line must be walked and strictly enforced.

Protection from this self-imposed threat will come through adherence to established procedures and NATOPS. Squadrons must make a professionally executed launch the goal; simply being faster than the other guy isn't the goal. This standard starts with ready-room leadership. If a new pilot sees a senior instructor violate procedures while turning up for an immediate mission, can we be surprised when he does the same thing?

Predeployment training also should include practice launches for aircrew and ground-maintenance personnel. This training must be realistic and include as many of the required personnel as possible. Many squadrons already implement a series of combat-crew simulators for all aircrew before deployment. Using these events to augment training in the aircraft reduces risk to aircraft and possible emergencies.

Time standards should be set by the squadron, based on the experience and proficiency of the aircrew. These standards should be enforced by the squadrons to make sure all procedures are completed correctly and inefficiencies are eliminated.

If we can respect the time-critical reality of the mission, while reducing the mistakes from chasing a few inconsequential extra seconds, we will, in the end, offer more effective and efficient support to the Marines and Soldiers outside the wire.

Capt. Stempien flies with HMLA-367.

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

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Hostility in the Cockpit

By Lt. Justin Collins

I was a new H2P, and this flight just was my second time completing deck-landing qualifications (DLQs). My first DLQs were a year earlier at the fleet-replacement squadron (FRS). The crew had night-vision goggles (NVGs), but with an illumination level of 1 percent, the NVGs provided little assistance to our situational awareness (SA); they felt more like an obstruction. All my senses were peaked as we made our way back to the ship after a two-hour mission and transitioned to the DLQ phase.

We are supposed to be dual-piloted, not dueling pilots.

To improve our SA, we decided to extend our final to two miles, rather than the normal one and two-tenths miles, and we used forward-looking-infrared radar (FLIR) to assist our lineup on the ship. Once the ship set flight quarters, we decided to shoot several practice approaches while we waited for a green deck.

The helicopter-aircraft commander (HAC) completed the first approach, and I flew the second. As we set up for our third approach, we received a green deck to begin multiple approaches and landings to complete our DLQ requirements. The HAC began the first approach, and all was going well as we passed through a half-mile. Our closure rate was slow, but we had briefed to complete the approach slower than normal because of the lack of illumination and my relative inexperience. As we closed the ship, our CRM was decreasing faster than our DME.

At two-tenths of a mile from the ship, I saw we were at 70 feet, about 40 feet low, and closing at only 10 knots. The HAC was on instruments, and I was scanning—mostly outside. As we slowly approached the back of the boat, the HAC scanned outside, so I shifted my scan more to the instruments. We practically were hovering at two-tenths of a mile behind the boat when I saw the radar altimeter rapidly decrease below 60 feet. I immediately called, "Power… power… power!" At the same time, I increased collective. This action startled my HAC, who wisely waved off. I was about to witness the worst example of cockpit relationships I ever hope to see.

On our downwind, the HAC and I discussed what just had occurred. I explained what I had seen, but the HAC was infuriated I had come on the controls and increased power. The HAC thought the approach was fine, and what I had seen was not correct because we had the ship made. This assessment may have been right, but the HAC never made any call that indicated we were approaching the back of the ship, or that we had the deck made. I simply did what I thought was correct and increased power to stop our descent. After being reprimanded for my action, we continued to our next approach to the deck. It

I ended up refusing to fly with her that night.

was a replay of the first one. We were at two-tenths of a mile from the ship with zero knots closure, and I was offering little assistance. My assertiveness was decreased acutely after the scolding I had received. The HAC waved off, and we took it around. I was not doing as much to back up my HAC at this point, and we reached an all-time low in CRM with a crew that still needed to land on the ship.

Our next approach went better, although no thanks to me, as I virtually sat on my hands and gave little assistance. Once over the deck, the HAC tried to land in the RSD and mistrapped. The HAC lifted into a hover, again mistrapped, and lifted once more. I said very little as the HAC tried to get comfortable, hovering over the deck. I could sense the HAC's frustration, and to my surprise, I began to receive another lecture about the approach where I had increased power. I said nothing, but our cool-headed aircrewman spoke up, "Let's get this on deck and talk about it later."

I still needed another approach and two landings for my currency qualification. As a crew, we decided to put all of our disagreements aside and finish with another approach and two landings. They were uneventful, and everything was completed.

In the debrief, the HAC continued to tell me what I had done was wrong and was due to my inexperience. I thought maybe she was right. We finished after an hour or so, and I later reflected on what had occurred. But, I never vocalized my concerns to other HACs on our detachment. This omission proved to be a big mistake, because a few weeks later, I was scheduled to fly another NVG flight with the same HAC on a night with low illumination. During the brief, the HAC became angry with me for not completing preflight calculations. I saw that same frustration already was brewing, and I realized this person may not be in condition to fly on another stressful night. After all, my inexperience and the HAC's frustration had led to dangerously poor crew coordination just a few weeks earlier. I ended up refusing to fly with her that night.

The first lesson I learned is that pride never should get in the way of someone speaking up or taking action if they see something unsafe. This pride goes for both of us. As a junior H2P, I should have spoken up and admitted I was out of my comfort box at the beginning of the DLQs. My HAC may have had better knowledge and could have prepared mentally, instead of jumping right to frustration. The HAC should not have reacted with such anger once I came on the controls and increased power. My reaction to what I had perceived as an unsafe situation should not have been interpreted as a personal attack on the HAC's flying skills. We are supposed to be dual-piloted, not dueling pilots.

The cockpit has little room for anger and frustration. All pilots have heard of compartmentalization. If another pilot does something that one finds frustrating, then that person needs to put it in the back of his or her mind and address it at the debrief. Some things have to be dealt with immediately, but introducing hostility into an already high-risk environment is just poor headwork.

We also learned the importance of communication. I should have said I was uncomfortable. Also, one of us should have shown some leadership and said it would be best discussed at the debrief. Our aircrewman demonstrated leadership by speaking up, which helped defuse the situation. My reaction to the HAC's frustration and anger was to clam up and say very little. I failed to pass important information, such as line-up and forward calls, which degraded our SA.

Finally, I failed to voice my concern with the OinC and other HACs on the detachment in a human-factors council (HFC) or standardization board. If I had, the OinC could have made adjustments or implemented controls that may have mediated a similar situation from occurring in the future. Instead, the OinC did not learn of the sequence of events until a few weeks later when I rightfully refused to fly with the same HAC, who was angry with me before we even had launched. This resulted in a cancelled flight and reduced readiness.

Lt. Collins flies with HSL-49.

DON'T ROLL YOUR EYES

By Lt. Rob Littman

As I near the end of my first JO tour, I have accrued 750 hours in twin-engine aircraft, 120 hours in single-engine aircraft and, because of recent events, a little over 90 seconds in "zero engine" aircraft. I'm still not sure how to log the flight time.

Our squadron was just over two months into cruise, flying Lot X and XI FA-18Cs in support of Operations Enduring Freedom and Iraqi Freedom. I was scheduled for a 45-minute day-currency and CQ flight in the Arabian Gulf, following our first port call. We had no clouds to speak of, although the visibility was Gulf standard: three to five miles in dust and haze. The flight began as I knocked out a few practice plugs and then logged some SSC (surface search and control) time before meeting the other squadron section overhead for recovery. As I started to join with the other two aircraft, my

impromptu NATOPS check ride began.

Immediately after advancing the throttles to military power, I heard a loud bang from the right side, and the engine began to flame out. I pulled the throttle to idle and heard another loud bang—the engine had flamed out. I told the section lead I had lost my right motor. I assumed lead and requested they join on me. As our three-ship headed toward mom, we stepped through all the displayed cautions.

Besides the associated cautions, rpm and fuel flow read zero, and the EGT was steady at 80 degrees Celsius, so we agreed to turn off the right engine. I had read tales of pilots securing the wrong throttle, so I made sure my hand was on the right throttle, then pulled it to "Off."

Our operations officer, a former FRS instructor and CAG paddles, arrived in CATCC. The radio representative and I quickly brought him up to speed. With things now well in hand, he instructed the other two aircraft to proceed to marshal for the day, Case III restricted-visibility recovery. About this time, I received FCS and FLAPS OFF cautions and notified the rep. Bringing up the FCS page, I found the leading-edge-flap servos in channels 2 and 3 were X'd out. With no secondary indications from the right motor, we decided to crossbleed the right engine to restore the hyd-2 system for a flight-control reset. This action cleared the FCS and FLAPS OFF cautions.

We decided to try a single-engine CV recovery. The rep instructed me to lower the gear to make sure we could get three-down-and-locked. Then I would dump fuel to single-engine, maximum-trap weight in preparation for a single-engine approach. At 91 degrees Fahrenheit and near 100-percent humidity, the single-engine-recovery weight was about 30,000 pounds, which meant I would need to dump almost 8,000 pounds of fuel to make the single-engine ball call at 2,700 pounds.

Maintaining altitude with one engine at my current aircraft weight was much more difficult than expected. I had the dumps on as I descended to 2,000 feet, but I could not stay level at military power. I had to use afterburner (AB) to climb to 3,000 feet and then reduce the throttle to military power to select the dumps and squeeze out more gas. I repeated this process until my fuel state was below 5,000 pounds, which allowed me to maintain level flight.

I set up for the approach and coordinated with paddles. At two-and-a-half miles, I realized the ship's wake was angling off to my right by more than 30 degrees. I asked for confirmation of the given final bearing of 262, and was told it now was 298 degrees. I felt too close to make an aggressive correction on one engine, so I made a left 330-degree turn and set up for the proper FB (final bearing). Although this move solved my lineup problem, it also forced me lower and slower, without room or energy to fix it, and prompted paddles to give me a timely waveoff. I first tried a military powered waveoff but didn't get the desired response. I selected full AB for a safe climb away from the deck.

With directions to tank, I picked up the Super Hornet tanker and proceeded to join. The pilot asked if I would be tanking dirty, and I said "yes." After only a short time, I told the rep it was impossible. The angle-of-attack the tanker required to maintain just above his 180-knot minimum airspeed directed his jet wash right through the basket and over my aircraft. We cleaned up to try again.

I finally got into the basket with just less than 1,000 pounds of fuel remaining but only could stay plugged and receiving when the tanker flew straight and level. I had filled up to 3,100 pounds but fell out of the basket as the tanker started a turn toward mom.

When I replugged for the remainder of the fuel, I inadvertently must have pulled the left throttle below 85-percent rpm. Suddenly, the aircraft reverted to

the MECH ON flight-control mode. The resultant undamped manual control of only the stabilators created an initial nose-down pitch, and my instinctive aft-stick correction caused a violent nose-up pitch. All I could do was pull the throttle to idle fast enough to avoid hitting the tanker. Once clear, but still fighting the PIOs (pilot induced oscillations), I stared down at the stick to find and hold a neutral point until the oscillations dampened. I finally managed to regain control at 1,800 feet, told the rep of the MECH ON reversion, and my current fuel state of 3,100 pounds. He immediately told me to hit the FCS reset button, which I did, and the system returned to normal. We all had seen enough by this point, so the rep said my signal was "divert." I selected that waypoint on the HSI (horizontal situation indicator) and started on my way.

Until this point, I liberally had been using afterburner on the good motor. My neutral power point was far higher than normal, and the afterburner detent almost was nonexistent in my mind. At the current density altitude, I was unable to climb at any airspeed close to the desired bingo profile. The combination of these factors led to my inadvertent selection of AB for several seconds to reach the 300 knots recommended to climb to 22,000 feet. But, I barely got above 16,000 feet. At this altitude, I no longer could climb at an airspeed greater than 250 knots, so I leveled off and accepted this as my final altitude.

Al Udeid, Qatar, was the primary divert. The rep and I discussed some of the field information. We thoroughly had briefed divert fields, and I felt comfortable with a 12,000-foot runway with arresting gear. At this time, the tanker from the next cycle appeared on my right wing, following an expeditious join-up. The rep suggested I get gas while we headed to Al Udeid. I got into the basket, much more aware of the 85-percent-rpm hurdle, with roughly 1,000 pounds of fuel and 60 miles remaining to the divert. I maintained 90-percent rpm and relayed the associated airspeed to the tanker pilot to get back in the basket. I felt intense relief as my fuel quantity started to climb. According to my calculations, I barely had enough gas to make the divert without tanking.

While tanking, I started to drift aft and added power. Immediately, the train came off the tracks. I watched as the probe unexpectedly popped out of the basket. I heard my only remaining engine (left) spool down, saw the cockpit lights go out, and was struck by a sudden and eerie quiet.

I transmitted in the blind, "I just lost my left engine."

I was in a 30,000-pound glider, listening to nothing but airflow over the canopy. I pulled the left throttle to OFF, lowered the nose to keep the left engine turning, put the APU switch to ON, and cranked the left motor. This restarting action also allowed me to maintain hydraulic pressure to the flight controls.

I began to prepare for what was sure to be a controlled ejection. Since it was dusk, I tried to get my flashlight on the standby gauges to ascertain altitude, attitude and airspeed. I waited as long as I could stomach it, and then brought the throttle around the horn. Nothing happened. I waited a moment and tried it again. Nothing. After the third try, I got some lights back but still had no fuel flow. Descending through 10,000 feet, I momentarily debated another restart or eject. I once more pulled the throttle OFF, and again back ON; the left engine came back to life.

For roughly two seconds, the feeling of relief was overwhelming. Then it was gone again when I realized with both engines offline, the INS had dumped, I had fallen 8,000 feet, and I had about 1,000 pounds of gas left.

Marshaling what seemed to be the last of my compartmentalization skills, I started to climb and headed roughly toward the divert. The HSI was rotating 90 degrees every few seconds as the jet began its in-flight alignment. I also had lost sight of the tanker. I called the rep and told him that I had managed to restart the left engine. I learned the tanker pilot had lost sight of me in the thick haze.

I knew I had been flying southwest before the flameout. I approximated my previous heading, based on the sun's position and my wet compass, knowing I needed to buy some time as the INS aligned. I heard the departure controller tell the tanker I was three miles south of his position. Moments later, the tanker triumphantly zoomed out in front of me, basket already out and ready to go. I worked my way into place and got the probe in the basket. No flow—nothing. The tanker pilot reset the basket.

It's hard to accurately convey the pucker factor I had, but with less than 500 pounds of gas, it was up there. He put the basket back out, and I jumped in again. Would you believe it? I still had no flow. Finally, he selected override on the basket and the "green light of life" came on. I later found out I had 371 pounds of fuel remaining before this last attempt to refuel.

I stayed in the basket and received about 4,000 pounds when the tanker said the divert field was on our nose at 14 miles. He said the active runway was 16 and gave me the tower frequency. I checked in with tower and asked if the runway lights were on—I couldn't see them. They said yes, so I asked them to turn the lights on full bright. The runway then came into focus. I slowed down to emergency-extend the gear, double-checked everything, and made sure my hook was down.

I expected the tanker or the ship already had coordinated a short-field arrestment, but I thought it wise to double-check the status of the gear with tower. They said, "Yes, the gear was raised." I touched down, expecting a brief rollout into the short-field gear. Shortly after touchdown, about the time I expected to engage the gear, tower came up on the radio and, in an excited voice, said, "The departure-end gear is rigged."

I already had decelerated below 100 knots and was rolling down the runway with no nosewheel steering. I let the aircraft track on its own until a slight left drift began. I then reached down and selected emergency brakes. Using as much right rudder as I could, I finally was forced to use the emergency brakes to keep the aircraft on the runway.

Knowing the Hornet's reputation for blowing tires while using emergency brakes, I gently tried to brake, but immediately after I applied the brakes, the left mainmount blew. I was headed off the runway and checked the airspeed as it passed just below 80 knots. If you've ever been to Al Udeid, you know it is flat, hard-packed earth and rock that might as well be asphalt. I decided not to eject.

The ride was very bumpy, but not violent. The jet finally came to a stop in the dirt after about 2,000 feet of off-roading, halfway between the runway and the parallel taxiway. I set the parking brake, shut off everything, and after the crash crew lowered the ladder, shakily climbed down to solid ground.

Postflight analysis showed the right engine suffered catastrophic combustion-liner failure, along with a major crack in the oil reservoir. The engine internally FODed itself, which caused the initial flameout. This action happened so quickly it did not trigger any associated engine or oil cautions. With no preflight indicators of this impending failure, a single-engine situation effectively was impossible to avoid.

Now that I'm back to "1G straight and level," I am thankful for many things, but I could have done better. A point of discussion was the decision to take a look at the ship. No naval aviator likes to dump 8,000 pounds of gas and intentionally put themselves below divert-bingo numbers. This was our first, no kidding, single-engine approach of the deployment, although we'd been through several idled-engine approaches. An accurate final bearing would have allowed an approach on the first try, when I was more prepared and likely sharper.

Single-engine tanking brings many factors to the table and has stimulated much ready-room discussion. Although use of afterburner on the bingo profile is not directed, my sensitivity to the afterburner detent virtually was nonexistent after 30 minutes of flight that frequently required min burner or more. I was unable to reach the profile parameters at military power because of the increased density altitude. The big gotcha, however, comes when we analyze why I lost my left and only remaining engine.

As a result of continually cross-bleeding the right engine to maintain reliable flight controls (after a series of subsequent flight-control failures), we trapped fuel in the No. 3 feed tank and starved the good motor. In hindsight, we agreed pushing the FIRE light at lower fuel states would have been worth the risk of overheating the good engine's AMAD (airframe-mounted-accessory drive). I also gained an appreciation of the second tanker's lack of situational awareness regarding my emergency. I never gave the second tanker a quick rundown of the situation on his join-up. I assumed he arrived on the scene fully aware of my emergency.

Finally, there was much confusion about the short-field arrestment. My intent, from the moment I was given the signal to divert, was to trap at Al Udeid. I assumed this would be coordinated by someone not flying the emergency jet; I would confirm once I got in touch with approach control. Obviously, this coordination did not happen in the flurry of emergencies. I tried to confirm the arrestng gear on tower frequency, but the Air Force often thinks of gear as a departure-end item, not in the sense of short-field traps like the Navy.

The plane, and possibly my life, were spared as a result of excellent teamwork and CRM. At the very least, I won't be laughing or rolling my eyes during the next NATOPS simulator when it provides multiple compound emergencies.

Lt. Littman flies with VFA-81.

To Push Or Not To Push?

By LCdr. Brian C. Sinclair

I was one of the fortunate FRS students to head to El Centro in the summer of 2006 for my strike Det. My hiatus from aviation in Monterey, Calif., had made me completely incompatible with the desert clime. My respect for our Marine brethren in Yuma quadrupled as I burned my fingers every start from APU spool-up until I got both engines online. The last time I had dealt with this kind of weather was in the Gulf in 2002, with TF-34 (S-3B Viking) engines. In that platform, I had a true respect for the old "hot and heavy" situation, which can test a pilot's skills. Although VFA-106 had thoroughly briefed me on engine-performance degradation, and I had spun the numbers using TOLD (takeoff and landing data), I honestly thought the Hornet always would have power available. With a configuration of single centerline tank and a few Mk-76s, the aircraft at least would have enough power available so that my skills would not be tested. That was my first misconception.

So, there I was, waiting at the holdshort with my lead, just minutes away from taking off VFR to the ranges. Because of the short transit, I was rehearsing the mission and switchology in my mind. I knew it would be fast and furious once I got wheels in the well. I always thought of the takeoff and rendezvous as quite mechanical and did not give much thought during my chair flying—bad idea No. 2.

We received clearance from tower and set up for a

Photo by PH1 Hana'lei Shimana

standard 10-second-go on the west-flow runway. As I watched lead race away from me, his plane looked distorted from all the rising hot air; it made him look almost like a mirage. As I began to roll, I noticed this mirage took quite a lot of concrete to rotate. I took a final look at my gauges, then focused outside on the runway and my airspeed. At just over my TOLD-calculated rotation speed, the plane picked itself off the deck.

I then heard several loud, successive bangs from my right engine. Betty blurted, "Engine right. Engine right," as the plane began to yaw to the right. I steadied the plane and left both throttles in burner, as I hawked my airspeed and altitude. I struggled to maintain 380 feet and 157 knots (three knots below calculated takeoff speed) for a few moments, while I sucked up the seat cushion. I glanced down at the IFEI (integrated fuel engine indicator) and saw my right engine had rolled back to flight idle, despite my left hand still commanding afterburner on both sides.

I tried to push the throttles through the anti-skid switch and had a white-knuckle grip on the stick. I also tried to curl my toes around the brakes as I maintained balanced flight. Just then, the rest of the emergency-takeoff procedure hit me: "External jettison button-push (if required)."

As my stem power invited a few more neurons to play, I realized I was flying over farms and buildings. I saw an open patch of desert at my 1 o'clock and not terribly far. I decided to hold the jettison until that point, so I wouldn't ruin anyone else's day. Fleeting ideas of possible ejection caused me to straighten up in the seat and reassess the populated areas if the "EXT JETT" did not make a difference.

As I wrestled with the plane for a few more seconds, out of one of the darkest, dustiest corners in my mind, the old Viking EP for emergency takeoff reared its head. I decided I could gain a little more airspeed by retracting the landing gear. Without a second thought, my left hand complied, and up they came. As the green lights extinguished, the airspeed crept up a few knots to a much more comfortable 165 knots. I now felt comfortable raising the nose a few degrees and started a gentle climb at about 162 knots.

When I passed 2,000 feet, I did my best impersonation of a calm, collected pilot and told tower of my emergency. I then asked for a delta at 7,000 feet. I finally brought the right throttle back to idle, and the IFEI showed the engine safely stable at that setting. The left throttle remained in A/B while I explained the situation to my lead. He immediately rejoined in a loose cruise, and we went through the PCL (pocket checklist) procedures several times to ensure accuracy. I cracked a smile as he said (over TAC), "Let me know if you have to step out of the jet at any moment."

Only a Brit would use such a genteel expression to describe such a violent and undesirable act. Once established at 7,000 feet, my next order of business was to set up for a trap. Because I had kept the external tank, I had to dump a lot of gas to get down to landing weight. Unfortunately, I had to keep the left engine in blower to maintain altitude, which brought me to my next dilemma: Should I be dumping fuel only eight to 10 feet above my staged afterburner? My fearless lead's response was something along the lines of "I'm not quite sure, but I will move farther away."

I dumped down and took an uneventful trap on the duty runway. On deck, the right engine started making a horrible crunching sound, so I shut it down. After an initial inspection, the maintainers realized my right nose-gear bearing had exploded and had sent shards of metal and ball bearings down the right engine. The ball bearings bounced fore and aft like pinballs between the compressor and turbine stages, robbing the engine of many blades before exiting. The nosegear hub had fused to the strut. I could see daylight through the right engine. I had clobbered the active for about 30 minutes until they could properly tow me away—mistake No. 3.

I was impressed with the GE engine and how much abuse it could take and still run. I really appreciated having all of my utilities, which are run off the hydraulic pump from the affected engine. Never before had I seen an engine so completely destroyed and still running at idle.

More importantly, I learned that single-engine flight, in even the mightiest of aircraft, really tests a pilot. Each phase of flight must be considered carefully during a preflight. Seemingly mundane takeoffs quickly can become the most difficult part of a flight, especially in bad weather. Airport surroundings (farms, buildings) also must play into the decision matrix when executing EPs, and dramatically can alter strategies. These factors should be addressed in the briefing space at 1G and 0 knots. I also learned that NATOPS does not recommend dumping while in blower (for obvious reasons). I comfortably could have burned circles in the sky and contacted the SDO on base freq to double-check procedures in the Big Blue.

LCdr. Sinclair flies with VFA-81.

BRAVO Zulu

VFA-106

LCdr. Jason Naidyhorski was the pilot of Roman 334 and lead for an FRS close-air-support training flight in the Fallon range complex. During the "G awareness" maneuver, his FA-18 had an uncommanded deflection of the left inboard, leading-edge flap, which caused a severe nose-down attitude and significant loss of altitude. LCdr. Naidyhorski recognized the seriousness of the situation, immediately recovered the aircraft, and climbed to a safe altitude. He did handling and controllability checks to assess if the aircraft could land in this configuration. Because he couldn't slow the aircraft below 190 knots without an unacceptable degradation to the aircraft's flying qualities, he decided to fly a 200-knot, straight-in approach.

He skillfully flew his stricken aircraft and kept it clear of populated areas. He touched down at 204 knots on runway 31L at NAS Fallon and used the long-field-arresting gear.

His event significantly contributed to the strike-fighter-community's understanding of this serious failure mode.

LCdr. Naidyhorski was awarded the Air Medal for his efforts.

DOING THE SPLITS

By 1stLt. Justin Wortendyke, USMC

Being the new guy in the squadron has its ups and downs. I certainly didn't expect to fly out to my squardon's spring detachment in Yuma, Ariz. However, skeds wanted me to start my low-altitude-tactics (LAT) qualification to speed up my combat-wingman qualification. Flying on the CO's wing, the cross-country to Yuma was uneventful. Once there, I was slated to get my LAT qual on a quick out-and-in with the CO.

We took off out of Yuma after a thorough brief and headed to the range. As we descended through 5,000 feet, we completed the low-altitude checks, and the CO fell back to my six as a chase plane. He let me get comfortable with some mild maneuvering.

After a few check turns to get me headed in the right direction, the skipper asked, "How are you feeling?"

I rogered with a "Good, sir," and started to get a rush of excitement. I was ready to get into the meat of the flight.

The CO called a hard left for 90 degrees. From 550 feet AGL, I checked my left clear, rolled and started a smooth 5-G pull across the horizon. Just then, my left wing dropped sharply. My first thought was the roll-off was just mere turbulence or rusty stick skills. I thought, "Why can't I do a level hard turn for the CO?"

As I brought my left wing back up, I realized this maneuver was taking far too much right stick. I increased right stick to compensate for the heavy left wing. I fed in coordinated rudder to keep the jet tracking, threw the throttles forward, and began to pull up.

"Watch your nose!" the CO called, but that factor was far from my mind at this point. As my nose came back up through the horizon, I jammed the throttles into afterburner and waffled my way upward, away from the hard ground. I then got the master-caution tone, with the associated FCS (flight-control system) caution and aural warning. I momentarily was preoccupied with the controls, so I ignored Betty. I was far more concerned with flying away from the ground.

As I passed 1,000 feet, I finally had a chance to look outside. I expected to see blood from a bird all over my wing, but instead, I saw my outboard leading-edge flap (LEF) sticking straight up, 90 degrees the wrong way.

My CO asked, "How are you doing up there?"

With a clear head and concise comm, I was able to get out, "Not good, sir."

I know—a very descriptive response, and just what a flight lead wants to hear. I regrouped, took a deep breath and said, "My left leading-edge flap is sticking straight up like a barn door."

Once again, I could have been a little more helpful, as I heard his response, "Oh crap," followed by, "Keep climbing."

I decided to be a little more descriptive this time and clarified it was my left, outboard leading-edge flap. The CO had me verify my problem once more as I began to relay to him what my FCS page showed. I retained the lead as the skipper helped keep me in

Photo by MCSN John Wagner. Modified.

the area. We switched to base on the aux radio. They broke out the big book and made a call to MAWTS-1 to get the resident expert to help. When I finally caught up on the primary-range frequency, I found the CO had coordinated our flight back and declared the emergency for me. I punched 7700 into my transponder.

We circled a couple times to go through the slow-flight checklist and got down the gear. We also burned some extra gas to get down to my final speed. The -1 expert showed up at the squadron and had a calming voice on the radio. He assured me that we had done everything correctly—so far.

We flew a straight-in approach to the duty runway with the CO calling out my speeds to make sure I didn't touch down too fast and blow a tire. I landed at 190 knots, the nosegear speed. I rolled out to the end and taxied back as my CO circled to land.

I was greeted by the ordnance guys, who checked my brakes and de-armed my Sidewinder. With a jaw-dropping look, they pointed to the flap standing up the wrong way. Everyone seemed happy to have me back after they heard what had happened. The maintenance department showed me the part that had failed, an original part on my FA-18A+ Hornet. This event can help remind us that our aging aircraft can fail at inopportune times.

1stLt. Wortendyke flies with VMFA-312.

Hornet Runaway Leading-Edge-Flap Failures

Bravo zulu to the author and VMFA-312 for this successful recovery. Failures of the FA-18A-D LEF system have resulted in three aircraft losses in the last three years. Lesser failures of the LEF system have resulted in flaps locking with a deflection that did not impact controllability. Failures may involve one or both spans of leading-edge flaps. Seven cases of outboard-only upward runaways have been documented in the last 18 months. A mishap-response team from NavAirSysCom analyzed the LEF system and found that a 400-flight-hour, recurring wingtip-to-wingtip inspection of the entire LEF system was necessary. However, despite ongoing plans to implement such an inspection, sufficient logistics support will not be available in time to sustain required fleet operating levels.

A revised inspection has been developed that is supportable and maintains the residual risk at accepted levels until the 400-hour inspection is in place. Target release date for the inspection was June 1, 2007, as a bulletin series comprised of AFB-644, AYB-1182, AYB-1183, and AYB-1184 with a compliance time of next 200-hour phase for the initial inspection and a recurring interval of every 200 flight hours. These bulletins are a subset of the eventual wingtip-to-wingtip inspection. Completing the inspection bulletins in conjunction with the 200-flight-hour phase will minimize aircraft down time.

Commanders should stress the importance of zone inspections when conducting maintenance in the LEF areas of the aircraft. No later than the fourth inspection cycle, the bulletins will be replaced by a full wingtip-to-wingtip inspection.—Maj. Duke Budde, USMC, FA-18A-D analyst, Naval Safety Center.

How To Get a Call Sign

By Lt. Charles Rowland

I was outside my seven-day, night-currency window, and needed a day and a night trap on USS *Nimitz* (CVN-68) to regain currency. I had been in a rush ever since my first flight, which was long and uneventful. Unfortunately, I was a half-hour late for my next brief and found the rest of the crew waiting for me as I entered the ready room. I took off my gear and quickly began to brief them. They already had completed the mission portion of the brief and filled me in on the details. I grabbed a bite to eat, read the aircraft book, and put back on my flight gear. The day already was long and getting longer.

I sat in the pilot's seat of aircraft 601, the newest edition to the Wallbangers' fleet of four Hawkeye-2000 aircraft. With both engines turning, we were ready to taxi. Events finally were slowing down to a normal pace as we taxied to cat 2 for launch.

We were scheduled to launch 10 minutes before the rest of the aircraft in the cycle, as it was our job to control them. We spread our wings and watched as the shuttle came aft down the track. The director hurriedly put us in tension and passed control to the shooter. The parking brake was off, my feet came off the brakes and down to the deck, and the nosewheel-steering handle was stowed. I ran up the engines to 2,500 horsepower and then quickly to maximum power when the shooter gave the signal. I checked all the gauges, received a ready call from the NFOs in the back, and asked the copilot if he liked what he saw.

A second later, the copilot was shaking his head at the shooter and calling over the radio to the tower, "Suspend. Suspend. Suspend cat 2".

A few tense moments later, the cat was safe, and the shooter gave us the throttle-back sign. The copilot said he had seen something fall off the instrument panel when we had run up the engines. The panel violently shakes when the engines are at maximum power.

I set the parking brake, and we moved back our seats to search for the object. I spotted what turned out to be an instrument-light mount near my right foot. The copilot reached over and picked it up. He then called tower to tell them we had recovered our FOD and were ready to try again. Tower said we'd have to wait until the normal launch started. We saw the shuttle go back to the bow—so much for our 10-minute-early launch.

We sat for eight minutes, cursing our FOD and annoyed at the wait. With no prior warning, the shuttle came aft toward us, and the deck-status light turned green. In a matter of seconds, the taxi director looked forward and aft, then gave us the signal for tension and passed control to the shooter. The shooter quickly gave us the signal for maximum power.

In the cockpit, I dropped my feet from the brakes, touched the nosewheel-steering handle to make sure it was in, and scanned the instruments as I ran up power.

Photo by PHA Stephen Early. Modified.

I didn't immediately realize what had happened, but I knew something was very wrong.

Everything looked good to me: The ready call came from the back, and the copilot agreed we were good to go—no FOD this time. He saluted the shooter to indicate we were ready, and everyone braced for the shot. Three, two, one, acceleration, but something didn't feel right. The ride was very bumpy, almost as though the aircraft did not want to go flying. The plane shuddered back and forth like only one side at a time was touching the ground.

I didn't immediately realize what had happened, but I knew something was very wrong. As soon as the stroke was over, I threw up the gear handle—I wanted as little drag on the aircraft as possible to help make sure we remained airborne. Well, my thought may have been correct, but my earlier actions were not. A second after the gear handle was up, the call came from tower, "601, I think you left the parking brake set; you blew your tires, one for sure, and probably the other one."

As he spoke, I looked down at the brake handle and felt that sinking feeling. The copilot turned around in time to see the remains of a tire enter the wheelwell and then watched the doors close around it. I knew raising the gear was the last thing I wanted to do. Fortunately, the gauge indicated three-up-and-locked, as I confirmed everything looked normal on the left side. The copilot and mission crew confirmed the starboard-side gear seemed to have raised properly.

I had a moment for reflection as the plane began to climb, "Duh, that was dumb. How did we miss that step?"

There was no time for the "whys;" we had to figure out what to do. We pulled out the pocket checklist (PCL) and read about field landings with both main gear failed. Our exact situation wasn't covered in the

book, but what was there was close enough.

We knew we had to divert to NAS North Island and make an arrested landing. Tower arranged for a Hornet to join up, inspect our gear, and look for any other damage. When he joined, I lowered the gear handle and prayed they would come down. Fortunately, again, the gear came down normally, and the gauge indicated three-down-and-locked. The Hornet pilot confirmed what we saw out our windows: Both main gear had blown, most of the rubber still was on the rim, and no other damage was evident.

The call came from our XO that we were diverting to North Island for an arrested landing. In any emergency situation where time permits, it is standard operating procedures for the aircraft commander to get into the left seat, if he already wasn't there. Because the copilot was the aircraft commander, we switched seats, so he would be in the left and taking the trap. We made the appropriate radio calls to check out of the ship's airspace, headed toward the beach, and reluctantly declared an emergency (self-inflicted) with approach control.

Once at North Island, we made a straight-in approach to runway 36. An LSO was on-station to help talk us into the wires. The CAPC (carrier airplane commander), flew a smooth approach and touched down just as the hook grabbed the wire. The rollout was bumpy, but the aircraft stayed in the middle of the runway. We came to a stop in about 400 to 500 feet, with the hook still clutching the wire. He set the parking brake, and we quickly exited the aircraft as the fire trucks came roaring up. They were there just in case one of the wheels had caught on fire, which did not happen.

As I exited on the left side of the aircraft, I had my first look at the damage. It looked like just a flat tire, though the hole was large. I was surprised; I had expected more damage. That's when I walked around to the other side, where all that remained was the rim. All the rubber had been removed during the landing, and three large pieces of the rim were on the ground near the back of the plane. A good portion of the rim had been ground off. As I looked closer, I could see through the top of the rim, down onto the brakes; they also had hit the ground a few times and had been damaged. A track about 10 feet long and a quarter-of-an-inch deep extended behind the complete width of the rim; the asphalt now was removed. Behind that, as far as I could see, a replica of the edges of the rim was engraved in the runway, interrupted about every three feet by a six-inch patch the width of the rim. This was where the rim had rolled down the runway, and the stretch directly behind the rim was where the pilot had applied the brakes. The aircraft now sat with the starboard rim sunk half-an-inch deep in the runway. We had left our mark on North Island.

A maintenance crew arrived in less than half an hour. It only took two hours to get two new tires and to raise the aircraft back to its original height. Though it took a day to get a new brake for the starboard gear, the maintenance crew quickly replaced it and got us on our way back to the ship.

We were on shore for about a day and a half—plenty of time to figure why we had forgotten to release the brake. What were the causal factors? We had sat on the catapult, annoyed at our FOD and at having to wait before taking off. We had relaxed and then quickly were brought back to reality when the ship was ready to launch us. The deck crew was in a hurry, and we rushed to make sure we were ready. There was no taxiing forward into the shuttle, and we quickly were put in tension. That's when we missed one of the last steps on the checklist. Our final checks in the cockpit focused more on the dashboard in a FOD search, than it did at the bottom of the control pedestal that houses the parking-brake handle. I had not called out "parking brake off," and no one caught it.

Every part of the process is important. If you need to focus on a specific area, you cannot sacrifice another area. Also, aircrew must avoid being rushed through something as critical as a cat shot. If you make the shooter wait a few extra seconds while you make sure everything is as it should be, it could be the difference between a normal cat shot and leaving large amounts of your tires on the deck. More importantly, it could mean the difference between life and death. That is a lesson I will not forget soon.

As I entered the ready room after returning to the ship from North Island, I was greeted with a number of new call signs, none of which I'll share. I also was told I had about 10 minutes before I was to brief for my next flight. I still needed to get that night currency.

Lt. Rowland flies with VAW-117.

BASH

By Lt. Larry Tarver

From 1980 to present, the Navy had:

18 Class A mishaps costing $352,994,491
33 Class B mishaps costing $8,269,040
341 Class C mishaps costing $17,602,563
21,830 hazreps (many with no cost entered), totaling $2,106,238
Total cost to the Navy: $380,972,332

Do you report every bird strike? Or every deer sighting on the runway?

A critical aspect of any bird-animal-strike-hazard (BASH) program is reporting. When you report bird and animal activity around the airfield environment, as well as actual strikes, you provide the most accurate and real-time information for increasing pilot awareness and decreasing BASH incidents.

The pilot on final approach, the person driving the duty sweeper, and the contractor refueling parked aircraft should contact the tower and provide information about wildlife activity. This activity may pose a threat to aircrews and aircraft. Reporting a near-miss with wildlife is just as important. This data, coupled with actual strike data, provides local BASH teams with information to resolve wildlife issues.

When you report aircraft strikes and any wildlife (dead or alive) found on the runway surfaces, you should include information on the species, location and time. You can get help with species identification from your local USDA biologist, base BASH team, or from base-operations personnel. They then can highlight problem areas in the airfield environment and on low-level routes. Given this data, the experts can find out what attracts a species to a particular area, and in most cases, the attractant can be removed or avoided. Low-level routes can be modified and local operations can be conducted.

According to recent studies, the cost to military and commercial aviation from bird and animal hazards is more than $1.5 billion each year. This cost includes aircraft loss and damage and out-of-service delays.

The Naval Safety Center estimates only about 25 percent of all BASH incidents get reported, so the figures above underestimate the scope of the problem. Accurate reporting is critical to identifying hazards and preventing mishaps. If you don't report a problem, no one knows it exists, and nothing can or will be done to fix it.

BASH is a safety and operational issue, not a natural-resource issue. Currently, individual installations fund their BASH programs, based on the requirements of their local instructions. This arrangement has created vast differences in effectiveness between various locations because of a lack of specific department-wide guidance and requirements. Currently, the Navy is working to develop, fund and implement a Navy-wide BASH program, which would increase the overall effectiveness and decrease the risk to aircrew, aircraft and other Navy assets.

You can get online information regarding BASH conditions at http://www.usahas.com. Use the search menus to get the current conditions in your area or for your intended route. The website updates every six minutes and is as close as you can get to real-time information, unless you have a local BASH radar system at your airfield.—*Lt. Tarver is the BASH analyst, Naval Safety Center.*

You can get more information from Matt Klope, the Navy and Marine Corps BASH program manager. Any strike remains that cannot be locally identified also should be forwarded to him.

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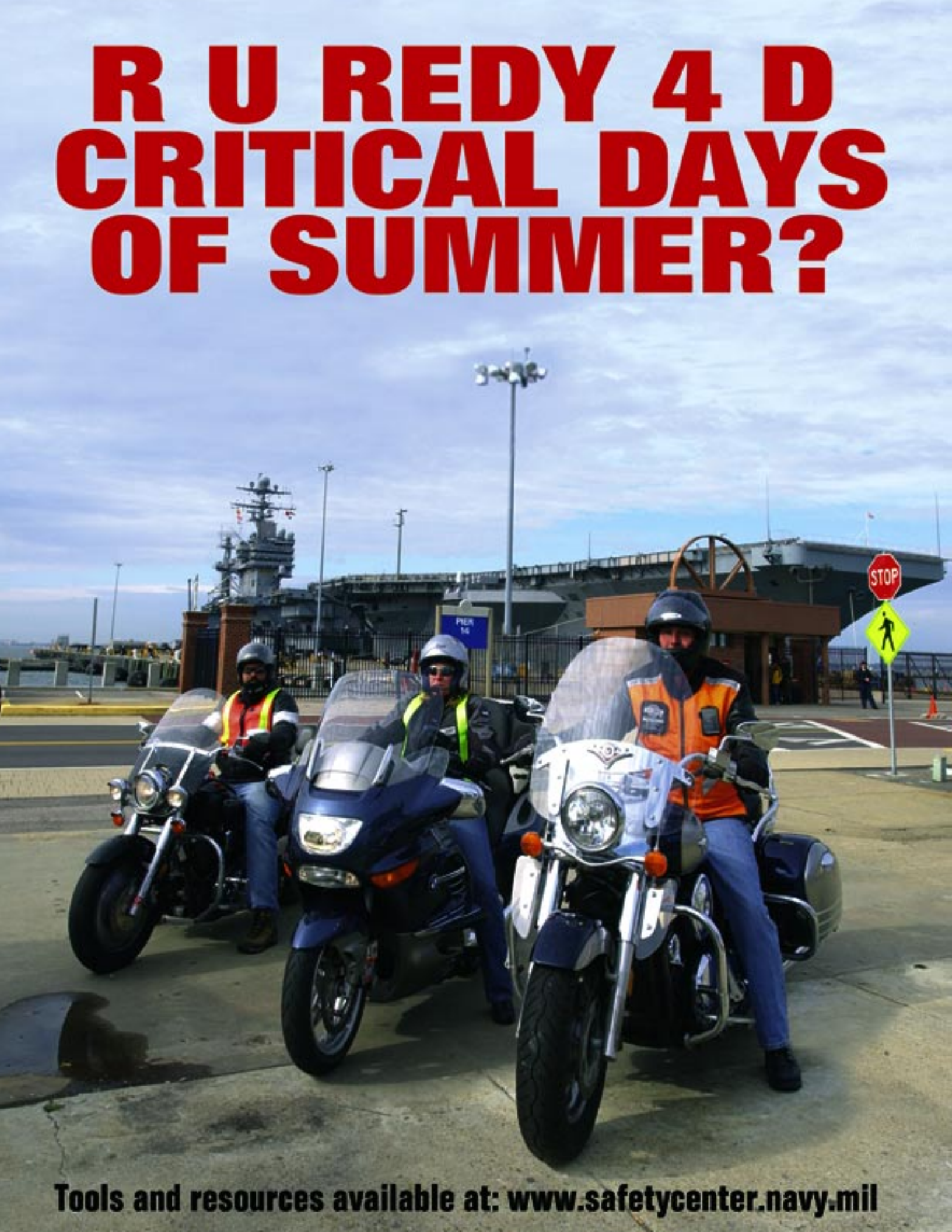
R U REDY 4 D CRITICAL DAYS OF SUMMER?



Tools and resources available at: www.safetycenter.navy.mil